14th International Conference on Business Management (ICBM) 2017

Managing Interface: Corporate Resilience and Growth Potential

8th December 2017, Colombo, Sri Lanka

Conference Proceedings

Faculty of Management Studies and Commerce
University of Sri Jayewardenepura, Sri Lanka
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The responsibility for opinions expressed, in articles, studies and other contributions in this publication rests solely with their authors, and this publication does not constitute an endorsement by the ICBM or FMSC of the opinions so expressed in them.

Official Website of the Conference: www.icbm.sjp.ac.lk
Online proceedings are available at www.ssrn.com
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Introductory Remarks and Acknowledgements

The Faculty of Management Studies and Commerce (FMSC) of the University of Sri Jayewardenepura, widely known as the ‘Centre of Excellence for Management Education in Sri Lanka’ is proud to present the International Conference on Business Management – ICBM 2017 for the 14th consecutive year. The theme for conference is ‘Managing Interface: Corporate Resilience and Growth Potential’ which has been coined after considering the numerous viewpoints of the contemporary dynamic business world. ICBM 2017 aims at promoting and publishing current and relevant ideas on Managing Interface; Corporate Resilience & Growth Potential which are vital and vibrant especially for corporate and public-sector organizations, which perform an important role in improving the quality of life of all stakeholders.

ICBM 2017 has received empirical, methodological and conceptual papers from both local and international academics, practitioners and policy makers, which are organized under 05 tracks. A transparent reviewing process was conducted where the papers underwent a double-blinded review procedure conducted by an eminent panel of local and international reviewers who are subject specialists in their respective areas. It should be noted that neither the ICBM 2017 committee nor the Faculty of Management Studies and Commerce of the University of Sri Jayewardenepura will assume responsibility for any errors or omissions in the research papers, which rest solely with the authors.

This conference would not have been possible if not for the invaluable contribution made by various persons and organizations and we express our sincere gratitude to them all. We would like to extend our sincere gratitude to the Chief Guest Professor Patrick Mendis, Harvard University for kindly accepting our invitation. We are extremely grateful to Assoc. Professor Evan Lau, University of Malaysia Sarawak who graciously accepted our invitation to deliver the keynote speech. Our sincere thanks to Prof. Sampath Amaratunga, Vice Chancellor of the University of Sri Jayewardenepura for his unstinted support and encouragement. Our special thanks also go out to Dr. U. Anura Kumara, Dean of the Faculty of Management Studies and Commerce for his continuous and abundant support, dedication, guidance and cooperation in organizing a research conference of this magnitude.

We would also like to acknowledge with gratitude the Business Forum panelists and the Doctoral Consortium panelists who sacrificed their valuable time to share with us their experiences and invaluable input. Our sincere thanks go out to our eminent panel of reviewers and Doctoral Consortium discussants for the priceless service they rendered. We would like to gratefully acknowledge the support extended to us and contributions made by the academics and non-academics of the University of Sri Jayewardenepura to make this conference a success. Our grateful thanks to our numerous sponsors, and media partners for their generous contributions, without which this conference would not have been a reality. We would like to acknowledge the support extended by administrative staff, staff of the Information Technology Resource Centre (ITRC) and Business Communication Unit, University of Sri Jayewardenepura.

Last but not least a big ‘Thank you’ to all our presenters and participants for their active participation and valuable contributions in enriching the conference and making ICBM 2017 a success.

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Panel of Reviewers: ICBM 2017

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Message from the Vice Chancellor

It is with great pleasure that I write this congratulatory message to the 14th International Conference on Business Management (ICBM 2017) organized by the Faculty of Management Studies and Commerce (FMSC) of the University of Sri Jayewardenepura.

The University is committed to the pursuit and transmission of knowledge through teaching, scholarship and research, and active service to the community in an environment which values creativity, freedom of intellectual thought and expression, equal opportunity, fairness and professional growth. The University’s endeavor is to contribute to national development by providing a balanced education which blends the finest in theory and practice and by forging interactions between the University and the wider polity. In this scenario, I note the ICBM of FMSC as one of the greatest contributory attempts towards this honorable achievement. I have no doubt that ICBM 2017 will necessarily build a forum for the academics, researchers, practitioners and policy makers in management and allied disciplines for networking and share knowledge and expertise on the locally and globally pertinent theme, ‘Managing Interface: Corporate Resilience and Growth Potential’ toward the realizing of aspirations of the wider society.

We are proud that ICBM has become a leading business conference in the Asian region. It offers the authors the best opportunities for publishing their work in the Journal of Contemporary Issues in Business and Government published by Swinburne University of Technology, Australia, which collaborates with this prestigious conference. Also, selected papers will be published in a special issue of Vidyodaya Journal of Management. The conference maintains the best standards with a superior panel of reviewers and a procedure.

I appreciate the tremendous amount of dedication and efforts made by the Dean of the Faculty, Conference Co-Chairs and the members of the organizing committee in making this event a reality. I also congratulate the local and foreign researchers and the business community for sharing their expertise.

Let us join hands to create a better tomorrow for us all.

Thank you

Prof. Sampath Amaratunge
Vice Chancellor
University of Sri Jayewardenepura
Message from the Dean of the Faculty

As the Center of Excellence in Management Education in Sri Lanka, the Faculty of Management Studies and Commerce (FMSC), is delighted to host the International Conference on Business Management (ICBM) for the fourteenth consecutive year. FMSC is committed to high quality teaching and learning in addition to impact research and development. It focuses on promoting an intellectually stimulating - multidisciplinary environment for its stakeholders through Effective Industry and Community Engagement as well as International Orientation.

ICBM is the apex event in the academic calendar of the faculty, and the theme selected after careful consideration for this year is, “Managing Interface; Corporate Resilience & Growth Potential”. This conference aims at promoting and publishing research thoughts to disseminate knowledge regarding this particular theme to a wider community. It also aims at enhancing links and strengthening the network between academics and practitioners.

I firmly believe that this enormous venture, ICBM 2017 will ensure a significant impact among the community and that it will indeed create a firm platform for the academia and the industry to meet and share perspectives. With this, I convey my very best wishes for the conference, the authors, paper presenters and other contributors while appreciating and admiring the commitment of the Organizing Committee for ICBM 2017.

Dr. U. Anura Kumara
Dean of the Faculty of Management Studies and Commerce
University of Sri Jayewardenepura
Message from the Chief Guest

It is with distinct honor that I extend this message of congratulations to the 14th International Conference on Business Management (ICBM) organized by the Faculty of Management Studies and Commerce (FMSC) at the University of Sri Jayewardenepura (USJP).

The origin of the USJP goes back to the Vidyodaya Pirivena at Maligakanda. This Buddhist center of oriental learning was established in 1873. Another historic center of Buddhist education—known as the Vidyalankara Pirivena—later became the University of Kelaniya. These two leading Buddhist institutions were elevated into university status in 1958. The Vidyodaya University of Ceylon was then relocated in 1961 to a land of rolling-hill belonged to the Sunethradevi Pirivena in Gangodawila, which was associated with King Parakramabahu VI (1412–67) of the Kingdom of Kotte. In 1978, the year before I entered the university, it was renamed the University of Sri Jayewardenepura. Today, both Kelaniya and Sri Jayewardenepura—the Cambridge and the Oxford of Sri Lanka—serve as the two legacy institutions of the nation’s Buddhist heritage.

For me, the motto of the USJP is inspiring. The Buddha’s Pali tenet, “Vijja Uppa Tatam Setta,” reminds us that “Of all things that arise, knowledge is the greatest.” It was taken from the Dhammapada and guided by the university’s vision of “Prosperity lives through education.” The Buddhist tradition of the university continues to promote loving-kindness and compassion while preserving the intellectual freedom, social responsibility, and excellence in teaching, research, and service to others.

While adhering to these values, the FMSC has emerged as the pioneering management faculty. And, it is the largest faculty in the university system of Sri Lanka—having more than 170 academic staff with over 65 doctorate-holders in diverse fields of management studies, economics, and commerce.

The faculty has a tradition of scholarship as well as the interactions between theory and practice with the private and public sectors. With the mentorship of the late Dean and Professor Hema Wijewardena, for example, I completed my management training at the Unilever (Ceylon) Limited, wrote research papers on the personnel evaluations and management processes of the state-owned Ceylon Fertilizer Corporation for the late Professor R. A. Perera, and conducted a series of two field-investigations on the traffic patterns, marketing behaviors, and the entrepreneur-interviews for Dean Jagath Bandaranayake.

Since my graduation almost a quarter-century ago, the FMSC has been working continuously to expand its outreach to corporate entities and government agencies. Like the other leading business schools at Harvard, Stanford, and Oxford, the FMSC must become a unique laboratory for experimentation in developing relevant interdisciplinary case-studies for pedagogy while addressing societal issues. Simultaneously, the faculty should then provide multiple platforms for broader network opportunities.

In fact, the ICBM is a classic example of the university’s role as a catalyst to address local and global issues that really mattered for Sri Lanka’s progress and lasting-peace. This year’s theme—Managing Interface: Corporate Resilience and Growth Potential—is timely for scholars and practitioners—and more importantly for policymakers—to better understand the significance of network-society that goes beyond the national boundaries.
For all this, I congratulate the Vice Chancellor, the Dean of the Faculty, ICBM Co-Chairs as well as the members of the organizing committee for their personal commitment and continuous efforts to make this annual event a success. I also applaud the local and international scholars as well as the business community for sharing their expertise and insights for cross-fertilization of ideas for innovation, and collective action for a better world.

**Patrick Mendis, PhD**  
BSc in Business Administration and Economics (First Class Honors), 1983 USJP  
www.patrickmendis.com
Message from the Co-Chairs

It is with great pleasure we welcome authors, invitees and participants to the 14th International Conference on Business Management (ICBM 2017) which is being held on the 8th December 2017 at the Taj Samudra, Colombo, Sri Lanka, organized by the Faculty of Management Studies and Commerce, University of Sri Jayewardenepura.

The theme of the 14th ICBM is “Managing Interface; Corporate Resilience & Growth Potential” which has been coined after considering the numerous viewpoints of the contemporary dynamic business world. This conference has three main parts viz. Doctoral Consortium, Research Conference and the Business Forum. We hope that this theme will provide an invaluable input to further enhance and broaden the knowledge of researchers and practitioners who would participate at the conference. ICBM 2017 aims to create a platform to publish and share the knowledge on Managing Interface; Corporate Resilience & Growth Potential which are vital and vibrant especially for corporate and public-sector organizations, which perform an important role in improving the quality of life of all stakeholders. Therefore, we are confident that you will be greatly benefited by the research presentations and the Industry Forum.

Finally, on behalf of the Organizing Committee, we wish the conference participants all the very best and we hope that you will be greatly enriched and edified by the line-up of events that have been organized. In closing we are also highly grateful to all the presenters, participants, sponsors including the main sponsors, session chairs and other contributors for their immense supports with good wishes.

Co-Chairs
Faculty of Management Studies and Commerce
University of Sri Jayewardenepura

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1 On a fellowship at Monash University, Australia from 02/10/2017.
Conference Tracks

Interface for Accounting, and Finance

Interface for Economics, Public Policy, Law and Education

Interface for Leadership, Organizational Behavior and Human Resources Management

Interface for Marketing, Real Estate and Business Management

Interface for Technology and Operations Management
# List of Research Titles and Authors

## Interface for Accounting and Finance

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Managing Interface in the Digital Era
Keynote: Managing Interface in the Digital Era

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Introduction
The life story from the book entitled ‘The Travels of a T-Shirt in the Global Economy’, where Pietra Rivoli reveals the complexity of globalization and interface processes which are the key factors to success in global business. By tracing a T-shirt's life story from a Texas cotton field to a Chinese factory and back to a USA storefront before arriving at the used clothing market in Africa, the book uncovers the interconnection of political and economic forces at work in the global economy setting. This fascinating exploration addresses interface, at which different parties, politics, trade, economics, ethics and the impact of history are integrated on today's business landscape.

With this setting at hand, integration and globalization process increased flow of ideas, expands our choice, broadens our horizons while it is the catalyst for creativity, innovation and growth in business. Nevertheless it is also dramatically changes the nature of interface in the business horizon. Among the significant interface is growing complexity within the business setting. Goldin and Kutarna (2017) argued that while global integration through economies of scale and harmonization of consumer preferences may reduce complexity, the fragmentation of supply chains, proliferation of rules and growth in the number of participants and governments overwhelm the potential for simplification. Complexity in this form positively provide greater variety and volume of interconnections for accelerating innovation while at the same time it also creates resilience for the business world. On the other side of the coin, growing complexity poses a severe challenge for managing them. The question would be how the business entity can make decisions when they can’t foresee the complexity of the interface process? What and where is the way forward? This note provide the view on managing interface in the digitalization era.

The Rise of Machine
Over a decade ago, smartphones do not exist while three decades before that, no one owned a personal computer. Nowadays, most of the us have personal devices that fit on our wrists that are just as powerful as the ‘supercomputer’ from the 1980s. The rise of technological revolution has enabled individuals, businesses and governments to do things differently, often, more efficiently. Many governments have recognised the importance of technological development for their national agenda and invest heavily in its development. On business front, firms could harness the benefits of rapidly changing technologies while powering their business in managing the interface into the next wave of growth. How can they do that? See for example Alibaba, a Chinese e-commerce conglomerate that provides services via web portal. They also provide electronic payment services, shopping search engine and data-centric cloud computing services. Investment and forward looking in technological innovation solve their complexity in managing businesses for company like Alibaba.
Additionally, in a study by Accenture Mobility Research (2015) point out that companies have spent considerable time, money and attention developing mobile apps that help them engage and connect with their customers as well as improve the efficiency and productivity of their employees. Further, they found existence of correlation between a company’s profitability (relative to competitors in the industry) and its approach to and perspectives on the mobile apps. With this engagement and involvement, the race is clear to ensure sustainable growth in the business. Making a digital impact would be the way forward for the business in order to be relevant and sustainable. Certainly change is necessary here for the companies while they should create a comprehensively robust mobile strategy for their business. This would goes from understanding their own competitive advantage to position well their products and consumers within market segmentation.

Digital Interconnection: Tapping the Endless Opportunities

Onto the digital revolution, Internet of things (IoT) is another alternative solution for the complexity in business interface. How IoT works? IoT is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors and network connectivity which enable these objects to connect and exchange data with each other. How would IoT be useful for the business agenda? The IoT allows objects to be controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems while resulting in improved efficiency, accuracy and economic profitable benefit. The IoT allows and creates for virtually endless opportunities and connections to take place especially for business. Charan (2016) stressed that every industry will soon be driven by digitization and every winning company will be using algorithms or mathematical rules for processing information to shape the end-to-end customer experience. Company should tap this digital connectivity and make radical changes within themselves. Questions arise from this radical changes would be a) how can the IoT used to create a better or entirely different kind of customer experience platform? b) How would it impact product quality and sales? c) How can the successes of company business model be strengthened by digitization? This would create a new ‘breed’ of digital business model that suits each company of which the focus is on the needs of users.

Exploitation of Data at Hand

How to exploit the data for the benefit of the business? With the IoT devices in place – connecting consumers would provide greater access to the data than ever before. Smart devices will be able to track and record patterns of consumer behavior and possibly even learn from them, making intelligent product recommendations and customizing searches in new, innovative ways. Companies for example, can start taking advantage of these data-based insights called analytics to come up with more effective advertising and get to know their target demographics on a more specific cluster of society. The positive impact – data at every stage of the consumer buying cycle, research to purchase and implementation is made available for the businesses. From consumers perspective – they be able to find, order exactly the product and demand delivery sooner. With the connectivity from the supplier and logistic provider – we create an ecosystem that be able to serve customers faster. Further, IoT developments will allow accomplishment of large-scale tasks faster and with greater precision, including data analysis, analytics and management of the data.
Digital transformation: Immortality Ahead

The pathway for managing interface in the businesses is clear. It is critical for traditional and new businesses to realize that digitalization will go away over time, but rather stay immortal and will affect while sometimes disrupt the entire industries of which it is necessary to reposition their digital activities as the core focus. Additionally, integration of the whole business organization is important to ensure growth and sustainable objectives been achieved. It meant that everyone in the organizational structure plays important role toward this agenda. Outside, collaboration with partners, suppliers, customers and other stakeholders involves deeper and more comprehensive exchange of information for planning and production purposes. This notion named of “sharing economy” extends across both the consumer, business worlds and stakeholders with companies of complementary capabilities partnering to leverage resources rather than relying solely on their own or having to build resources that are not fully utilized. To this end, the journey of digital transformation is been laid off – it is time to act and turn the disruption into opportunity. This would ensure the sustainable growth while managing the interface towards the immorality of digitization.

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Interface for Accounting and Finance
An Evaluation of Competitive Strategies in Achieving Sustainable Profitability in Domestic Commercial Banks of Sri Lanka

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ABSTRACT

Achieving of sustainable economic growth of Sri Lanka essentially depends on the Banking sector contribution which plays a vital role. Sri Lankan banking sector after the post war boom in 2009 is playing in a stable platform at present. This has created an intensified competition among the banks and unless competitive strategies are formed sustaining and increasing market share has become a remote target. The target population of this research consisted of 41,098 staff members, employed by the selected 11 Domestic Commercial Banks of Sri Lanka. The sample size was arrived at 381. The purposive sampling on convenience basis was used to obtain and gather reliable information and considering the knowledge required to answer questionnaire pertaining to strategies in the right manner. However due to time and resource constrains only 159 positive responses were collected. Data was analyzed using statistical analysis tool SPSS – Version 24. Central dispersion methods such as Mean & Standard Deviation was used and presented analytically through Graphs and Tables. According to the study findings although the profitability of Commercial Banking sector of Sri Lanka is in the increasing trend profitability indicators (ROA, ROE & NIM) is in the declining trend. It was apparent that some Banks have reported to increased profitability ratios due to the right strategies adapted to achieve sustainable profitability. The study concluded that all variables names, strategies of Information Technology, Service Quality, Banking Rates, Human Capital, Strategic Leadership and Differentiation bears a positive correlation towards the dependent variable, Profitability. Therefore, the study recommends all the competitive strategies analysed in this study in order to thrive among others to achieve higher profitability. Hence it is suggestive that introducing the latest Information Technologically advanced products, ways and means of improving service quality, offering a competitive interest rates, attract, retain and motivate the human capital and to differentiate to become more and more innovative.

Keywords: Competitive Strategies, Sustainable Profitability, Domestic Commercial Banks, Sri Lanka
INTRODUCTION

Sri Lankan banking industry is said to be well-regulated and fast-growing, benefited to be one of the sectors that prominently boomed after post-war in 2009. However, the Banking sector of Sri Lanka is facing a key shift in policy changes, significantly discontinuing the consolidation process implemented by the previous Government after the transition to new administration in 2015. Considering the last decade it is evident that the banking sector round the world has faced profound changes with the advancement of information technology, innovation and the inevitable driving forces of globalization. This has created both opportunities for growth and challenging environment to be profitable in this heightened competition. Profitability is required for a bank to preserve ongoing activity and to offer fair returns to its shareholders. Therefore apprehension of appropriate strategies detriment to the performance have attracted interests of stakeholders, Bank supervisors and regulators.

All these financial entities in the financial system provide similar services and offering and engage in functions such as to act as the prime mobilizes of deposits and providing main source of financial support to the nation’s economic activities. The sound presence of financial system is of prime importance to gain confidence while failure will have an immense impact on the country’s economy. On the other hand, LCB’s bears a heavy asset-base and while offering a high magnitude of so-called services in the economy of the country. Thus, LCB’s are the most important and efficient segment of financial institutions in the Banking Industry of Sri Lanka. As at end 2015, LCB’s dominate the entire financial system with an impressive market share of 51% and banking sector assets of 86%. Therefore, it can be concluded that the sound background of LCB’s largely depends on the health of the financial system (CBSL, Annual Report 2015). In Sri Lanka, there are about 25 Licensed Commercial Banks (LCB’s). The no. of Licensed Specialized Banks (LSB’s) counts to 9. The existing 25 LCB’s consists of 13 Domestic Banks and 12 Foreign Banks. The Domestic banking sector is led by the two state-owned banks, BOC & Peoples Bank in terms of market share. From the total CBS, private sector banks holds 46% of market share whereas the two giant Government Banks holds 44% (CBSL, Annual Report 2015).

RESEARCH PROBLEM AND OBJECTIVES

The operating environment relating to the banking industry of Sri Lanka is becoming more and more competitive with intense competition trying to outperform the other. In order to sustain in the market the Banks should devise strategies that will enable them to achieve competitive advantage over their rivals (Abhishua, 2010). Sri Lanka experienced a relatively stable economic climate over the last decade for Banking business. However with regard to Banking industry in subsequent years, due to
added liquidity in the local money market, reduced market rates on deposits and advances was prominent. As the result Net Interest Margin (NIM) depleted biting in to the overall profitability of Domestic Commercial banking sector. Main observation is that ROA and ROE was also observed.

Although it appears that industry wise profitability ratios are in the trend of declining not all Banks are in par with industry level performance and differences in the performance levels was apparent. This intern reveals that some bank level factors have contributed healthy performance of some banks while absence in such well-defined strategies have resulted weak competitive position. This can be essentially due to intense competition among banks where we witness the monopoly enjoyed by certain Banks drastically diluting. While, there had been rapidly growing study & literature related to determinants of profitability, little recognition has been given to strategies that boost efficiency of those determinants.

Porter (1980), argues that every firm competing in a particular industry has to have a strategy. Strategies reap profitability to a firm while bring in satisfaction to the customers. To which extent these strategies are helpful to perform beyond rivals warrants an extensive study. This study therefore would focus on evaluating effectiveness of competitive strategies to achieve profitability in Banking sector. In this study strategy is defined as a design of action/s that is well planned to achieve a specific goal or goals within an organizational framework. Strategic management is all about operating in the competitive market by building capabilities that allows an organization to create value for customers (Nag, Hambrick & Chen 2006). Strategy would largely focus on using internal assets to create a value added proposition. This mitigates threats and help to capture opportunities.

Porter proposes three generic strategies which includes “Cost leadership”, “Differentiation” and “Focus”.

- Cost leadership (Increasing profits by reducing costs)
- Differentiation (Ability to delivery unmatchable products or services, effective marketing and innovation)
- Focus (Focus on nich market and develop uniquely low cost or well specified products)

Accordingly it is essential for organizations to decide whether to position Cost leadership or Differentiation as the Focus strategy taking competencies and strengths in to account.

The right choice/s are required to be competitive in the market; Strategic Goals selection, The right choice on appropriate products or services, The design and policy preparation in order to determine the way to position correctly to compete in the market. These selections needs to be critically analyzed since it has a major impact on the success or failure of firms. According to Caig & Babette (2007) when industry growth is consistently mounting so do challenges continue to rise.
There is no universally conventional findings of competitive strategies to achieve sustainable profitability in Banking Industry. Also there are no research on measurements of effectiveness of strategies applied in the Banking industry. This could be essentially due to the reason that political, economic, financial systems and operating environment of each country differs from one another. Thus, this study will evaluate imperative Bank specific variables relating to the Commercial Banking Industry of Sri Lanka, which are potentially responsible for determining profitability, more over positively relates to the profitability over time. 

The extent of which these elected strategies place a specific Bank ahead of the others warrants a comprehensive research. Consequently this study will focus on evaluating the competitive strategies to achieve sustainable profitability in Domestic Commercial Banking sector relevant to Sri Lanka. Hence the research problem at hand is “How effective are the competitive strategies adapted by Domestic Commercial Banks of Sri Lanka for sustainable Profitability?” Hence the present study attempts to achieve the following objectives pertaining to the nexus between competitive strategy and sustainable profitability.

1. To identify the theoretically effective competitive strategies for sustainable profitability of Domestic Commercial Banking Sector of Sri Lanka. In order to do this in-depth review of literature was done.

2. To analyze the extent to which the identified competitive strategies affect the profitability of Sri Lankan Domestic Commercial Banks.

Findings will be immensely beneficial for the top management of Domestic Commercial Banks of Sri Lanka to form strategies aligning work force strategies with business objectives. Furthermore respective information can be utilized to identify the strategies used by the competitors and means and ways of creating differentiation and innovation. Further the information pertaining to the study will be of help stakeholders to evaluate the performance of each Bank. Policy makers will be much equipped to have focus on areas to implement policies.

THEORETICAL AND EMPIRICAL BACKGROUND

Porter (1996) explains strategy as a process of creating a valuable and unique position for an organization using a set of activities by way of well defined objectives. Therefore strategy entails on building defenses against the competitive forces in the particular industry as well as discovering a position in the specific industry where competitive forces are weakest (Strickland, 2003). Firms that possess value-creating processes and positions that cannot be imitated or duplicated in terms of employee competencies, leadership, technology and innovation and service quality would have a
sustainable Competitive Advantage over its rivals (Kathuni and Mugenda, 2012). Since 1970’s, rapid changes in the line of technology, globalization and competition in the market, organizations have approached management tasks with profound strategic perception (Rosenberg et al, 1985). There comes a question whether the firms which puts strategies into practice (financial and non financial) derives better results over the other haunts many a scholars which had made many to quantify the impact that lies on strategies of organizational performance. Few thought-provoking facts are further discussed.

Introduction of financial indicator/s to measure impact of strategies that bears on Corporate performance. It was significant that results, were in-favour of strategic planning. Quantitative analysis done by Armstrong (1982) with a sample size of 28 studies came into a conclusion that 20 studies was in favour of strategies are associated with higher performance and profitability. Out of the sample 5 bore no difference and 3 were in the view of planning to be detrimental. A survey was carried out by Karger et al (1999) among set-of companies that form strategies with those who does not. It was apparent that the companies that formed strategies prior were much more successful and displayed better performance than those who did not. However, it doesn’t mean that every company that form strategies have become successful (David, 2003). Greenley’s (1989) analyzed these previous experiments carried out on manufacturing firms concluded to indicate, 5 agreeing to that with planning, performance was better, while 3 neutral and 01 showed adverse results.

Further research has been carried out by other researchers with regard to quantitative (non-financial) aspect “profitability” and “performance”. Hitt et al (2003) is of the view that reputation attracts the highly skilled people which will eventually increase “intellectual capital”. This in turn gives a competitive advantage over its competitors where these people will begin new products or services and innovative diversified ideas which will create more profit to the company over long run. Financial sector competition matters due to no. of reasons. The degree of innovation, efficiency in financial service, product quality in the particular industry directly affects the degree of competition among the competitors. Where Banking sector is concerned this is poised between stability and competition as per most empirical studies on prudential policy practiced in the sector (Vives, 2001). This empirical studies has further confirmed that degree of competition affects the overall growth in the economy of the country (Liyanagamage, 2014).

Financial institutions round the world had identified internet to be the prime avenue to reduce distribution costs and to re-design the business process of the industry (Furrer, Thomas and Goussevskaia, 2007). Furthermore, web based commerce and internet technology have dramatically transformed the financial sector industry in the last decade (Ahasanul, et al., 2009). According to Law
(2009), information technology can act as a powerful tactical strategic tools for organizations, where if rightly applied and used will bring out greater advantages in promoting and strengthening the competitiveness of the entity. On the other hand quality has been underlined as the source of competitive advantage over the past decade. Quality has revolutionized from operational level to strategic level and can be adapted as one of the strategic goal in an organization (Adam, 1992). Service quality strategy basically aimed at putting emphasis on strategies and processors in terms of innovative services or patterns of services to seize the potential (Kupper, 2001).

Philips (1983) is of the view that high quality products require more expensive materials and processors that does not support the cost leadership regime. However this idea has been negated by the school of though given by Philips (1983) stating the link between high quality and low cost. According to him high quality products results in lower costs on economies of scale through higher market share.

Due to the intense competition among Banks there have been manipulation of banking rates on products and services is visible to attract potential customers. Every bank try to satisfy customers with attractive rates which ultimately becomes the greatest asset for the bank. It is a well known fact that a satisfied customer repeat the experience and also create new customers by communicating the positive facts of the organization (Dispensa, 1997). On the other hand negative message is communicated by a dissatisfied customer (Brekke et al, 2009).

Profitability of banks are affected by market interest rates (Flannery, 1981). He further stressed that the notion of banks being “borrow short and lend long” denotes that sharp interest rate increases cause significant number of banks to fail. In Banks statement of Profit and loss relates to income and expense. In this context managing interest rate sensitivity and interest margin can raise profitability (Bourke, 1989). He further stated that in an instance where the Bank is unable to reduce the expense on interest then the option is to raise the interest rates on loans. This can be done only through increasing riskier loan portfolio where they have no option but to obtain the loan facility.

Human capital is regarded as the organizations main strategic resource that is crucial to achieve competitive advantage (Bartlett & Ghoshal, 2000). It has the value of non been able to imitate and each and every employee contributes in its unique way. The concept of non-imitability is linked to theory of human free will which helps to achieve sustainable competitive advantage (Reed, Srinivasan & Doty, 2009). On the other hand competitiveness of a country’s economy significantly depends on competitiveness of various companies and company competitiveness lies in the hands of employees. Human capital effectively contribute to achieve the organizational strategy by way of increasing competitiveness (Becker, Huselid & Ulrich 2001; Downes, 2007; Kazlauskaite & Buciuniene, 2008).
The management has the capability to link organizational performance and human development through strategic human resource (Jacobs & Washington, 2003).

The strategic prominence of human capital appears more pronounced in human capital concentrated industries. Human capital intensive industries which includes financial organizations need to explore knowledge to perform their functions (Carpenter & Sanders, 2009). Employees attached to service institutions collectively, could perceive as a source of competitive advantage (Crick, 2007; Liao et al., 2009). Backing this theoretical proposition Sheehan, Holland and De Cieri (2007) stated that it is possible to gain substantial competitive advantage in service organizations through physical capital, organizational capital and potential of human capital. This concept was further developed by Pilbeam and Corbridge (2006) that focus should be on behavior of human capital contribution in terms of “skills, knowledge, attitudes and competencies” that people brings in to the organization. These competencies can be further enhance by firm-specific training including knowledge transfer system (Chadwick & Dabu, 2009; Kang et al., 2007).

Strategic leadership is on the other hand is all about the ability of organizations to predict, envision and main a balanced flexibility while empowering others to create a viable future (Khelin, 2009). According to Gulliot (2003), strategic leadership is the ability of a leader who has the vision and the wisdom to formulate and execute a plan in an unpredictable, indefinite environment Montgomery (2008) claims that very few leaders possess a clear cut strategy. Additionally, a leader should guide the direction covering all spheres of the organization, covering the loading deck to its prime important corporate office. A leader should identify the ways of adding value to day to day operational functions while forming a strategic direction to capture opportunities through “Change”. Strategic leadership notion may become the most pertinent concept to embrace better value driven culture in many industries in the era of 21st century (Jin & Avery 2008).

Study of Dag (2006), seconded the previous research done by Graetz (2000), on some points relevant to the future environment. In his opinion unlike in the past a different kind of leadership is required to gain results in ever changing competitive world. Formerly leaders only manage complex enterprises with relative stability and obvious predictability. However in present globalized world, leaders face the latest reality being working in flexible contexts, connected to the outside world through “real-time” electronic media have become critical resource of the organizations.

Differentiation is perhaps the most important strategy in today’s dynamic business environment.

In 1957 Igor Ansoff created a marketing tool to improve “Product-Market” matrix. This model let organizations to find new ways to grow the business its existing or new products either in existing markets or new markets that presents four probable product/market blends. In this context new
products can be developed for existing markets or developing different products to the same existing market. Developing a new product can surely snatch new customers for the particular product. Therefore, development of a new product is a crucial strategy to remain competitive. Another avenue is to offer a proven product to a targeted different customer segment. Academics have since developed concepts to counter Porter’s view, signifying that low cost and differentiation possibly be independent dimensions that ought to be pursued vigorously and simultaneously (Hill, 1998; Murray, 1998).

Banks have increasingly started using marketing aspects such as advertising and promotions to differentiate from the competitors by way of image or brand communication to boost their product awareness (LeHew & Fairurst, 2000). The delivery method of commercial banks is a mix of location, human resources and equipment’s (Smith, 2006). Developments in information technology has allowed banks to access the target market (Kuzilwa, 2005). ATM’s (Automated Teller Machines, EFT (Electronic fund transfer), credit cards and most importantly the human skills must be enhanced to gain benefits to ensure delivery of the best and to identify new opportunities.

METHODOLOGY

Critical literature review and theoretical analysis has laid the foundation to form the conceptual framework for this research. In view of that six factors were highlighted as major strategies to attain sustainable profitability in domestic banking sector of Sri Lanka.

Analysing the critical review of literature, following conceptual framework has been developed for the research.
Table 1: Analysis of literature for factor identification

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<th>Information Technology</th>
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<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
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Figure 1. Conceptual framework of the study
Following hypotheses has been developed analyzing the factors identified as per the literature review and the research objectives.

**H₁** Strategies on Information Technology positively impact on profitability of domestic commercial banks.

**H₂** Strategies on service quality positively impact on profitability of domestic commercial banks.

**H₃** Strategies on banking rates positively impact on profitability of domestic commercial banks.

**H₄** Strategies on human capital positively impact on profitability of domestic commercial banks.

**H₅** Strategies on leadership positively impact on profitability of domestic commercial banks.

**H₆** Strategies on differentiations positively impact on profitability of domestic commercial banks.

Former researchers have decided on their variables analyzing diverse parameters and perspective to focus on research objectives although there are no exact definitions. Therefore, this research has been developed as per the following working definitions pertaining to independent variable to abstain a specific focus on the objectives of this study and research.

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<tbody>
<tr>
<td>15</td>
<td>Styles, P. (2010)</td>
<td>x</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>16</td>
<td>Dyer, L. (2013)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>17</td>
<td>Greenwood, W. (2014)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>18</td>
<td>George, K. (2014)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Carolyne, A (2016)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weighted average %</td>
<td>32.0</td>
<td>32.0</td>
<td>37.0</td>
<td>21.0</td>
<td>42.0</td>
<td>16.0</td>
<td>37.0</td>
<td>5.0</td>
<td></td>
<td></td>
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</tbody>
</table>
Primary and Secondary data was mandatory considering the empirical nature of research topic. Therefore, secondary data was collected basically through Banks Annual Reports, Central Bank website and published journal articles in order to clarify the scope of the research design in a scientific manner. These data collected has been immensely valuable to understand the past, present and the future of the research essential to develop the study. In addition to that this research is mainly relied on the primary data. As a result quantitative data was collected as the primary data. A questionnaire was build based on number of measurements analyzing the previous research on the same study. Thus, the questionnaire consisted of two parts namely, A & B totaling to 34 questions. The section ‘A’ is to obtain demographic information of the respondent. The section “B” mainly focus on obtaining the respondents perception on each variable (06), that contributes to increase of profitability. Respondents were requested to mention their views based on the 5-point Likert scale.

In organizations decision making and strategic initiatives are suggested and implemented by Middle and Higher Management categories. Therefore to obtain an accurate picture, the research was carried out considering two kinds of Sample data. The Branches of 11 Banks were selected on convenience basis where as the respondents were selected on purposive sample. Since the research was carried out considering quantitative data, simple random
sampling method was selected. Sample size of 381 was arrived upon consideration of total permanent employee population of the respective Banks being 41,098.

RESULTS AND DISCUSSION

Out of the 385 questionnaires distributed through hardcopy and through electronic media. However only 164 responses was able to extract. Out of same 5 was discarded due to incomplete answers. Upon same data was prudently verified and entered to a Microsoft excel work sheet IBM – SSPS (Version 24) software for further analysis.

Table 3: Descriptive Statistics of Variables

<table>
<thead>
<tr>
<th></th>
<th>Information Technology</th>
<th>Service quality</th>
<th>Banking Rates</th>
<th>Human Capital</th>
<th>Strategic Leadership</th>
<th>Differentiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.9459</td>
<td>3.8574</td>
<td>3.8035</td>
<td>3.9384</td>
<td>3.7094</td>
<td>3.6148</td>
</tr>
<tr>
<td>Median</td>
<td>4.0000</td>
<td>4.0000</td>
<td>4.0000</td>
<td>4.0000</td>
<td>3.8000</td>
<td>3.5000</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.0000</td>
<td>5.0000</td>
<td>5.0000</td>
<td>5.0000</td>
<td>5.0000</td>
<td>5.0000</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.7748</td>
<td>0.7177</td>
<td>0.6700</td>
<td>0.7756</td>
<td>0.8075</td>
<td>0.8014</td>
</tr>
<tr>
<td>Observations</td>
<td>159</td>
<td>159</td>
<td>159</td>
<td>159</td>
<td>159</td>
<td>159</td>
</tr>
</tbody>
</table>

Analyzing the above table it is evident that the highest central tendency is depicted against Information Technology being 3.959 followed by Human Capital with a mean value of 3.984, Service quality with 3.8574 and Banking Rates 3.8035. In comparison Differentiation carries the lowest mean value of 3.6148 after Strategic Leadership having 3.7094. However all these mean values belongs to upper score range. This concludes that all strategies bears a high concern over Profitability. The measure of standard deviation summarize the value within a data set that varies from the mean. Analyzing the above it is evident that Standard deviation for each and every variable is somewhat close to its mean value suggesting that data is dispersed closely.
Table 4: Values of Cronbach’s Alpha for Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Items</th>
<th>Cronbach’s Alpha value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Information Technology</td>
<td>5</td>
<td>0.916</td>
</tr>
<tr>
<td>2 Service Quality</td>
<td>6</td>
<td>0.884</td>
</tr>
<tr>
<td>3 Banking Rates</td>
<td>4</td>
<td>0.704</td>
</tr>
<tr>
<td>4 Human Capital</td>
<td>5</td>
<td>0.891</td>
</tr>
<tr>
<td>5 Strategic Leadership</td>
<td>5</td>
<td>0.904</td>
</tr>
<tr>
<td>6 Differentiation</td>
<td>4</td>
<td>0.856</td>
</tr>
</tbody>
</table>

Accordingly, estimate of reliability test scores pertaining to Information Technology and Strategic Leadership stands to be excellent with over 0.9 rate. Service quality, Human Capital and Differentiation stands at good level with over 0.8 rate where as Banking Rates bears an acceptable rating. In overall reliability test confirms the internal consistency estimate of reliability of tested scores.

Testing of hypotheses were done to understand the relationship between the independent and dependent variables. Spearman’s co-efficient and correlation (ranked) was calculated on each and every hypothesis. Interpretation of relationship among the independent and dependent variables were done using Scatter-pot diagrams. The hypothesis testing were at significance level “0.05”.

Table 5: Correlation analysis

<table>
<thead>
<tr>
<th>Correlations with sustainable profitability</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Technology</td>
<td>.674</td>
<td>.000</td>
</tr>
<tr>
<td>Service quality</td>
<td>.655</td>
<td>.000</td>
</tr>
<tr>
<td>Banking Rates</td>
<td>.679</td>
<td>.000</td>
</tr>
<tr>
<td>Human Capital</td>
<td>.674</td>
<td>.000</td>
</tr>
<tr>
<td>Strategic Leadership</td>
<td>.619</td>
<td>.000</td>
</tr>
<tr>
<td>Differentiation</td>
<td>.578</td>
<td>.000</td>
</tr>
</tbody>
</table>
Figure 1. Scatter Diagram – Hypothesis Test 01
Figure 1 shows Scatter-plot diagrams of competitive strategies and profitability relationships. It is an indicative of moderately strong positive relationships between strategies on Information Technology, Service Quality, Banking Rates, Human Capital, and Strategic Leadership, Differentiation with Profitability since the data points depicts the cluster points, in close proximity. R² coefficient values ranges between 0.334 and 0.455. This concludes that the said competitive strategies have influences of 33% to 46% on Profitability. As given in Table 5 these competitive strategies and Profitability depict positive-moderate relationships upon obtaining a Pearson Correlation of 0.578 to 0.679. The significance (P) values were indicated as 0.000 which is below 0.05, of significant value. Therefore, these findings reveal that all hypothesis developed in this study, cannot be rejected concluding that there is a positive-moderate effect of each of these strategies on bank sustainable profitability. These findings are consistent with some existing literature. The Research carried out by, Okango (2016) with a sample size of 158 too has confirmed a moderate positive relationships of Information Technology, service quality and Human Capital with Profitability. According to Cocoglu (2010), retention of customers provides greater value to an organization. Further as per Pareto principle, it is said that around 18% of its operational cost can be saved by retaining only a small 5% of customer base. Further Pareto principle indicates that 20% customers essentially contributes to of the total revenue stream. Therefore it is very much imperative to turn this 20% of customers into loyal customers. This particular relationship was revealed by the results of this analysis.

According to the study carried out by Soumadi (2010), on “Growth strategy and Bank Profitability” of Housing Bank for trade & Finance in Ghana, it was revealed that there is a moderate strong relationship among Interest Rates impact of profitability. However, the research carried out by Sattar (2014) on the “Impact on Interest Rates change on Profitability of 4 Pakistani Banks” has produced a strong negative impact of correlation of -0.69. The reason behind this is that Pakistani Banks keeps a huge interest margin and any change in interest rates are absorbed by this spread. Hence, the finding of this analysis reveal that, when using Banking Rates as a strategy Banks should concentrate on the Interest Margin to keep the momentum of profitability.

Marimuthu et al (2009), states that Human capital should not considered as a phenomenon that adds more “zero’s” to profitability and that it entirely transform the entire workforce to become the most valuable assets that inter-connects all the other variables towards higher profitability. The results of the present study too confirm this relationship.

As per the study conducted by Kireru et al (2010) based in multivariate regression-model, which was constructed to determine the relationship between Differentiation and competitive Advantage in Kenya concluded to say that there is a 95% confidence level with significant fit among the variables
through correlation of 0.710. Further, a study conducted by Janze (2011), depicted a strong positive correlation of R 0.900 among Differentiation and Profitability.

In order to analyse the collective effect of all the identified competitive strategies on sustainable profitability of domestic commercial banking sector of Sri Lanka, a multiple regression analysis was done and results are reported in table 6.

**Table 6: Results of multiple regression analysis**

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
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<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.196</td>
<td>0.390</td>
</tr>
<tr>
<td>Information Technology</td>
<td>0.329***</td>
<td>0.083</td>
</tr>
<tr>
<td>Service quality</td>
<td>0.235**</td>
<td>0.147</td>
</tr>
<tr>
<td>Banking Rates</td>
<td>0.201**</td>
<td>0.088</td>
</tr>
<tr>
<td>Human Capital</td>
<td>0.310***</td>
<td>0.094</td>
</tr>
<tr>
<td>Strategic Leadership</td>
<td>0.192**</td>
<td>0.277</td>
</tr>
<tr>
<td>Differentiation</td>
<td>0.196**</td>
<td>0.077</td>
</tr>
<tr>
<td><strong>R Squared</strong></td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td><strong>Durbin-Watson</strong></td>
<td>1.98</td>
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</table>

In above table R value 0.599 predicts a positive direction of results and a stronger relationship among predicted and observed values towards a more progressive direction. Adjusted coefficient of determination (R2) value was 0.592. This demonstrates that 59.2% of the variance in dependent variable (Profitability) was predicted and explained by the independent variables with the stronger positivity (Banking Rates, Information Technology and Strategic Leadership).

**CONCLUSION AND MANAGERIAL IMPLICATIONS**

The present paper concludes that Information Technology, Service Quality, Banking Rates, Human Capital, Strategic Leadership and Differentiation have positive relationship towards achieving profitability. As lengthily discussed under background and Literature review some Banks have been able to achieve more profitability than their rivals due to correct strategy application. General conclusion that can be arrived from the study is that the Banking industry has a high degree of price competition. Every Bank fights to increase their market share. Therefore, it is imperative to gain competitive advantage to win the competition through the implementation of “right strategies”. Hence, the findings of this study suggests banks to take proper measures to create more awareness to improve the customer base highlighting the facts of ease of use, reliability and its cost savings. Since many Banks mainly relies on Information Technology in managing their operations it is recommend to
initiate policies which the Government also can intervene in enhancing internet connectivity. Shifting in to more updated IT techniques to be in par with the international arena and using IT as the main advertising instrument which would definitely help to gain competitive advantage in the market at the same time lowering costs. Findings further suggest banks to be concentrate on improving customer service by reducing the turnaround time which makes banking more easy, quick and convenient. Frontlines to be comprehensively trained to bring about customer – friendly atmosphere where service exceeds the expectations. It is the Researches opinion that Bank rates should be applied to customers after segmenting according to the risk factors. Thus, certain low risk categories can be afforded with more attractive rates to be competitive in the market. Another option is to provide bundle product to one particular customer. Therefore, the customer gets the interest rate concession while the Bank can generate more profitability through increase use of their product portfolio.

As the findings of the study highlights the Banks must take proper measures to implement constant training, direct communication, defined responsibilities, motivation, monitoring performance and liking performance measures to incentives to boost up high work force. Further investing in “Firm Specific Skills” will also provide competitive advantage to the organization and add value over the long run. Banks must clearly take initiatives to increase the motivation of employees understanding the fact that HR practiced bears a complex relationship with other resources. Analysis of the research suggests that it is vital to determine corporate strategic direction. This will ensure the overall management of human capital, financial capital and social organizational culture which will enhance the competitive advantage over their rivals. Banks leadership must promote and support change strategically to adapt to new Micro Macro factors. Also Banks should invest in grooming strategic leadership that will effectively carry out tasks to achieve ultimate goals.

Finally, banks must take initiates to differentiate themselves along with some dimensions that are valued by the customers. Literature review reveals that Differentiation is the main strategy in an international arena which is somewhat new to the developing countries. Banks must try their best to analyse the profitable variables and accordingly should segment and differentiate the customer base and products offered for each segment.
REFERENCES


Are India’s Recent Fund Inflows Structural in Nature - Common Patterns with USA:
Learning for Other Asian Developing Nations

Aiyer, S., Editor-South Asia Fast Track; Finance services professional, India

ABSTRACT

Recent years saw significant inflows into financial savings in India, especially into mutual funds. Equity mutual funds alone saw net inflows of over Rs. 700 bn in each of the last three years, a reversal from the five years prior to that which saw an aggregate net outflow of Rs. 308 bn. But is this surge merely transitory or more structural in nature? This paper connects India’s experience from 2014 onwards with that seen in USA from mid-1980s to mid-2000s, which is when mutual fund penetration there took off. We identify commonalities in their respective periods of demand-side parameters like macro trends and its impact on disposable surplus, real estate and fixed income trends which pushed the migration towards financial savings and equities, as well as supply-side parameters like the industry’s efforts to expand its network and awareness. These observations lead us to conclude that the recent surge in inflows in Indian mutual funds is more structural in nature, at least for the near-term. However, India also start thinking long-term when it comes to holding investments, something where it yet to match its US counterparts. If that happens, the trend will be structural in nature even for the long-term, not just the near-term. These observations can also be learning for other Asian developing countries where financial saving is yet to take off, especially in products earning higher real returns. Can these observations help them too?

Keywords: Financial Savings, Financial Markets, Income, Mutual Funds, Investments
INTRODUCTION

Recent years have seen India gain from the increased mobilization to financial savings, especially into mutual funds. Equity mutual funds alone saw net inflows of over Rs. 700 bn in each of the last three years (FY2015, 16 and 17), a huge reversal given that the five years prior to that (FY2009 to 2014) saw aggregate net outflow of Rs. 308 bn. But is this surge in inflows transitory or structural in nature? We connect India’s experience with that seen in USA from mid-1980s to mid-2000s, which is when mutual fund penetration there took off. We identify commonalities in their respective periods of demand-side parameters like macro trends and its impact on disposable surplus, real estate and fixed income trends which pushed the migration towards financial savings and equities, as well as supply-side parameters like the industry’s efforts to expand its network and awareness. We also look at an area where India is yet to match its US counterparts, and a commonality is not yet seen. These observations can also be learning for other Asian developing countries where too financial saving is yet to take off!

METHODOLOGY

We use data of macro metrics like inflation, per capita income, GDP, gross savings, household savings, financial savings, policy interest rates, along with industry metrics like mutual fund AUM, investor awareness programs and IFA count, to identify commonalities in their experiences.

Identifying a common pattern in the key macro-economic variables

The US experience: Following the post-World War II reconstruction, it took USA about ~25-30 years to achieve a sustained period of macro stability. From 1980, it reached an ideal combination of sustained real growth, rising individual incomes, and low consumer inflation. Over the next two-decades, i.e. from 1981 to 2005, IMF data shows that USA’s per capita GDP grew ~3X from ~$14,000 to ~$43,000. During the same period, its consumer inflation reduced ~3X from ~10% to ~3% (Chart 1). Real growth rates doubled in the initial stage of this period, to eventually sustain at ~2-3%. This was the period when the sustained expansion in disposable surplus drove the demand towards discretionary allocation, including towards saving products. Saving products, per se, are still viewed as discretionary by most individuals across developing countries. While household savings to income, per se, dipped from ~10% to
~5% in this period, the sheer volume of people entering the disposable savings bracket boosted aggregate savings. On financial saving, say mutual funds, these two decades coincided with the penetration of mutual funds taking off. ICI data shows the penetration of mutual funds to the GDP in the US grew ~9X - from ~8% in 1981 to ~70% in 2005. The differential between the changes in incomes and inflation (~3X each) vs. mutual fund penetration (~9X) during this period indicates the sheer multiplier effect possible. This combination of the macros in the initial period, helped drive a manifold rise in mutual fund penetration.

The Indian experience: Assuming India’s contemporary economic growth journey to start post the 1991 economic reforms, India has also traversed ~25 years since then. Coincidentally, India’s recent macros from 2014 till 2017 bear an uncanny resemblance to the US at this juncture. IMF data shows India’s per capita GDP grew ~1.5X from ~Rs 90,000 to ~Rs 128,000 from 2013 to 2017 and consumer inflation dipped ~2X from ~9% to ~5% (Chart 2). Real growth doubled in this initial stage. During the mid-2000s, India saw a rise in its gross savings. But corporations and government led that growth, not households. With the current per capita GDP in 2016 growing ~5X of the mid-2000s levels, Indian households have now moved beyond their base income, and are now contributing to the saving flows. So while household savings to GDP have been flattish at ~20% in this period, the volume of people entering the disposable savings bracket due to overall economic growth has helped boost aggregate saving inflows.

India now seems to have entered a similar period of rising individual incomes, low consumer inflation and sustained real growth, a combination thus expanding the disposable surplus of individual Indians. This expansion in the disposable surplus has driven a demand for
discretionary spends, including the discretionary allocation towards savings products. If one looks at financial products like mutual funds, AMFI data shows that the penetration of mutual funds in India has risen ~2X in this initial period so far, from ~6% to ~10%. While the long-term multiplier impact in India is yet to play out like in the US, the similarity in the macro variables during the initial periods between the two countries, and its effect in deepening mutual fund penetration, is noticeable. Never before in the immediate histories of either economy did the macros combine in this ideal way.

But will this phase continue in India, like it did in the USA? India’s macro estimates make a strong case for the continuity of this structural story, at least for the near-term. IMF estimates India’s per capita GDP to grow at 11% CAGR over the next three years, and inflation to stabilize around ~5%. As the disposable surplus expands further, a rise of ~1% each year in the mutual fund penetration rate (in line with the last 3-year average) indicates the potential mutual fund AUM possible in India in the near-term. One can argue the veracity of the IMF estimates, but the focus is on the broader trends.

However, while this commonality in the macro-variables expanding the disposable surplus may explain the general push towards savings, it does not explain why financial savings, and equities, in particular?

Identifying a common pattern in the physical savings landscape

Real estate losing sheen? Any expansion in the disposable surplus should impact both physical and financial savings, right? Let us look at real estate. There are assets within physical savings other than real estate, say gold. But real estate comprises the lion’s share of physical savings in most countries. Moreover, most developing nations are importers of gold bullion and the need to maintain current account deficits within limits in recent years has led to higher duties on gold imports, reducing its attractiveness. Hence, this paper concentrates on the real estate specifically, within physical savings.

In India, the period from 2014 till 2016 coincided with a general peaking of the high-end property prices. At this price-level, there is excess supply and there is not enough money with the typical middle-class to buy these prime properties at such excessive price-points. The Modi government’s thrust to make opaque real estate transactions transparent via the RERA Act and counter black money flows via demonetisation, also contributed to real estate losing
some sheen with large investors. Real estate is now less attractive to hide unaccounted incomes. This has resulted in a migration of investor interest from physical to financial savings. Resultantly, there has been a migration towards financial savings (Chart 3). Household financial savings grew at a 14% CAGR from 2013 to 2016, higher than the 5% CAGR in overall household savings. These trends in real estate may help partly address why the current expansion of disposable surplus led to a more significant migration towards financial savings, rather than physical savings.

In the USA, its real estate sector saw its own crisis from 1980 onwards! Over-development in its real estate sector led to excess capacity in the market, while deregulation of lending standards and reduction in capital reserve requirements led to a mortgage loan crisis in the early 1980s. Resultantly, there was a steep drop in home sales during the early 1980s, and new homes constructed dropped significantly through the late 1980s. This impact continued well into the 1990s. The lower attractiveness of the real estate sector as a saving option through the 1980s and 1990s, helped coincide the migration of the US investor interest towards financial savings avenues like mutual funds (Chart 4). More importantly, the differential between financial savings growth and mutual fund penetration growth in Chart 4 again indicates the sheer scale that is possible if these trends sustain over the long-term. In India, the journey has only started in the last three years, if the first three years seen in USA are any indicator.

In other words, the migration of monies from real estate to financial assets has itself been a significant driver of inflows into financial savings in both USA and India during their respective periods, over and above the general uptick in the macros environment and disposable surplus itself. However, while this commonality of the challenges facing the real estate sector in both US and India may partly explain the push towards financial savings, it does not explain why equities in particular?
Nevertheless, periods of sustained macro stability, expansion of disposable surplus and reducing attraction of the real estate asset may be an opportune time to enact regulations to clean up the real estate sector, which is often an opaque sector in most developing countries. But this presupposes the country has a reasonable depth of financial products to absorb the incremental flow to financial assets.

**Identifying a common pattern in the fixed-income financial savings landscape**

**Fixed-income losing sheen?** Any expansion in the disposable surplus should impact equities and fixed-income both, right? There are other assets within financial savings other than equities and fixed-income, say commodity funds or international funds. But these two comprise the lion’s share in most countries. Apart from mutual funds or direct investments, even life insurance products ultimately invest in fixed-income or equities. Hence, this paper concentrates on these two financial assets specifically.

Within financial savings, the pull towards equities has been striking in both US and India during these periods. In India, with the Reserve Bank of India’s repo rate reducing from ~8% in 2014 to ~6.25% in 2017 in line with the reduction in its average inflation levels, fixed income lost some sheen (Chart 5). This drove investor interest towards equities to earn higher real returns. Hence, equity mutual fund AUM in India grew at a 42% CAGR from 2014 to 2017, much higher than the 29% CAGR in overall mutual funds. Going forward, expectations of further interest rate cuts in India to help boost private sector capex and economic growth continues to augur well for the continued migration towards equity asset class.

Even the US saw a similar trend during the 1980s and 1990s. With the Federal Reserve funds rate steadily reducing from ~10% to ~3% from mid-1980s to the mid-2000s in line with the reduction in its average inflation levels, fixed income lost sheen there too (Chart 6). This
pushed investor interest towards equity assets to earn higher real returns. Resultantly, this helped equity fund AUM in the US grow at a 21% CAGR from 1985 to 2005, higher than the 16% CAGR in the case of overall mutual funds. The growth, inflation and surplus trends observed in the section on macros, led to the calls for reducing the policy rates to boost the economy further, thus reducing the attraction of fixed-income investments.
Identifying a pattern in institutional efforts like network expansion and investor education

Institutional efforts are expansion of the network of branches and advisors across the length and breadth of vast countries like USA and India, to tap pools of savings in small towns; and the emphasis on investor education to widen the investor base, educate them and debunk myths people have about mutual funds. While the macro environment, real estate and fixed-income asset trends are market-driven, the financial industry itself has an equal responsibility to strengthen its own institutional efforts at the correct time.

In India, smaller towns (B-15 towns, i.e. towns beyond the largest-15 cities) have been a key source of incremental flows into equities since 2014. AMFI announced an incentive of ~30 basis points additional expense ratio to be charged for AUM mobilized from the B-15 towns. From 2014 to 2017, the AUM from B-15 towns grew at a 31% CAGR to Rs 3.1 tn vs. a 28% CAGR for the overall AUM. Since ~80% of these B-15 AUM is held by the Top 10 fund houses, ample scope still exists for the remaining 30-odd fund houses. B-15 towns also have a more favourable mix of higher-yield equity within their AUM mix, since T-15 cities have most of the institutions and corporates who prefer debt funds.

In the US, the mobilization by funds also gained from an expansion in the distribution network during the 1980s and 1990s, especially through the IFA channel. Its retail investment market is advisor-driven, with IFAs now managing ~66% of the AUM in USA. This proliferation of advisors throughout USA resulted in garnering mobilization even from smaller towns. The 1980s-1990s was when many such firms started expanding their networks.
Edward Jones, one of America’s biggest retail-advisory firms, today has over 12,000 branches spread across USA’s fifty states, a journey that started two decades ago. This deepening of the network into small towns also helped drive its surge in inflows into financial products.

Investor education by Indian mutual funds since 2014 also helped improve awareness. AMFI mandated all Indian fund houses to allot 2 basis points of their net assets each year for investor education initiatives. This includes on-ground seminars, TV-commercials and web campaigns. Apart from fund houses, even AMFI has released investor education initiatives. As per AMFI, the outreach through AMC investor awareness programs in India covered a total ~932,000 participants during the two years from April 2015 to May 2017, as compared to a total ~766,000 participants during the two years from May 2010 to August 2012. More than half of these investor awareness programs were in the B-15 smaller towns. This push has been key in widening the investor base, resulting in a 12% CAGR in new individual investor folios (HNI and retail) from FY2014 to FY2017. Also, this education has helped debunk myths and perceptions about mutual funds, and reduced the chances of panic-induced redemptions by the retail herd-mentality.

Even in the USA, investor education played a key role in the 1980s-1990s. It helped diversify the AUM base by making investors aware of asset allocation. Till 1970, 90%+ of US mutual fund AUM was in equity funds. Education helped diversify this during the 1980s-1990s, and ~50% of AUM was in equities by 2000. In India, ~53% of the individual-held AUM is in equity funds now, similar to the US. But this has risen from ~42% in 2014; hence India’s investor education should now concentrate on diversification.

Any pattern where India does not fit to the US experience?

It has to be held for the long-term: While we looked at the common patterns between India and USA, is there any uncommon pattern? If India has to see a two-decade story like in the USA, its individual investors have to think long-term. Defined contribution plans in the USA historically helped mobilize US retail savings into mutual funds, ensuring the money stayed invested for the long-term. Indian equity inflows have been individual-led, with retail/HNI equity folios growing at a 12% CAGR from 2014 and 2017. But most of the incremental AUM is bunched in shorter-duration buckets, as the vintage of recent inflows is still less than
2 years. ~57% of the individual equity AUM as of 2017 was held for less than 2 years vs. ~42% in 2014. This has to be held for the long-term, just like in the US.

At the same time, the benchmark index Nifty’s volatility has dipped. Its standard deviation was ~0.8% in 2017 vs. ~1.1% in 2014. This augurs well as far as panic-redemptions by retail investors are concerned.

CONCLUSION

Observations highlighted in this paper show the commonality in the drivers behind the recent surge of inflows into financial savings in India, to that in the USA during their respective periods. This gives some support to the argument that these trends in India are structural in nature rather than merely transitory, at least in the near-term if the macro estimates and the trends in real estate, fixed income and institutional efforts continue. However, this recent surge apart, India still has a long way to go. India’s penetration of individual folios in mutual funds has only risen from ~3% in 2014 to ~4% in 2017. On the other hand, USA’s two-decade journey showed a growth of 4X, i.e. from ~13% in 1985 to ~50% in 2005. Can India also see a ~4X growth by the mid-2030s? For that, India’s investors have to start thinking holding for the long-term, just like their counter-parts in the US did. If that happens, the journey would indeed be structural even in the long-term, not just in the near-term.

One positive feature is the strong regulatory system in both India and US during these periods. Regulatory support for investor protection cannot be over-emphasized, and both have developed strong and agile regulatory mechanisms. This augurs well for the continuity of the structural story in a market like India.

On a final note, other Asian developing countries who are also trying to deepen their penetration of financial saving products might take clues from the common patterns observed across a developing market like India and a developed market like USA. If a similar combination of patterns strike in those Asian developing countries, maybe they may also see their financial savings take off.
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Identification of Bankruptcy Level of Listed Manufacturing Companies in Sri Lanka

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ABSTRACT

The past experience in number of industries evidenced that even healthy companies can go bankrupt and abolish stakeholder confidence while creating a significant damage to country’s economy. Though stakeholders are vulnerable, how they can assess the bankruptcy level is another question that researchers are trying to answer. This creates an urgency to find out the bankruptcy level of manufacturing companies in Sri Lanka using an appropriate model and publicly available information in order to protect stakeholders. Therefore, the objectives of the study are to investigate the degree to which bankruptcy level can be identified from the business performance of listed manufacturing companies in Sri Lanka. Quantitative approach has been applied in the study while utilizing the ZETA model. Secondary data was used in this study which was gathered through the annual reports and the data was analyzed through e-views 6 software. The study found that bankruptcy level can be identified from financial performance and non-financial performance. The findings of the study will help different stakeholders to make decisions relevant to manufacturing firms in Sri Lanka.

Keywords: Bankruptcy Risk, Business Performance, Manufacturing Companies, ZETA Model
INTRODUCTION

There are enough local and international evidences within last decades to prove that companies can become financially insolvent and bankrupt due to many reasons, such as aggressive expansion of operations, mismanagement and high level of financial gearing (CSE Fact Book, 2009). In the international context Lehman brothers, AG, Washington Mutual, and Fannie Mae & Freddie Mac and in the local context, Prarnuka Bank and Golden Key were bankrupt and Seylan Bank and The Finance Co. Ltd had created a doubt among general public. Unfortunately, many of these companies were unable to assess their financial conditions before the companies fail. On the other hand, other stakeholders, named creditors, investors, shareholders, etc are also failing to assess these companies solvency before this tragedy. These incidents badly affect to the country’s economy and lost the investor and stakeholder confidence (Gnanaweera, 2011). As per Bum (2007) identifying risk of bankruptcy is vital as when a company is suffering with financial distress situation, there is a problem for the employees of such company as well as for the shareholders, lenders and the other stakeholders. It badly affects the job security of managers and employees and stakeholders’ equity position and claims of lenders since their claims are not guaranteed. This evidence provides that need of assessing the financial health of the companies more effective manner in order to ensure the economic stability of the country while ensuring the stakeholder interest.

In way back 19th century traditional ratio analysis was considered as a technique which is used by the practitioners to analyze the business performance and risk of their business decision making (Altman, 1968). The most common and available source was annual reports which can perform ratio analysis to assess the status of the company (Sandin and Porporato, 2007) by any stakeholder. However, Altmen(1968) emphasized that it is doubtful whether ratio analysis can be used as an analytical technique to future bankruptcy of companies. Based on different arguments many scholars developed different models to test the bankruptcy level of a company. Altman’s ZETA model or rather zscore model along with discriminant analysis was one of the best and widely use model which recognized the bankruptcies in companies (Altman, 1968).
Sri Lankan manufacturing sector plays an important role in economic growth of Sri Lanka and many manufacturing firms are showing significant growth after end of the Civil war in 2009. As a result most of the investor in Sri Lankan stock market prefers to invest in manufacturing firms listed in Colombo Stock Exchange. Hence, it is vital to promote manufacturing firms (Thusyanthi and Yogendararajah, 2016) which is also vulnerable for bankruptcy. However, investors have the same problem in identifying the industries and firms which are not performing well and companies which are vulnerable to bankrupt (Appiah and Abor 2009). This situation gets worse as even financially sound companies can be bankrupted (Ong, Yap and Khong, 2011). Predominantly it was a question whether the financial statements provide the proper guidance to identify the risk. Further, as stated by Gnanaweera (2011) there is a vacuum in Sri Lankan context to evaluate the soundness of the Z-score model(s) for bankruptcy prediction in Sri Lankan Context. Therefore, this study will investigate “The Degree to which Bankruptcy level can be identified through Business Performance of Listed Manufacturing Companies in Colombo Stock Exchange”.

Therefore, the research objective of this study was to explain the relationship between bankruptcy level and the business performance of listed manufacturing companies in Sri Lanka.

LITERATURE REVIEW

Bankruptcy Risk

Bankruptcy is an economic indicator which is common to both developed and developing countries who perform in any industry as this will affect to many people and hence much public attention. As per Wikipedia (2011) this can define as a legally declared inability or impairment of the ability of an individual or organization to pay its creditors. The concept and origin of bankruptcy law as it is now known in Sri Lanka originated in England. A commercial law practitioner, an attorney at law, mentioned that The Law relating to bankruptcy is based mainly on the English Law. There is provision in our law for persons to have themselves declared bankrupt by court in the event they are unable to settle their debts. These are called Pauper Actions and were found in Sections 442 to 449 of the Civil Procedure Code. However these sections were repealed by Act No: 20 of 1977.
Abor et al (2009) emphasized that risk has been identified as an important factor in financial decisions while empirical and theoretical research do not provide proper answer regarding the debt level and capital structure where capital structure of the firm plays a pivotal role in deciding integrated risk of a firm. Moreover Sandin and Porporato (2007) explained that Univariate studies which focus about the ratios on categories of earnings, liquidity and solvency are very much important to decide the bankruptcy.

The firms operate in many developed countries like USA are voluntary declare as a bankrupted company in order to gain some advantages such as borrow more money and take time to solve the problems (Altman and Hotchkiss, 2006). However, this is still new to the Sri Lankan contest and it will take a longer period for declare as a bankrupt. Furthermore, in Sri Lankan terms it is different, empirically, due to the market fact that the number of companies de-listed by the Colombo Stock Exchange (CSE) due to bankruptcy or liquidity issues is very low during the last decades, and there are only a few business failures declared in public for many years (Gnanaweera, 2011).

**ZETA model (z-score model)**

However it was rather difficult to identify proper businesses since there was no recognized model to identify the risk. Align with that the objective of ZETA model was to develop a suitable method to identify the bankruptcy level of the companies focusing on the multiple discriminant analysis (Appiah and Abor, 2009). Moreover, Stickney 1990 mentioned that bankruptcy level of the economies can be identified through financial health, financial troubles, bankrupt level and liquidity level (as cited in Sandin and Porporato, 2007). Apart from that as Yeh and Lee (2004) explained that weak corporate governance results high probability of financial distress compared to firms practice proper corporate governance which imply the importance of qualitative improvements of a business.

Initially as Altman et al (1977) explained that with the recent development of the business failure models, ZETA has been developed which can recognize the bankruptcy 5years in prior of manufacturing companies’ and retailers. The reasons for developing this model states that there were failures in business based on the financial profile; model should be temporal due to changing nature of the data, past models concentrated on a particular industry, most recent
changes in financial and accounting aspect has been considered to develop the model and finally lots of modifications have been done as suitable to the present context.

As Altman (1968) emphasized, among the significant types of ratios, ratios have been taken which concern about profitability, liquidity, leverage, solvency and activity. Furthermore, statistical significance, inter correlations between the variables, accuracy and judgment of the analysis have been considered to select the appropriate ratios. More specifically areas concerned under the model can be mentioned as follows.

X1 best ratio which consider the liquidity and size characteristics explicitly.
X2 which concern about the cumulative profitability
X3 earning power of assets is concerned by ignoring leverage factors.
X4 firm’s assets decline before liabilities exceeds the asset value.
X5 sales generating capability of assets is concerned.

Finding of the study explains that when Z >2.99 the company is safe, 1.8< Z >2.99 the company is in grey zone while Z <1.8 it is financially distressed. Further, in Altman’s model the highest contribution was profitability ratio while lowest was working capital (Appiah and Abor, 2009). According to this model business is focused under five main areas its status can be identified.

There are number of studies can find internationally in the area of predicting financial distress. Samarukkoon and Hasan (2003) empirically tested the three versions of Altman’s Z-Score model with the financially distressed companies in Sri Lanka. According to them US based Altman Z”- Score model has a remarkable degree of accuracy in predicting distress in the year prior to distress. This study concluded that the Z-Score model is a suitable model in predicting financial distress in Sri Lanka.

**Evolution of ZETA model**

As Sandin and Porporato (2007) explained in good old days unemployment and social pressure which affect to the economy and globalization have created considerable outcomes in the business environment. However the reforms which include the diversification of business were appropriate for the prevailing legal setup. Align with that as Altman (1968) mentioned when they make the diversification decisions they required an analysis which considers the items with same characteristics in a one particular group.
Later on Multiple Discriminant Analysis (MDA) has been introduced in 1930 which was used to attain financial problems such as credit evaluation and investment classification. The model developed under MDA was z-score model which classify the bankruptcy prior to 5 years on 70% accuracy and further alternative bankruptcy prediction can be made by using the expected cost criteria (Altman et al, 1977). Importantly, ZETA is the most pioneering model developed to test the going concern (Young and Wang, 2010). Thereafter most of the industries utilized that model to make the future predictions.

According to Sandin and Porporato (2007) this is an intuitive strategy to compare the groups with similar and dissimilar characteristics with others. However the classification of bankruptcy models is based on the stage of the company at a particular situation. Further the industry type also plays an important role when it comes to bankruptcy prediction which is a most used method to discover the failures.

Specifically, Altman et al (1977) specified that to develop the model the following important aspect has been considered namely capitalization of leases, reserves, minority interest and other liabilities, captive finance companies and non-consolidated reserves, goodwill and capitalized research. Basically this model has concerned on 7 variables under multivariate statistical technique.

In Sri Lanka, Samarakoon & Hasan (2003) test the original Altman’s Z-score models and concludes that the third version of score model (Z”-score model) gives the highest overall success rate and it seems that Z-score models have a very good potential in predicting 3 A most prominent model developed based on UK companies and all the variables used are different from Altman’s Model.

Finally it can be concluded that the Z-score model under Multivariate Discriminant Analysis is still a valid model for predicting financial distress in the context of Sri Lanka. Though there are criticisms over MDA (Nanayakkara and Azzez, 2015).

Specifically, as Altman (1968) mentioned unfavorable credit risk can be measured through the MDA. However he further explained that just a numerical value is not sufficient to make a decision about a particular company. Similarly z-score model help investors and bankers for decision making under unstable economic conditions (Sandin and Porporato, 2007). Furthermore Appiah an Abor (2009) revealed that Altman’s model can be used for credit
evaluation portfolio evaluation and as internal control guidance. Significantly, ratio analysis has found important for financial institutions for their lending decisions. There the only concern is creditworthiness of the customer when it comes to providing loans to customers where the financial distress of bank is not concerned which should be addressed mostly. Likewise the validity of z-score model affects number of parties to make better decisions while minimizing the risk.

**Other Studies**

Ou (1990) highlighted that not only profits figures but also non-profit data in financial reports. As per the findings of this study percentage growth in the ‘inventory / total assets’, percentage growth in the ‘net sales / total assets’, change in ‘dividends per share’ relative to that of the previous year, percentage growth in ‘depreciation expense’, percentage growth in the ‘capital expenditure/ total assets’ ratio, with a 1-year lag, the accounting rate of return, change in rate of return relative to the previous year’s rate of return are some of the information which can use to measure the bankruptcy of firms.

**METHODOLOGY**

Precisely in this section conceptual framework is addressed and operationalization is performed to identify the hypotheses then on. Moreover sample, sampling procedure and data collection methods are analyzed.

**Conceptual Framework**

As Young and Wang (2010) mentioned Altman’s model consider the risk in multi levels. Specifically it concerned about all aspects of financial statement under five categories. However, it is problematic that the contribution of financial statements to identify the business risk. Align with that this study focused to examine the impact of business performance to identify the risk level of manufacturing companies.

According to the findings of Altman (1968) the zscore can be calculated by using the different weights to the ratios.

\[ Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \]
According to the conceptual framework business performance is the independent variable which is twofold. Specifically, financial performance and non-financial performance can be identified under business performance. Moreover, Return on Asset has concerned as the proxy variable for financial performance while employee productivity is the proxy variable for the non-financial performance. As Evans (2004) explains, when measuring financial performance most of the research has been utilized profitability ratios such as return on assets (ROA) in order to emphasize the financial viability of the business (as cited in Cohen, Thiraios & Kandilorou, 2008; Wang & Chang, 2005). At the same time Byus and Lomerson (2004) emphasized that, productivity ratios are towards the non-financial performance and those have been derived by considering the value addition. In line with the conceptual framework dependent variable is the bankruptcy level where Z-score has concerned as the proxy variable along with the ratios of profitability, liquidity and gearing.
Operationalization

Table 1: Operationalization Table

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Definition</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>A ratio reflects the total earnings from total assets.</td>
<td>Net income after tax / Average total asset</td>
</tr>
<tr>
<td>Productivity per Employee</td>
<td>Contribution of employees for sales</td>
<td>Net sales/ Number of employees</td>
</tr>
<tr>
<td>X₁</td>
<td>Measure the liquidity level</td>
<td>Working capital/ Total assets</td>
</tr>
<tr>
<td>X₂</td>
<td>Earnings of the company</td>
<td>Retained earnings/ Total assets</td>
</tr>
<tr>
<td>X₃</td>
<td>Concern about capital</td>
<td>EBIT/Total Assets</td>
</tr>
<tr>
<td>X₄</td>
<td>Measure the debt to equity</td>
<td>MV of equity/BV of Liabilities</td>
</tr>
<tr>
<td>X₅</td>
<td>Measure the sales volatility</td>
<td>Sales/Total assets</td>
</tr>
</tbody>
</table>

Source: Altman (1968)

Hypothesis development

According to the conceptual framework basically three relationships can be identified from the model.

H₁ : There is a direct relationship between business performance and bankruptcy level

H₂ : There is a direct relationship between financial performance and bankruptcy level

H₃ : There is a direct relationship between non-financial performance and bankruptcy level

Population and Sample Selection

This study has concerned about 26 listed manufacturing companies under Colombo Stock Exchange have been selected for the study among 31 registered companies (Colombo Stock Exchange, 2014). However in the study of Sandin and Porporato (2007) sample has been selected from Buenos Aires Stock Exchange around 100 listed companies. Further the sample was selected based on the listing rather than market capitalization or size. Importantly this revealed that validity of selected listed companies under stock exchange.
Data Collection and Analysis

Annual reports of 26 manufacturing companies have been analyzed to collect the data for 10 years from 2004 to 2013 where panel data is utilized for the study with 260 data points. Specifically data was analyzed through e-views 6 software which is focused for in next section.

DATA ANALYSIS AND FINDINGS

More specifically this section focuses descriptive statistics, unit root tests, and correlation as well as regression analysis in order to analyze the data and check the hypothesis.

Descriptive statistics of the study

![Figure 2: Descriptive Statistics of ZSCORE](image)

According to the descriptive statistics of dependent variable, Figure 2, mean value of the zscore is 3.037 which is quite fair number since zscore value should be greater than 3 if the company is in the safe zone. However, median value comparably low while jarque bera has a higher value of 3721.12 while reveal that data has high reliability with the zero probability. Furthermore skewness is positive which mentions the longer right tail of the histogram while kurtosis of 20.43 derives higher lapto kurtosis since value is greater than 3.

As descriptive statistics of ROA, Figure 3, which is an independent variable, explains that mean value of ROA is 10% while median is 5% which shows a quite difference. However
jarque bera value is 486889 with zero probability emphasizing the high reliability of data. Moreover skewness is positive and higher peakness can be seen in the histogram.

![Figure 3: Descriptive Statistics of ROA](image3)

Specifically, descriptive statistics for productivity, Figure 4 also explains the high reliability of data with 8878 jarque bera value along with zero probability where data is normally distributed. Further positive skewness can be seen with longer right tail in the histogram and along with a higher kurtosis value.

![Figure 4: Descriptive Statistics of Productivity](image4)
Moreover, all tree variables in the model represent reliable data with high validity as per descriptive statistics.

**Results of Unit Root Test**

More precisely this study has utilized panel data and Levin, Lin and Chu unit root test has been performed to check whether there is a unit root problem. However, trend has been checked prior to the unit root test and revealed that there is no trend for all three variables since probability values are greater than 0.05.

**Unit root test on zscore;**

Table 2: Unit Root Test on ZSCORE

<table>
<thead>
<tr>
<th>Method</th>
<th>Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin, Lin &amp; Chu t*</td>
<td>-2.63551</td>
<td>0.0042</td>
</tr>
</tbody>
</table>

According to the given results the dependent variable which is zscore is stationary where mean, variance and auto correlation does not change overtime. Therefore, there is no unit root problem where probability value also less than 0.05.

**Unit root test on ROA;**

Table 3: Unit Root Test on ROA

<table>
<thead>
<tr>
<th>Method</th>
<th>Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin, Lin &amp; Chu t*</td>
<td>-15.0625</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Similarly, independent variable which is ROA also a stationary data series with zero probability. Therefore, there is no unit root problem where probability value also less than 0.05.

**Unit root test on productivity at level;**

Table 4: Unit Root Test on Productivity

<table>
<thead>
<tr>
<th>Method</th>
<th>Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin, Lin &amp; Chu t*</td>
<td>0.98239</td>
<td>0.8370</td>
</tr>
</tbody>
</table>
Table 5: Unit Root Test on Productivity 1st Difference

<table>
<thead>
<tr>
<th>Method</th>
<th>Statistics</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levin, Lin &amp; Chu t*</td>
<td>-3.07626</td>
<td>0.0010</td>
</tr>
</tbody>
</table>

However, the second independent variable is non-stationary where it has been converted to 1st difference to perform the tests further in e-views. Similarly, other variables also converted to 1st difference since one variable is non-stationary.

Correlation Results

Table 6: Correlation Results

<table>
<thead>
<tr>
<th>DROA</th>
<th>DPRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000000</td>
<td>-0.003552</td>
</tr>
</tbody>
</table>

Correlation has been tested in order to check whether there is a strong relationship among independent variables. According to the correlation results, Table 6, two independent variables are not correlated and both of them can be used in the model.

Regression Analysis

Table 7: Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.051910</td>
<td>0.146289</td>
<td>0.347719</td>
<td>0.7284</td>
</tr>
<tr>
<td>DROA</td>
<td>3.031015</td>
<td>0.314680</td>
<td>9.632052</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

According to the conceptual model developed in the methodology financial performance which is proxied by ROA can be checked with zscore primarily which shows there is a relationship with bankruptcy level. As per Altman’s model z value should be greater than
three and ROA shows a positive relationship with z value which is a good indicator people who refer the financial performance of the annual reports. Further probability is 0 while statistics also represent value greater than 1.96 and Durbin Watson statistics also represent a fair value.

Table 8: Regression results on non-financial performance and bankruptcy level

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.051633</td>
<td>0.157653</td>
<td>-0.327514</td>
<td>0.7436</td>
</tr>
<tr>
<td>DPRODUCTIVITY</td>
<td>-5.10E-08</td>
<td>6.70E-09</td>
<td>-7.612091</td>
<td>0.0000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.199845</td>
<td></td>
<td></td>
<td>-0.044039</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.196396</td>
<td></td>
<td></td>
<td>2.690171</td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>2.411575</td>
<td></td>
<td></td>
<td>4.608484</td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>1349.242</td>
<td></td>
<td></td>
<td>4.636481</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-537.0129</td>
<td></td>
<td></td>
<td>4.818855</td>
</tr>
<tr>
<td>F-statistic</td>
<td>57.94392</td>
<td></td>
<td></td>
<td>2.177714</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specifically non-financial performance and bankruptcy level also represent a relationship with zero probability and t statistics. However the relationship is negative which shows employee productivity is negatively affect. Further as per statistics the coefficient value is also very less while R- squared is around 20%.

Table 9: Regression results on Business performance and bankruptcy level

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.044064</td>
<td>0.127182</td>
<td>0.346459</td>
<td>0.7293</td>
</tr>
<tr>
<td>DROA</td>
<td>3.022048</td>
<td>0.268978</td>
<td>11.27304</td>
<td>0.0000</td>
</tr>
<tr>
<td>DPRODUCTIVITY</td>
<td>-5.08E-08</td>
<td>5.39E-09</td>
<td>-9.416841</td>
<td>0.0000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.483816</td>
<td></td>
<td></td>
<td>-0.044039</td>
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<tr>
<td>Adjusted R-squared</td>
<td>0.473347</td>
<td></td>
<td></td>
<td>2.690171</td>
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<tr>
<td>S.E. of regression</td>
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<td></td>
<td>4.177152</td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>370.4022</td>
<td></td>
<td></td>
<td>4.221451</td>
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<tr>
<td>Log likelihood</td>
<td>-486.7268</td>
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<td></td>
<td>4.195014</td>
</tr>
<tr>
<td>F-statistic</td>
<td>108.2576</td>
<td></td>
<td></td>
<td>2.605557</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the conceptual framework developed final out put can be presented with 48% goodness of fit while all two variables have zero probabilities where alternative hypotheses can be accepted. Further Durbin Watson statistics should be improved. The regression line can be presented as follows,
Estimation Equation:

\[ \text{DZSCORE} = C (1) + C (2) \times \text{DROA} + \text{DPRODUCTIVITY} \]

Substitute Coefficients

\[ \text{DZSCORE} = 0.044064491156 + 3.02204815098 \times \text{DROA} - 5.07911013937 \times \text{DPRODUCTIVITY} \]

Moreover, co-integration test and short-term relationships cannot be checked since most of the variables are stationary. Similarly, Gunathilake (2014) emphasized that Altman’s model shows more significant results compared to the solvency test.

Finally, the last section will discuss the conclusion, limitations, and directions for future research.

**CONCLUSION, DISCUSSION AND IMPLICATIONS**

This study is focused on the problems faced by investors and managers when making decisions about companies prior to the introduction of Altman’s model. Specifically, they had a problem of identifying bankrupt companies in advance and real status of the companies. As a solution, Altman developed the ZETA model along with the multiple discriminant analysis which focused on five areas of a company. Thereafter, lots of industries benefited, and people could make their decisions with less risk. Importantly, this study focused on the Zscore value and the relationship with the business performance. There, the study found that business performance results affect the bankruptcy level which can be identified from the annual reports. Similarly, Gunathilake (2014) revealed that Altman model is showing more accurate and significant results in identifying financial distress.

More precisely, the study found that there is a positive significant relationship between bankruptcy levels and financial performance. Importantly, those conclusions were arrived on 5% significant level with considerably acceptable coefficient of determination. Similar to the findings of Nanayakkara and Azzez (2015) and Samarakoon and Hasan (2003), this study also proved that Sri Lankan manufacturing firm’s bankruptcy level can predict through the ZSCORE model. Similar to the findings of Ou (1990) this study also highlighted a negative
but significant relationship between non-financial performance and bankruptcy level in Sri Lankan manufacturing firms.

The result of the study will be benefited to many stakeholders in different ways. Especially, investors and current shareholders can easily use their annual reports and can find out the best manufacturing firms to invest. Further, managers and directors can evaluate and predict their company status using ratios and can take necessary corrective actions if needed. Furthermore, relevant authorities such as audit firms, governing bodies and government can easily predict the firm’s future and help firms to overcome such bankruptcy situations. Moreover, they can educate general public on these relationships and these awareness and early cure of the problems will make sure the stability of the economy.

LIMITATIONS AND FUTURE STUDIES

According to the study of Sandin and Porporato (2007) it is explained that ratio analysis is questionable and have some confused points as a methodology. However, this study also followed the same methodology. Therefore, it is vital to use different models and predict the bankruptcy behavior will help to generate better conclusion in future. Further, the future studies should be done in this area in different industrial categories in order to check the validity of the model.

Future research can be done by incorporating more qualitative factor to the model which affect to identify the bankruptcy level since information provide from the annual reports are not quite sufficient for decision making on companies in the current context.

REFERENCES


Impact of Inventory Management Practice on Cost Reduction & Profitability of Holcim Cement Company (Lanka) Ltd (With Special Reference to Galle District Branch)

Haleem, H.M.M., Eastern University, Sri Lanka.
Madumali, P.A., Eastern University, Sri Lanka.

ABSTRACT

The study is titled “Impact of Inventory Management Practice on Cost Reduction and Profitability” of Holcim Cement Company (Lanka) Ltd in Galle District. This study was done to find solutions and to suggest recommendations to the identified problems to make the Inventory management system successive. For the purpose of easy and effective analysis, two types of variables were selected. There are dependent variables and independent variables. Here the dependent variables are Inventory Cost and Firms’ Profitability, Independent variables are suppliers of raw materials, material handling, wastage handling, investment in inventory, finished product handling. To find out the relationship between independent variables and dependent variable related to Inventory Management Practice in Holcim Cement Company (Lanka) Ltd in Galle, data and information were mainly collected through questionnaire and secondary data. Sample was selected according to the simple random sampling method. The obtained data and information have been transformed into tables. Information was tabulated, evaluated and findings were identified. Mean, Std. deviation, Correlation, & Regression Analysis were used for data analysis. After data analysis it was identified that, there was no relationship between Inventory Management & Cost Reduction, and there was no relationship between Inventory Management & Profitability. These findings are explained individually further at the end of the study. The appropriate solution and recommendations are provided for the necessary modification of the Inventory Management to make it successful.

Keywords: Inventory Management, Cost Reduction, Profitability, Material Handling and Investment in Industry
BACKGROUND OF THE STUDY

The viability of any business relies on the ability to effectively manage receivables, inventory, and payables. This is important from the point of view of both liquidity and profitability. When there is a poor management of working capital, funds may be unnecessarily tied up in idle assets. This will reduce liquidity of the company and also the company will not be in a position to invest in productive assets like plant and machinery. Which used to create the goods and services to sell. This means how well the company utilized their assets may cause to the difference between profit and losses. Therefore, Proper management and control of Inventory not only solve the problem of liquidity but also increase profitability. It has been seen that in most of the cases unnecessary funds are tied up with inventories, which is one of the important elements of current assets. Hence, it is necessary to efficiently manage inventories in order to avoid unnecessary investments. A firm, which neglects the management of inventories, will have to face low liquidity, bankruptcy and penalty will arise relating to long-term profitability and may fail to survive (Ghosh & Kumar 2007). With the help of better inventory management, a firm can reduce the levels of inventories to a considerable degree through the reduce safety stocks, Analyse usage and lead time, Redetermine order quantity, and Implement new inventory software (Ghosh & Kumar 2007).

To a large extent, the success or failure of a business depends upon its inventory management performances. Inventory establishes a link between production and sales. Every business undertaking needs inventory adequate quantity for efficient processing and in-transit handling. Since, inventory itself is an idle asset and involves holding cost; it is always desirable that investment in this asset should be kept at the minimum possible level. Inventory should be available in proper quantity at all times, neither more nor less than what is required. Inadequate inventory adversely affects smooth running of business, whereas excess of it involves extra cost, thus reducing profits. The primary objective of inventory management is to avoid too much and too little of it so that uninterrupted production and sales with minimum holding costs and better customer’s services may be possible (Ogbo 2011).

Inventories provide a significant link between production and sales of product, and constitute a large percentage of the cost of production. It is one of the most expensive and important assets of many manufacturing companies representing a considerable percentage of the total
invested capital. At any level of a firm, inventory is among the largest investment made and therefore logically deserves to be treated as a major policy variable, highly responsive to the plans and style of top management (Telsang 2007a).

Inventories are basically stocks of resources held for the purpose of future production and/or sales (Telsang 2007b). Inventories may be viewed as an idle resource which has an economic value. Better management of inventories would release capital for use elsewhere productively (Ghosh & Kumar 2003). Hence Inventory Control implies the coordination of materials accessibility, controlling, utilization and procuring of material (Russell & Taylor 2006). The direction of activity with the purpose of getting the right inventory in the right place at the right time and in the right quantity is inventory control and it is directly linked to production function of any organization (Drury 2004). This implies that profitability of any organization directly and indirectly is affected by the Inventory Management System operated (Drury 2004).

Inventory Control is the supply of goods and services at the right time with the right quality and quantity (Tony 1992). It is a reliable mean in which businesses are been managed to ensure customers are satisfied and organization remains in operations via minimization of losses. Inventory Management has been a problem to many business organizations. There are unnecessary tie-up of the firm’s funds and loss of profit, Excessive carrying costs, and Risk of liquidity. Stakeholder Wealth Maximization is the main objective of a company. Therefore they mostly used to tide up their cash flows on non-current assets (long term) which give high return. This may cause to insufficient inventory management practices, liquidity and production issue (short term). Therefore the strategies and plans implemented by the top management should consider on both short term and long term survival of the company. However, to date in most organization, both analysts and managers have been relatively unsuccessful in convincing top management to give this area the due consideration that it logically deserves.

Without stock on hand customers would have to wait for long period before their orders are fulfilled. Inventory Management is the control of materials used and stored in a company with the objective of providing exactly what is required where and when it is required employing a minimum of residual stock and thus incurring the least possible cost (Tony 1992).
Inventories are vital to the successful functioning of manufacturing and retailing organization. The existence of inventory in any supply chain is associated with high risk and high impact (Bowersox, Closs & Cooper 2002). Inventory shortages may result in customer dissatisfaction and/or the disruption of manufacturing or marketing plans. However, too much inventory increases costs and reduces profitability. With the Inventory Control company can gain more benefits, there are, improvement in customers relationship, efficient utilization of working capital, helps in minimizing loss due to deterioration, obsolescence damage etc. Therefore, Inventory Management, which includes addressing the functionality, the principles, the cost and impact associated with carrying the inventory, plays an important role in the success of company (Tony 1992).

OBJECTIVES OF THE STUDY

The objective of this research is to examine whether there is significant impact of Inventory Management Practice on cost reduction and profitability of Holcim Cement Company (Lanka) Ltd. Following areas are considered in order to further study as broad objectives;

1) To examine the nature of relationship between Inventory Management Practice & Cost Reduction.

2) To evaluate the nature of relationship between Inventory Management Practice & Profitability.

LITERATURE REVIEW

Definition of Inventory

Inventory generally refers to the material in stock; it is also called the idle resource of an enterprise (Gagandeep, Gagandeep & Harpreet 2004). Inventories represent those items which are either stocked for sale or they are in the process of manufacturing or they are in the form of materials which are to be utilized (Gagandeep, Gagandeep & Harpreet 2004). According to Accounting Standard (LKAS) 2, inventories generally constitute the second longest item after fixed assets, particularly manufacturing organizations. (LKAS 02) The valuation and presentation inventories therefore have significant effect in determining and presenting the financial position and performance of industrial and commercial undertaking. Inventories valuation involves two processes,
1. Determination of quality of each type of inventory held.

2. Assignment of the value of the units items of inventory.

Inventory is the sum of the value of raw materials, fuels and lubricants, spare parts, maintenance consumables, semi process materials and finished goods stock at any given point of time (Gagandeep, Gagandeep & Harpreet 2004). The operation definition of inventory would be the amount of raw material to be stocked for the smooth running of the plant (Gagandeep, Gagandeep & Harpreet 2004)

Types of Inventories

A manufacturing firm generally carries the following main types of inventories.

1. Raw Materials - raw materials are those basic materials which have not undergone any operation since they are received from the suppliers (Gagandeep, Gagandeep & Harpreet 2004).

2. Working Process Inventories (WIP) - these refer to the items or materials in partially completed condition on manufacturing (Gagandeep, Gagandeep & Harpreet 2004).

3. Finished Goods Inventories - these refer to the completed products ready for dispatch (Gagandeep, Gagandeep & Harpreet 2004).

Reasons for keeping Inventories

1. To stabilize production - The demand for item fluctuates because of the number of factors. E.g. seasonally, production schedule etc. the inventories (raw materials and components) should be made available to the production as per the demand failing which result in stock out and production stoppage takes place for want of materials, hence, the inventory is kept to take care of this fluctuation so that the production is smooth (Telsang 2007a).

2. To take advantage of price discounts - Usually the manufacturers offer discount for bulk buying and gain this price advantage the materials are bought in bulk even though it
is not required immediately. Thus inventory is maintained to gain economy in purchasing (Telsang 2007a).

3. **To meet the demand during the replenishment period** - the lead time for procurement of materials depends upon many factors like location of source, demand supply condition etc. so inventory is maintained to meet the demand during the procurement (replenishment) period (Telsang 2007a).

4. **To prevent loss of orders (Sales)** - in this competitive scenario, one has to meet the delivery schedules at 100% service level, means they cannot afford to miss the delivery schedule which may result in loss of sales. To avoid the organization have to maintain inventory (Telsang 2007a).

5. **To keep place with changing market conditions** - the organization have to anticipate the changing market sentiments and they have to stock materials in anticipation of non-availability of materials or sudden increase in prices (Telsang 2007a).

6. **Sometime the organizations have to stock materials** - due to other reason like minimum quality condition, seasonal availability of materials or sudden increase in prices (Telsang 2007a).

**Classification of Inventory Cost**

Inventories” Costs are traditionally categorized in to four basic types: Purchase Costs, Ordering Costs, Carrying Costs and Holding Costs (Gagandeep, Gursharnjit & Harpreet 2004). A brief discussion of these is given below;

**Purchase Cost**

For items that are purchased from outside the firm, this usually unit price the firm pays to its vendor. As an item moves through logistics system of the firm, its purchase cost in the inventory analysis should reflect its fully land cost, by which is meant the cost to acquire and move the item to that point in the system. Thus, the landed cost would include transportation costs, tariffs, taxes, and any other costs included to make the item available at that point. This cost becomes significant when availing the price discounts. This cost expressed as Rupees or unit (Gagandeep, Gursharnjit & Harpreet 2004).
Ordering Cost
In addition to the per unit purchase cost, there usually an addition cost which is incurred whenever we order, reorder or replenish the inventory. If we produce the item internally, there may be an organization set up cost which accrues because we need to shut down the manufacturing line and “change over”, reconfigure the line to make the specific item. For an item, which is purchased from outside the firm, there is an administrative cost, which incurred in the purchasing function. This is the cost involved with processing the order, involving the paying the bill, auditing and so forth. In many firms, the average administrative costs associated with placing an order can be surprisingly large. In inventory control, the usual convention is that the ordering cost occurs whenever we order and is fixed with regard to the size of the order (Gagandeep, Gursharnjit & Harpreet 2004).

Holding Cost
The costs of that occur due to the actual holding of inventory over time period can vary considerably from one situation to the next. Many different kinds of cost can be considered as holding costs. The key characteristics of a holding cost vary with the amount of inventory being held and with the length of time that the inventory is held. The holding cost can further be classified as follows:

Storage Costs
These costs occur due to the costs of warehousing the inventory. Storage costs are usually a function of land and labor costs associated with running a warehouse, and Property Tax thus can be expected to vary considerably from location to location (Gagandeep, Gursharnjit & Harpreet 2004).

Risk Cost
These costs are intended recognize that there can be considerable financial risk associated with holding and item in inventory, because the item may become lost, stolen, damaged, or obsolete while it is being held. Risk costs are significantly different than storage and service costs in that they are inherently probabilistic in nature (Gagandeep, Gursharnjit & Harpreet 2004).
Capital Costs (Interest)
Capital costs reflect the idea that an inventory ties up funds, which the firm could be using for other product purposes. As such, the inventory should bear an opportunity cost of capital so that financial decision about the appropriate level of inventory in the firm will consider the costs of funding the investment inventory (Gagandeep, Gursharnjit & Harpreet 2004).

Carrying Cost
The carrying cost of maintenance inventory is an important aspect to consider for a cement manufacturer, since the value that is carried may be high as 15% - 20% of the total maintenance inventory. The carrying cost of inventory consists of a number of components each with a contribution relative to the value of inventory (Gagandeep, Gursharnjit & Harpreet 2004).

Inventory Management
The main objectives of Inventory Management are operational and financial. The operational Objectives mean that the materials and spares should be available in sufficient quantity so that work is not disrupted for want of inventory. The financial objective means that investments in inventories should not remain idle and minimum working capital should be locked in it (Selvaraj 2002). The following are the objectives of inventory management; in the context of Inventory Management, the firm is faced with the problem of meeting two Conflicting needs;

1. To maintain a large size of inventories of raw material and work-in-process for efficient and smooth production and of finished goods for uninterrupted sales operations.
2. To maintain a minimum investment in inventories to maximize profitability.

Both excessive and inadequate inventories are not desirable. These are two danger points within which the firm should avoid. The objective of Inventory Management should be to determine and maintain optimum level of inventory investment. The optimum level of inventory will lie between the two danger points of excessive and inadequate inventories. The
firm should always avoid a situation of over investment or under-investments in inventories (Selvaraj 2002).

The major dangers of over investment are:

a. Unnecessary tie-up of the firm’s funds and loss of profit,
b. Excessive carrying costs, and
c. Risk of liquidity.

The excessive level of inventories consumer’s funds of the firm, which then cannot be used for any other purpose, and thus, it involves an opportunity cost. The carrying costs, such as the costs of storage, handling, insurance, recording and inspection, also increase in proportion to the volume of inventory. These costs will impair the firm’s profitability further. Excessive inventories, carried for long-period, increase chances of loss of liquidity. It may not be possible to sell inventories in time and at full value. The aim of inventory management, thus, should be to avoid excessive and inadequate levels of inventories and to maintain sufficient Inventory for the smooth production and sales operations. Efforts should be made to place and order at the right time with the right source to acquire the right quantity at the right price and quality (Selvaraj 2002). An effective Inventory Management should;

1. Ensure a continuous supply of raw materials, to facilitate uninterrupted production.
2. Maintain sufficient stocks of raw materials in periods of short supply and anticipate price changes.
3. Maintain sufficient finished goods inventory for smooth sales operation, and efficient customer service.
4. Minimize the carrying cost and time.
5. Control investment in inventories and keep it at optimum level.

The investment in inventories constitutes the most significant part of current assets working capital in most of the undertakings. Thus, it is very essential to have proper control and Management of inventories in general and manufacturing industries. Effective

Inventory Management allows an organization to meet or exceed customer’s expectations of product availability with the amount of each item that will maximize the organization’s net profits (Selvaraj 2002).
REVIEW OF EMPIRICAL STUDIES

Berling (2005) researcher explained in “On Determination of Inventory Cost Parameters” the holding inventory is associated with a number of generally high costs. The importance of determining the carrying cost follows from the fact that the value of carrying cost may have significant impact on inventory management. Also Biggart (2007) explained in “Supply Chain Logistic Management” it may also have an effect on the profitability of the organization.

According to Gourdin (2001), explained in “Business Logistics Management International edition” that holding (or carrying) costs are such as storage, handling, insurance, taxes, obsolescence, theft and interest on funds financing the goods. These charges increase as inventory levels rise. In order to minimize carrying costs, management makes frequent orders of small quantities. Holding costs are commonly assessed as a percentage of unit value, i.e. 15 percent, 20 percent, rather than attempting to derive a monetary value for each of these costs individual. This practice is a reflection of the difficulty inherent in deriving a specific per – unit cost for, for example, obsolescence or theft.

According to the Krajewski (1999) explained “Development of business Organizations” Inventory management is an important concern for managers in all types of businesses. For companies such as J C Penny limited, which operate on relatively low profit margins, poor inventory management can seriously undermine the business. The challenge is not to pare inventories to the bone to reduce costs or to have plenty around to satisfy all demands, but to have the right amount to achieve the competitive priorities for business most efficiently and effective.

According to Adam and Ebert (2004) explained “The Structuring of organization” “shortage or Stock out cost is cost associated with demand when stocks have been deplete. They take the form of lost sales, cost or back order costs”. When demand of inventory is greater than supply of inventory, then shortage takes place. It is the cost of not having inventory. The cost of shortage include payment of overtime due to stock-outs, special administrative expenses due
to stock outs, loss of sales and loss of goodwill. It should be noted that stock-out result in decreased customer service level, less efficient production shortage cost.

According to Kenneth and Brian (2006) “Strategic Purchasing and Supply Chain Management” includes keeping inventory includes the following reason:- Reduce the risk of supplier failure or uncertainty- safety and butter stocks are held to provide some protection against such as strikes, transport breakdowns due to floods or snow, crop failures, wars and similar factors. Protect against lead time uncertainties, such as where supplier’s replenishment and lead time are not known with certainty – in such case an investment in safety stocks is necessary if customer services is to maintain at acceptable levels. Meet unexpected demands or demands for customization of products as with agile production and smooth seasonal or cyclical demand.

Lucay (2003) said that excessive levels of stock are undesirable because they increase the risks of inventory becoming obsolete, stock loss through damage and theft, increased storage costs like rent, insurance and unnecessary tie up of the firm’s funds. Researcher further state that a firm would be foregoing profits when it continues maintaining excessive levels of inventory, which implies that the probability position of the firm is being threatened in the long run since funds are not being invested in other profitable ventures.

According to Lambert et al (2001) in “Competitive Advantages of Nations” mentions a number of challenges in inventory management which include: unqualified employees in charge of inventory, using a measure of performance for their business that is too narrow, a flawed or unrealistic business plan for a business for the future and not identifying shortages ahead of time. Having people in charge of inventory without adequate training, experience or who neglects the job will lead to inventory problems that will result into poor organizational performance. The use of a measure of performance for business that is too narrow. This is a situation where the performance measure are not wide enough and do not encompass all the aspects of the organization. Many areas get overlooked and can lead to either inventory shortages or inventory stockpiling.

Gupta (1994) said, that organizations should establish proper inventory control procedures,
efficient and effective information system regarding stock so that they are able to balance the costs and risks of inventory control against the benefits got from having inventory readily available for smooth operations. Lower levels of inventory are also undesirable because it interrupts production, loss of good will and high ordering costs especially when ordering is frequent. Inadequate inventory levels leads to business closure due to shifting of customers to other efficient suppliers as a result of production/operation interruptions.

DATA COLLECTION
This study attempt to find out Impact of Inventory Management Practice on Cost Reduction and Profitability of Holcim Cement Company (Lanka) Ltd with special reference to Galle branch. The researcher uses the Descriptive methods for the analysis of data, such as frequency, table etc. Primary data & secondary data were used on this study to gather sufficient information about the Inventory Management Practice of this Company.

SAMPLING DESIGN
Sample is one of the most important techniques used to collect the data to do the research study. In most practical situation the population will be large to carry out a complete survey and only a sample number will be examined. Holcim Cement Company PLC spread in Puttalam and Galle. The population includes 500 employees (Puttalam branch 400, Galle branch 100). Here population was Inventory Section in Holcim Cement Company (Lanka) Ltd. There are 5 executive level employees, 5 non-executive level employees & 62 Workers have been selected using Simple Random Sampling.

RESEARCH METHOD
Statements in the questionnaire will be prepared in accordance with the conceptualization model to support to the secondary data.

By using the Likert scale the data will be obtained.

Strongly Agree 05
By given these marks and by comparing all the statements, finally by service providers could find out the high, moderate and low effective level. Further Correlation analysis was carried out to find out the relationship between the Dependent Variable and Independent Variables and Regression model was applied to test how far the Inventory Management Practice had Impact on Inventory Cost. Coefficient of determination – $R^2$ is the measure of proportion of the variance of dependent variable about its mean that is explained by the independent or predictor variables.

CONCEPTUALIZATION FRAMEWORK

This frame shows the impotency of the effective Inventory Management Practice to achieve the company’s objectives.

(Source: Develop for research purpose)

Figure: 1

Conceptualization Framework for measuring relationship between Inventory Management Practice and Inventory Cost based on Primary data analysis.

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Conceptualization Framework for measuring the impact of Inventory Management Practice and Firm Profitability based on Secondary Data Analysis.

Here independent variables influence the dependent variable as shown in this model. These variables were divided into two groups, Independent and Dependent Variables. In this study dependent variables are, Inventory Cost & Profitability.

**HYPOTHESES**

- **Supply of Raw Material**
  
  $H_0 =$ There is no positive relationship between Supply of Raw Material and Inventory Cost  
  $H_1 =$ There is positive relationship between Supply of Raw Material and Inventory Cost

- **Material Handling**
  
  $H_0 =$ There is no positive relationship between Material Handling and Inventory Cost  
  $H_1 =$ There is positive relationship between Material Handling and Inventory Cost

- **Minimizing Wastage**

(Source: Develop for research purpose)

Figure: 2
H₀ = There is no positive relationship between Minimizing Wastage and Inventory Cost
H₁ = There is positive relationship between Minimizing Wastage and Inventory Cost

- Investment in Inventory
  H₀ = There is no positive relationship between Investment in Inventory and Inventory Cost
  H₁ = There is positive relationship between Investment in Inventory and Inventory Cost

- Finished Product Handling
  H₀ = There is no Positive Relationship between Finished Product Handling and Inventory Cost
  H₁ = There is Positive Relationship between Finished Product Handling and Inventory Cost

- Cost Reduction
  H₀ = There is no positive relationship between Inventory Management & Cost Reduction
  H₁ = There is positive relationship between Inventory Management & Cost Reduction

- Profitability
  H₀ = There is no positive relationship between Inventory Management & Profitability.
  H₁ = There is positive relationship between Inventory Management & Profitability

RESULTS AND DISCUSSION

Table 1: Correlation between overall variable with Inventory Cost
<table>
<thead>
<tr>
<th></th>
<th>Inventory Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suppy of Raw Materials</strong></td>
<td>Pearson Correlation .225</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) .116</td>
</tr>
<tr>
<td></td>
<td>N 50</td>
</tr>
<tr>
<td><strong>Material Handling</strong></td>
<td>Pearson Correlation .158</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) .272</td>
</tr>
<tr>
<td></td>
<td>N 50</td>
</tr>
<tr>
<td><strong>Minimizing Wastage</strong></td>
<td>Pearson Correlation .036</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) .802</td>
</tr>
<tr>
<td></td>
<td>N 50</td>
</tr>
<tr>
<td><strong>Investment in Inventory</strong></td>
<td>Pearson Correlation -0.104</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) .473</td>
</tr>
<tr>
<td></td>
<td>N 50</td>
</tr>
<tr>
<td><strong>Finished Product Handling</strong></td>
<td>Pearson Correlation -0.204</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) .154</td>
</tr>
<tr>
<td></td>
<td>N 50</td>
</tr>
<tr>
<td><strong>Inventory Cost Ratio</strong></td>
<td>Pearson Correlation 1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td></td>
<td>N 50</td>
</tr>
</tbody>
</table>

(Source: Survey Data)

Above table shows the Pearson correlation coefficient for Supply of Raw Material and Inventory Cost. The correlation coefficient shows 0.23. This value indicates that correlation is not significant at 0.05 level (2tailed) and implies that there is positive relationship between supply of raw material and inventory cost ($r = 0.23$). The computed $r = 0.23$ is lower than 0.05; therefore, accept null hypothesis and conclude that there is no positive relationship between Supply Raw Material and Inventory Cost.

Pearson correlation coefficient for material handling and inventory cost. The correlation coefficient shows 0.16. This value indicates that correlation is not significant at 0.05 level...
(2tailed) and implies that there is positive relationship between material handling and inventory cost \((r = 0.16)\). The computed \(r = 0.16\) is lower than 0.05; Therefore, accept null hypothesis and conclude that there is no positive relationship between Material Handling and Inventory Cost.

Pearson correlation coefficient for Minimizing Wastage and Inventory Cost. The correlation coefficient shows 0.036. This value indicates that correlation is not significant at 0.05 level (2tailed) and implies that there is positive relationship between Minimizing Wastage and Inventory Cost \((r = 0.04)\). The computed \(r =0.04\) is lower than 0.05; therefore accept null hypothesis and conclude that there is no positive relationship between Minimizing Wastage and Inventory Cost.

Pearson correlation coefficient for Investment in Inventory and Inventory Cost. The correlation coefficient shows -0.10. This value indicates that correlation is not significant at 0.05 level (2tailed) and implies that there is no positive relationship between Investment in Inventory and Inventory Cost \((r = -0.10)\). The computed \(r = -0.10\) is lower than 0.05; therefore accept null hypothesis and conclude that there is no positive relationship between Investment in Inventory and Inventory Cost.

Pearson correlation coefficient for Finished Product Handling and Inventory Cost. The correlation coefficient shows -0.20. This value indicates that correlation is not significant at 0.05 level (2tailed) and implies that there is no positive relationship between Finished Product Handling and Inventory Cost \((r = -0.20)\). The computed \(r = -0.20\) is lower than 0.05; therefore accept null hypothesis and conclude that there is no positive relationship between Finished Product Handling and Inventory Cost.

**Regression Analysis**

In Multiple Regressions analysis the whole set of variables will be used to find out the impact of Independent Variable on the Dependent Variable. \(R^2\) is the measure of proportion of variance of Dependent Variable about its mean that is explained by the Independent or
Predictor Variables (Hair et al as cited by Sivesan 2012).

**Table 2: Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.343(^a)</td>
<td>.118</td>
<td>.018</td>
<td>.29119</td>
</tr>
</tbody>
</table>

(Source: Survey Data)

According to the above table of regression analyse, the Researcher determines the relationship between dependent variable and independent variable. Above table Model summary, Adjusted R\(^2\) is 0.018. It means that there is a 1.8% of impact of the independent variables (Supply of Raw Material, Material Handling, Minimizing Wastage, Investment in Inventory and Finished Product Handling) on the dependent variable (Inventory Cost).

**Table 3: ANOVA table in the Regression Analysis**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>.499</td>
<td>5</td>
<td>.100</td>
<td>1.177</td>
<td>.336(^b)</td>
</tr>
<tr>
<td>1</td>
<td>Residual</td>
<td>44</td>
<td>.085</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4.230</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Survey Data)

According to the ANOVA Table in the Regression Analysis Significant p value is 0.336. It is higher than the significant level 0.05. Therefore Researcher can conclude that 1.8% of the impact in the significant level.

**Table 4: Coefficient of Independent Variables and Inventory Cost**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
</tbody>
</table>

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E-Mail: icbm@sjp.ac.lk | WEB: icbm.sjp.ac.lk
According to the above table Coefficient B value build positive relationship for Supply of Raw Material, Material Handling, and Minimizing Wastage, and negative relationship for Investment on Inventory and Finished Product Handling between Inventory Cost. Among those variables Supply of Material has highest relationship than others (0.27). Therefore when Supply of Raw Material increase one unit Inventory Cost increase by 27%. Although Supply of Raw Material has better relationship than other variable. But it’s not Strong relationship between Inventory Cost. There is a positive relationship between Material Handling and Inventory Cost (0.18). This is also not a strong relationship with the Inventory Cost. When Material Handling increases one unit, Inventory Cost increases by 18%.

According to coefficient table, Minimizing Wastage has positive relationship between Inventory Cost, and its poor relationship with the Inventory Cost. When considering other two variables have negative relationship between Inventory Cost. Investments in Inventory and Finished Product Handling have (0.14) and (0.20) respectively.

The estimated Regression Equation for the model is formulated as,

\[ Y = b_0 + b_1 (X_1) + b_2 (X_2) + b_3 (X_3) + b_4 (X_4) + b_5 (X_5) \]

\[ Y = 3.62 + 0.27 X_1 + 0.18 X_2 + 0.13 X_3 - 0.14 X_4 - 0.20 X_5 \]

Where,
Y = Inventory Cost  
X₁ = Supply of Raw Material  
X₂ = Material Handling  
X₃ = Minimizing Wastage  
X₄ = Investment in Inventory  
X₅ = Finished Product Handling

According to the output of the coefficient table 4.22 variables positive and negative B values. The meaning of B value is that the individual contribution of each variable to the model and degree of each independent variable affects the dependent variable. According to the output result, the researcher can find Inventory Cost increases with effect of Supply of Raw Material, Material Handling, Minimizing Wastage, Investment in Inventory, and Finished Product Handling. In case of Minimizing Wastage, Investment in Inventory, and Finished Product Handling haven’t strongly affected for Inventory Cost as this study.

SECONDARY DATA ANALYSIS

Profitability Ratio Analysis

Table 5: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.842ᵃ</td>
<td>.709</td>
<td>.476</td>
<td>6.90170</td>
</tr>
</tbody>
</table>

Source: Survey Data

According to the above table of regression analysis, the researcher determines the relationship between dependent variable and independent variable. In the table 4.23 Model summary, R square is 0.709. It means that there is a 70.9% impact of the independent variables Material Purchasing Cost Ratio, Material Transporting Cost Ratio, Material Operating Cost Ratio and Productivity Ratio of Clinker Usage on the dependent variable Firm Profitability.

Table 6: ANOVA in the Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
</table>
According to ANOVA Table in the Regression Analysis Significant p value is 0.127. It is higher than significant level 0.05. Therefore can conclude that 70.9% of the impact in the significant level.

Table 7: Correlation between overall variable with Profitability

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
<th>Profitability</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPC</td>
<td>-0.285</td>
<td>.425</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTC</td>
<td>-0.526</td>
<td>.118</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOC</td>
<td>0.565</td>
<td>.088</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU</td>
<td>-0.532</td>
<td>.114</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above table shows the Pearson correlation coefficient for overall independent variable of firm profitability. The correlation coefficient of Material purchasing cost, Material Transporting Cost, Material Operating Cost and Productivity usage of Clinker Usage shows -0.285, -0.526, 0.565, and -0.532 respectively. These values indicate that correlation is not significant at 0.05 levels (2tailed) and implies that there is no positive relationship between overall Variable with
Firm profitability. But material Operating Cost has positive relationship with firm profitability. \((r = 0.565)\). The computed \(r\) is overall variables is lower than \(0.05\); therefore accept null hypothesis and conclude that there is no positive relationship between inventory management and profitability.

After testing overall variable hypothesis it was discovered that;

There is no relationship between Inventory Management and Cost Reduction \((r = 0.336, P > 0.05)\).

After testing overall variable hypothesis it was discovered that;

There is no relationship between Inventory Management and Profitability \((r = 0.127, P > 0.05)\).

According to the Augustine (2013) Explained there is highly positive correlation between good inventory management and organizational profitability\((r = .843, P<.05)\). The researcher was found that the organizations under study at times run into problems of inadequate stock of inventory which consequently affected their production, leading to scarcity of one brand of their products or the other thereby affecting their profitability.

**CONCLUSION**

According to the findings and discussions researcher can understand the level of Effective Inventory Management of Holcim Cement Company (Lanka) Ltd in Galle Plant. Here, when consider the average mean value of overall variables (Supply of Raw Material, Material Handling, Minimizing Wastage, Investment in Inventory and Finished Product Handling) shows as 1.27 which is between the ranges of \((01 \leq X_i \leq 2.5)\). So, it is under the lower effective level.

When we consider the statements 1-20 which had been given following Conclusions;

1) Supply of Raw Material
The mean value of supply of raw material show as 1.20 which is between the ranges of \((01 \leq X_i \leq 2.5)\). So it is under the low effective level Inventory management with supply of raw material. When consider the statement 1-4 most of the employees are dissatisfy with the statement. Because of big proportion of money to transport the raw material, big proportion of money to buy raw material, and huge time for gaining the raw material.

2) Material Handling

The mean value of material handling show as 1.36 which is between the ranges of \((01 \leq X_i \leq 2.5)\). So, it is under the low effective level Inventory management with material handling. When consider the statement 5-8 most of the employees are dissatisfy with the statement. Because of there are no sufficient workers for material handling, new machines and techniques are not use for material handling process, there are not sufficient raw materials in the storage.

3) Minimizing Wastage

The mean value of minimizing wastage show as 1.28 which is between the ranges of \((01 \leq X_i \leq 2.5)\). So it is under the low effective level Inventory management with minimizing wastage. When consider the statement 9-12 most of the employees are dissatisfy with the statement. Because of there is wastage loading and unloading raw Material, there are wastage during the raining period, careless workers and not sufficient storage facilities.

4) Investment in Inventory

The mean value of investment in inventory show as 1.26 which is between the ranges of \((01 \leq X_i \leq 2.5)\). So, it is under the low effective level Inventory management with investment in inventory. When consider the statement 13-16 most of the employees are dissatisfy with the statement. Because of there are long payback period, and employees are not satisfy with the company returns.

5) Finished Product Handling
The mean value of finished product handling shows as 1.27 which is between the ranges of \((01 \leq X_i \leq 2.5)\). So it is under the low effective level Inventory management with finished product handling. When consider the statement 17-20 most of the employees are dissatisfied with the statement. Because of there are lot of complains from the agents, product quality is poor.  

According to the Secondary data analysis, Model summary, R square is 0.709 It means that there is a 70.9% of impact of the independent variables Material Purchasing Cost Ratio, Material Transporting Cost Ratio, Material Operating Cost Ratio and Productivity Ratio of Clinker Usage on the dependent variable Firm Profitability. According to ANOVA Table in the Regression Analysis Significant p value is 0.127. It is higher than significant level 0.05. Therefore can conclude that 70.9% of the impact in the significant level.

The correlation coefficient of Material purchasing cost, Material Transporting Cost, Material Operating Cost and Productivity usage of Clinker Usage shows -0.285, -0.526, 0.565, and -0.532 respectively. These values indicate that correlation is not significant at 0.05 levels (2tailed) and implies that there is no positive relationship between overall Variable with Firm profitability.

**The solutions for the problems of Supply of Raw Material**

1. Enter to the trade agreement with the closest countries to the Sri Lanka for acquiring the raw material.
2. Start the new excavation for searching out the new raw materials which are stayed in Sri Lanka.
3. Take action to get cost benefits by expanding the capacity area of the port jetty for the vast amount of bulk of raw material ships which are arriving from the close foreign countries, e.g. India.

**The solutions for the problems of Material Handling**

1. Repair and maintain the preventing machines and equipment’s within the company
and purchase new machines for production process.

2. Launch the special programs to motivate the employees of the company, by introducing and offering incentives and scholarship for the employee’s children, and bonus and insurance policies for employees.

3. Recruit new qualified employees from the university, technical college, and job agencies.

4. Reducing cycle time of inventory and balance inventory level.

5. The company shall diversify their inventory system, to suit specific needs of production.

The solutions for the problems of Minimizing Wastage

1. Expand the places for storing the Clinker and Gypsum and cover with polythene.

2. Use new system for loading and unloading raw material and goods.

3. Make awareness on employees regarding the accident which are occurring at the work station and give advices to them.

4. Offer special incentives for the employees who perform their duty with responsibility and without any accident or error in the working process.

5. Management shall closely monitor and manipulate their inventory system to maintain production Consistency for organizational profitability and effectiveness.

The solutions for the problems of Investment in Inventory

1. Selling the finished goods at cash on hand and cheques and collect money on credit sales within short times.

2. Make a deposit on proportion of profit for use at the emergency and special circumstances arising with the company.

3. Management should consider on both short term and long term survival of the company. They mostly used to tide up their cash flows on non-current assets (long term) which give high return. This may cause to insufficient inventory management practices, liquidity and production issue (short term). Therefore the strategies and plans implemented by the top management should consider these issues.

The solutions for the problems of Finished Product Handling
1. Introduce the special programs to encourage the distributing dealers, offering foreign tours and gift vouchers.
2. Establish a new branch at the area to satisfy the demand for the product.
3. By effectively using above four variables (supply of material, material handling, minimizing wastage, and investment in inventory) company can achieve the target with the quality product.

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Impact of Repo and Reverse Repo on Interest Rates: Evidence from Nepal

Risal, H.G., Kathmandu University, Nepal

ABSTRACT

‘Cash is king’ in the world of business as insufficient cash leads to several problems leading to bankruptcy. The reason behind this age-old saying is very clear as no business can operate smoothly without adequate flow of cash. Moreover, the entire financial system cannot function without adequate flow of cash. On the contrary, excess cash or liquidity overflow create problems such as high inflation, reduction in market interest rates, investment in unproductive sectors, undesired life style and unfair activities. Hence, central banks and other policy makers have been involved in activities to maintain adequate flow of cash in the economy. The monetary policy and their tools for open market operations (OMO) are famous worldwide to maintain adequate liquidity. Central banks offer repos during the liquidity crunch in reducing interest rate whereas reverse repo is offered to mop-up excess liquidity hence protect the interest rates. This probably is the first systematic attempt to solve the problems of undesired level of interest rates and liquidity despite continued effort of Central Banks. This research uses time series data from 2007 to 2016 in establishing the causal relationship between open market operations using repo and reverse repo and the interest rates. For the purpose, this research begins with ordinary least square (OLS), deals with the endogeneity issues using identification strategies leading to the final robust model.

The main finding of this research is that the volume of repos issued one time or, just couple of times alone cannot reduce the interest rates during a liquidity crunch. Hence, maturity period of repos must be considered to reduce the interest rates at desired level as explained by the coefficient of interaction variables ‘days’ and ‘repos’. Similarly, longer maturity or the frequent reverse repo used to mop-up the liquidity can protect the interest rates as explained by the coefficient of interaction variable ‘days’ and ‘reverse repo’. Above findings of this research makes a tangible recommendation to policymakers while supplying repos and reverse repos.

Keywords: Repo, Reverse Repo, Open Market Operations (OMO), Interest Rates and Nepal Rastra Bank (NRB).
INTRODUCTION

Repos have been very popular worldwide during the global financial crises of 2007-2009. Shadow banking and their components such as money market mutual funds, securitization and run on the repos are major culprits of the crisis, Gorton et al. (2010). Run on the repo and increased haircuts caused deleveraging and banks were forced to liquidate the collateral, Gorton & Metrick (2009). Although repos are useful interbank borrowing tools, it is suggestive to take precautions before making trust on any innovative tools in banking. The context considered for the research is completely different in case of Nepal as no existing laws and policies allows for securitization.

In Nepal, repo and reverse repo are simply practiced as money market management instruments used by the central bank. Fed also uses repos in open market operations, which affect the supply of reserve balances in the banking systems thereby influence short term interest rates, Fleming et al. (2010). With an objective to maintain, the adequate flow of liquidity Nepal Rastra Bank (NRB) uses repo and reverses repo. Whenever there is need of liquidity or cash injection in the market, NRB offers the repos through competitive bidding system. Its objective is to help the financial system and market participants to have money for their operation and reduce the liquidity crunch. Although, commercial banks, development banks and finance companies are eligible to participate in it to get the short-term loan through treasury securities; especially limited commercial banks offering higher rates will get the money. This way, based on the total liquidity availability, NRB offers the repos frequently.

Ultimate goal of repos is to reduce the interest rate in the market and facilitate the smooth financial transaction. In contrast to repos, reverse repos are issued by NRB in the period of excess liquidity. The transaction of reverse repos will be done in similar way as in case of repo. The data available from public debt management shows more than two times transactions of reverse repo than that of the repos. Reverse repos have been practiced as a liquidity mop-up techniques since 2007 in Nepal. The interbank market also provides an alternative source to central bank repos for short-term funding, Bindseil et al. (2009).

Law of ‘Demand and Supply’ is one of the fundamental theories of economics. When there is excess liquidity, interest rate declines whereas, interest rates goes up in the period of liquidity crunch. Hence, repo and reverse repos are the intervention used by NRB to control
the unexpected volatility in the market. This research will evaluate the performance of repos and reverse repos using a natural experiment in context of Nepal.

This research probably provides first systematic research to model the relationship between interest rate and repos. This research attempts to make a huge contribution to the existing literature in the field of repos, liquidity and interest rates. Most of the existing studies analyze U.S. repos (Gorton & Metrick, 2010), whereas this research makes an in-depth analysis of an emerging economy like Nepal.

Neupane (2013) has shared that repo and reverse repo may have lag effect on interbank rate so this research serves as a testimony. Interbank rate decreases after the introduction of repo and increases after the introduction of reverse repo. Introduction of repo by the NRB increases the supply of liquidity, which in turn, eases the demand-supply gap for liquidity and drives interbank borrowing rate (IBR) to fall. On the other hand, reverse repo mop-ups the liquidity, which tends to increase the interbank rate. In addition, there are factors like government spending, seasonal factors, and festivals etc. that also force IBR to rise or fall.

This research has a potential to make major contribution to the policymakers in Nepal and other countries with similar practice and development stage of growth. Central banks at the time of formulation of monetary policies, and while injection or mop-up of cash can take some cautions based on the findings of this research. Similarly, the dealers and associations may also consider for their planning and execution.

**RESEARCH QUESTION AND OBJECTIVES**

With an aim of maintaining smooth flow of liquidity and appropriate interest rates in the market; central bank offers ‘repo’ and ‘reverse repo’ as an intervention tool through their open market operation department. Hence, research question here is: ‘Are repos helping to maintain smooth flow of liquidity and appropriate level of interest rates?’

With above research question, the purpose of this research is to evaluate the performance of repo and reverse in the context of Nepal. Their performance will be measured using interest rates. Out of several rates available, this research considers interbank borrowing rate for the analysis. Following are the objectives of this research:

i. To examine the influence of increased volume of repo issued by NRB during
high liquidity crunch, on inter bank borrowing rate (interest rate).

ii. To examine the influence of increased volume of reverse repo issued by NRB during excess liquidity in the market, on inter bank borrowing rate (interest rate).

For the purpose, this research begins with review of literatures on repo and reverse repos, existing practices, latest monetary policies and their provisions regarding repos and entire open market operations and empirical studies in the similar field. After which the data collected from public debt department of Nepal Rastra Banks since 2007 to 2016 has been analyzed using a robust model. To come up with the robust results, the research begins with the ordinary least square (OLS), deals with the Endogeniety issues using identification strategies leading to the final model. Finally, the conclusion and discussions are presented based on the findings of the research.

REVIEW OF LITERATURE

An Overview of Repo and Reverse Repo

The repo and reverse repo are simple words as lending and borrowing of money against certain qualified securities. Generally, the securities used as collateral are treasury bills or government bonds etc. The important thing is the practice adopted by the country or the facilitator and different stakeholders. Commercial banks and other financial institutions, which enter into the repo and reverse repo to meet their short term cash requirements. However, central bank of the country must decide whether to use them as a purely money market instruments or to allow banks and financial institutions for interbank transactions.

Ascertaining the origin of repo is very difficult, Lumpkin (1987). Studies suggest that repos (RPs) date back to the 1920s, about the time that the federal funds market evolved. Other sources state that government securities dealers initiated the use of RPs after World War II as a means of financing their positions. There is general agreement for many years that almost exclusively government securities dealers and large money center banks used RPs. Since late 1960s however, the number and types of participants in the RP market has grown considerably, Lumpkin (1987).
A repo is secured against collateral without pledging like traditional collateral, but sold and then repurchased at maturity. A repo is a sale of securities coupled with an agreement to purchase the same securities on a later date, typically at a higher price, Fleming et al. (2010). Ownership gives the lender stronger control over the collateral, which makes repo the preferred means of lending for risk-averse cash investors. On the other hand, the lower risk on repo makes it a source of cheaper financing and greater leverage for borrowers.

Consequently, repo has become the primary source of funding for leveraged traders such as proprietary desks and hedge funds. Repo can take the form of either repurchase agreements or buy/sell-backs, which does the same job with legal and operational differences. Repos are used to borrow cash and securities in order to cover short positions. Repo used in this way is comparable to securities lending. For securities having strong demand, the repo market will offer cheap cash in exchange. Such securities are said to be ‘special’. The interest given up by the buyer of a ‘special’ in the repo market is equivalent to the fee paid by the borrower of the same securities in the Securities lending market, Euroclear (March 2009). A repo rate is similar to interest rate on loan collateralized by a specific security and it is called ‘special’ when it is significantly below prevailing riskless rates, Duffie (1996).

Repo to one party is always the reverse repo to other party. It is repo for one who sells the eligible collateral today and promises to buy them back after certain time. The same transaction is reverse repo to counterpart investor who gives money, buys the securities and agrees to sell them back in future date at an agreed upon price, Jordan & Jordan (1997). Major dealers commonly use reverse RPs to establish or cover short positions and to obtain specific issues for delivery to customers. This practice is similar to securities borrowing arrangements in which the dealer obtains securities in exchange for funds, other securities, or a letter of credit. Reverses are typically cheaper, however, and provide greater flexibility in the use of collateral, in that they can be arranged for fixed maturities while borrowing arrangements usually may be terminated on a day's notice at the option of the securities lender, Lumpkin, (1987).
For about a decade, repo and reverse repo have been tremendously used to inject liquidity during crunch and mop-up the excess liquidity in the financial markets. The maximum liquidity injected using repo was during 2009-2010 whereas, the maximum liquidity mopped-up using reverse repo was during 2014. In the recent period, reverse repo is used substantially to mop-up the liquidity but the introduction of deposit collection facility has caused the reduction. Besides, it shows the excess liquidity mopped-up by NRB using reverse repo is more than the double of repo used to inject liquidity.

**Practice of Open Market Operation (OMO) in Nepal:** The open market operations (OMO) are major instrument of monetary control around the world, Shrestha (2005). The primary objective of central bank using OMO is to maintain appropriate level of liquidity in the country. The NRB stared OMO by auctioning Treasury bill since November 1988. The 91-day T-bills auction system was introduced to mop-up excess liquidity in the banking system, which also discovered market oriented interest rate. OMO is guided by the Rules on Public Debt Management, 2002, led by the monetary policy.
In July 1989, 182-day T-bills were introduced to mop up the excess liquidity but it remained highly irregular until the end of 1991 and they were auctioned only twice a month. Due to the excess liquidity in the market, NRB issued Bonds in December 31, 1991 as an effort to mop up the excess liquidity, which helped correcting the negative interest rate. After which the 182-day T-bills were dropped and 364-day T-bills were introduced in July 1994 as per NRB reports.

NRB has also reported about introduction of 28-day and 182-day T-bills since September 11, 2004. The issue calendar was first ever publicized through the bank’s website on August 20, 2003 with all pertinent information, Shrestha (2005). Until the announcement of monetary policy on July 19, 2004 for fiscal year 2004/2005 NRB used to price repo and outright purchase/sale were determined by the NRB. With the arrival of new policy, NRB adopted a new auction arrangement for outright sale/purchase, repo/reverse repo to make it market oriented and witnessed a frequent and efficient OMO during the adverse market moments.

Under the Liquidity Monitoring and Forecast Framework (LMFF), NRB has intensively started to concentrate on OMO since 2004. Until July 2004, NRB used to operate the OMO taking the initiatives from commercial bank but then all commercial banks were given equivalence and NRB started to take initiative at their own as indicated by the LMFF. Initially, NRB has defined the OMO instruments as outright sale/purchase, repo/reverse repo and recently added one more instrument called the deposit collection and planning to come up with NRB bonds.

The LMFF has been made operational since fiscal year 2004/05. The LMFF supports open market operation (OMO) in order to monitor and forecast medium-term and short term (weekly) liquidity position of the economy. The quantity of outright sale or purchase and repo or reverse repo auctions in the secondary market is determined as per the recommendation of LMFF. Since fiscal year 2008/09, development banks and finance companies were also allowed to participate in open market operation (OMO).

It is observed that the NRB has always put on serious effort to maintain appropriate amount of liquidity in the market. Hence, their effort on OMO has helped the market to determine an appropriate level of interest rate, well functioning of banking and financial system, increased
profitability, reduced risk, controlled the money supply in unproductive sector and stopped the chances of capital flight and unfair activities

**Latest practice and policy of NRB**

As of now the most popular and high-frequently used instruments are repo and reverse repo. It runs OMO as per the NRB OMO sub-directives, 2071 B.S. (2014/15) under the NRB act 2058 B.S. (2001/02) and the Monetary Policy. Following are the key highlights of monetary policy in relation to OMO. On January 07, 2016, NRB has issued a circular to all participants of OMO to enter into the Master Repurchase Agreement utmost by February 12, 2016 to become eligible to take part in.

Due to very high liquidity in the market, NRB has also introduced deposit collection facility to mop-up the excess cash. Major participants are commercial banks and the maturity period is 90 days whereas the reverse repo will mature in 7 days. The total volume of deposit collection since July 2015 to May 2016 is almost double of Reverse Repo. Besides, seven outright sale transactions took place during 2072 B.S. (2015/16) maturity period ranging from 54 days to 194 days.

**Provisions of Monetary Policies**

To understand and evaluate the performance of repo and reverse repo few recent monetary policies have been reviewed as:

**Monetary Policy (2013/14) has made the following changes in Open market operations:** Due to comfortable liquidity situation in BFIs, the maximum period of repo and reverse repo auction under OMOs has been reduced to 21 days from existing 28 days.

In order to make OMO more effective for short-term liquidity management, online bidding system has been introduced in the auction of treasury bills and development bonds. Besides, OMO bylaws has been formed and implemented. In addition, development of necessary infrastructure to introduce primary dealer system in making secondary market more active for government securities has been implemented.

Monetary policy (2014/15) and their highlights regarding open market operations: Due to higher deposit mobilizations by (BFIs) compared to low credit flow, resulting from the higher level of remittance inflows and net services income from the beginning of 2013/14, excess
liquidity situation has been seen in the banking system. Anticipating the likely pressure on inflation from monetary expansion as reflected by low short-term interest rates, excess liquidity of BFIs was mopped up through open market operations (OMOs) in the review year. In addition, NRB, Open Market Operation Bylaws, 2014 has been brought into implementation in order to implement OMO purposefully.

The NRB has been using OMOs as a principal instrument for keeping monetary aggregates and interest rates at a desirable level. In 2013/14, total liquidity of NPR 611.0 billion was mopped up. Out of which, NPR 602.5 billion was mopped up through reverse repo of 7 to 14 days and NPR 8.5 billion was mopped up through outright sale auctions. In the previous year, total liquidity of NPR 8.5 billion was mopped up.

Monetary Policy (2015/16) with major highlights: The NRB has been using Open Market Operations (OMOs) as a major instrument for maintaining monetary aggregates and interest rates at a desired level. In 2014/15, the NRB absorbed liquidity of NPR 155.0 billion through deposit auction, NPR 315.80 billion through reverse repo auction and NPR 6.0 billion through outright sale auction on cumulative basis. In the previous year, NPR 602.50 billion was mopped up through reverse repo and NPR 8.50 billion through outright sale auction.

RESEARCH METHODOLOGY AND DATA ANALYSIS

Research Methodology

This research is designed as correlational analysis showing causal relationship. All the data used in this research have been collected through secondary sources. The research has taken into account of available open market operations statistics from the reports of public debt management department of NRB. The time period covered here is since 2007 until May 2016 and the instruments covered are repo and reverse repos with their volume, interest rates, maturity period and the date of issue.

The dependent variable here used is interbank borrowing rate (IBR) and the independent variables are volume of repo and reverse repo. Further maturity period in days, interest rates, lags and 91 days T-bill rates have been used to address the Endogeniety issues.

Regarding the model, a diagnostic approach has been used and the robust model has been found. Starting with OLS and looking at significance level, further expansion and modification has been made been made to solve the Endogeniety issues.
The model used for this research is a robust one as an outcome of systematic diagnosis.

\[ IBR_t = \alpha + \beta_1 IBR_{t-1} + \beta_2 T\text{-BILL RATE}_t + \beta_3 \text{REPO}_t + \beta_4 \text{REVERSE REPO}_t + \beta_5 \text{REPO}_t \times \text{Maturity} + \beta_6 \text{REVERSE REPO}_t \times \text{Maturity} + \epsilon \]

Data Analysis

To establish the causal relationship between repo / reverse repo and interest rates; a rigorous process has been completed with different steps and models. First, it starts with OLS for time series data analysis.

**First Proposed Model**: The first proposed model for the research simply shows the relationship between repo and reverse repo to the interbank borrowing rate.

\[ IBR_t = \alpha + \beta_1 \text{REPO}_t + \beta_2 \text{REVERSE REPO}_t + \epsilon \]  

**Table 1: Outcome of First Proposed Regression Equation**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of obs = 289</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
<td>----</td>
<td>-------</td>
</tr>
<tr>
<td>F (2, 286) = 143.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>2231.81932</td>
<td>2</td>
<td>1115.90966</td>
</tr>
<tr>
<td>Prob &gt; F = 0.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>2231.2896</td>
<td>286</td>
<td>7.8017119</td>
</tr>
<tr>
<td>R-squared = 0.5001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4463.10892</td>
<td>288</td>
<td>15.496906</td>
</tr>
<tr>
<td>Root MSE = 2.7932</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| IBR | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|-----|-------|-----------|---|-----|----------------------|
| REPOAMT | 1.43e-09 | 1.02e-10 | 13.96 | 0.000*** | 1.23e-09 - 1.63e-09 |
| REVREPOAMT | -1.46e-10 | 2.60e-11 | -5.61 | 0.000*** | -1.97e-10 - 9.45e-11 |
| _cons | 2.521 | 0.2156 | 1 | 0.000** | 2.09686 - 2.94577 |

***significant at p<0.001; **significant at p<0.005; *significant at p<0.05.
The probability of proposed hypothesis being rejected is zero signifies that chosen variables repo and reverse repo are appropriate. However, the R-squared value is 0.5001 signifies the model to be adequately significant. Hence, further introduction of variables maybe appropriate.

Table 2: Variance Inflation Factor (VIF)

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPOAMT</td>
<td>1.07</td>
<td>0.933072</td>
</tr>
<tr>
<td>REVREPOAMT</td>
<td>1.07</td>
<td>0.933072</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.07</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Correlation Matrix of Coefficients of Regression Model

<table>
<thead>
<tr>
<th>e(V)</th>
<th>REPOAMT</th>
<th>REVREP~T</th>
<th>_cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPOAMT</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REVREPOAMT</td>
<td>0.2587</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>_cons</td>
<td>-0.4662</td>
<td>-0.5549</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Looking at the VIF and correlation coefficient, above relationship can be considered for the purpose of research. VIF less than 4 means there is no issue of multicollinearity.

Second Proposed Model: The first proposed model simply considers the volume of repo issued by central bank during the liquidity crunch and issue of reverse repo at the time of excess liquidity. Hence, it may not be sufficient in maintaining appropriate interest rates; the maturity period of repo and reverse repos should make a substantial contribution. Along with the maturity period of repos interaction with issue amount have been added in the first model.

\[
IBR_t = \alpha + \beta_1 REPO_t + \beta_2 REVERSE REPO_t + \beta_3 \text{Maturity} + \beta_4 \text{Maturity} \times \text{REPO}_t \times \text{Maturity} + \epsilon \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (2)
\]
Table 4: Outcome of Second Proposed Regression Equation

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs = 289</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2275.25122</td>
<td>4</td>
<td>568.812805</td>
<td>F (4, 284) = 73.84</td>
</tr>
<tr>
<td>Residual</td>
<td>2187.8577</td>
<td>284</td>
<td>7.7037243</td>
<td>Prob &gt; F = 0.0000</td>
</tr>
<tr>
<td>Total</td>
<td>4463.10892</td>
<td>288</td>
<td>15.496906</td>
<td>R-squared = 0.5098</td>
</tr>
</tbody>
</table>

Adj R-squared = 0.5029

<table>
<thead>
<tr>
<th>IBR</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPOAMT</td>
<td>2.05e-09</td>
<td>3.01e-10</td>
<td>6.81</td>
<td>0.000**</td>
<td>1.46e-09 - 2.64e-09</td>
</tr>
<tr>
<td>REVREPOAMT</td>
<td>-2.36e-10</td>
<td>1.00e-10</td>
<td>-2.36</td>
<td>0.019*</td>
<td>-4.33e-10 - 3.88e-11</td>
</tr>
<tr>
<td>Days_REPO</td>
<td>-2.40e-11</td>
<td>1.10e-11</td>
<td>-2.18</td>
<td>0.030*</td>
<td>-4.58e-11 - 2.30e-12</td>
</tr>
<tr>
<td>Days_REVREPO</td>
<td>1.30e-11</td>
<td>1.36e-11</td>
<td>0.96</td>
<td>0.337</td>
<td>-1.37e-11 - 3.97e-11</td>
</tr>
<tr>
<td>_cons</td>
<td>2.466728</td>
<td>.2156062</td>
<td>11.44</td>
<td>0.000**</td>
<td>2.042339 - 2.891117</td>
</tr>
</tbody>
</table>

**significant at p<0.001; **significant at p<0.005; *significant at p<0.05.

Even after introduction of interaction dummies, the R-squared value has not been significantly increased. Besides, the p-value of interaction of maturity period of reverse repo and its volume 0.337 signifies the probability of proposed hypothesis being wrong to be 33.7% whereas all other variables are significant at 5%.

Table 5: Variance Inflation Factor (VIF)

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>REVREPOAMT</td>
<td>16.16</td>
<td>0.061896</td>
</tr>
<tr>
<td>Days_REVREPO</td>
<td>16.15</td>
<td>0.061910</td>
</tr>
<tr>
<td>REPOAMT</td>
<td>9.37</td>
<td>0.106766</td>
</tr>
<tr>
<td>Days_REPO</td>
<td>9.22</td>
<td>0.108450</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>12.72</td>
<td></td>
</tr>
</tbody>
</table>
It can be seen that the VIF in all cases are not at the acceptable level signifies that the proposed model number 2 may not be enough to justify the proposed research.

Table 6: Outcome of Second Proposed Regression Equation with Heteroskedasticity

| Robust                  | Coef.     | Robust Std. Err. | t    | P>|t|   | [95% Conf. Interval] |
|-------------------------|-----------|------------------|------|-------|----------------------|
| REPOAMT                 | 2.05e-09  | 3.16e-10         | 6.49 | 0.000***| 1.43e-09          | 2.67e-09          |
| REVREPOAMT              | -2.36e-10 | 6.87e-11         | -3.43| 0.001***| -3.71e-10         | -1.01e-10         |
| Days_REPO               | -2.40e-11 | 1.20e-11         | -2.00| 0.046*   | -4.77e-11         | -3.79e-13         |
| Days_REVREPO            | 1.30e-11  | 9.57e-12         | 1.36 | 0.174*   | -5.79e-12         | 3.19e-11          |
| _cons                   | 2.466728  | .2447084         | 10.08| 0.000*** | 1.985055          | 2.9484           |

***significant at p<0.001; **significant at p<0.005; *significant at p<0.05.

Even after making it robust to heteroskedasticity not improving the significance of model and the negative coefficient of reverse repos and positive coefficient of the repos confirms the issues related to Endogeniety to be addressed.

Endogeniety Issues

Although three of the proposed variables seem to be significant, the positive coefficient of repo and negative coefficient of reverse repo are against the set priori. As a priori, when there is liquidity crunch, central bank issues the repos to maintain the moderate liquidity, which must be able to reduce the interest rate; the reverse is applicable with reverse repo.

Above regression result, especially the coefficients of both repo and reverse repo along with their interaction dummies confirm the Endogeniety issue. The possible issue here can be
omission of variables, which causes changes on interbank borrowing rate more than that of repos. Further to omission, simultaneity may also a problem since central banks also consider interbank rates along with liquidity available in the market while offering the repo and reverse repo. Besides, the central banks may not fill the necessary cash required during liquidity crunch and mop-up all excess cash from the market. As a result, the impact of repo and reverse repo may not be seen clearly.

Neupane S. (2013) in his research shows an interaction of daily weighted average interest rate (IBR), repo and reverse repo rate of Nepali financial markets. The repo and reverse repo rate are the rate determined by the auction system of the NRB under its open market operation. However, interbank rate is market-determined rate. All three rates IBR, repo, and reverse repo rate follow the same trend. Interbank rate is high when repo rate is high. On the other hand, interbank rate is low when reverse repo rate is low.

If the basic law of demand and supply follows in Nepal’s money market and supply of repo volume decreases the repo rate then low or no supply increases then there exists negative relationship between repo rate and repo issued by NRB. In Neupane’s observation, interbank, repo and reverse repo rates were found to move together which further can be considered as a basis of Endogeniety issues to be prevalent in our model.

**Identification Strategies**

To address the issues related with multicollinearity, autocorrelation, omission of variables and simultaneity, lag of IBR has been introduced as an Instrument Variable (IV). It comes from the theory and technical analysis that the yesterday’s IBR causes the today’s IBR. Hence, it can be the one major contributor in place of added interaction variables above.
Table 7: Outcome of Second Proposed Regression Equation with IV

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs = 288</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F (3, 284) = 681.76</td>
</tr>
<tr>
<td>Model</td>
<td>3914.7874</td>
<td>3</td>
<td>1304.92913</td>
<td>Prob &gt; F = 0.0000</td>
</tr>
<tr>
<td>Residual</td>
<td>543.594227</td>
<td>284</td>
<td>1.91406418</td>
<td>R-squared = 0.8781</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adj R-squared = 0.8768</td>
</tr>
<tr>
<td></td>
<td>4458.38163</td>
<td>287</td>
<td>15.5344308</td>
<td>Root MSE = 1.3835</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IBR</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>lagofIBR</td>
<td>.8739056</td>
<td>.0294921</td>
<td>29.63</td>
<td>0.000***</td>
<td>.8158548 .9319565</td>
</tr>
<tr>
<td>REPOAMT</td>
<td>1.68e-10</td>
<td>6.63e-11</td>
<td>2.54</td>
<td>0.012*</td>
<td>3.78e-11 2.99e-10</td>
</tr>
<tr>
<td>REVREPOAMT</td>
<td>-2.04e-11</td>
<td>1.35e-11</td>
<td>-1.51</td>
<td>0.132*</td>
<td>-4.71e-11 6.19e-12</td>
</tr>
<tr>
<td>_cons</td>
<td>.3187316</td>
<td>.1300894</td>
<td>2.45</td>
<td>0.015*</td>
<td>.0626698 .5747935</td>
</tr>
</tbody>
</table>

***significant at p<0.001; **significant at p<0.005; *significant at p<0.05.
Table 8: Variance Inflation Factor (VIF)

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>lagofIBR</td>
<td>2.02</td>
<td>0.493897</td>
</tr>
<tr>
<td>REPOAMT</td>
<td>1.83</td>
<td>0.546140</td>
</tr>
<tr>
<td>REVREPOAMT</td>
<td>1.19</td>
<td>0.843196</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.68</td>
<td></td>
</tr>
</tbody>
</table>

It can be seen that the results have been improved drastically after introducing the IV. The R-squared value has been increased to 0.8781. Further, it passes the multicollinearity test through the VIF test.

The graph below shows the Interbank-borrowing rate (IBR) over the years. The IBR is highest during 2010 when NRB has supplied sufficient amount of repos to control the interest rate and maintain required level of liquidity. Hence, higher IBR causes supply need of repo hence adequate supply of repos should be able to reduce the interbank rate. This two-way relationship has been addressed using the lag of IBR, which causes more than that of the repo or the reverse repos.

![IBR (%)](image_url)

Figure 2: Interbank Borrowing Rate over the years
The Final Model and Analysis

Based on the identification strategies, final model used for the analysis has been found as:

\[ IBR_t = \alpha + \beta_1 IBR_{t-1} + \beta_2 T\text{-BILL RATE}_t + \beta_3 REPO_t + \beta_4 REVERSE\ REPO_t + \beta_5 \ REPO_t \times Maturity + \beta_6 REVERSE\ REPO_t \times Maturity + \epsilon \] .............. (3)

The model uses the lag effect of daily IBR and introduces the 91 days T-bill rate as an omitted variable, which has direct relationship with the IBR. When T-bill rate increases, commercial banks also tend to increase their interbank rates and vice-versa. Further, to explain the time factor date variable (interaction of maturity with volume) has been added.

Table 9: The Result Summary from the Final Model

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>Robust Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>lagofIBR</strong></td>
<td>.6741659</td>
<td>.0745655</td>
<td>9.04</td>
<td>0.000***</td>
<td>.5273881 .8209437</td>
</tr>
<tr>
<td><strong>TBILLRATE</strong></td>
<td>.3003244</td>
<td>.0998471</td>
<td>3.01</td>
<td>0.003**</td>
<td>.1037812 .4968677</td>
</tr>
<tr>
<td><strong>REPOAMT</strong></td>
<td>3.39e-10</td>
<td>1.74e-10</td>
<td>1.94</td>
<td>0.053*</td>
<td>-4.20e-12 6.81e-10</td>
</tr>
<tr>
<td><strong>REVREPOAMT</strong></td>
<td>-2.25e-11</td>
<td>4.03e-11</td>
<td>-0.56</td>
<td>0.578</td>
<td>-1.02e-10 5.69e-11</td>
</tr>
<tr>
<td><strong>Days_REPO</strong></td>
<td>-9.75e-12</td>
<td>6.11e-12</td>
<td>-1.60</td>
<td>0.112</td>
<td>-2.18e-11 2.28e-12</td>
</tr>
<tr>
<td><strong>Days_REVREPO</strong></td>
<td>2.25e-12</td>
<td>5.62e-12</td>
<td>0.40</td>
<td>0.690</td>
<td>-8.82e-12 1.33e-11</td>
</tr>
<tr>
<td><strong>_cons</strong></td>
<td>.0955111</td>
<td>.1176815</td>
<td>0.81</td>
<td>0.418</td>
<td>-.1361382 .3271604</td>
</tr>
</tbody>
</table>

***significant at p<0.001; **significant at p<0.005; *significant at p<0.05.
Here in the result table, model used seem to be appropriate one. The R-squared value 0.8900 explains that most of the independent factors causing changes on IBR have been considered. However, the p values for reverse repo amount, its interaction with maturity period in days and interaction between volume of repo and its maturity dates are not found to be significant.

CONCLUSION AND DISCUSSION

The results, which the research has come across, may seem contradicting but when dealt with one by one gives a very straightforward and valuable results. The beta coefficient of repo (i.e., 3.39) and reverse repo (i.e., -2.25) considering their volume are exactly opposite to our expectation. Hence, it rejects the proposed hypothesis that open market instruments plays crucial role in maintaining smooth interest rate. On the contrary, to above results, beta coefficient of interaction variable repo volume with its maturity days -9.75 shows substantial contribution. Hence, 1 unit supply of repo from the central bank causes 9.75% decrease in the IBR on an average. Similarly, the interaction of reverse repo volume with its maturity days 2.25 explains 1 unit of liquidity mop-upped by NRB causes 2.25% increase in IBR.

Hence, main contribution of this research is that the amount of repo and reverse repo cannot simply maintain the interest rate. Nevertheless, when considered with their maturity period help maintaining desired rate of interest rates. Findings of this research shall be useful for central bank and participants of the repo and reverse repo while deciding on their maturity period. When central bank offers repos during liquidity crunch, the liquidity supplied for longer period reduces the interest rates whereas short-term injection cannot reduce it. In case of reverse repo, very short-term liquidity mop-up alone cannot protect the interest rates whereas continuous or frequent reverse repos can protect them.

The findings of this research can be applied in many countries having similar practices or they share the similar level of financial development and growth. To make the findings of this research more generalizable, cross-country analysis can be made incorporating necessary issues in methodology.
REFERENCES


Euroclear – March 2009


The Impact of Working Capital Management on Profitability and Shareholders Wealth: Evidence from CSE

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Perera, K.L.W., University of Sri Jayewardenepura, Sri Lanka

ABSTRACT

The Working Capital Management (WCM) has an important role for the firm’s success or failure because it directly effects the overall business health of the firm. This study examined the impact of WCM on profitability and shareholders wealth using the 50 companies listed in different sectors on the Colombo Stock Exchange (CSE) from the period 2010 to 2015. This sample represents 47% of the selected sectors of the CSE. The profitability of the company is measured using gross operating profit (GOP) and shareholders wealth measured by Tobin’s Q (TQ) ratio. The WCM is measured using five independent variables namely stock holding period (SHP), debtors’ collection period (DCP), creditors’ settlement period (CSP), cash conversion circle (CCC) and current assets ratio (CAR). Further, three additional variables such as firm size (SIZE), leverage (LEV) and earning yield (EY) are employed as controlling variables to capture the impact of other performance of the companies. The data were analyzed using ordinary least square (OLS) and panel data regression models. These regression models reveal that there is a significant negative relationship between CCC and dependent variables (GOP & TQ). Further this relationship has been confirmed by the major components of CCC such as SHP, DCP. Firm size also positively and significantly effects the firm GOP while negatively effects the TQ. Further it was revealed that there is a significant positive relationship between LEV and TQ.

Keywords: Working Capital Management, Tobin’s Q, Leverage, Panel Data, Cash Conversion Circle
INTRODUCTION

The Short-term finance is considered as the most important aspect in managing financial resources of all business at present. This is also known as working capital (WC) which is defined as the balance between current assets (CA) and current liabilities (CL) (Parks and Pike, 1984). Working capital is customarily divided into two categories, Gross working capital and net working capital. Gross working capital is the sum of all current assets while net working capital is the difference between current assets and current liabilities. Current assets include all those assets that in the normal course of business return to the form of cash within a short period of the time normally within one year. Current Liabilities include all liabilities settle within short period of time (Rahman & Nasr, 2007). Singh & Kumar (2013) also found that the short-term finance is being successfully employed in the industrial practice.

Management of working capital (MWC) is another important aspect in finance, which plays an important role in every business entity. MWC is concerned with the problem that arises attempting to manage CA and CL and interrelationship between them. MWC is very important component of corporate finance because it directly affects the company’s performance (Deloof, 2003). The need for maintaining an adequate working capital can hardly questioned. Just as circulation of blood is very necessary in the human body to maintain life, the flow of fund is very necessary to maintain business. If it becomes week, the business can hardly prosper and survive (Refuse, 1996). That statement emphasizes the importance of WCM to a business for their survival. The ultimate objective of any firm is to maximize the profit. But preserving liquidity of the firm is an important Objective too. The problem is that increasing profits at the cost of liquidity can bring serious problems to firm. Therefore, there must be a tradeoff between these two objectives of the firm. One objective should not be at cost of the other because both have their importance.

According to the literature WCM directly impact on firm and market performance of the companies. Most research studies emphasizes that efficient management of working capital leads to maximize the profit and shareholders’ wealth of the company. Since WCM is best described by CCC, It is very important to identify the impact on CCC and each component consists in CCC (SHP, DCP &CSP) to profitability and shareholders wealth (Bana Abuzayed, 2013). CCC means the decision about how much to invest in customers and inventory
accounts and how much credit is accepted from the suppliers. Most researchers employed CCC and its component (SHP, DCP& CSP) as main proxies in WCM (Abuzayed 2010; Viural and Shockman 2012; Raheman and Nasr 2007; Teruel and Solano 2007; Lazaridis and Tryfonidis 2005; Dellof, 2003; Kodithuwakku 2015). In addition to that investment in current assets (CA) from total assets (TA) is also influenced to working capital management. This is called working capital Policies employed by the companies. Theoretically company can adopt three working capital policies as aggressive, moderate and conservative policies based on financial and investment strategies. (Bandara and Weerakoon, 2015). Bana Abuzayed (2013) Emphasized that selection of best working capital policy is a good implication to increase not only profitability but also the shareholders’ wealth of the companies. As the significance in selecting this working capital policy, this is going to be tested as an explanatory variable in this study. According to the literature of other market indicators also influence to the profitability and shareholders wealth of the companies. For identify, these effects most studies examine the firm size (SIZE), Leverage (LEV), Sales growth, CAR employ as proxies to represent the other indicators.

Based on their findings most researchers found that significant negative relationship between CCC and Profitability (Deloof 2003; Rahuman & Nazr,Garcia-Teruel and Solana 2007; Kodithuwakku 2015). But some researchers found contradict result that positive relationship between CCC and profitability. (Bana Abuzayed 2010; Don & SU 2012). Each component in CCC behaves in different ways (Positively or negatively) with the profitability. Bana Abuzayed (2010) reveals that there is a significant negative relationship between CCC and market performance while Vural & Shokmen (2012) emphasis there is no relationship between main component in CCC and market performance. (Shin & Sonen 1998, Dellof 2003,Raheman & Nazr 2007) reveal that aggressive working capital policy enhance the performance of the companies. But Nazir & Afza (2009) found his study that Conservative working capital Practice enhances the performance of the businesses. The findings of WCM and its impact on firm performance and market performance are not provided consistency result. The other market indicators also significantly influence to firm and market performance. Most studies found that size of the firm positively affect the performance (Gracia-Teruel and Martinez-Solano 2007, Paris & Gama 2015). LEV of the company also significantly affects to the performance of the companies. However, the findings are not in line with the previous studies because some studies found that increasing the leverage leads
to higher profitability (Teruel and Solano 2007; Paris & Gama, 2015) while some studies reveal that low leverage cause to higher profitability (Fama & French, 2002).

Studying the previous literatures, researcher observed that there are a very few studies available to examine the impact of working capital management on market performance in both international and local context. In local context, all studies relating to working capital management are focused on manufacturing sector companies. Companies in other sectors are neglected. This study is focused on fulfilling these research gaps. This study examines the WCM and how the way its impact on profitability and shareholders’ wealth using 50 listed companies in Colombo Stock Exchange (CSE) in different sectors.

To analyze the above problem statement, following objectives were developed in this study.

- To identify the impact on different components of WCM on profitability of the companies.
- To identify the impact on different components of WCM on shareholders’ wealth of the companies.

Section two reviews the literature for the relevant theoretical and empirical work on WCM and its impact on profitability and shareholders wealth. Section three presents the methodology and conceptual framework which includes sample, variable used for analysis. Section four highlights the data analysis, statistical result and detailed discussion. Finally, section five discuss about the conclusion.

**LITERATURE REVIEW**

The researchers in different countries examined these relationships in different industries in different environments. These literatures were useful to identify the relationships established by the researchers about working capital management and buildup a theoretical approach for my study based on their findings. These literature identified as impact of WCM on firm profitability, Shareholders wealth and working capital policies employs by the companies.

Most researchers examined WCM and its impact on firm profitability. Very limited studies examined WCM on Profitability and shareholders wealth. Main working capital component such as CCC, DCP, SHP and CSP used as independent variables in most studies. Data were analyzed using descriptive statistics, correlation analysis and regression analysis (OLS, Random & fixed effect methods). Different relationships were found as their major findings.
Dellof (2003) Examined the impact on WCM on firm profitability using a large sample of 1009 large Belgium non-financial companies during the period of 5 years from 1992 to 1996. He found a significant negative relationship between Gross Operating Profit and Each component in CCC. (SHP, DCP, CSP). Based on his findings, he suggested that managers could create value for their shareholders by reducing the number of days of receivables and inventories accounts to a reasonable minimum. They found that the negative relationship between accounts payable and profitability is consistent with the view that less profitable companies wait longer to pay their bills.

In Pakistan context, Rahman and Nasr (2007) selected a sample of 94 Pakistani companies listed on the Karachi Stock Exchange for a period of 6 years from 1999-2004 to study the relationship between WCM in firm profitability. The results of this study showed that there was a strong negative relationship between the above mentioned variables of working capital management and companies’ profitability. Besides, they also showed a positive relationship between the size of the company, measured by natural logarithm of sales, and profitability. Further they revealed that there is a significant negative relationship between debt used by the firm and its profitability.

Padachi (2006) discussed that the trends of working capital management and its impacts of firm performance. 58 small manufacturing firms in India from 1998 to 2003 has been selected for this study. From this study as attempt to measure and analysis the trend of WCM & Investment needs of small manufacturing firms in India. According to his findings high investment in inventories and receivables is associated with lower profitability. According to result of this study he found that significant relationship between Working capital management and profitability of the business.

In local context Kodithuwakku (2015) examined the relationship between working capital management & profitability of manufacturing companies in Sri Lanka from 2008 to 2012. 20 manufacturing companies listed in Colombo Stock Exchange were selected for this study. The Study found a significant negative relationship between the profitability and cash conversion Cycle, while a positive relationship between profitability and Creditors Conversion Period. Moreover this study reveal that the financial leverage, Sales Growth firm size also have a significantly impact on profitability of the companies.
Abuzayed (2010) examined the WCM in both Accounting & market value of Jordan firms, 98 companies of Amman Stock exchange from 2003 to 2008 were selected for this study & observed 468 observations. Firm value has been calculated using gross operating profit (GOP) & market value expressed by Tobin’s Q (TQ). The main aim is this study is improving awareness of the investors and improving information transparency of the business. According to this study they found that profitability is affected positively with cash conversion circle. This study reveal that more profitable firm have less motivate to manage their working capital. In addition to that they found significant negative relationship between shareholders wealth and cash conversion circle.

Vural and Shokmen (2012) examine the working capital management on firm’s performance. Firm performance are divided into two main component in this study that are profitability of the firm & shareholders wealth of the firm. This Study based on secondary data collected from 75 manufacturing companies listed in Istanbul Stock Exchange from 2002 to 2009. According to the observation they reveal that there is a significant negative relationship between average receivable days and CCC. Leverage as a control variable has a significant negative relationship with firm value and profitability of the firms. Further this study revealed that the result of firm value insignificant except cash conversion Circle and leverage. According to the result of the regression analysis, there is a positive relationship between cash conversion circle and firm value while there is a negative relationship between leverage and firm value.

Perera & Wickramasinghe ( 2010) examined the working Capital Practices of manufacturing Sector Companies in Sri Lanka. As above mentioned in a literature review article, they observed that there is a lack of survey based articles. This study fulfil that gap because this article is a survey based article. This is the first study investigate the working Capital Management Practices in Sri Lanka. According to this article they presented that current assets form a large proportion of total assets in both developed & developing countries. It is observed that most of the manufacturing Companies in Sri Lanka have on informal policy related to working Capital Management.

Afza and Nazir (2007) examined the relationship between the working capital policies (Aggressive and conservative) were used by the companies listed in Karachi stock exchange. The data was collected from seventeen industrial groups for the period of six years from 1998
to 2003. According to their findings they revealed that aggressive working capital policy increase the profitability and shareholders wealth.

All the above studies provide a sound base regarding working capital management and its impact on firm and market performance. Above studies were done in different countries and different environment using different samples. These studies give us different result and conclusions. Based on these researches, the framework of this study has been developed.

**METHODOLOGY**

**Sample & Sample procedure**

Table 01 represent the selected sample for the study with their percentage. The sample was selected from different sectors in the economy avoiding Finance sector, Real Estate, Hotel and traveling and service rendering businesses from the sample since the specific nature of their activities. Even though 108 companies registered in my selected sample at end of year 2016 only 50 companies were selected based on the data availability for all variables for the period of 2010-2015. Since 08 firms are outliers for more than one period they have dropped from the sample. This sample represents 47% of the listed companies in the selected sectors. Following table shows respective percentage representation of selected companies of these sectors.

**Table 01: Composition of Sample**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Listed Companies</th>
<th>Selected Companies</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>37</td>
<td>17</td>
<td>46%</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>21</td>
<td>10</td>
<td>48%</td>
</tr>
<tr>
<td>Chemical &amp; Pharma.</td>
<td>10</td>
<td>6</td>
<td>60%</td>
</tr>
<tr>
<td>Motors</td>
<td>8</td>
<td>5</td>
<td>62%</td>
</tr>
<tr>
<td>Plantations</td>
<td>19</td>
<td>7</td>
<td>37%</td>
</tr>
<tr>
<td>Trading</td>
<td>10</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td>Footwear &amp; Garments</td>
<td>3</td>
<td>2</td>
<td>66%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>108</strong></td>
<td><strong>50</strong></td>
<td><strong>47%</strong></td>
</tr>
</tbody>
</table>

*Source: Author’s own*
Variables

According to the literature on working capital management the studies have recognized different variables in order to determine the impact on firm profitability and shareholders wealth of the companies. The study wish to discuss these variables under three categories such as dependent variable, explanatory variables and control variables.

Dependent variable is the variable being tested and its value is determined by the other variables in the relation. This study includes two dependent variable which are gross operating profit and Tobin’s Q ratio.

Explanatory variable can be identified as variable, the change does not depend on another variable and it is considered to have an effect on dependent variable. In this study it can be identified five independent variables. Cash Conversion Circle (CCC), Stock Holding Period (SHP), Debtors Collection Period (DCP), Creditors Settlement Period (CSP) And Current Assets Ratio (CAR) considered as independent variables.

Control variable is a variable that would cause an interference to the dependent variable. This variables are used to measure the other market effect influence to the dependent variables. This study contain three control variables which are firm size, leverage and earning yield.

Operationalization of variables

Table 02: Summary of operationalization

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Measurement</th>
<th>Variable into Model</th>
<th>Expected relationship with independent variable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GOP</td>
<td>Gross Operating Profit</td>
<td>(Sales-Cost of sales) / (Total Assets-Financial Assets)</td>
<td>SQRT GOP</td>
<td>GOP</td>
</tr>
<tr>
<td>TQ</td>
<td>Tobin’s Q</td>
<td>(market value of equity+book valu of liability)/ book value of total asset</td>
<td>Inverse TQ</td>
<td>TQ</td>
</tr>
<tr>
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<td></td>
</tr>
</tbody>
</table>
Independent Variables

(a) Explanatory Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Formula</th>
<th>CCC in days</th>
<th>Relationship with dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC</td>
<td>Cash conversion cycle</td>
<td>Stock Holding Period + Debtors Collection Period + Creditors Settlement Period</td>
<td>CCC in days</td>
<td>Negative relationship with dependent variables</td>
</tr>
<tr>
<td>SHP</td>
<td>Stock Holding Period</td>
<td>(inventories / cost of sales)*365</td>
<td>SHP in days</td>
<td>Negative relationship with dependent variables</td>
</tr>
<tr>
<td>DCP</td>
<td>Debtors Collection Period</td>
<td>(Accounts Receivables / sales)*365</td>
<td>DCP in days</td>
<td>Negative relationship with dependent variables</td>
</tr>
<tr>
<td>CSP</td>
<td>Creditors Settlement period</td>
<td>(Accounts payables / Cost of Sales) *365</td>
<td>CSP in days</td>
<td>Positive relationship with dependent variables</td>
</tr>
<tr>
<td>CAR</td>
<td>Current assets Ratio</td>
<td>Current Assets / Total Assets</td>
<td>CA ratio</td>
<td>Negative Relationship</td>
</tr>
</tbody>
</table>

(b) Control Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Formula</th>
<th>Relationship with dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>Firm Size</td>
<td>Ln sales</td>
<td>Ln Sales</td>
</tr>
<tr>
<td>LEV</td>
<td>Leverage</td>
<td>Total non-current liabilities / total equity</td>
<td>Leverage Ratio</td>
</tr>
<tr>
<td>EY</td>
<td>Earnings Yield</td>
<td>EPS / share price</td>
<td>EY Ratio</td>
</tr>
</tbody>
</table>

Source: authors own

Regression Models & analysis of data

The models are going to be developed using Econometrics’ models. Two dependent variables going to be tested using five explanatory variables and three control variables. In this study models are developed to test the explanatory variables independently (one by one) with
control variables in order to avoid multicollinearity effect influence to the regression. Multicollinearity is a phenomenon in which two or more predictor variables in a multiple regression model are highly correlated, meaning that one can be linearly predicted from the others with a substantial degree of accuracy. When the covariant in the model are not independent from one another, multicollinearity effect are arises (https://en.wikipedia _collinearity). Based on the hypothesis developed in the previous section following regression models were derived to analyze the data.

Following five models are constructed to analyze the effect of working capital management on firm profitability.

\[
\begin{align*}
\text{GOP} & = \beta_0 + \beta_1\text{SHP} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 1}] \\
\text{GOP} & = \beta_0 + \beta_1\text{DCP} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 2}] \\
\text{GOP} & = \beta_0 + \beta_1\text{CSP} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 3}] \\
\text{GOP} & = \beta_0 + \beta_1\text{CCC} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 4}] \\
\text{GOP} & = \beta_0 + \beta_1\text{CAR} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 5}]
\end{align*}
\]

The above five models examine the hypotheses in alternative forms:

\[H_0 = \text{There is no relationship between GOP and Major component in WCM}\]

The effect of Shareholders wealth of the company analyze using following models.

\[
\begin{align*}
\text{TQ} & = \beta_0 + \beta_1\text{SHP} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 6}] \\
\text{TQ} & = \beta_0 + \beta_1\text{DCP} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 7}] \\
\text{TQ} & = \beta_0 + \beta_1\text{CSP} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 8}] \\
\text{TQ} & = \beta_0 + \beta_1\text{CCC} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 9}] \\
\text{TQ} & = \beta_0 + \beta_1\text{CAR} + \beta_2\text{SIZE} + \beta_3\text{LEV} + \beta_4\text{EY} + \varepsilon & [\text{model 10}]
\end{align*}
\]

The above five models examine the hypotheses in alternative forms:

\[H_0 = \text{There is no relationship between TQ and Major component in WCM}\]

Note: Where GOP; gross operating profit, TQ ; Tobin’s Q , SHP; stock holding period, DCP; debtors collection period, CSP; creditors settlement period, CCC; cash conversion circle, CAR; current assets ratio, LEV; leverage, SIZE; ln sales, LEV; leverage, \( \beta_0 \text{ : intercept, } \varepsilon \text{ : error term} \)
First normality test were performed to ensure these data are suitable for analyze using regression model. Generally OLS method use to analyze the regressions. The most common panel data models are the fixed effects model and random effects model. This study uses both OLS method and panel data method (Fixed Effect or Random Effect) to analyze the data.

In OLS method panel data method also employs to analyze the data. Panel are a type of longitudinal data or data collected at different points in time. Panel data methodology is applied to analyze the panel data. The Balance panel data allows for the equal observation for every unit of observation for each time period. On using panel data, one must decide whether to employ a fixed effect model or Random effect model. The Hausman test helps to determine which model would result in better premises.

DATA ANALYSIS AND DISCUSSION

Table 03: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Std. Dev.</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOP</td>
<td>0.24359</td>
<td>0.213913</td>
<td>0.726971</td>
<td>0.000706</td>
<td>0.182196</td>
<td>-0.8519</td>
<td>3.594812</td>
</tr>
<tr>
<td>TQ</td>
<td>1.794071</td>
<td>1.609532</td>
<td>11.7664</td>
<td>0.987851</td>
<td>0.804683</td>
<td>6.68394</td>
<td>80.1377</td>
</tr>
<tr>
<td>SHP</td>
<td>59.42016</td>
<td>47.40341</td>
<td>223.8528</td>
<td>2.459176</td>
<td>44.10392</td>
<td>1.468887</td>
<td>4.858109</td>
</tr>
<tr>
<td>DCP</td>
<td>51.09405</td>
<td>43.68339</td>
<td>160.5253</td>
<td>1.09979</td>
<td>34.70863</td>
<td>0.697679</td>
<td>2.73145</td>
</tr>
<tr>
<td>CSP</td>
<td>23.96467</td>
<td>18.88958</td>
<td>139.406</td>
<td>0.136909</td>
<td>21.12605</td>
<td>1.767008</td>
<td>7.260215</td>
</tr>
<tr>
<td>CCC</td>
<td>86.54291</td>
<td>68.09632</td>
<td>289.909</td>
<td>1.080003</td>
<td>57.77319</td>
<td>0.926124</td>
<td>3.21726</td>
</tr>
<tr>
<td>CAR</td>
<td>0.450691</td>
<td>0.454537</td>
<td>0.947871</td>
<td>0.069024</td>
<td>0.204737</td>
<td>0.219664</td>
<td>2.242351</td>
</tr>
<tr>
<td>SIZE</td>
<td>6.439874</td>
<td>6.410043</td>
<td>7.874615</td>
<td>5.625134</td>
<td>0.434608</td>
<td>0.619811</td>
<td>3.745966</td>
</tr>
<tr>
<td>LEV</td>
<td>0.24478</td>
<td>0.120044</td>
<td>2.456586</td>
<td>0.003038</td>
<td>0.313441</td>
<td>2.810182</td>
<td>14.09536</td>
</tr>
<tr>
<td>EY</td>
<td>0.078327</td>
<td>0.06614</td>
<td>1.242175</td>
<td>-0.825</td>
<td>0.146084</td>
<td>1.20005</td>
<td>25.65678</td>
</tr>
</tbody>
</table>

Notes: GOP: gross operating profit, TQ: inverse Tobin’s Q, SHP; stock holding period, DCP; debtors collection period, CSP; creditors settlement period, CCC; cash conversion circle, CAR; current assets to total assets SIZE: ln sales, LEV; leverage, EY; earning yield

As per above descriptive analysis (Table 03) average gross profit indicates 24.35% while median is remain 21.39%. Maximum and minimum value of profitability would be 72.69% and minimum 0.0007% respectively while volatility indicate 15.21%. Higher variations can be observed between minimum value and maximum value. This type of variations can be expected due to different sector companies are employed and 7 year period are considered for the study. It meant that the value of the profitability can deviate moderately to both side of
the mean at the rate of 15.21%. Most companies earn moderate profit around 25% since the mean value indicate 24.35%.

The average value of TQ is 1.7940 since maximum exist 11.766 & minimum indicate 0.9878 value. This implies higher variation between minimum and maximum. But very few companies indicate higher value since the average value indicate 1.79 and deviation indicate 80.49% .According to my sample Sri Lankan companies are overvalued because mean value indicates 1.6095 (Higher than 1). Even though higher variation can be expected in the market value of firms since standard deviation reflects on 80.46% deviation from the median.

The CCC represent all other main variables affect to working capital management namely stock holding period, Debtors collection period and creditors settlement period. The CCC used as a proxy to check the efficiency management of working capital. The average number of CCC is 86 days and deviation is 57 days. Maximum dates of conversion circle is 290 days while minimum exist 2 days. But CCC OF most companies exist 86 days since mean value reflect 86.54. The median indicates 68 days. The other component consist in CCC behave in different ways. According to the statistics summary some companies held their stocks only 2 days beside other company hold 224 days. This is not a surprise to spread wide rage this SHP since our sample consist different sector businesses. Even though the SHP vary between a wide ranges, the average holding period is 59 days and volatility is 44 days. This implies few companies exist in both ends while most companies in average level. Minimum time taken to collect cash from debtors 1 day while the maximum time exist in 160 days. Average period of collection is 51 days and standard deviation is 34 days. The average time period taken to settle their suppliers are 23 days and deviation is 21 days. The maximum time period to settle the suppliers is 139 and minimum only one day. According to these statistics implies that these companies suffer in Cash flow problems, since they pay their creditors in less time than the time given to debtors to settle their balances. In current asset ratio indicates 45% average figure and it volatility is 20%. This implies that nearly half of Total assets represents by current assets. The maximum amount indicate 95% while minimum represent only 6%. This ratio reveals that the companies include in the sample use both aggressive policy and conservative policy most companies tend to use moderate working capital policy.
Table 04: Correlation matrix

<table>
<thead>
<tr>
<th>Correlation</th>
<th>GOP</th>
<th>TOBINS_Q</th>
<th>SHP</th>
<th>DCP</th>
<th>CSP</th>
<th>CCC</th>
<th>CA_TA</th>
<th>SIZE</th>
<th>LEVERAGE</th>
<th>GE</th>
<th>EY</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOP</td>
<td>1.000000</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOBINS_Q</td>
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Notes: GOP; f gross operating profit, TQ: Tobin’s Q, SHP; stock holding period, DCP; debtors collection period, CSP; creditors settlement period, CCC; cash conversion circle, CAR ; current assets to total assets SIZE: ln sales, LEV; leverage, EY; earning yield

Pearson correlation coefficient is a measure used to quantify the degree of association between two variables. But this measurement can be used only when there is a linear relationship between two variables under consideration. The table 04 provides the Pearson correlation coefficient for the pairs of variables in the study. This correlation matrix helpful to the researcher to identify the multicollinearity effect between two variables. Field (2005) suggested that multicollinearity becomes a problem only when the correlation coefficient exceed 0.8. The result in the table iii shows the none of the correlation between independent variables exceed these threshold value. As per the result of analysis shows only two highest value correlation between CCC with SHP & DCP. The coefficient value indicate 0.7787 and 0.6569 respectively, but lesser than 0.80. According to the result of regression analysis the coefficient indicate positive

Relationship between all independent variables with both dependent variables, except creditors’ settlement period and leverage of the company. Even though the result of correlation matrix is not in line with the result deriving from regression analysis. This contradictory situation was observed not only this study but also other studies also. Some study indicate this situation in one or two variables and the study done by Vural and Shockmen (2012) indicate completely different relationship in result obtained from correlation matrix and regression analysis.
This is a questionable situation that completely different results provide in the same study in different evaluation methods. This is not a surprise because the limitations in the correlation matrix were already identified by the researchers. One limitation of Pearson correlation matrix is that it does not provide assistance in identifying causes from the consequences (Deloof 2003). He further emphasized that care must be exercised while interpreting the Pearson correlation coefficients because they cannot provide a reliable indicator of association in a manner which controls for additional variables. In other things, correlation analysis does not consider each variable's correlation with all other independent variables since simple correlation analysis does not provide a reliable indicator of association between the variables. Thus, the researcher developed a regression model. As this situation, our main analysis will be derived from regression models, estimated using fixed or random effects framework and OLS method.

**Regression analysis**

**WCM and its impact on profitability:**

Table 05 provides the result of OLS & panel data analysis. Based on the result of OLS method, it does not provide any significant result for main variables except current assets ratio. In addition to that, the explanatory power of the variables is very poor. R Squared represents the explanatory power of the model. Therefore, the result of OLS analysis is not going to be interpreted. But the result derived from panel data analysis shows the powerful significant relationship between dependent variables and explanatory variables.

The regression result of model 01 indicates the negative coefficient of SHP (\( \beta =0.0005, P = 0.028 \)). This implies that when the number of SHP increased by one day, GOP of the firm declines by 0.0005 percent. The overall model is significant because the P < 0.05 level. This result emphasizes that an increase or decrease in inventory turnover days significantly affects profitability. If the inventory is converted into sales in a shorter time period (Reduce the stock holding period), it leads to higher profitability.

The second regression result shows a significant negative relationship with DCP and profitability. The result indicates \( \beta =0.0012, P = 0.009 \). This emphasis that when the number of DCP increased by one day, the GOP of the company decreased by 0.0012 percent. The model is highly significant since p < 0.01 level. This implies the company can increase their profitability by shortening the collection period of debtors.
The relationship between CSP and GOP indicate negative insignificant relationship (p = 0.7743). It implies that CSP does not significantly affect to the profitability.

Significant negative relationship can be identified between CCC and profitability. The result represent ($\beta = 0.0007, \ P = 0.0018$) values in the regression. That means when the CCC increase by one day GOP of the company decrease by 0.0007 percent. Since the $p < 0.01$ the model is highly significant. This implies that companies can increased their profitability by shortening the CCC.

**Table 05**

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Notes: *** statistically significant at 1%; ** statistically significant at 5%; ** statistically significant at 10%.


Since CCC is the comprehensive measure of checking the efficiency, this can emphasis as increase the efficiency of the firm leads to higher profitability of the business.

The significant positive relationship indicate the current asset ratio. The relationship is highly significant since $p < 0.01$. This emphasis that increase in the current assets of the businesses to total assets ultimately create higher profit. It means conservative working capital policy is more prefer in Sri Lankan companies.
Firm size and earning yield as the control variables indicate a significant positive relationship with profitability of the company. The p value of firm size and earning yield indicate probability less than 0.05 percent. It is interpreted that when the size of the firm increases (Represented by natural logarithm of sales), it will lead to increasing the profit of the firm. Though the leverage is negatively affect to the profitability the relationship is not significant in all five models. The first four models implies a high expletory power (R2) under panel data analysis around 70%.

**WCM and its impact on shareholders wealth:**

Table 06 provides the result of OLS & panel data analysis. Based on the result of OLS method it does not provide any significant result for main variables except current assets ratio. But firm size indicate a significant negative relationship with the shareholders wealth while leverage indicate significant positive relationship with the shareholders wealth. The explanatory power of the regressions are very poor less than 10%’ Therefore the result of OLS analysis is not going to be interpreted. But the result of panel data analysis shows the powerful significant relationship between dependent variable and independent variables except earning yield.
Table 06

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Notes: *** statistically significant at 1%; ** statistically significant at 5%; * statistically significant at 10%

SHP; stock holding period, DCP; debtors collection period,CSP; creditors settlement period, CCC; cash conversion circle, CAR; current assets ratio, LEV; leverage, SIZE; ln sales, LEV; leverage

This regression run using a transformation employed into dependent variable. Inverse value of Tobin’s Q used to run the regression. Inverse means the relevant figure divided by one (1/Tobin’s Q). The result of that figure give an inverse relationship with the independent variable. Therefore the time that interpreting the result the researcher has to pay more concern about the sign of the coefficient. That sign of the coefficient should be reversed to get the actual result.

In order to get the result of impact of WCM to shareholders wealth of the firm, five regression models were employed. Four regression models give a significant result except CSP. The model 1 indicates that the coefficient of SHP is 0.0008 Negative and p- Value is (0.0182). This is significant because p<0.05 level. It implies that SHP is increased in one day value of the firm will be decreased by 0.0008 percent. This means the efficiency management of stock (Reduce the stock holding period) leads to increase the value of the firms.
Model 2 tested to identify whether there is a relationship between DCP and firm value. The regression result shows negative significant relationship ($\beta =0.0012$, $P = 0.038$). This implies that, when the number of DCP increased by one day, value of the firm increases by 0.0012%. This interpret that efficiency collection procedures (Reduce the debtor’s collection period) ultimately lead to increase the value of the firms.

CSP indicates positive relationship between TQ but it is not significance ($p = 0.4874$). It implies that CSP does not significantly affect to decide the value of the firm.

Model 4 indicate negative and highly significant negative relationship between CCC and TQ ($\beta =0.0008$, $P = 0.0051$). It implies that the increase or decrease in CCC significantly affect to the firm value. That means when the CCC increase by one day value of the company decrease by 0.0007 percent. Since the $p < 0.01$ the model is highly significant. This implies that companies can increased their market value by shortening the CCC. Since CCC is the comprehensive measure of checking the efficiency, this can emphasis as increase the efficiency of the firm ultimately leads to enhance the value of the businesses.

Current assets ratio used as an independent explanatory variable in this study. This ratio indicates a significance positive relationship between TQ ($\beta =0.175$, $P = 0.0879$). This means that investment more in the current assets compare to total assets increase the value of the firm. This emphasis that if a company follow the conservative working capital policy it leads to increase the market value of the business.

Firm size and leverage as the control variables indicate a significant relationship with market value of the company. Considering the control variables (Firm size and leverage) p value of all five models indicate a (firm size, $p < .01$) highly significant & (leverage $< 0.05$) significant. It is interpreted that small firms can enhance their value than large firms controlling the working capital component. Considering the leverage there is a significant positive relationship is indicated. It implies that firm can increase the value of the business by increase the leverage of the firm (Employing more debt capital compare to equity capital). The regression models are represented strong explanatory power because Adjusted $R^2$ of all 5 models indicate around 60% explanatory power.
CONCLUSION

This study is going to test the impact of WCM on profitability and shareholders wealth of different sector companies using five years (2010 – 2015) data set with 50 companies. To achieve this objective create hypotheses for all variables and build up ten regression models to analysis. Data analyze using both OLS method and Panel data method. Since OLS model does not provide strong result OLS results were not interpreted. Based on the result received from panel data analysis employed to get the conclusion.

Based on the findings of panel data analysis we observed that there is a significant negative relationship between SHP, DCP and CCC with both firm profitability measured by GOP and shareholders wealth measured by TQ. This implies that company can increase both profitability and shareholders wealth by increase the efficiency of the businesses. Further revealed that the most suitable working capital policy to Sri Lanka is Conservative policy. Company size also significantly affects to both profitability and shareholders wealth of the companies. Company size which is measured using firm size, positively affect to the company while negatively affect to the shareholders wealth. This implies that small scale businesses have high value of share comparing with large scale of businesses.

REFERENCES


Triangulation Approach in Finance Research

Dewasiri, N.J., University of Colombo, Sri Lanka
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Jayarathne, P.G.S.A., University of Sri Jayewardenepura
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ABSTRACT

The purpose of this study is to critically and comprehensively review the ways and means of using triangulation in finance research to overcome the current drawbacks arisen from a single approach. Employing systematic literature review method, the findings divulged that the finance based research studies on quantitative methods, behavioral and proxy variables should be further validated through triangulation approaches, thereby increasing the validity, completeness, and confidence over findings, minimizing the inherent weaknesses of single-method approaches, and avoiding contradictions over explanations. This study is the first comprehensive review of the uses of triangulation in finance research and it demonstrates how, why and under what circumstances can triangulation be meaningfully integrated and implemented to provide a deeper and comprehensive understanding of financial phenomena.

Keywords: Triangulation approach; validity; completeness; finance research; proxy variables
INTRODUCTION

The success of organizations depends on effectively making financial decisions. The major aim of finance research is to aid financial decision makers (Ramirez et al., 1991). Quantitative research methodology has been one of most popular approaches to finance research over the past thirty years. Baker et al. (2011) noted that empirical studies in finance tend to rely on a large number of financial observations, resulting in robust statistical power and analysis if cross-sectional variation, and identify the fact that “researchers have limited ability to deal with non-quantifiable issues” as major problem in the discipline. Dewasiri and Banda (2016) recently argued that most of finance studies (68%) in the last decades have used proxy variables in behavioural models. For instance, Jiraporn et al. (2015) investigated the relationship between managerial ability (measured through proxies) and dividend policy. Wang et al. (2016) tested the catering theory of dividends by applying a proxy for investor’s demand or preference. We argue that real behaviours may be very distinct from what is captured by proxy explanations, and hence further investigation is required to achieve more consensual accounts of financial behaviour. Quantitative approaches have been predominant in recent finance research, and as a result few scholars have highlighted the importance of supplementary approaches. For instance, Burton (2007) identified the importance of qualitative approaches in finance, highlighting early financial studies (Lintner, 1956) based on qualitative data.

Turner et al. (2013) conducted a study based on secondary data on traded companies in the London Stock Market between 1825 and 1870 to investigate the “dividend puzzle” (namely, the puzzle of why companies pay dividends). However, it remains debatable whether their results derived from the use of proxy variables are valid in explaining the behavioural decision to pay dividends. Moreover, investigation of dividend puzzle is still remaining as a controversy issue in finance even though it is investigated for decades through quantitative approaches. As stated by Frankfurter et al. (2002), it is unable to understand the dividend puzzle simply analysing the secondary (market) data. As Bruner (2002) stated “The task must be to look for patterns of confirmation across approaches and studies much like one sees an image in a mosaic of stones.” Here, we argue that confirmation of the findings of two different approaches or methodologies pave the way towards a completeness, validity and generalizability of the findings than a single methodology as supported by Baker et al. (2011).

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Accordingly, this study will contribute to the finance research phenomenon by filling this methodological gap emphasizing the ways and means of using triangulation as an alternative approach in finance research in order to minimize inherent weaknesses of a single approach. We also point out that employing proxy variables hinders the completeness and validity of financial studies. Triangulation has been recognized for some time as a potential solution to this issue and it could be identified as a powerful approach that facilitates confirmation and validation of findings through two or more methods / sources in a single study. In particular, Denzin (1970) argued that the more intensive the use of triangulation, the greater the confidence in observed findings. Decrop (1999) identified triangulation as a state of mind where creativity is required from researchers, and urged them to generalize the use of triangulation as a way of obtaining sound and valid results. After Denzin (1970), triangulation is becoming a widely accepted approach as a way to enhance the robustness of the analysis and interpretation of findings of various research studies.

Triangulation can be used as an effective tool when there are contradictions over the findings derived from the application of a single method. Jakob and Alexander (2001) argued that “often the purpose of triangulation in specific contexts is to obtain confirmation of findings through convergence of different perspectives. The point at which the perspectives converge is seen to represent the reality”. Other scholars such as Bruner (2002), Baker et al. (2011), and Dewasiri and Banda (2016) have also strongly recommended triangulation in finance research, but failed to elaborate on specific details and potential implications.

The lack of studies based on empirical mixed methods in finance, the contradictions of the findings of quantitative approaches on financial issues (such as dividend puzzle, capital structure puzzle) and scarcity of theoretical and methodological articles on the triangulation approach have motivated our study. By addressing the gap in the literature, we comprehensively and critically review and discuss the ways and means of utilizing triangulation in finance research, while at the same time not presenting it as an ultimate or “takeover” approach.

The History of Triangulation Approach in Research

In recent years, the application of multiple methods and approaches to a single phenomenon has received significant attention in social science in general. In fact, there are as many different versions of triangulation as there are articulate proponents of the approach. Campbell
and Fiskel (1959) laid the foundations of “triangulation” in social science research by arguing that more than one trait and method are needed to increase discrimination and convergence of results, proposing what they called a multi trait-multi method matrix. Webb et al. (1966) emphasized the application of unobtrusive (non-reactive) measures instead of interviews, questionnaires and manipulative experiments, in order to avoid their inherent weaknesses. Denzin (1970) identified four forms of triangulation: data triangulation, investigator triangulation, theoretical triangulation and methodological triangulation. Jack and Raturi (2006) emphasized five triangulation approaches, adding multiple triangulation to the list as an approach including multiple observers, theoretical perspectives, sources of data, and methodologies in a single study.

So far, triangulation has been applied in a limited number of studies. Jick (1979) combined qualitative and quantitative approaches and emphasized the multiple advantages of triangulation; increasing the confidence of findings, suggesting new ways to capture research problems, and synthesizing theories applied to the same phenomenon. He demonstrated the use of triangulation by investigating the impact of job insecurity on turnover through multiple methods; surveys, co-worker observations, qualitative interviews, archival sources, and unobtrusive methods. His multiple methods provided consistent and convergent results; however, problems may arise when there are discrepancies across findings. Shih (1998) identified two main reasons for implementing triangulation: completeness and confirmatory purposes. Jack and Raturi (2006) also pointed out that triangulation engenders completeness, confirmation and contingency, and recommended its application to finance research.

In the following, we focus on four triangulation approaches discussed by Denzin (1970), pathways to integration into finance research, benefits, and ways of overcoming potential weaknesses.

**Data Triangulation**

Denzin (1970) defined data triangulation as the use of data sources on time, persons and space in a single study. Data sources may vary due to the time of collection, place, and settings (Denzin, 1970; Mitchell, 1986). The study by Kelley and Krey (1934) was one of the earliest applications of data triangulation and relied on two data sources (peer judged by students and the world; association test scores) to test four traits; courtesy, honesty, poise and school drive.
There are instances where data are collected concurrently (longitudinal studies) and simultaneously implemented, and therefore cannot be considered under time triangulation. Kimchi et al. (1991) emphasized that studies conducted under time triangulation are based on data collected at different times, and aim to identify similar findings. Similarly, studies conducted under data triangulation focused on variance in situations, subjects and places with the purpose of increasing the confidence over findings. Fielding and Fielding (1986) emphasized that the weaknesses in one data source could be compensated by the strengths of another, which results in increased validity and reliability over findings. Banik (1993) identified the nature and increased amount of data available for interpretation as the main benefits of data triangulation, while Burr (1998) emphasized comprehensiveness and convergence as its main benefits.
How to proceed with data triangulation?

Turner et al. (2013) presented a single-method investigation of the dividend puzzle (why do companies pay dividends?) through a secondary analysis of financial data. They applied a quantitative methodology and proxies to explain and test current dividend theories. Even though their results were consistent with the signaling hypothesis, they revealed contradictions in the catering theory and prospect theory, and provided little support for the agency and liquidity hypotheses. To solve those inconsistencies, we suggest triangulating the findings from secondary data with primary data.

![Figure 1. Possible application of data triangulation.](source)

Source: Authors’ own.

It is also possible to observe person variation in the data, and include both investor’s and management’s views regarding the same phenomenon; this case can also be included in data...
triangulation. Further, it is conceivable to investigate different contexts (settings) in developed and developing markets. After reviewing all available possibilities, we derived three forms of data triangulation: sequential data triangulation, concurrent data triangulation and multiple data triangulation.

1. Sequential data triangulation: Data collection and analysis occurs in two phases. One data type or source is followed by another, and interpretation is based on the entire findings.

2. Concurrent data triangulation: Data collection and analysis of two data types occurs concurrently in two phases, minimizing the time required compared to the sequential approach. The preliminary objective of this method is to achieve confirmation while reducing the inherent weaknesses of one data type or source.

3. Multiple data triangulation: More than two data sources to investigate the same phenomenon can be named “multiple data triangulation”. It can also be applied to a sequential or concurrent process.

The weaknesses of data triangulation are investigator or respondent biases, difficulties in dealing with big data sets, and the additional cost and time requirements. These weaknesses could be minimized but not easily eliminated. It is possible to classify surveys and interviews where the people under investigation are aware of the experiment. However, situational and personal biasness in the results could still result from other reasons. As Web et al. (1966) suggested, it is possible to use unobtrusive data sources (archival records like memos, simple observation, videos, recordings) to achieve more comprehensive and complete data triangulation.

Methodological Triangulation

Campbell and Fiske (1959) laid the foundations of methodological triangulation by identifying the multi-method technique as an important tool to achieve validation and convergence. Denzin (1970) interpreted this approach as “between or across methods triangulation”, a view later supported by Jick (1979) and Thurmond (2001). Jick (1979) defined this approach as the most popular method of methodological triangulation, as it is based on the use of multiple methodologies (qualitative and quantitative) to investigate a similar phenomenon. The second version of methodological triangulation is known as “within-method triangulation”, where multiple data collection is carried out under one
method, thereby achieving higher internal consistency or reliability (Denzin, 1970). The use of the within-method is strongly recommended by Jick (1979), since a quantitative method (such as in a survey) allows the acquisition of multiple scales or indices of a single concept. It is thus possible to identify this approach as a type of data triangulation. Within-method triangulation is also identified as a useful cross-validation tool by Onwuegbuzie et al. (2010).

In a qualitative study, the within-method is able to combine in-depth interviews and separate observations in the same study. Methodological triangulation also reduces deficiencies and biases which could derive from a single method approach. Additionally, the strengths of one method could compensate for the weaknesses of others.

Unlike other triangulation approaches, methodological triangulation has been applied to management research areas such as marketing, human resources, operations management and business administration, but very rarely to financial studies. The problem often starts at the first step of analysis: namely to choose between to apply the qualitative or quantitative method first, or both concurrently.

Creswell (2009) emphasized four important factors when planning a mixed method procedure; timing, weighting, mixing and theorizing. Timing refers determining when to conduct qualitative and quantitative data collection, and whether to proceed with sequential or concurrent phases. If sequential phases are the preferred choice, the decision whether to proceed firstly with qualitative or quantitative study in the research process will depend on the researcher’s intention. When qualitative data are collected first, the intention is to explore the phenomenon with a large sample. When data are collected concurrently, implementation should be simultaneous (Creswell, 2009). Weighting refers to whether priority is given to quantitative or qualitative design, which depends on factors such as researcher’s interest, audience and purpose of the study. Mixing refers to establishing how to mix data collection and analysis based on multiple methods. According to Creswell (2009), mixing could occur in three phases: connected mixed methods, integrating data and embedding data. In the connected mixed methods, either qualitative or quantitative data collection or analysis occurs first, followed by as is followed by the other approach. In the integrating stage, researchers proceed with qualitative and quantitative data collection concurrently, followed by simultaneous analysis. Under the embedded method, the aim is to collect one type of data, while the other type only provides supporting information. Theorizing (or the “transforming
lens”) refers to the use of theoretical perspective to guide the entire research study: this entails the operationalization of concepts, the sampling procedure, data collection methods, determining potential implications of the study, among other aspects. Turner et al.’s (2013) exemplifies a study guided by multiple perspectives including signaling theory, catering theory, agency theory, liquidity hypothesis and behavioral explanations. Even though these four factors (timing, weighting, mixing and theorizing) do not exhaust all the possibilities, six major methodological designs were derived from them by Creswell (2009):

1. Sequential Explanatory Design: Quantitative data collection and analysis takes place, followed by qualitative data collection and analysis. Finally, an interpretation of the entire analysis is conducted by the researcher. It is useful when researchers show a strong quantitative intention.
   a. For example, in the Turner et al.’s (2013) study, since the researchers have strong quantitative leaning and unexpected results have arisen within the paradigm, it is possible to apply the sequential explanatory design by surveying the management followed by some qualitative interviews. The drawback of this method is the time involved in the two separate phases, but it contributes to confirmation, completeness and convergence of results.
13. Research problem: Why do companies pay dividends?

1. Sequential Exploratory Design: Qualitative data collection and analysis takes place first, followed by quantitative data collection and analysis, and finally, by an interpretation of the entire results.

a. Jiraporn et al.’s (2015) study exemplifies this approach. They investigated dividend policy and managerial ability through a quantitative study using proxy variables, and results showed that more talented managers are more likely to pay dividends. Since it is a new investigation in dividend policy which
required further validation and confirmation, we suggest that the next step should be to proceed with a qualitative study (interviews) followed by a study of quantitative method (survey), which could provide sound support for a new hypothesis.

3. Sequential Transformative Design: Sequential data collection guided by a strong theoretical backing.
   a. There are numerous theories explaining the dividend puzzle, but Turner et al. (2013) only addressed a limited number such as the information asymmetry, catering, agency, prospect theories and liquidity hypotheses. Their study could have rested on a stronger theoretical framework by amalgamating also the life cycle, free cash flow theories and rent extraction hypotheses, which also attempt to explain the dividend puzzle.

4. Concurrent Triangulation Strategy: In order to achieve analytical convergence, confirmation and corroboration, both quantitative and qualitative data collection and analysis should occur concurrently. Creswell (2009) argued that through this strategy the inherent weaknesses of one method could be offset by the other.
   a. Since there is no consensus regarding the best proxy for corporate social performance, and contradicting results in the findings, Soana’s (2013) study should be readdressed under the concurrent triangulation strategy. This would require qualitative interviews and field survey concurrently, thereby offset the weaknesses of one method through the other.

5. Concurrent Embedded Strategy: Unlike the concurrent triangulation strategy, the concurrent embedded strategy focusses on a single phase of both qualitative and quantitative data collection. This approach therefore is less time-, effort- and value-consuming that the mixed method. Priority is given to one method based on researcher’s primary aims, while the other method plays a supporting role.
   a. An embedded strategy instead of concurrent triangulation results in a supportive role by the qualitative strategy.

6. Concurrent Transformative Strategy: Both quantitative and qualitative data collection occurs at the same time in a single phase, and mixing of evidence occur during the connecting, integrating or embedding stages.
a. Wang et al. (2016) carried out a study to investigate the catering theory using a proxy variable to explain the investors’ demand or preference. Since their study is driven by a theoretical model and further confirmation is required to explain investors preference (behavioral explanation), we recommend the concurrent transformative strategy where the researchers could have data collection at one phase (qualitative interviews of the investors, quantitative survey on investors) and mixing data during the connection, integration or embedding stages.

**Theoretical Triangulation**

Theoretical triangulation refers to the application of multiple theories or hypotheses concurrently, with the purpose of explaining the same phenomenon (Hopper and Hoque, 2006). The intention is to apply multiple lenses and indicators in conceptualization, to provide sound theoretical support to research design and analysis. Hopper and Hoque (2006) warned that no single theory could enjoy an explanatory monopoly. Lounsbury (2008) argued that researchers tend to use multiple theories to obtain a diversity of actors and practices in their studies. As Hoque et al. (2013) argued, plurality in theory provides complementarity, which adds to the depth and richness of the studied phenomenon. At this point, we emphasize two major paradigms, namely historical sociology and sociological history (Fischer 1995). Rowlinson and Hassard (2013) described historical sociology as historical neo-institutionalism, and sociological history as neo-institutionalist history. They interpreted historical neo-institutionalism as a ‘theory-driven’ approach, and neo-institutionalist history as ‘story-driven’. Even though researchers in neo-institutionalist history are classified as story-driven (drawing on history to illustrate theory, as is frequently the case with finance researchers), Kieser (1994) proposed that theory could be advanced through the integration of history, as exemplified by the rent extraction hypothesis developed by Shleifer and Vishny (1997) from the free cash flow hypothesis of dividends (Jensen, 1986). Rowlinson and Hassard (2013) argued that neo-institutionalists should focus on applying theory to illuminate history, instead of focusing on historical data to elucidate theory.

When conducting theoretical triangulation, the major problem is deciding which theoretical perspectives are suitable for the study. There are both competing and complementary theories of a given phenomenon. Regarding the dividend puzzle, there are two major competing
theoretical perspectives; dividend relevance and irrelevance. By merely looking at the theoretical assumptions (related to the social reality) and appropriateness, researchers could proceed by combining complementary theories (signalling theory, free cash flow theory, catering theory, agency theory, life cycle theory among others) for confirmation, rejection or modification of the argument. Hoque and Hopper (1997) identified an alternative approach, namely to conduct a pilot study based on different perspectives, and to select the most appropriate theories explaining the research puzzle.

Moreover, Hopper and Hoque (2006) identified two types of theoretical triangulation guiding research. Theories with similar epistemological assumptions are called “within-same tradition”, but the problem arises with “out of the tradition” arguments. Hoque et al. (2013) argued that the core assumptions regarding ontology, epistemology and human nature provide the rationale for the particular ways of implementing theoretical triangulation in practise. They argued that proper justifications are required when selecting multiple theories, and that they are particularly useful when researchers hold multi-layers of insights on the phenomenon. Finally, we emphasize the four interrelated selection criteria of theories in triangulation introduced by Covaleski et al. (2003) for deciding between competing and compatible explanations. First, variable names and meanings should be in line with the theories; second, explanations of causal process with different perspectives should be consistent; third different theoretical perspectives should be based on the same unit of analysis ( individual or firm level); and fourth theories should entail causal-model forms. Furthermore, if researchers proceed with multiple sources of data (data triangulation), they are able increase the accuracy of their judgments and will be closer to attaining consensus over explanations.

**Investigator Triangulation**

Thurmond (2001) described investigator triangulation as a type of triangulation which requires more than one observer, interviewer, investigator or data analyst whose primary responsibility is to collect and interpret data without prior discussion with others. Eventually the findings are amalgamated based on the consensus amongst the investigators. Denzin (1970) argued that this approach provides greater credibility to observations while increasing trust over findings. The benefits of investigator triangulation are: establishing cross-investigator confirmation, minimizing intrinsic biases of investigators, strengthening validity and reliability, and ultimately increasing the robustness of findings. It is important to notice
that reduction in bias may sometimes undermine the objectivity of findings, as it may be caused by a resistance to new or unknown facts. It is thus suggested to match investigator triangulation to one or more alternative triangulation methods, and to allocate experts on qualitative and quantitative methods as investigators. Hence, it is possible to conduct any kind of triangulation study (data or methodology) by selecting two or more experts on qualitative and quantitative methods as investigators, thereby overcoming the gaps arisen from a single method. When multiple triangulation methods are used in a single study, it is known as “multiple triangulation”.

**How to proceed with data analysis in a triangulated research?**

Researchers should revise their conceptual framework to include data, investigator, methodological or multiple triangulation, and thereby achieve outcome higher level of theoretical pluralism. Each question or objective in a study should be investigated with the aim of achieving confirmation and comprehension of the findings of each strategy (Thurmond, 2001). The seminal study by Dunning et al. (2008) was based on a mixed method approach to quality of life (QoL) and rested on a different philosophical paradigm (geography). They employed a sound methodological approach combining face to face qualitative interviews and a quantitative survey. They properly proceeded with confirmation and comprehension procedures according to stated research questions and objectives.

Confirmation is defined as the convergence of two data sets based on the operationalization of two available approaches. Even though researchers use various statistical tools for confirmation of findings derived from two methodological approaches, problems have arisen when quantifying qualitative data, such as single case findings (outliers), or a non-existing or non-identified code (Thurmond, 2001). In order to avoid such difficulties, Mitchell (1986) introduced “conceptual validation” as an alternative approach whereby logical patterns of relationships among variables are investigated in both quantitative and qualitative methods. Then revised hypotheses are generated and tested in order to overcome gaps derived from the mixed methodology.

Mixing of qualitative and quantitative findings leads to increased comprehension, which accelerates the understanding of the phenomenon (Morse, 2003). The difference between confirmation and comprehension is demonstrated by Mitchell (1986) as shown in Figure 2.
Figure 3. Confirmation and comprehension

Source: Adapted from Mitchell (1986).

Even though confirmation refers to similarities of findings (or similar differences), comprehension refers to the total findings (which also include unique differences). If there are unique differences in findings, the two methodologies must be revised in terms of the dimension and indicator level characterizing the whole research process, including wording, coding and conceptual validation. Mitchell (1986) observed that confirmation and comprehension of concepts are not mutually exclusive, which corroborates Dunning et al. (2008) observations. Sometimes, the lack of confirmation may lead to increased insights on the phenomenon, which would not have been achieved from a single method (Dunning et al., 2008).

CONCLUSION AND PRACTICAL IMPLICATIONS

In this study, the ways and means of applying triangulation approaches in finance research have been comprehensively and critically reviewed. In addition, we highlighted its benefits, modes of reducing weaknesses, and importance of congruence, completeness and divergence. As a concluding remark, we argue that applying triangulation may promote a consensus on prevailing issues in financial phenomena that remain after decades (such as the capital structure puzzle). Moreover, we suggest that finance researchers should justify their selection of relevant methodology, eliminate convenient methodology selection biases, and minimize the inherent weaknesses of the selected methodology.

In summary, it is possible to apply the triangulation approach to finance research in five ways: data triangulation, methodological triangulation, theoretical triangulation, investigator triangulation and multiple triangulation. Despite numerous challenges and issues faced by researchers, it is possible to propose a creation of a new hybrid discipline in finance research merging incongruent binaries within the same tradition. This new discipline would contribute to reducing the quantitative-qualitative methodological divide, while bridging the gaps between dissimilar areas in finance.
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Working Capital and Firm Performance: Special Reference to Listed companies in Sri Lanka
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ABSTRACT

This study investigates impact of working capital on firm performance. Fifty non-financial and services firms are investigated. Firms were selected using stratified proportionate random sampling method based on Global Industry Classification Standard. Secondary data representing the period of 2011-2016 were used for this study. Working capital is measured using Current Ratio, Quick Ratio, Current Assets to Total Assets, Current Liabilities to Total Assets and Working Capital Turnover Ratio. Firm performance is measured using traditional measures Gross Profit Ratio, Net Profit Ratio, Return on Assets and Return on Equity. Descriptive statistic, Correlation analysis, Panel data regression analysis both fixed effect and random effect with Hasuman specification test were used. Study reveals that working capital has impact on firm performance (8.2% on Net profit) which is consistent with previous empirical evidences and theories. This study concludes that: Working capital management policy affects performance of the company and if the firm can effectively manage its working capital, it can lead to increasing firm performance.

Keywords: Working Capital, Traditional Performance Ratios and Firm Performance
INTRODUCTION

Finance, both in theory and in practice, has experienced a strong development over many decades. Large firms in Sri Lanka and elsewhere in the world have been receptive to the advancements made in modern financial theory and the increasing globalization of markets. Companies already used to making decisions with regard to operating environment, corporate objectives, financial reporting objectives, and agency costs, as well as smaller firms and non-profit organizations, are recognizing the advantages to be gained from the new knowledge and are eager to adapt new techniques for their benefit.

Corporate financial management involves all functional areas within a business from market-related issues to operating issues within the business. Both marketing issues and operating issues regularly require financial resources, investments which in turn need to be financed. The broad concern of making sensible investment and finance decisions is the domain of financial managers. The decisions are by nature economic decisions, although managers may use as their information resource accounting information systems devised by accountants.

A number of external factors in the business environment affect managers’ decisions and the firm: for example, financial markets, government rules and regulations, tax structure, competitors, general business conditions, world economy, etc. Management needs to consider these inputs in making decisions, for example, on types of products or services to offer, marketing and production systems, investment policies, amount of debt used, dividend policy, working capital policies, employee policies, and the like. The outcomes of these decisions are later filtered, translated, and presented in the financial statements of the firm; and the financial statements in turn constitute an important input for financial decisions among the users of those statements.

Practitioners and researchers believe that working capital can be managed strategically to improve competitive position and firm performance. Liquidity or profitability and the balance between both are challenging decisions while conducting a firm day to day operation. Liquidity is a precondition to ensure that firms are able to meet their short term obligations and their continued flow can be guaranteed from a profitable undertaking. Business must be run both efficiently and profitably. An asset–liability mismatch may occur which may increase firm’s firm performance in the short term but at a risk of its insolvency. On other
hand, too much focus on liquidity would be at the expense of profitability. Thus, managers of a business entity is in a dilemma of achieving desired tradeoff between liquidity and profitability in order to maximize the value of a firm (Padachi, 2006; Abuzayed, 2011). Working capital investment involves a tradeoff between profitability and liquidity. Working capital policy is one of the factors affecting bankruptcy. The aim of working capital management is to select a unique combination of current assets and short term debts in order to achieve a balance between the firm profitability and risk. In most of the financial literatures, working capital parts are associated with a balance discussion between risks and return because working capital management is a type of risk and return topic. Strategies associated with high risk and return are addressed perky policy and strategies with lower risk and return are called moderate policy and finally strategies with the lowest risk and return are called conservative policy. Inappropriate working capital management is a reason for the failure of most bankrupt companies. They may have a good financial status in long term but they start to lose their competing ability due to the insufficiency of working capital (Zohdi, Valipour, and Shahabi, 2010).

Use of financial ratios to assess the firm performance is not new. A simple literature search can find literally thousands of publications on this topic. The studies often differentiate themselves from the rest by developing and using different independent variables (financial ratios) and/or employing different statistical or machine learning based analysis techniques. For instance, Horrigan (1965) claimed that the development of financial ratios ought to be a unique product of the evolution of accounting procedures and practices; further stating that the origin of financial ratios and their initial use goes back to the late 19th century. Financial ratios, which are calculated by using variables commonly found on financial statements, can provide the benefits (Ross, Westerfield and Jordan, 2003).

Working capital management is a simple and straightforward concept of ensuring the ability of the organization to fund the difference between the short term assets and short term liabilities (Harris, 2005). In practice, working capital management has become one of the most important issues in business entities where many financial executives are struggling to identify the basic working capital drivers and an appropriate level of working capital (Lamberson, 1995). Firms can minimize the risk and improve the performance by understanding the role and drivers of working capital management. A firm may adopt an
aggressive working capital management policy with a low level of current assets as a percentage of total assets, or it may also be used for financing decisions of the firm in the form of high level of current liabilities as a percentage of total liabilities. Excessive levels of current assets may have a negative effect on firm performance whereas a low level of current assets may lead to a lower level of liquidity and stock outs, resulting in difficulties in maintaining smooth operations (Van Horne and Wachowicz, 2004) Most empirical studies relating to working management and firm performance support that aggressive working capital policies enhance a firm’s profitability (Jose, Lancaster and Stevens, 1996; Deloof, 2003; Shin and Soenen, 1998; Wang, 2002; Sharma and Kumar, 2011). Determination of optimal working capital is ongoing research. Various studies from emerged and emerging countries context with different measures of variables using different analytical tool have been done last couple of years (Jose, Lancaster and Stevens, 1996; Deloof, 2003; Shin and Soenen, 1998; Wang, 2002; Sharma and Kumar, 2011; Teruel and Salano, 2007; Talonpoiko, Karri, Pirttila and Monto, 2016; Raheman, Afza, Qayyum and Bodla, 2010; Harsh and Satish, 2013; Mehta, 2017; Harsh, Satish Kumar and Sisira, 2017). Due to mixed results of studies in various context and different periods of the study necessitates constructing this study in Sri Lankan listed companies in recent years. Working capital related studies are important to emerging countries like Sri Lanka which will give fruitful avenues to find the space to take some crucial decisions. Therefore the present study is initiated to find out that to what extent working capital influences on Firm performance in the Sri Lankan context? The main objective of the study is to find out the impact of working capital on firm performance.

REVIEW OF LITERATURE

This section focuses on extant literatures relating to the working capital components and how its components impact on firm performance. The researcher critiques the relevant literatures for this study in terms of accounting and financial concepts.

The traditional definition of Finance is the study of funds management and the directing of these funds in order to achieve its particular objectives. The unique objective of a good financial management is to maximize returns that associate with minimizing of financial risks simultaneously. In Financial management it is critical to understand the business objectives and financial functions before recognizing the major component that is the short-term financial management or the Working Capital Management relative to the day-to-day
operations (Brigham and Ehrhardt, 2010; Chandra, 2008; Keown, Martin, Petty, and Scott, 2002; Sharma, 2009).

Any business requires efficient management of both long-term and short-term assets to sustain its growth. Since major decisions of any company primarily focus on long-term financial investments and assets, it leads to many times side-lining the importance of short-term assets and liabilities. But in present tumultuous financial markets and ambiguous market dynamics, to restrict external financing for working capital, the short-term assets and liabilities need to be managed effectively. Working capital management (WCM) impacts the firms’ profitability and risk and hence their value (Smith, 1980). The finance manager’s inefficiency to handle the current assets and liabilities in proper manner has led to closure of a lot of business units (Smith, 1973). Working capital is a measure of operating liquidity and defines the short-term condition of a company and inefficient handling of working capital can deteriorate the strength of the entity. Alternatively, excessive working capital may sway the firm into investing heavily on fixed assets and eventually leading it into a situation of overcapitalization which may not be compensated by its sales. Too much of operating capital may tempt the firm to overtrade or accumulate the inventory unnecessarily which could adversely affect the profitability. On the other side, paucity of working capital may hamper the firm in implementing its operations and consequently in achieving its targets. So it is desired to maintain balanced level of working capital. A balanced working capital elevates a firm’s rating in the market in terms of liquidity, and at the same time it accelerates growth of shareholders value (Jeng-Ren et al., 2006). For firms which are financially constrained, efficient working capital increases their value significantly (Wasiuzzaman, 2015).

Working Capital Management is concerned with management of short-term capital of a firm, that is, funds required by a firm to finance its daily operations. This short-term capital consists of current assets and current liabilities. Current assets generally include the cash, accounts receivables, accrued income, inventories (raw materials as well as finished goods), prepaid expenses and other short-term investments. Such assets have a short life span and may be converted into cash within an accounting period of a business (generally a year). On the other hand, current liabilities are obligations of a firm toward its creditors and are constituted by short-term loans, bills payable, outstanding expenses, proposed dividends and other similar factors. Current liabilities are indirect sources of external financing for business entities and
may be of much more importance for smaller firms that may face problems in acquiring long-term loans (Teruel and Martínez - Solano, 2007). Working capital requirement is taken care by capital provided by the shareholders/investors and payments from the debtors. Working capital may be classified conceptually as quantitative and qualitative. Quantitatively, the total current assets are considered and this type of working capital is known as the gross working capital. Qualitatively, the excess of current assets over current liabilities highlights the net working capital. In case current liabilities exceed current assets, there is a deficit of working capital and vice-versa. Permanent/regular working capital defines the minimum amount of investment needed to be maintained in the business regardless of fluctuations in sales. There are various factors that influence the requirement of working capital. For instance, if the supply of raw materials is unpredictable and irregular then more capital would be needed to be invested in inventory. Alternatively, if credit from financial institutions is available on favorable terms and conditions then less capital would be required for carrying out the operations. Many other similar factors like nature of business, seasonal demand of products and market dynamics may also affect the working capital needs. For running a business smoothly and efficiently, a firm needs to maintain adequate amount of working capital (depending on market dynamics) to optimize its profitability.

Delavar, Kangarluei and Motavassel (2015) examined the relationship between working capital management, company performance and financial constraints of companies listed in Tehran Stock Exchange. To achieve the objectives of the study, 71 firms listed in Tehran Stock Exchange is studied for the period 2004 to 2012. In this study, to measure firm performance, Tobin’s Q-ratio has been used. In addition, for measuring financial constraints, Z score index, and for performance of the company the net trade cycle is applied. To test the hypothesis, multiple regression models using SPSS software has been used. The results indicate that there is no significant relationship between working capital management and firm performance. The results also indicate that there is no significant relationship between working capital management and financial performance of companies listed in Tehran Stock Exchange. Hoque, Mia and Anwar (2015) examined the profitability and working capital position of selected cement industries, correlation between them and whether the profitability is affected by working capital
management. Ratio Analysis have been used to show Profitability position & Working Capital position. Correlation Matrix have been used to show correlation between them and Regression Analysis have been used to show the impact of Working Capital management on Profitability respectively. The study is mainly based on secondary data. The study reveals that Profitability position & Working Capital position over the study period is not satisfactory. From the study it is also found that there is significantly positive correlation between profitability and working capital components as well as impact of day sales outstanding (DSO) on profitability ratios is negatively significant. The study recommended that sample cement industries should reduce their day sales outstanding (DSO) for improving their profitability position.

Tran, Viet and Hoang (2015) aimed at investigating the relationship between working capital management and profitability. This study is based on a panel data of 98 manufacturing firms listed on Ho Chi Minh City Stock Exchange for a period 6 years (from 2009 to 2014). The results of Pearson’s correlation and fixed effects multiple regression analysis found significant negative relationships between cash conversion cycle, net trade cycle, average collection period, average inventory period, average payment period and return on assets. So managers can improve the firm’s profitability by reducing cash conversion cycle, net trade cycle and it’s components to an optimal level. Further, the control variables including liquidity, leverage, firm size and firm growth also have significant effects on firm profitability. In particular, the findings also imply that managers can use net trade cycle instead of cash conversion cycle confidentially.

Islam and Rahman (1994) conducted a study on working capital trends of enterprises in Bangladesh. They find that optimum working capital enables a business to have its credit standing and permits the debts payments on maturity date and helps to keep itself fairly in liquid position which enables the business to attract borrowing from the banks. Nejad et.al (2013) preformed a research worked on the Effect of Working Capital Management on the Profitability of Listed Companies in Tehran Stock Exchange. The research results of this study indicate that, there is a significant inverse relationship between cash conversion cycle and its components, including the collection period, inventory turnover period and accounts payable turnover period, and profitability of the firms. Here it is also recommended that corporate managers can increase the profitability of their company desirably by reducing the collection period and inventory turnover period. In the article “Liquidity-Profitability
Tradeoff: An Empirical Investigation in an Emerging Market” Eljelly (2004) examined the relation between profitability and liquidity by using Correlation and regression analyses and found that the cash conversion cycle was of more importance as a measure of liquidity than the current ratio that affects profitability. A study with a view to analyzing the relationship between working capital management efficiency and corporate profitability in the Indian Cement Industry was conducted by Santanu, Ghosh and Maji (2003). His results depicted a significant association between effective and efficient use of current assets and profitability. However, the study also revealed that the performance of the industry was not remarkable during that period. Chakraborty (2008) his article “Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industryl. He observed that there were two different viewpoints: One was that there might be a negative relationship between working capital and profitability and that the former does not play any role in improving the later. The second view was that Working Capital Management had a notable impact on Profitability and that without investment in working capital, the desired level of Sales could not be achieved. In a survey conducted by Ancuist et al (2012) the effect of working capital management on profitability during 1990 to 2008 in Finland stock Exchange was examined. The results showed that there is an inverse relationship between the cycles of cash, receivable accounts Collection period and inventory turnover period, and profitability; and there is a direct relationship between the cycles of cash, receivable accounts collection period and inventory turnover period, and accounts payable turnover period.

Nimalathasan (2010) revealed that a negative relationship between cash conversion cycle and profitability and a positive relationship between the inventory conversion period and profitability. Oye (2003), Beaumont and Begemann (1997) emphasized that the major concept of the working capital management are profitability and liquidity. They point out that there exists a trade-off between profitability and liquidity. Thus, the relationship between profitability and working capital helps to understand the relationship between profitability and liquidity, the dual goals of the working capital management. Mahamad and Saad (2010) investigated that the effect of working capital management and the performance. They found that current assets to total assets ratio shows positive relationship. Cash conversion cycle, current assets to current liabilities ratio and current liabilities to total assets ratios show the
negative relations. Raheman and Nasr (2007) found that most of the Pakistani firms have large amounts of cash invested in working capital. They have found significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle. Shin and Sonen (1998) studies the relationship between working capital management and profitability of the firm. They found a strong negative relationship between net trade cycle and corporate profitability in long run. Wang (2002) examined the relationship between working capital management and firm profitability and found that lesser the investment in working capital which leads to increase the profitability of the firm. Quayyum (2011) study on Effects of Working Capital Management and Liquidity: Evidence from the Cement Industry of Bangladesh. In her study she discovered that significant level of relationship between the profitability indices and various liquidity indices as well as working capital components. She also it also recommended that the firms should forecast their sales and hold cash enough as according to their projected sales level, so that they be able to take advantage of the bargaining position while making purchases and thus reduce cost. Rahman (2011) conducted a research work on Working Capital Management and Profitability: A Study on Textiles Industry. In his study he found that correlation exists between Working Capital Management and Profitability. The study also brings to fore that Working Capital Management has a positive impact on Profitability.

Literature review consisting some of previous studies though limited in scope, methodology and overall output. Likewise, lack of not incorporating all relevant and most important variables (independent) used to measure both working capital and firms profitability, it creates difficulty for comparability of studies conduct in similar areas. Beside this researcher’s knowledge, all previous studies includes accounting ratios constructed on basis of accrual basis accounting as proxies for measurement of firm performance such as ROE, ROA, net profit ratio and gross profit ratio.

**RESEARCH METHODOLOGY**

**Organizational profile**
Firms in Sri Lanka are operating highly volatile environment. Each firm competes with other to take competitive advantage in each aspect while they are contributing to economy of Sri Lanka. Their performance in terms of their profitability and its financial position should be strengthened. Listed firms are disclosing each aspect in their financial statements which are accompanied with respective rules and regulations. Stakeholders including management should have well awareness to use information in proper point while their decision making which signify the necessity of the study. Firms listed under industries of Consumer Durables and apparel, Retailer, Automobile, Food Beverage and tobacco, Food staples and retailing, Household and personal product, Energy, Pharmaceuticals, Biotechnology & life, Sciences, Capital goods, Material and Utilities are considered.

**Data Collection**

Data for research derives from two main sources. Original data, which is referred to as primary data, is collected directly for the intended purpose. For example, survey data, questionnaires, observations and experimental data. Data which already exists is referred to as secondary data, such as annual reports, books, published statistics and internal records kept by companies. The data and information required for the study are collected from the Colombo Stock Exchange (CSE) websites, annual reports, journals and the Colombo Stock Exchange publication The Hand book of listed companies during the period of 2011 to 2016.

**Sampling Design**

The Global Industry Classification Standard (GICS) was developed by S&P Dow Jones Indices, an independent international financial data and investment services company and a leading provider of global equity indices, and MSCI, a premier independent provider of global indices and benchmark-related products and services. The GICS methodology aims to enhance the investment research and asset management process for financial professionals worldwide. It is the result of numerous discussions with asset owners, portfolio managers and investment analysts around the world. It was designed in response to the global financial community’s need for accurate, complete and standard industry definitions. The GICS structure consists of 10 sectors, 24 industry groups, 67 industries and 156 sub-industries.

The sample used for this research comprises non-financial companies listed on the Colombo stock exchange of Sri Lanka (excluded financial and other services related sectors). The
samples are selected according criteria; the companies must have complete data for all variables from its Statement of cash flow Statements of income and Statement of financial position; the companies must have operated during the fiscal year ended 31st March. Commercial and professional services, Transportation, Consumer Services, Media Industry, Health care and Services, Banks, Diversified Financials, Insurance, Real estate, Software and services and Telecommunication are ignored due to the unique nature of activities (Dimitrios, Chritos and Iordanis; 2006, Dawar;2014, Ebaid;2009). Stratified proportionate sampling method is utilized to get the sample size in this study. The companies are stratified based on the 24 different industry groups. All service and financial related industry groups are excluded. Selected industry groups and number of firms are presented in following Table.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Listed Companies</th>
<th>Included Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Durables and apparel</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Retailer</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Automobile</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Food Beverage and tobacco</td>
<td>55</td>
<td>18</td>
</tr>
<tr>
<td>Food staples and retailing</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Household and personal product</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Energy</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Pharmaceuticals, Biotechnology &amp; life Sciences</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Capital goods</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td>Material</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>Utilities</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>148</td>
<td>50</td>
</tr>
</tbody>
</table>

METHODOLOGY
This study is based on a positivist paradigm used deductive reasoning and quantitative techniques. This study adopted a positivist approach, because a positivist approach seeks facts or causes of social phenomena. The reasoning is deductive because the hypotheses were derived first and the data were collected later to confirm or negate the propositions.

Measurement of Variable
For the analysis, all dependent and independent variables are measured using accounting ratios constructed from financial statements (Statement of Comprehensive Income and Statement of Financial position). The independent variables considered related to working capital management include Current Ratio, Quick Ratio, Current liability/Total assets, Current assets/Total assets and Working capital turnover.

The study uses dependent variable as measure of firm performance which is measured using traditional measures. Traditional measures are Gross profit ratio Net profit ratio, Return on Assets and Return on equity.

**Model Setting**

While most of the existing studies have used the OLS regressions, this study utilizes recent development in the econometrics of panel data (fixed effect methodology (FEM) and Random effect methodology (REM)) to estimate the parameters in the model. Panel data models are powerful research instruments, which take into account the effects of cross sectional data. This in turn may help to estimate the appropriate empirical model. This uses general models for panel data that make it possible to produce an empirical estimate of the relationship between working capital and firm performance.

**Conceptualization**

This study conceptualizes based on theoretical and empirical evidences that working capital, and firm performance have inter - relationship and affect each other in different direction and in different degree. To optimize the firm performance firms should keep eye on its working capital management. The following figure illustrates study’s conceptual frame work.
Operationalization

<table>
<thead>
<tr>
<th>Concept</th>
<th>Variables</th>
<th>Indicators</th>
<th>Measurement</th>
<th>Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Capital</td>
<td>Liquidity</td>
<td>Current Ratio = \frac{\text{Current Assets}}{\text{Current Liabilities}}</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quick Ratio = \frac{\text{Quick Assets}}{\text{Current liabilities}}</td>
<td>QR</td>
<td></td>
</tr>
<tr>
<td>Working capital policy</td>
<td>Current liability/Total assets = \frac{\text{Current liability}}{\text{Total assets}}</td>
<td>CLTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Current assets/Total assets = \frac{\text{Current assets}}{\text{Total assets}}</td>
<td>CATA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working capital efficiency</td>
<td>Working capital turnover = \frac{\text{Turnover}}{\text{Networking capital}}</td>
<td>WCT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Firm performance

Profitability

| Traditional Ratios | Gross profit ratio = \frac{\text{Gross Profit}}{\text{Sales}} *100 | GP         |
|                    | Net profit ratio = \frac{\text{Net profit ratio}}{\text{Sales}} *100 | NP         |
|                    | Return on Assets = \frac{\text{EBIT}}{\text{Total Assets}} *100 | ROA        |
|                    | Return on equity = \frac{\text{Net income}}{\text{Share holders’ equity}} *100 | ROE        |

Hypotheses

Through severe review of extant literature following hypotheses have been formulated. The study uses a set of proxies (financial ratios) with reference of previous studies for working capital and firm performance to examine the effect of working capital and Capital Structure on firm performance.
Table: Hypotheses of the Study

$H_1$ There is a relationship between working capital and firm performance

$H_{1a1}$ There is a significant relationship between QR and GP

$H_{1a2}$ There is a significant relationship between CR and GP

$H_{1a3}$ There is a significant relationship between CLTA and GP

$H_{1a4}$ There is a significant relationship between CATA and GP

$H_{1a5}$ There is a significant relationship between WCT and GP

$H_{1b1}$ There is a significant relationship between QR and NP

$H_{1b2}$ There is a significant relationship between CR and NP

$H_{1b3}$ There is a significant relationship between CLTA and NP

$H_{1b4}$ There is a significant relationship between CATA and NP

$H_{1b5}$ There is a significant relationship between WCT and NP

$H_{1c1}$ There is a significant relationship between QR and ROA

$H_{1c2}$ There is a significant relationship between CR and ROA

$H_{1c3}$ There is a significant relationship between CLTA and ROA

$H_{1c4}$ There is a significant relationship between CATA and ROA

$H_{1c5}$ There is a significant relationship between WCT and ROA

$H_{1d1}$ There is a significant relationship between QR and ROE

$H_{1d2}$ There is a significant relationship between CR and ROE

$H_{1d3}$ There is a significant relationship between CLTA and ROE

$H_{1d4}$ There is a significant relationship between CATA and ROE

$H_{1d5}$ There is a significant relationship between WCT and ROE

$H_2$ Working Capital has significant impact on firm performance

$H_{2a}$ Working Capital has significant impact on NP

$H_{2b}$ Working Capital has significant impact on GP

$H_{2c}$ Working Capital has significant impact on ROA

$H_{2d}$ Working Capital has significant impact on ROE

$H_{21a}$ Working Capital has significant impact on NP

$H_{21b}$ Working Capital has significant impact on GP

$H_{21c}$ Working Capital has significant impact on ROA

$H_{21d}$ Working Capital has significant impact on ROE
Statistical tools used in the study

This study uses descriptive statistics to summarize the sample characteristics, correlation analysis to find out the degree of relationship between dependent and independent variables, and panel data methodology to conduct analysis as it takes into effect systematic differences between the firms as compared with Ordinary Least Square (OLS) regression methodology which assumes that model parameters remain constant across all firms. Under panel data regression methodology, there are two types of data models: fixed effect methodology (FEM) and Random effect methodology (REM). FEM model takes into account the individuality of each firm or cross-sectional unit included in the sample by allowing the intercept to vary for each firm but still assumes that the slope coefficients are constant across firms. REM is theoretically the opposite of the FEM and assumes that the variables are uncorrelated and appropriately can apply random effects when performing the regression. Moreover, the REM disregards the need for generating dummy variables and instead uses a disturbance term in correspondence with the error term. To determine whether to use FEM or REM for data set, Hausman (1978) specification test is conducted. The Hausman test statistic is asymptotically disturbed as $X^2$ and is based on the Wald criterion. The Hausman test assumes the null hypothesis that there is no correlation between the individual effects and the regressors and hence REM should be used. In case the null is rejected, implying correlation between the individual effects and the regressors, FEM is preferred over REM.

ANALYSIS, RESULTS AND DISCUSSION

Data Presentation

Under this section of data presentation, the researcher have analyzed and presented all data collected from annual reports of listed companies. For research purpose, the process of presenting data is necessary to understand the pattern of statistics and to find out its open feathers. In this research the process is undertaken from the pattern of the classified schedule of data. In a way the data collected is presented in tabular a form.
Working Capital

Working Capital measures such as Current Ratio (CR), Quick Ratio (QR), Current Liabilities to Total Assets (CLTA), Current Assets to Total Assets (CATA), and Working Capital Turnover Ratio (WCT) are tabulated on yearly average basis in Table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>CR</th>
<th>QR</th>
<th>CLTA</th>
<th>CATA</th>
<th>WCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011/12</td>
<td>2.34</td>
<td>1.79</td>
<td>0.46</td>
<td>0.43</td>
<td>4.25</td>
</tr>
<tr>
<td>2012/13</td>
<td>2.56</td>
<td>1.97</td>
<td>0.39</td>
<td>0.42</td>
<td>2.68</td>
</tr>
<tr>
<td>2013/14</td>
<td>2.77</td>
<td>2.18</td>
<td>0.26</td>
<td>0.44</td>
<td>3.75</td>
</tr>
<tr>
<td>2014/15</td>
<td>1.94</td>
<td>1.39</td>
<td>0.46</td>
<td>0.45</td>
<td>3.12</td>
</tr>
<tr>
<td>2015/16</td>
<td>2.13</td>
<td>1.61</td>
<td>0.27</td>
<td>0.41</td>
<td>3.02</td>
</tr>
<tr>
<td>Average</td>
<td>2.35</td>
<td>1.79</td>
<td>0.36</td>
<td>0.43</td>
<td>3.36</td>
</tr>
</tbody>
</table>

Firm performance (Traditional Measures)

Firm performance Measures (Traditional Measures) such as Gross Profit (GP), Net Profit (NP), Return on Assets (ROA) and Return on Equity (ROE) are tabulated as yearly average in Table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>GP</th>
<th>NP</th>
<th>ROA</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011/12</td>
<td>0.31</td>
<td>0.17</td>
<td>0.12</td>
<td>0.18</td>
</tr>
<tr>
<td>2012/13</td>
<td>0.26</td>
<td>0.21</td>
<td>0.08</td>
<td>0.12</td>
</tr>
<tr>
<td>2013/14</td>
<td>0.29</td>
<td>0.16</td>
<td>0.06</td>
<td>0.1</td>
</tr>
<tr>
<td>2014/15</td>
<td>0.28</td>
<td>0.14</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td>2015/16</td>
<td>0.27</td>
<td>0.15</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td>Average</td>
<td>0.28</td>
<td>0.17</td>
<td>0.07</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Descriptive Statistics

Descriptive statistics allow researchers to present important statistics such as measures of central tendency and spread to serve as a foundation for further analysis (Bradley & Brand, 2013). The descriptive statistics in Tables show the mean (Mean) and standard deviations (Std.Dev) of working capital, capital structure and performance for 250 observations. Mean of each variable is calculated using observations for sample overall years of the study period. The standard deviation of a variable measures the dispersion of its mean.
Descriptive Statistics of Working Capital

The summary statistics of explanatory variables (working capital) over sample period are presented in Table above, reflecting the mean value and standard deviation. CR (current ratio) is on average 2.35 times. Mean Value of QR (quick ratio) is 1.79 times. CLTA (current liabilities to total assets) and CATA (current assets to total assets) are average of 35% and 43% respectively which is witnessed a volatility of 20% both. WCT (working capital turnover) has a mean value of 3.36 times over study period.

Current Ratio (CR) is within the standard range of 2:1 to 3:1 which is good indicator of firms’ liquidity. While Quick ratio (QR) of 1:1 is considered satisfactory as a firm can easily meet all current claims. Quick ratio is average of 1.79 which indicates a small part of the current assets of the firm is tied up in slow moving and unsaleable inventories and fast paying debts. The firm would find it easy to pay current liabilities. The quick ratio provides, in a sense, a check on liquidity position of a firm as shown by its current ratio. The quick ratio is a more rigorous and penetrating test of liquidity position of a firm.

Aggressive investment policy results in minimal level of investment in current assets in relation to Total Assets. In contrast a conservative investment policy places a greater proportion of capital in current assets with the opportunity cost of lesser profitability. Current Assets to Total Assets (CATA) are 43% which means 43% of total assets are tied up in current assets. CATA is a measure of the asset structure and is the ratio of current assets to total assets. As this ratio increases, by an increase in the level of stocks and debtors, they mirror an increase in the use of trade credit, cash credit and short-term borrowing.

Aggressive financing policy utilizes higher levels of current liabilities and less long term debt. In contrast, a conservative financing policy uses more long term debt and capital with the

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR</td>
<td>250</td>
<td>2.355656</td>
<td>2.242504</td>
</tr>
<tr>
<td>QR</td>
<td>250</td>
<td>1.792281</td>
<td>2.053644</td>
</tr>
<tr>
<td>CLTA</td>
<td>250</td>
<td>0.3591091</td>
<td>0.2059991</td>
</tr>
<tr>
<td>CATA</td>
<td>250</td>
<td>0.4336061</td>
<td>0.2004956</td>
</tr>
<tr>
<td>WCT</td>
<td>250</td>
<td>3.363181</td>
<td>5.040866</td>
</tr>
</tbody>
</table>
more borrowing cost lesser profitability. Current Liabilities to Total Assets (CLTA) is 36% which indicates 36% of total assets are current liabilities.

Net working Capital (NWC) represents the excess current assets over current liabilities. A firm should have sufficient NWC in order to be able to meet the claims of the creditors and day to day needs of business. The greater is the amount of NWC, the greater is the liquidity of the firm. Accordingly, NWC is a measure of liquidity; inadequate working capital is the first sign of financial problems for a firm. Working capital turnover provides some useful information as to how effectively a company is using its working capital to generate sales. The working capital turnover is a measurement comparing the depletion of working capital to the generation of sales over a given period. A high ratio indicates efficient utilization of working capital and a low ratio indicates otherwise. But a very high working capital turnover ratio may also mean lack of sufficient working capital which is not a good situation. Mean value 3.4 of Working Capital Turnover (WCT) ratio show how effectively working capital is utilized. The higher your working capital turnover ratio is, the more efficient firms are in using working capital to generate sales, but a very high working capital turnover ratio can show that a company does not have enough capital to support its sales growth.

**Descriptive Statistics of Firm performance (Traditional Measures)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP</td>
<td>250</td>
<td>.2828689</td>
<td>.2399044</td>
</tr>
<tr>
<td>NP</td>
<td>250</td>
<td>.1657271</td>
<td>.2897093</td>
</tr>
<tr>
<td>ROA</td>
<td>250</td>
<td>.0737982</td>
<td>.0989854</td>
</tr>
<tr>
<td>ROE</td>
<td>250</td>
<td>.1004109</td>
<td>.1502029</td>
</tr>
</tbody>
</table>

In table above, descriptive statistics of dependent variable (Traditional accrual based performance measures) are presented. GP (gross profit ratio) and NP (net profit ratio) are on average of 28% and 16% of sales. Mean values of ROA (return on assets) and ROE (return on equity) are 7% and 10% respectively.

Gross profit is the result of the relationship between prices, sale volume and costs. A change in the gross margin can be brought about by changes in any of these factors. The gross margin represents the limit beyond which fall in sales prices are outside the tolerance limit. Further, the gross profit ratio can also be used in determining the extent of loss caused by theft,
spoilage, damage and so on in the case of those firms which follow the policy of fixed gross profit margin in pricing their products. A high ratio of gross profit to sales is a sign of good management as it implies that the cost of production of the firm is relatively low. It may also be indicative of higher sales price without a corresponding increase in the cost of goods sold. It is also likely that cost of sales might have declined without a corresponding decline in the sales price. A very high and raising gross profit ratio may also be the result of unsatisfactory basis of valuation of stock, that is, overvaluation of closing stock and/or under evaluation of opening stock. A relatively low gross margin is definitely a danger signal, warranting a careful and detailed analysis of the factors responsible for it. Firm should have a reasonable gross profit margin to ensure adequate coverage for operating expenses of the firm and sufficient return to owners of the business, which is reflected in the net profit margin. Net profit ratio is indicative of management’s ability to operate the business with sufficient success not only to recover from revenues of the period, the expenses of operating the business and the cost of the borrowed funds, but also leave a margin of reasonable compensation to the owners for providing their capital at risk. The ratio of net profit to sales essentially expresses the cost price effectiveness of the operation. A high net profit margin would ensure adequate return to the owners as well as enable a firm to withstand adverse economic conditions when selling price is declining, cost of production is rising and demand for product is falling. The gross profit margin and the net profit ratio should be jointly evaluated. The need for jointly analysis arises because two ratios may show different trends. In this study, the gross margin shows a substantial increase over a period of time but the net profit ratio actually has declined. It may be due to the fact that the increase in the operating expenses.

Profitability ratio is measured in terms of the relationship between net profit and assets. The Return on Assets (ROA) based on the ratio would be an underestimate as the interest paid to the lenders is excluded from the net profit. In point of fact, the real return on total assets is the net earnings available to owners and interest to lenders as assets are financed by owners as well as creditors. A more reliable indicator of the true return on assets, therefore, is the net profit inclusive of interest. It reports the total return accruing to all providers of capital. The ROA is measure of the profitability of total assets of a firm. It, however, throws no light on the profitability of different sources of funds which finance the total assets. The profitability ratios based on shareholders’ equity are termed as return on shareholders’ equity (ROE). The
ratio reveals how profitably the owners’ funds have been utilized by the firm. The real owners are the shareholders who bear all the risk, participate in the management and are entitled to all the profits remaining after all outside claims. The profitability of a firm from the owners’ point of view should, therefore, in the fitness of things be assessed in terms of the return on equity. This study reveals that ROA has mean value of 7% and ROE has the mean value of 10% which makes the evidence Sri Lankan firms are financed by debt due to that ROA is less than ROE. Larger parts of total assets are financed by debt while firms have high obligations to pay interest.

Correlation Analysis for working capital and performance

Table 7: Correlations

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>QR</th>
<th>CLTA</th>
<th>CATA</th>
<th>WCT</th>
<th>GP</th>
<th>NP</th>
<th>ROA</th>
<th>ROE</th>
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<tr>
<td>CR</td>
<td>Pearson Correlation: 1</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>QR</td>
<td>0.931**</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<td></td>
<td></td>
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<tr>
<td>CLTA</td>
<td>0.198**</td>
<td>0.046</td>
<td>Pearson Correlation: 1</td>
<td></td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.002</td>
<td>0.471</td>
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<tr>
<td>CATA</td>
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<td>Sig. (2-tailed)</td>
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<tr>
<td>WCT</td>
<td>-0.179**</td>
<td>-0.177**</td>
<td>-0.050</td>
<td>-0.049</td>
<td>Pearson Correlation: 1</td>
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<tr>
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<td>Sig. (2-tailed)</td>
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<td>0.005</td>
<td>0.435</td>
<td>0.442</td>
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<tr>
<td>GP</td>
<td>0.224**</td>
<td>0.304**</td>
<td>-0.085</td>
<td>-0.116</td>
<td>-0.019</td>
<td>Pearson Correlation: 1</td>
<td></td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.180</td>
<td>0.068</td>
<td>0.762</td>
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<tr>
<td>NP</td>
<td>0.022</td>
<td>0.121</td>
<td>-0.235**</td>
<td>-0.263**</td>
<td>-0.028</td>
<td>-0.022**</td>
<td>Pearson Correlation: 1</td>
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<td>Sig. (2-tailed)</td>
<td>0.733</td>
<td>0.055</td>
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<td>0.000</td>
<td>0.660</td>
<td>0.000</td>
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<tr>
<td>ROA</td>
<td>-0.094</td>
<td>-0.088</td>
<td>-0.182**</td>
<td>-0.178**</td>
<td>-0.115</td>
<td>0.058</td>
<td>0.239**</td>
<td>Pearson Correlation: 1</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.140</td>
<td>0.164</td>
<td>0.004</td>
<td>0.005</td>
<td>0.068</td>
<td>0.358</td>
<td>0.000</td>
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<tr>
<td>ROE</td>
<td>-0.084</td>
<td>-0.043</td>
<td>-0.140</td>
<td>-0.119</td>
<td>0.126</td>
<td>0.024</td>
<td>0.259**</td>
<td>0.533**</td>
<td>Pearson Correlation: 1</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>0.183</td>
<td>0.498</td>
<td>0.027</td>
<td>0.061</td>
<td>0.047</td>
<td>0.709</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table above contains the correlation matrix for the variables included to test association between variables and multicollinearity.

GP is positively associated with CR, while QR at 0.01 level. NP is negatively associated with CLTA and CATA at 0.01 level. CLTA and CATA are negatively associated with ROA at 0.01 level. CLTA and WCT are negatively associated with ROE at 0.05 levels.
GP is positively correlated with QR and CR. Inventory is one of the factor which affect both GP and CR ratio. Positive relationship means that while CR increases, GP increases. It can occur up to a certain levels because there is a bench mark for current ratio that 2:1 ideal any how it can be accepted in the range 2:1 to 3: 1. Positive relationship reveals a increase in CR will cause a increase in GP which is possible by increasing the level of inventory. GP and QR are correlated with each other in significant level which means when quick assets increases GP increases. This can also arise up to certain level that is 1:1 at 1.5:1 for quick ratio. In this study both QR and CR are in accepted range therefore CR and QR is positively correlated with GP. There is no relationship between NP and QR and CR. It indicates high operating cost. Increase in cash sales or credit sales will increase the quick assets and gross profit.

NP and ROA are negatively related with CLTA and CATA at 0.01 significant levels. An increase in CLTA and CATA decreases NP. Significant relationship between NP and ROA and CLTA and CATA indicates firms are operating its activities with accruals and advances of operating expenses and income. ROE is negatively related to CLTA which indicates an increase in ROE reduces current liabilities. Increasing ROE reduces accrual interest expenses thereby reduces current liabilities. While ROE is positively related with WCT which indicates high turnover of working capital increases ROE. GP is positively correlated with QR and CR. Inventory is one of the factor which affect both GP and CR ratio. Positive relationship means that while CR increases, GP increases. It can occur up to a certain levels because there is a bench mark for current ratio that 2:1 ideal any how it can be accepted in the range 2:1 to 3: 1. Positive relationship reveals a increase in CR will cause a increase in GP which is possible by increasing the level of inventory. GP and QR are correlated with each other in significant level which means when quick assets increases GP increases. This can also arise up to certain level that is 1:1 at 1.5:1 for quick ratio. In this study both QR and CR are in accepted range therefore CR and QR is positively correlated with GP. There is no relationship between NP and QR and CR. It indicates high operating cost. Increase in cash sales or credit sales will increase the quick assets and gross profit.

NP and ROA are negatively related with CLTA and CATA at 0.01 significant levels. An increase in CLTA and CATA decreases NP. Significant relationship between NP and ROA
and CLTA and CATA indicates firms are operating its activities with accruals and advances of operating expenses and income. ROE is negatively related to CLTA which indicates an increase in ROE reduces current liabilities. Increasing ROE reduces accrual interest expenses thereby reduces current liabilities. While ROE is positively related with WCT which indicates high turnover of working capital increases ROE.

Finally, the correlations among the independent variables suggest that multicollinearity should not be a problem in the panel data regression analysis, as the coefficient values are well below the 0.80 limit prescribed by Field (2005). However, Myers (1990) argues that a certain degree of multicollinearity can still exist even when none of the correlation coefficients are very large. Therefore, the variance inflation factors (VIF) are examined in all models and reported in below to further test for multicollinearity and all are below the threshold value of 10 suggested by Field (2005) indicating that multicollinearity does not pose a problem in the regressions.

| Table 8: Variance inflation factors |
|------------------|----------------|----------------|
| Variable        | VIF  | 1/VIF          |
| CATA            | 4.81 | 0.207747       |
| CLTA            | 4.66 | 0.214776       |
| QR              | 1.15 | 0.870735       |
| WCT             | 1.04 | 0.964845       |
| Mean VIF        | 2.91 |                |

| Table 9: Variance inflation factors |
|------------------|----------------|----------------|
| Variable        | VIF  | 1/VIF          |
| CATA            | 5.24 | 0.190987       |
| CLTA            | 4.71 | 0.212098       |
| CR              | 1.3  | 0.771529       |
| WCT             | 1.04 | 0.963556       |
| Mean VIF        | 3.07 |                |
## Panel data regression

**Working Capital and Firm performance (Traditional Performance Measures)**

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>GP</th>
<th>NP</th>
<th>ROA</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>QR</td>
<td>0.00491</td>
<td>0.0129**</td>
<td>-0.00137</td>
<td>0.00773</td>
</tr>
<tr>
<td>CLTA</td>
<td>-0.00556</td>
<td>-0.00186</td>
<td>-0.0278</td>
<td>-0.0257</td>
</tr>
<tr>
<td>CATA</td>
<td>0.0844*</td>
<td>-0.0114</td>
<td>0.257***</td>
<td>-0.0150</td>
</tr>
<tr>
<td>WCT</td>
<td>0.0320</td>
<td>0.00295</td>
<td>0.00689**</td>
<td>0.00555*</td>
</tr>
<tr>
<td>Constant</td>
<td>0.219***</td>
<td>0.257***</td>
<td>0.0162</td>
<td>0.153***</td>
</tr>
<tr>
<td>Hausman</td>
<td>48.64</td>
<td>27.50</td>
<td>23.51</td>
<td>11.43</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.028</td>
<td>0.082</td>
<td>0.058</td>
<td>0.034</td>
</tr>
<tr>
<td>Number of CD1</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Empirical results shown in the Table above indicates that impact of QR, CLTA, CATA and WCT on traditional accrual based firm performance measures (GP, NP, ROA and ROE). Hausman specification test indicates that the random effects models are rejected in favor of the fixed effects model in all models (significant values are 0.0000, 0.0000, 0.0001 and 0.0221 respectively). In conventional level of significance, CATA is positively related to GP at 0.1 level and NP and ROA at 0.05 levels. All dependent variable QR, CLTA, CATA and WCT have significant impact of 8.2% and 5.8% on NP and ROA respectively.
QR is negatively related to ROA and ROE where as it is positively related with GP. CLTA is negatively related to GP and NP and it is positively related to ROA and ROE. CATA is positively related to GP, NP, ROA and ROE. WCT is positively related to GP, NP, ROA and ROE.

Table 11: Working Capital and Firm performance (Traditional Performance Measures)

<table>
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<tr>
<th>VARIABLES</th>
<th>GP (1)</th>
<th>GP (2)</th>
<th>NP (1)</th>
<th>NP (2)</th>
<th>ROA (1)</th>
<th>ROA (2)</th>
<th>ROE (1)</th>
<th>ROE (2)</th>
</tr>
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<tbody>
<tr>
<td>CR</td>
<td>0.00610</td>
<td>0.0108*</td>
<td>0.00218</td>
<td>0.00473</td>
<td>-0.00358</td>
<td>-0.00276</td>
<td>-0.00230</td>
<td>-0.00330</td>
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<tr>
<td>CLTA</td>
<td>-0.00456</td>
<td>-0.00262</td>
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<td>0.000589</td>
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<td>-0.0108</td>
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<tr>
<td>CATA</td>
<td>0.0860*</td>
<td>-0.0121</td>
<td>0.256***</td>
<td>-0.0122</td>
<td>0.110***</td>
<td>-0.00278</td>
<td>0.0866</td>
<td>0.00242</td>
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<tr>
<td>WCT</td>
<td>0.00328</td>
<td>0.00285</td>
<td>0.00712**</td>
<td>0.00543*</td>
<td>0.00172</td>
<td>0.00183</td>
<td>0.00478**</td>
<td>0.00378*</td>
</tr>
<tr>
<td>Constant</td>
<td>0.212***</td>
<td>0.255***</td>
<td>0.00774</td>
<td>0.155***</td>
<td>0.0158</td>
<td>0.0785***</td>
<td>0.0421</td>
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</tr>
<tr>
<td>Hausman</td>
<td>71.69</td>
<td>21.94</td>
<td>23.14</td>
<td>13.92</td>
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<td>250</td>
<td>250</td>
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<tr>
<td>R-squared</td>
<td>0.031</td>
<td>0.082</td>
<td>0.060</td>
<td>0.034</td>
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<td>Number of CD1</td>
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</table>

Results reported in the Table above show that impact of CR, CLTA, CATA and WCT on traditional accrual based performance measures. Results of the Hausman specification test indicate that null hypothesis is rejected and Using fixed effects model is preferable in all four models (significant values are 0.0000, 0.0002, 0.0001 and 0.0075 respectively). All dependent
variable CR, CLTA, CATA and WCT have impact of 8.2% and 6.0% on NP and ROA respectively. Among NP and ROA are affected in statistically significant level.

In conventional level of significance CATA is positively related to GP at 0.1 level and NP and ROA at 0.01 levels. WCT is positively related NP and ROE at 0.05 level. CR is positively related to GP and NP and it is negatively related to ROA and ROE. CLTA is negatively related to GP and NP and it is positively related to ROA and ROE. CATA is positively related to GP, NP, ROA and ROE. WCT is positively related to GP, NP, ROA and ROE.

Traditional measures of performance Gross Profit (GP), Net Profit (NP), Return on Equity (ROE) and Return on Assets (ROA) are affected by working capital in terms of liquidity, working capital policy and working capital management. As per the statistical result working capital measured in Quick Ratio (QR) as liquidity measure, Current Assets to Total Assets (CATA) and Current Liabilities to Total Assets (CLTA) as measure of working capital policy and working capital turnover ratio as measure of working capital management efficiency have significant impact on firm performance measured in NP and ROA which implies firms are managing its working capital in order to trade off profitability and liquidity. Beta co efficient of CATA reveals which is significant impact factor on NP and WCT. Mean Value of total assets are tied up in current assets which is higher than the CLTA which means Current Liabilities are less than Current assets. Where, firms are adopting defensive policy. Defensive policy reduces the risk by reducing the current liabilities but it also affects profitability because long term debt offers high interest rate which increase cost of financing. GP and ROE are not affected by Cost of borrowing due to that which is not having significant impact on working capital. When substitute the Current Ratio (CR) instead of QR also same statistical evidence derived reveals firms are managing current assets and quick assets efficiently which says firms are having proper inventory management.

DISCUSSION
Impact of working capital management on firm performance is examined using panel data analysis. Working capital management are measured liquidity management and working capital management policies (QR, CR, CLTA, CATA and WCT). Firm performance is measured using both traditional (GP, NP, ROA and ROE) measures. As a measure of liquidity
is tested using two variables QR and CR, thereby which are individually substituted in the equations.

CATA is positively related to GP at 0.1 level and NP and ROA at 0.05 levels. All dependent variable QR, CLTA, CATA and WCT have impact of 2.8%, 8.2%, 5.8% and 3.4 % on GP, NP, ROA and ROE respectively. Among NP and ROA are significantly affected by QR, CLTA, CATA and WCT. CATA is positively related to GP at 0.1 level and NP and ROA at 0.01 levels. WCT is positively related NP and ROE at 0.05 level .All dependent variable CR, CLTA, CATA and WCT have impact of 3.1%, 8.2%, 6.0% and 3.8% on GP, NP, ROA and ROE respectively. Among NP and ROA are affected in statistically significant level. Results align Dong and su, 2010; Mathuva, 2009 and are inconsistent with Deloof, 2003; Falope and Ajilore, 2009; Padachi, 2006; Raheman and Nasar, 2007

CATA shows a positive relationship with firm performance which indicates that firms in general following the conservative policy of working capital management. On other hand CLTA is showing a significant negative relationship with firm performance. It implies that the firms in sri lanka in general follow the conservative financing policy which implies that it would be better for firms if they finance the working capital by long term loans rather than short term loans. It will enhance firm performance.

CONCLUSION

Determination of optimum level in working capital components in a way to optimize the firm performance is challenging task to financial managers and researchers. It is ever questionable. Empirical evidence in extant literature on working capital and firm performance has been mixed and contradictory. Theories related to working capital have been tested in different context which also provide mixed results. Changing business environment (internal and external) affects businesses in its all decisions. So it is necessary to investigate impact of financial decisions and management on firm performance in regular basis. In line with this study is designed to answer the question; what extent working capital influences on firm performance in Sri Lankan context during study period. Through the outcome this study tries to give cues to future directions.

Working capital in terms of QR and CR and working capital policies (CATA and CLTA) have significant impact on firm performance measured using NP and ROA. CATA is positively
related to GP at 0.1 level and NP and ROA at 0.05 levels. NP and ROA are significantly affected by QR, CLTA, CATA and WCT. WCT is positively related NP and ROE at 0.05 levels. NP and ROA are affected in statistically significant level by QR, CLTA, CATA and WCT. Changes in the levels and compositions of the components of working capital impact on each other both directly and indirectly in an unsynchronized manner. Therefore, working capital management is not merely an administrative function consisting of a series of routines, but it is also strategic as it impact on the liquidity, solvency, efficiency, firm performance and shareholder wealth maximization of the business. The management of working capital affects the growth of a business and assists it survives the periodic crises which occur, and fluctuations of exchange and interest rates.

The practical implication that can be inferred from the results of the study is that they are consistent with firms being able to generate important profitability benefits from pursuing relatively aggressive current asset policies simultaneously with conservative trade financing policies. Thus, for firms seeking profit growth (in addition to focusing directly on revenue and cost concerns in relation to bottom line improvements) achieving increased efficiency in WCM should receive attention. In addition to effectively managing individual components of working capital, firms should ensure a proper matching between accounts receivable, inventory, and accounts payable in order to improve firm performance. Hence, from a monitoring perspective, management should ensure synchronization between procurement, warehouse, and credit and collection departments. Effective integrated collaboration is important in helping firms enhance their profitability. Corporate managers should follow a conservative investment policy in order to enhance the performance of their companies. This implies that the managers should maintain a higher level of investment in liquid assets relative to non-current assets.

The study has shown a clear understanding of working capital components and they influence on firm performance. This promotes the efforts of managers to improve their firms’ performance which can be done through appropriate management of working capital management. Thus, management should intensify initiatives to encourage greater understanding and acceptance of working capital components that boosts financial performance. Working capital of sri lankan firms investigated in this study have QR and CR in accepted range of bench mark which is a good sign of firms in relation to the liquidity.
Managing current assets and current liabilities in the same manner will be highly benefited for the companies in terms of liquidity.

The scope of the study was limited to the fifty listed companies. This study selected the 50 companies listed in the Colombo stock exchange, because the companies are more likely to have the resources and motivation to take the opportunity to adopt rules and reporting practices prior to their adoption being made mandatory by the stock exchange. It represented different sectors of the economy. As a result the sample is representative of companies listed in the Colombo stock exchange. The findings may have been different if a larger sample has been included and the study period has been extended. Sri Lankan companies which are not listed on the stock exchange, financial and other services related companies are excluded in this study. The study relies on secondary data which were collected from audited financial statements of the sampled companies which are prepared in accordance with the Lanka Accounting standards and Sri Lanka Financial Reporting Standard however there is a possibility of use of different accounting policies such as depreciation rate resulting into different outcome.

Same study could be replicated sector wise or it could be designed as comparative study developed and developing country perspective. Firm characteristics could be added in future as control variables. Future researcher may address limitations by including internal variables such as short term debt to equity ratio as well as external variable like inflation and GDP as control variables, so that to demonstrate the impact of other measure of capital structure and capital adequacy as well as external variables on firm performance. Furthermore, future researcher may assess the impact of capital structure on the overall performance of industry and other sectors of the economy too.

This research recommends that there is a pressing need for further empirical studies to be undertaken on working capital management policies and firm performance of listed firms at the CSE, in particular their working capital management policies by extending the sample size so that an industry wise analysis can help to uncover the factors that explain the better performance of some sectors and researchers to identify the requirements of, and specific problems faced by the listed firms at the CSE, especially as more emphasis is placed on the
CSE by the Government. To the academia, there is need to research on the appropriate working capital policy that will be suitable for particular sector industries. There is need for further studies to carry out similar study for a longer time period.

REFERENCES


Harris, 2005


<table>
<thead>
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<th>Table 12 : Hypotheses testing</th>
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</thead>
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<td>* Working Capital and Firm performance</td>
<td></td>
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<td><strong>H&lt;sub&gt;1&lt;/sub&gt;</strong></td>
<td>There is a relationship between working capital and firm performance</td>
</tr>
<tr>
<td><strong>H&lt;sub&gt;1&lt;/sub&gt;&lt;sub&gt;a&lt;/sub&gt;</strong></td>
<td>There is a significant relationship between QR and GP</td>
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<tr>
<td><strong>H&lt;sub&gt;1&lt;/sub&gt;&lt;sub&gt;a&lt;/sub&gt;</strong></td>
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<td>There is a significant relationship between CLTA and GP</td>
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<td><strong>H&lt;sub&gt;1&lt;/sub&gt;&lt;sub&gt;a&lt;/sub&gt;</strong></td>
<td>There is a significant relationship between CATA and GP</td>
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<tr>
<td><strong>H&lt;sub&gt;1&lt;/sub&gt;&lt;sub&gt;b&lt;/sub&gt;</strong></td>
<td>There is a significant relationship between QR and NP</td>
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<td>There is a significant relationship between QR and ROE</td>
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<td><strong>H&lt;sub&gt;1&lt;/sub&gt;&lt;sub&gt;d&lt;/sub&gt;</strong></td>
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<td>There is a significant relationship between CLTA and ROE</td>
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<td><strong>H&lt;sub&gt;2&lt;/sub&gt;</strong> Working Capital has significant impact on firm performance</td>
<td>P</td>
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<tr>
<td><strong>H&lt;sub&gt;2&lt;/sub&gt;&lt;sub&gt;a&lt;/sub&gt;</strong></td>
<td>Working Capital has significant impact on GP</td>
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<tr>
<td><strong>H&lt;sub&gt;2&lt;/sub&gt;&lt;sub&gt;b&lt;/sub&gt;</strong></td>
<td>Working Capital has significant impact on NP</td>
</tr>
<tr>
<td><strong>H&lt;sub&gt;2&lt;/sub&gt;&lt;sub&gt;c&lt;/sub&gt;</strong></td>
<td>Working Capital has significant impact on ROA</td>
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<td>Working Capital has significant impact on ROE</td>
</tr>
</tbody>
</table>

√= Accepted, X= Rejected and P=Partially Accepted
Interface for

Economics, Public Policy, Law and Education
Budget Deficit and Economic Growth in Sri Lanka
Kumari, M.A.K.M., University of Sri Jayewardenepura, Sri Lanka
Gunasekara, W.G.V., University of Sri Jayewardenepura, Sri Lanka

ABSTRACT

Budget deficit is a major problem in both developed and developing countries as the increasing budget deficit leads to increase in debt. Normally in most of the developing countries like Sri Lanka the government is always engaged in a lot of welfare activities and this leads to high level of government expenditure. Especially in Sri Lanka, the government is providing free health, education and to cater to all those expenditures, the government is not generating adequate income from tax and non-tax revenues. As a consequence of this problem, the budget deficit of Sri Lanka is increasing daily.

This study is mainly focused on identifying the type of relationship between the budget deficit and the economic growth in Sri Lanka. Keynesian theory, Neo-Classical theory and Recardian theory are the main theories on which the research is based on. The study uses the time series data from 1978 to 2015 with 37 observations. In order to develop a well fitted model, normality test, unit root tests and tests for errors are done and which are the validity tests and to find the relationship between the variables, Ordinary Least Square regression is applied. Correlation analysis is done to find the correlation among the variables and Johansen Co integration test and Vector Error Correction Model are used to find the long term and short term relationship between the variables respectively.

In conclusion the study found that there is a long term positive relationship between the budget deficit and the economic growth in Sri Lanka, which did not satisfy any of the three theories considered regarding the two variables. According to the study it was able to conclude that this long term positive relationship occurs because of the positive correlation between the budget deficit and the gross investment and as a result of increasing the gross investment, the economic growth is also increasing.

Keywords: Budget Deficit, Gross Domestic Product
INTRODUCTION

Background of the Study

The government budget reflects the fiscal policy of a country. It will include all the plans of the government regarding the revenue generating and the expenditure incurring. Having a balanced budget, surplus budget or a deficit budget will change from country to country according to their economies.

Sri Lanka as a developing country in South Asia, which provides lots of services for the people free of charge, always marks a budget deficit where the income for the government is less than the expenditure of the government.

Currently to finance this budget deficit the main strategies adopted by the government are to obtain loans from various sources and try to increase the tax revenue by increasing the tax rates and the efficiency of tax collecting.

Significance of the Study and Justification.

In almost all the countries, the main source of financing this budget deficit has become obtaining debt and increasing taxes. In Sri Lanka also the main solution adopts to finance the budget deficit is obtaining loans and increasing the taxes. Accordingly, the government debt which was around 16.9% out of the GDP in 1950s, has increased upto 76% now and out of the total revenue of the government, 33.8% is spent only to pay the interest of these debts (Central Bank Report 2015, Sri Lanka). In 2015, the Central Bank of Sri Lanka issued treasury bonds worth 2.5 billion US Dollars, which can be identified as one of the highest issue in the recent past. Currently Sri Lanka is in a debt trap where, to pay a debt it has to obtain another debt. And on the other hand various tax rates have been increased and different other policies have been taken to come out of this situation of budget deficit. But the problem is whether the policies formulated and implemented are productive or not. Therefore understanding the relationship between budget deficit and economic growth is crucial for policy makers in formulating policies because excessive budget deficit means excessive debt which directly affects the economic stability and growth. Besides that this study aims to provide an answer as to how budget deficit affects growth in the long run and short run. It is important to determine this because for the case of Sri Lanka as mentioned previously, the budget deficits are financed by domestic and foreign debt and with increased taxation. An ineffective budget deficit not only fails to stimulate the economic growth but also burdens the country’s debt level. The findings of this study will aid policy makers in budget decision making and control the debt levels in the country.

Research Question

The research question of this study is to identify “What is the relationship between the budget deficit and the economic growth in Sri Lanka?”
The data on budget deficit and economic growth shows that there is an overall long term positive relationship between these two variables though there are fluctuations in the middle.

But when consider the foreign debt servicing payments, foreign reserves and deficit in balance of payment, it is questionable whether the country is actually having an economic growth with increased budget deficit. Therefore it is very important to find the exact relationship between these two variables and provide information for policy making purposes. This research study seeks to fulfill this existing research gap by answering the above research question of finding the relationship between the budget deficit and economic growth of Sri Lanka.

**Objectives of the Study**

There are several objectives of this research study. And out of that the, main objective is,

1. To identify the type of relationship between Budget Deficit and Economic growth in Sri Lanka.

Here the relationship between the two variables is identified. Whether it is a positive, negative, neutral relationship or whether the relationship is ambiguous.

The secondary objectives of the study are,

1. To identify the reasons for the above relationship.
2. To identify the relationship of other variables such as gross investment, real interest rate, inflation rate, exchange rate with GDP.

**LITERATURE REVIEW**

**Empirical Review**

The empirical studies have found mixed results on the nature of the relationship between these two variables as mentioned in the research question part.

Positive Relationship: Taylor, Proan, Carvalho and Barbosa (2012) who have done a research at USA on the topic of “Fiscal deficits, economic growth and government debt in the USA” have found that there is a strong positive relationship between primary deficit and economic growth in USA. Here even the possible increase in interest rates are also taken into account.

Another study on the same topic done in Pakistan by Ahmad (2013) has found that there is a positive relationship between the two variables. For this time series data from 1971 to 2007 have been used and Gross Domestic Product is taken as the dependent variable while the Foreign Direct Investment and Budget Deficit are used as the independent variables. ADF test has been used to test the stationary of the data.

A study done by Edame and Okoi (2015) in Nigeria has found that there is a positive relationship between the fiscal deficit and economic growth. This study examined the relative impact of fiscal deficits (FSD) on economic growth in Nigeria during the military and
democratic regimes. The study employed Chow endogenous break test, unit root and co-integration tests. The results derived from the Chow test analysis reveal that there is a difference between the growth-impact of FSD in the two regimes. In particular, the study found that FSDs had a significant growth impact during the military regime, while it has not had a significant impact on economic growth during the democratic regime. Gross Domestic Product has been used as the dependent variable and Fiscal deficit, Interest rate, Gross fixed capital formation are used as the independent variables.

Jorge C. Avila (2011) analyzed the relationship between fiscal deficit, macroeconomic uncertainty and growth of Argentina for the period 1915-2006, and concluded that the deficit hampered on per-capita income growth in Argentina through the volatility in relative prices. Lance Taylor et al. (2012) examined the interactions between the ‘primary’ fiscal deficit, economic growth and debt for the period 1961-20 of USA. It found a strong positive effect on growth of a higher primary deficit, even when possible increases in the interest rate are taken into account. Osinubi et al. (2006) synthesized a relationship between budget deficits and external debt in Nigeria between 1970 and 2003. The results of the econometric analysis confirmed the existence of the debt Laffer curve and the nonlinear effects of external debt on growth in Nigeria.

**Negative Relationship:** Few researchers agreed with the new classical economies’ thought, in which there is negative relationship between budget deficit and economic growth. According to Bivens and Irons (2010), generally, the government has to borrow money internally or externally in order to finance budget deficit. An increase in the demand of the loanable funds by the government will distort the level of private investment due to an increase in the interest rate. The decline in the private investment will definitely reduce the level of economic growth. Based on the research conducted by Ball and Mankiw (2005) the previous statement is proven to be true from the case of the United States from 1960 to 1994. The same conclusion was found in a research done by Bose, Haque and Osborn (2007) made on the pattern of government expenditures for 30 developing countries. Huge budget deficits had significantly reduce the level of national savings and private investment. Apart from that, high budget deficits will give signal to the citizens that the government has lost control in managing the funds. And Ball and Mankiw (2005) found that the countries that faced budget deficits have lower growth rate as compared to countries that faced with budget surplus. A continuous rise in budget deficits will also leads to a problem of bankruptcy. As a result, the investors will have less confidence to invest in a country. It will further reduce the economic growth of a country. Apart from that, the budget deficit can also reduce the economic growth of a country based on the perspective of politic and election process. Brender and Drazen found that high budget deficit recorded by a country will give negative signals to the citizens that the government authorities did not perform well in managing the funds of a country. As a result, there is a probability of re-election process to be conducted in order to replace the authorities. Indirectly, the authorities who did not perform well may not be able to bring the country to the upper level. Hence, it will not contribute to high economic growth due to lack of confidence among citizens, investors and other neighboring countries.
On the other hand, an empirical research done in Kenya which is an East African country on this regard by Harrison (2013), has adopted a cross-sectional research design and has found that the budget deficit negatively affects the economic growth in the country. The study also concludes that gross investment in the country positively influence the country economic growth as it was revealed that increase in gross investment in the country positively influence the country economic growth. The study further revealed that increase in inflation rate, exchange rate and interest rate, negatively influence the country economic growth. The research has used the secondary data from the Central Bank of Kenya for 10 years from 2013 to 2012 and the regression analysis is used to find the relationship between the budget deficit and economic growth in Kenya. The dependent variable used here is the Gross Domestic Product and the independent variables used are the inflation, real exchange rate, real interest rate, budget deficit and gross investment.

Huynh (2007) conducted his study while collecting data from the developing Asian Countries for the period of 1990 to 2006. He concluded that there is negative impact of the budget deficit on the GDP growth of the country while simply analyzing the trends in Vietnam. Furthermore, he concluded the crowding-out effect surfaces as the budget deficit burden increases. Aisen and Hauner (2008) explored that the budget deficit negatively affecting the interest rate. The results were taken from the study of the period 1985-1994 for different countries. However, the effect is positive after the year 1995. They further argued that there is a positive effect of budget deficit on interest rate, which the effect varies from state to state.

Koech (2012), did a study on the determinants of Kenya’s external debt sustainability, the study found that the various determinant of countries external debt sustainability are gross domestic product, country export, domestic debt and external debt. The study found that external debt and domestic debt negatively affects external debt sustainability in Kenya, it was further revealed that gross domestic product and countries export positively influence the external debt sustainability in Kenya.

A study done in Pakistan by Fathima, Ahmed and Rehman (2012) using the time series data from 1978 to 2009 has found that there is a negative relationship between the budget deficit and economic growth in Pakistan and the variables used here are GDP as the dependent variable and inflation rate, real exchange rate, real interest rate, budget deficit and gross investment as the independent variables. The model has been constructed based on the OLS technique.

Similarly, another research done in Pakistan by Fathima, Ahmed and Rehman (2011) which has used time series data from 1980 to 2009 has found that the fiscal deficit adversely affect to the economic growth in Pakistan. And the research has used Real GDP per capita as the dependent variable and investment as a share of real GDP per capita, imports as a share of GDP, fiscal deficit and aid as the independent variables. And unit root test, Dickey – Fuller and Augmented Dickey – Fuller tests have been used to check the stationary.
Neutral Relationship: An empirical research done in Malaysia which is an East Asian country by Hayati and Rahman (2012) have found that there is no long term relationship between budget deficit and economic growth in Malaysia. However, productive expenditure has positive long run relationship with economic growth. Here the research has used quarterly data from 2000 to 2011 and ARDL method has used to find the long run relationship between variables. Real GDP, government’s debt, productive expenditures and non-productive expenditure are the variables used by the research.

Another study research done in Sri Lanka by Aslam (2016) using time series data from 1959 to 2013 has found that the budget deficit has the long run dynamic relationship on the economic growth of Sri Lanka but it has no short run relationship with the economic growth. For this study, economic growth in constant price is taken as the dependent variable and the budget deficit, export earnings, exchange rate and the inflation are used as the independent variables. And Johansen cointegration technique is used to test the cointegration among the variables.

On the other hand research on the same topic by Velnampy and Achchuthan (2013) has found that there is no significant impact of fiscal deficit on economic growth in Sri Lanka. And here the study has used the data from 1970 to 2010 and the dependent variable considered is the Gross Domestic Product growth rate at fixed price while the independent variable used is the fiscal deficit. Regression analysis is used to find out to find out the relationship between these two variables.

Benos (2009) who has done a study at Greece which is a developed country in Europe on the topic of fiscal deficit and economic growth considering the empirical evidence from EU countries, has found that some types of public spending and taxation affect growth. This paper takes into account explicitly both sides of the government budget and it disaggregate the government expenditure in a more detailed way. It concludes that specifically government outlays on infrastructure (economic affairs and general public services) and property rights protection (defense, public order – safety) exert a positive impact on per capita growth. On contrary, government expenditures on human capital enhancing activities (education, health, housing – community amenities, environment protection, recreation culture – region) and social protection do not have a significant effect on growth. Finally it identifies that distortionary taxation depresses growth and the growth impact of budget deficit is ambiguous. For this empirical findings the data from 1990 to 2006 has been used and OLS and panel econometric techniques have been used for the data analysis.

METHODOLOGY

Research Design

Primarily this study uses a simple regression model to identify the relationship between budget deficit and economic growth in Sri Lanka. And then an extended model which is a multiple regression is used including other variables to the model. The more details about the
variables and how the analysis is going to be done is given below through the conceptual framework.

**Conceptual Framework**

Here in all the variables, the natural logarithm of second difference of the variable is taken.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gov. Income-Expenditure</td>
<td>Budget Deficit</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>CCPI</td>
<td>Inflation</td>
<td></td>
</tr>
<tr>
<td>Lending Rate</td>
<td>Real Interest Rate</td>
<td></td>
</tr>
<tr>
<td>Gross Amount</td>
<td>Investment</td>
<td></td>
</tr>
<tr>
<td>US$</td>
<td>Exchange Rate</td>
<td></td>
</tr>
</tbody>
</table>

Source : Compiled by the author

**Data Collection**

Secondary data is used for the analysis done in the research and the data required for the research is obtained from the Special appendix of the Central Bank of Sri Lanka and World Development Indicators (WDI) of World Bank. The data from 1978 to 2015 are taken for the investigation purposes. And the sample selection is done according to the availability of data.

**Justification of the variables.**

The variables selected are,
Dependent variable

1. Gross Domestic Product in constant prices.

Independent variables

1. Inflation
2. Exchange rate
3. Real interest rate
4. Budget deficit
5. Gross investment

Out of this, Budget Deficit is the main independent variable and the other variables are taken as supportive variables. These variables are used because an empirical study done in Pakistan, Kenya has used the above variables to study the relationship between budget deficit and economic growth in Pakistan. Because of the homogeneity of the two countries, using the same variables will not be a problem.

Data Analysis

Regression analysis is used to analyze the data and find out whether there exists a relationship between budget deficit and economic growth in Sri Lanka. In this research a dynamic econometric model was employed to assess the joint relationship between budget deficit and economic growth in Sri Lanka.

Analytical Model

Cobb Douglas Production Function

This is a widely used function to represent the technological relationship between the amounts of two or more inputs. The Cobb Douglas form was developed and tested against statistical evidence by Charles Cobb and Paul Douglas during 1927 – 1947.

The most standard form of the function is as follows.

\[ Y = AL^\beta K^\alpha \]

\( Y = \) Total production
\( L = \) Labour input
\( K = \) Capital input
\( A = \) Total factor productivity
\( \beta \) and \( \alpha \) are the output elasticities of capital and labour respectively.
The same function is adopted in the research for the budget deficit and economic growth function as well.

Model for the research is as follows.

\[ Y_i = \beta_0 X_i^{\beta_1} + u_i \]

To change the model to linear, the natural logarithm is used.

Model developed by shojai (1999) is used in this study to assess the effects of budget deficit on the economic growth (GDP) and Ordinary Least Square (OLS) is employed to ensure the fulfillment of the assumptions thereof. These assumptions include, linearity of the model, its non stochastic characteristic, having mean value of 0, and distribution with equal variance etc. The mathematical expression of the model is as follow.

\[
\ln \text{GDP} = \beta_0 + \beta_1 \ln (\text{BD}) + \beta_2 \ln (\text{ER}) + \beta_3 \ln (\text{RIR}) + \beta_4 \ln (\text{IR}) + \beta_5 \ln (\text{GI}) + u_i
\]

GDP = Gross Domestic Product at current market price

BD = Budget Deficit

ER = Exchange Rate

RIR = Real Interest Rate

IR = Inflation Rate

GI = Gross Investment

DATA PRESENTATION AND ANALYSIS

Testing the validity of the Model

Testing for Normality: Normality test is done in order to identify whether the data is normally distributed and well modeled to run an Ordinary Least Square model.

\[ H_0 = \text{Data is normally distributed.} \]

\[ H_1 = \text{Data is not normally distributed.} \]

If Probability < 0.05, then reject the null hypothesis.

To identify the normality of the data the Jarque – Bera test statistic and the probability values are considered.
Accordingly it can be concluded that the gross investment and budget deficit are not normally distributed while the GDP, exchange rate, inflation and real interest rate are normally distributed.

Testing for Unit Roots (ADF): In order to identify the order of integration among the variables such as GDP, inflation, Real Interest Rate, Gross Investment, Budget Deficit and exchange rate, the study has used the augmented Dickey Fuller test. The unit root ADF test is done for the each variable separately taking null hypothesis as ‘presence of unit root’ (that is presence of non-stationarity) against the alternative hypothesis ‘series is stationary’. If the absolute computed value is greater than the absolute critical value, then the null hypothesis is rejected concluding that the series is stationary and vice-versa.
It is clear from the table 1 that the null hypothesis is rejected at the second difference as the values are significant at the 5% level and also the computed values are greater than the critical values at the second difference of all the variables except exchange rate. Here the exchange rate is not become stationary even in the second difference because Sri Lanka has a managed floating exchange rate system where always the exchange rate is controlled by the Central Bank of Sri Lanka. Therefore that is ignored here and for the further analysis purpose the second difference of the variable is taken as the problem of auto correlation is not there in the second difference of the variables.

4.2.4 Testing for Heteroskedasticity

Here the White test is done to identify whether the heteroskedasticity problem is available in the data obtained.

$H_0 = \text{Residuals are homoscedastic}$

$H_1 = \text{Residuals are heteroskedastic}$

If the chi square value < 0.05, reject the null hypothesis.

Table 3: Testing for Heteroskedasticity

<table>
<thead>
<tr>
<th>Chi square value</th>
<th>Probability value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3499</td>
<td>0.05</td>
<td>$H_0$ is accepted.</td>
</tr>
</tbody>
</table>

As resulted above the model has no the heteroskedasticity problem as the chi square value is greater than 0.05.

4.3 Testing the Relationship between the Variables

To test the relationship between the variables, the log second difference of the variable is taken.

4.3.2 Multiple Regression Analysis

$H_0 = \text{There is no significant relationship between the two variables.}$

$H_1 = \text{There is significant relationship between the two variables.}$

If the probability value is < 0.05, reject the null hypothesis.
Table 4: Multiple Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient value</th>
<th>Standard Error</th>
<th>T statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.000848</td>
<td>0.004024</td>
<td>-0.210801</td>
<td>0.8355</td>
</tr>
<tr>
<td>Budget deficit (BD)</td>
<td>0.001393</td>
<td>0.013522</td>
<td>0.102997</td>
<td>0.9192</td>
</tr>
<tr>
<td>Exchange rate (ER)</td>
<td>-0.082257</td>
<td>0.067585</td>
<td>-1.217095</td>
<td>0.2402</td>
</tr>
<tr>
<td>Gross investment (GI)</td>
<td>0.151908</td>
<td>0.034032</td>
<td>4.463659</td>
<td>0.0003</td>
</tr>
<tr>
<td>Inflation (INF)</td>
<td>0.001450</td>
<td>0.005548</td>
<td>0.261299</td>
<td>0.7970</td>
</tr>
<tr>
<td>Real interest rate (RIR)</td>
<td>0.001000</td>
<td>0.004675</td>
<td>0.213934</td>
<td>0.8331</td>
</tr>
</tbody>
</table>

R squared                 0.611
Adjusted R Squared        0.496
F Probability             0.003
Darbin Watson stat        2.11

Source: Compiled by author (2017)

From the above table, the regression equation can be established as follows.

\[
GDP = -0.000848 + BD^{0.001393} + ER^{-0.082257} + GI^{0.151908} + INF^{0.001450} + RIR^{0.001}
\]

According to the test results when the exchange rate, gross investment, budget deficit, inflation rate, real interest rate and budget deficit are held constant, the economic growth rate in Sri Lanka is -0.84%. And according to the statistics, the constant is not significant.

When the budget deficit is increased by 1%, the GDP will only increase by 0.14% and it shows a positive relationship between the two variables but the relationship is not significant, because the probability of budget deficit is greater than the significance level of 0.05. Accordingly there is no significant positive relationship between the budget deficit and economic growth in Sri Lanka.

Exchange rate and the economic growth of Sri Lanka has a negative relationship, when the exchange rate increased by 1%, the GDP decrease by 8%. But here also the test statistics show that the relationship is not significant between these two variables as the probability value is greater than the significance level of 0.05, and as a result the null hypothesis is rejected which says that there is no significant negative relationship between the variables.

When the gross investment is considered, it shows that there is a positive relationship with the GDP. When the gross investment is increased by 1%, the GDP increased by 15%. Here the relationship is significant as the probability value is greater than the significance level of 0.05, and the null hypothesis is rejected which concludes that there is a significant positive relationship between gross investment and the economic growth in Sri Lanka.

Inflation rate and GDP also have a positive relationship where, when the inflation increased by 1%, the GDP increased by 0.15%. But this is not a significant relationship as the probability value is higher than the significant level. Therefore it can be concluded that there
is no significant positive relationship between inflation and economic growth rate in Sri Lanka.

Similarly in Sri Lanka real interest rate and GDP also have a positive relationship and it is not significant as the probability value is higher than the significance level. Here when the real interest rate in increased by 1% the GDP increased by 0.1%. But as the relationship is not significant, it can be concluded that there is no significant relationship between real interest rate and economic growth in Sri Lanka.

According to the test results the R squared value is 0.611 and the adjusted R squared value is 0.495. As this is a multiple regression model, the adjusted R square is taken to analyze the explanatory power of the model. Here 49% of the dependent variable is explained by the independent variables and as the F probability is also less than 0.05, it can be concluded that the overall model is significant.

Table 5: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>GDP</th>
<th>Exchange Rate</th>
<th>Inflation Rate</th>
<th>Gross Investment</th>
<th>Real Interest Rate</th>
<th>Budget Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>-0.243036</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.2638)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation Rate</td>
<td>-0.093899</td>
<td>0.048173</td>
<td>1.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.6700)</td>
<td>(0.8272)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Investment</td>
<td>0.758333</td>
<td>-0.083662</td>
<td>-0.171451</td>
<td>1.000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.0000)</td>
<td>(0.7043)</td>
<td>(0.4341)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Interest Rate</td>
<td>-0.137523</td>
<td>0.058303</td>
<td>-0.287340</td>
<td>-0.198378</td>
<td>1.000000</td>
<td></td>
</tr>
<tr>
<td>(0.5315)</td>
<td>(0.7916)</td>
<td>(0.1837)</td>
<td>(0.3642)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budget Deficit</td>
<td>0.159245</td>
<td>0.090164</td>
<td>0.370659</td>
<td>0.183652</td>
<td>0.039398</td>
<td>1.000000</td>
</tr>
<tr>
<td>(0.4680)</td>
<td>(0.6824)</td>
<td>(0.0817)</td>
<td>(0.4016)</td>
<td>(0.8583)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)

According to the above findings, the correlation coefficient of the relationship between GDP and exchange rate is -0.24 which shows a weak negative relationship. And that means when the exchange rate increases, the GDP of Sri Lanka decreases. As the direct exchange rate is taken here, it is a realistic situation. Similarly inflation rate also shows a weak negative relationship where its correlation coefficient is -0.09. That is when the inflation increases, GDP decreases. And also the real interest rate of Sri Lanka shows a weak negative correlation.
with GDP of Sri Lanka, with a correlation coefficient of -0.14. This shows when the real interest rate increases, GDP decreases.

In contrast, gross investment and budget deficit shows a positive relationship with the GDP of Sri Lanka where the correlation coefficient of gross investment and GDP is 0.75 which shows a strong positive relationship and the correlation coefficient between budget deficit and GDP is 0.15 which is a weak positive relationship. Here when both gross investment and budget deficit increases the GDP increases which is also a realistic situation in Sri Lanka.

4.3.4 Johansen Cointegration Test
To test the long run dynamic relationship between budget deficit and economic growth of Sri Lanka, this study uses the Johansen cointegration technique. This technique considers the Trace and maximum Eigen value to verify the cointegration. The following tables illustrate the outcome of trace and maximum Eigen value statistics.

**Table 6: Results of Trace Statistic**

<table>
<thead>
<tr>
<th>Hypothesizes cointegration equations</th>
<th>no. of Eigenvalue</th>
<th>Trace Statistic</th>
<th>0.05 Critical value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0.474014</td>
<td>24.84116</td>
<td>15.49471</td>
<td>0.0015</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.046439</td>
<td>1.711861</td>
<td>3.841466</td>
<td>0.1907</td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)

**Table 7: Results of Max-Eigen Statistic**

<table>
<thead>
<tr>
<th>Hypothesizes cointegration equations</th>
<th>no. of Eigenvalue</th>
<th>Max-Eigen Statistic</th>
<th>0.05 Critical value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0.474014</td>
<td>23.121930</td>
<td>14.26460</td>
<td>0.0016</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.046439</td>
<td>1.711861</td>
<td>3.841466</td>
<td>0.1907</td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)

Based on the Table 8 and 9, one cointegration equation is identified at 5% critical value, because in trace and maximum Eigen statistics, At most 1 is greater than probability value. So, there is long run dynamic relationship among the budget deficit and economic growth of Sri Lanka.

4.3.5 Vector Error Correction Model (VECM)
To test the short – run dynamic relationship between the budget deficit and the economic growth of Sri Lanka, the vector error correction model is employed. The following table
shows the results of short run dynamic relationship between the budget deficit and the economic growth of Sri Lanka VECM.

**Table 108: Vector Error Correction test**

<table>
<thead>
<tr>
<th>Error Correlation</th>
<th>D(GDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoinEq1</td>
<td>0.038515</td>
</tr>
<tr>
<td></td>
<td>(0.01723)</td>
</tr>
<tr>
<td></td>
<td>[2.23528]</td>
</tr>
<tr>
<td>D(BD(-1))</td>
<td>-0.389506</td>
</tr>
<tr>
<td></td>
<td>(0.58246)</td>
</tr>
<tr>
<td></td>
<td>[-0.66873]</td>
</tr>
<tr>
<td>D(BD(-2))</td>
<td>0.783339</td>
</tr>
<tr>
<td></td>
<td>(0.58180)</td>
</tr>
<tr>
<td></td>
<td>[1.34641]</td>
</tr>
<tr>
<td>C</td>
<td>168370.0</td>
</tr>
<tr>
<td></td>
<td>(62647.9)</td>
</tr>
<tr>
<td></td>
<td>[2.68756]</td>
</tr>
<tr>
<td>R squared</td>
<td>0.698</td>
</tr>
<tr>
<td>Adjusted R squared</td>
<td>0.647</td>
</tr>
<tr>
<td>F statistic</td>
<td>13.46515</td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)

In Table 10, the probability value of the budget deficit is more than 5% and not significant. Therefore, the budget deficit has not maintained the short run dynamic relationship on the economic growth of Sri Lanka during the sample period.

**CONCLUSION AND RECOMMENDATION**

The primary objective of the study was to establish the relationship between the budget deficit and the economic growth in Sri Lanka. Secondary objective was to find the reason for the above relationship and to provide policy recommendations.

The reason for the long run positive relationship is mainly due to the continuous increase in the gross investment. According to the analysis it is clear that the gross investments significantly contribute to the increase in the economic growth and the correlation analysis also shows a strong positive relationship between gross investment and economic growth. On the other hand weak negative correlation is shown between the real interest rate and the gross investments. That means though the real interest rate increased, the gross investment does not decrease significantly. And also when the budget deficit and the real interest rate are considered, there the two variables have a weak positive correlation which shows when the budget deficit increases the interest rate does not increase highly though the government demands for more debt to cover the deficit.
Accordingly interest rate controls the gross investment of Sri Lanka and economic growth has a significant effect on gross investment. In Sri Lanka as the interest rate is controlled by the Central Bank, increase in budget deficit will not affect the interest rate in a significant manner. Therefore though the budget deficit has increased, the interest rate will not highly increase. As a result of that the investments will not decrease. This is also shown by the positive correlation between budget deficit and investments. Therefore the economic growth will not decrease though the budget deficit increase. Instead, the economic growth will increase with the increasing budget deficit in long run.

However when the whole research is considered, there are some limitations identified. Due to the unavailability of the enough data two variables used in the regression were not normal. These are assumptions that should be fulfilled in order to run the OLS technique. On the other hand when using the Johansen Cointegration test all the variables should be stationary in the first difference. But here as all the variables get stationary at the second difference, it is also a limitation to use the test.

But when consider the whole analysis at last it can be recommended that the government should currently tolerate the budget deficit in formulating the policies and focus on using the income of the government effectively and do productive investments so that in future the problems and burden on the government will be reduced.

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The Strength of Central Bank and its Impact on Price Stability in South Asia
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Gunasekara, W.G.V., University of Sri Jayewardenepura, Sri Lanka

ABSTRACT

The Central bank plays a key role in an economy of a county by way of managing the monetary policy. However, the importance of maintaining of financial strength within a central bank is subjected to controversy believing that being the monetary authority in the economy, central banks do not require a financial strength. But recently, the importance of financial strength even for central banks came to the consideration in the event of financial failures of central banks in larger economies. Hence, the requisite of central bank financial strength in terms of achieving policy objectives particularly the price stability which is the key policy objective of majority of central banks around the world came to the discussion.

The purpose of this study is to examine the impact of central bank financial strength on price stability in South Asian context. Prevailing limited studies on this field have been focused on the analysis of central bank financial strength and price stability mostly in the context of western countries or as a whole for the world. Investigation on South Asian context would give different insight to the prevailing debate on the topic since it is considered that there is lower central bank independence within the South Asian region which motivated this study.

The study has been conducted for the time period of 1980 to 2015 and an unbalanced panel regression was conducted using central bank financial strength as the main independent variable where the consumer inflation as a proxy to price stability was the dependent variable. Empirical result of this study provides a significant negative relationship between central bank financial strength and inflation suggesting a probable impact from central bank financial strength on price stability for the selected countries within the region.

Keywords: Central Bank Financial Strength, Price Stability, South Asia
INTRODUCTION

The issue of whether central banks require a financial strength is neither easy nor uncontroversial. The prevailing limited empirical evidence is also conflicting which opens up a researchable area on this subject. Accordingly, does central bank financial strength matter in maintaining price stability and if so, which type of relationship would be existed in between price stability and central bank financial strength is the main consideration which motivates this study with special reference to South Asia.

The concept of central bank financial strength is disregarded for a longer period of time due to several reasons. It is believed that monetary authority in the economy inherent only to central bank provides no more requirement of a financial strength (Stella, 2005). Stella claims that unlimited costless ability of central bank in creating domestic fiat money trivializes the need of a financial strength for a central bank as they can print any quantity of money to repay their obligations as well as to absorb the losses. But it is argued that there can be an adverse economic impact from printing money unlimitedly which could result conflicts in policy objectives especially in terms of price stability. Hence, the argument of even central banks requires an adequate level of financial strength to pursue their policy objectives freely, comes to the debate.

In nature, central banks hardly become illiquid (Benecka, Holub, Kadlečková & Kubicová, 2012). Being the monopoly issuer, central bank can continue its service even with a negative equity which is one of the reason for the negligence of this concept. Further, the formal procedures of standard bankruptcy are not subjected to central banks providing no legal binding constraint even with the zero level of equity (Benecka et al., 2012). Also, the right to collect seigniorage which is the monetary income of central banks make them able to go well beyond the accounting equity which undermines the importance of financial soundness in the context of central banks.

But central bank losses may have long term fiscal implications and they would try to control losses with improvements of finances by allowing higher inflation. This implies a probable conflicting situation between their primary goal of price stability and weak financial strength arising through inflationary means of solving financial weaknesses of the central banks.
It is reviewed that even though central banks can always create money to pay its bills and cannot be declared bankrupt by a court, their financial results can be an impact in terms of achieving the policy objectives. Therefore, losses or negative capital may raise doubts in its ability to deliver on policy targets and expose it to political pressure (Archer & Boehm, 2013).

Therefore, this study is mainly motivated by the prevailing research gap in this area by providing a comprehensive investigation on the impact of central bank financial strength on price stability in South Asian context.

**RESEARCH PROBLEM**

Generally, it is accepted that commercial banks require a substantial financial strength to survive and to conduct their primary responsibilities. But in the context of central banks, need of financial strength is a controversial area which requires further investigation. Both supportive and against views and findings can be observed in empirical literature giving an insight of prevailing debate on this topic.

Prevailing limited studies on this field have been focused on the analysis of central bank financial strength and price stability mostly in the context of western countries or as a whole for the world. Developing economies; specifically, South Asia has not been included in many of the empirical analysis suggesting that investigation on South Asian context would give different insight to the prevailing debate on the topic as a region with lower central bank independence comparatively (Ahsan & Skully, 2009). Hence, investigating whether there could be an impact from the financial strength of central bank on price stability comes as a researchable area which has been disregarded for a longer period of time especially in South Asian context.

Accordingly, this can be specified in to a specific research question as,

Does central bank financial strength impact on price stability in South Asia during the time period of 1980 to 2015?

**SIGNIFICANCE AND JUSTIFICATION OF THE STUDY**

This study will contribute to the prevailing controversy in this field on significance of central bank financial strength for an economy. Accordingly, findings of this study will conclude the impact of central bank financial strength on price stability in South Asian context. Hence, this
study will be significant to the prevailing empirical literature providing an empirical investigation in South Asian context with consideration of inherent features of central bank system within the region. The available empirical findings on the topic in the South Asian context remain scant compared to the studies in the advanced economic context. Hence, the study will fill the remaining lacuna of research in the field.

In addition, the findings of the study will draw the attention on the importance of the central bank financial strength in maintaining macroeconomic stability in the terms of price stability and will provide a different insight to policy makers with the involvement of the independence of central banks.

This study will cover the time period ranging from 1980 to 2015 which will provide the most recent analysis on the data compared to the previous studies.

**OBJECTIVES OF THE RESEARCH**

1. To identify the impact of CBFS on price stability in South Asia.

2. To identify the impact of other variables on price stability in South Asia

**REVIEW OF LITERATURE**

**Concept of Central Bank Financial Strength**

It can be observed different terms which have been used in the related literature to refer central bank finances. For instance, ‘central bank finance’, ‘central bank financial position’ are few of mostly used terms in the literature (Stella & Lonnberg, 2008; Ize, 2005). Some studies adopt the term ‘financial strength’ (Stella, 2005; Cargill, 2005; Klüh &Stella, 2008). In early literature, central bank finance has been discussed in the context of central bank independence (Perera, Ralston & Wickramanayake, 2011).

Accordingly, Central Bank Independence (CBI) has been considered as the degree of freedom of the central bank to pursue monetary policy without interference from political considerations (Sirivedhin & Hataiseree, 2000, as cited in Griffin, 2011). The independence consumed by the central banks in pursuing monetary policy granted more authority to central banks apart from the government authorities which ultimately allows them to make more
independent decisions which will lead to a more stable economic environment in the respective country (Maxfield, 1997, as cited in Griffin, 2011).

Later, the concept of Central Bank Independence (CBI) was broadly discussed in many aspects. Among the wide scope of CBI, the financial dimension of CBI came to the discussion focusing on the financial strength of central bank (Haan & Eijffinger, 2016). Since CBI referred to authority in central banking system, Financial authority has drawn the attention as the financial dimension of CBI (Hayat & Farvaque, 2011). The financial strength of the central bank has been defined in the scope of the ability of central banks to attain its policy goals without external financial support (Stella, 2005).

This study uses the term ‘Central Bank Financial Strength’ (CBFS) following the prevailing empirical studies (Klüh & Stella, 2008; Perera et al., 2011).

This is a concept which have been neglected previously. There are both historical and theoretical reasons for the negligence of CBFS which have been pointed out in empirical studies (Stella, 2005). Focusing on historical reasons first, it can be observed that many fiat money central banks including Group of Seven (G-7) countries had been highly profitable over a long period of time. Therefore ‘financial difficulties’ is much more a remote concept to them. It is stated that U.S. Federal Reserve System has been making profits since 1915 (Stella, 2005). Hence, being profitable ever in the history made the CBFS is rather a remote concept. Then the theoretical reasons provide that due to the unlimited costless ability in creating money, central banks do not require financial strength as commercial banks.

In addition, some of empirical studies claims that ability of central banks to print money allows them to recapitalize themselves through seigniorage or institutional arrangements with treasury to recapitalize and the consolidated fiscal position cause for the negligence of the concept of CBFS. But it is argued that weak financial strength of central banks causes the deterioration of the independence considerably which will ultimately affect the effective conduct of monetary policy (Mora, Castro & Adler, 2012).

It is stated that conventional measures of assessing financial strength of private enterprises cannot be employed in the context of central bank since profitability and capital are not the primary consideration of central bank (Stella, 2008). It has been used capital, equity or net worth as traditional accounting measurements of corporation’s financial standings which
cannot be used in the aspect of central banks (Hall & Reis, 2015). Reasons for the unacceptance of traditional financial measurements have been listed as; central banks cannot be liquidated, central banks do not have a market value since the primary consideration is not profit and governments own the central bank with more of deposit funds and most of the assets of the central bank as government liabilities which make confusing distinction between equity-holders and credit-holders in the context of central banks (Hall & Reis, 2015).

Therefore, it is suggested that performance of central banks can be assessed through the policy performance in particularly success of achieving the monetary policy targets. Accordingly, two specific benchmarks have been demonstrated to assess central bank performance; firstly, how well it creates conducive conditions to ensure favorable macroeconomic outcomes such as output growth, price stability, etc. and secondly, how efficiently the central bank achieves such outcomes referring the internal efficiency which minimizes the costs of attaining objectives (Stella, 2008).

A study has highlighted that major shifts in the composition and the size of central banks’ balance sheets resulting through large capital inflows in an emerging markets and increased sensitivity of capital to domestic interest rate movements have brought the forefront of policy debate of CBFS and monetary policy conduct (Mora et al., 2012).

In literature it is provided that CBFS distinguishes from the concept of central bank capital. Focusing on the concept of central bank capital, technical definition can be drawn from the studies as the amount of direct investment of shareholders plus accumulated retained earnings minus losses (Stella, 1997, as cited in Perera et al., 2011). But it is stated that capital is not a representative measurement of CBFS as it can be a misleading summery statistic mainly due to three reasons such as dependency on accounting and profit distribution methods, existence of off balance sheet items and improperly stated profits (Stella, 2008). Therefore, it can be concluded that financial strength matters more compared to the capital for central banks. Hence, it should be noted that capital and financial strength are clearly distinguished in the context of central banks.

Literature consider ‘Net worth’ as a much more useful indicator of potential profitability and financial independence of central banks. ‘Broadly, net worth is defined as the price of a fully informed risk neutral investor would pay to purchase the bank under normal conditions’
In other words, net worth reflects the franchise value of central bank which is the value after consideration of ability of printing money and imposing reserve requirements on commercial banks (Bindseil et al., 2004, as cited in Perera et al., 2011).

Even though central bank profit and losses are considered as less important measurements of CBFS, it can erode the central bank net worth negatively (Dalton & Dziobek, 2005, as cited in Perera et al., 2011). It is suggested that if central bank is able to conduct its operations without incurring operational losses, it can be said that it is a financially strong central bank (Cargill, 2006, as cited in Perera et al., 2011). Therefore, profit and losses of central banks also comes to the consideration as they determine the central bank net worth level. Hence, profit and losses of central banks help to conceptualize the CBFS. Accordingly, central bank net worth provides a useful benchmark to examine the central bank balance sheet as it is considered as a superior indicator of central bank profitability than capital.

In accordance with empirical views related to CBFS, it can be clarified that CBFS as an extension to CBI which is essentially required to carry out smooth functioning of monetary policy conduct by central banks. Accordingly, it can be concluded that CBFS is an important phenomenon in the context of central banks based on the related empirical literature.

Measuring Central Bank Financial Strength

Literature provides some useful measurements in assessing CBFS. Accordingly, some of widely employed measurements of CBFS can be identified in several studies in terms of ratios (Kluh & Stella, 2008; Benecka et al., 2012). Several ratios have been employed to assess CBFS with respect to balance sheets of central banks such as the ratio of Equity to total assets (ETA), the ratio of ‘broadly defined’ capital to total assets (CBFS) and the ratio of Net non-interest bearing liabilities (NNIBL) etc. Especially NNIBL has shown a significant negative coefficient with inflation providing that there is an impact of CBFS to inflation while other measures turned out to be insignificant (Benecka et al., 2012).

In the terms of profitability measures, Return on average assets (ROAA) and Return on average equity (ROAE) have been used as indicators reflecting net returns generated on central bank assets and the profitability of central banks ‘s own funds (Benecka et al., 2012).
The ratio of ‘broadly defined’ capital to total assets (CBFS) has been widely used in the empirical studies (Stella, 2008; Perera et al., 2011; Benecka et al., 2012). It has been constructed by taking account the central bank capital or equity plus the balance of ‘Other Item Net’ (OIN) account scaled by total assets of central bank. It is stated that the measurement comparatively reflects more of central bank balance sheet. It is mentioned that OIN includes the revaluation account, net worth, original capital, reserves and physical assets. Further it is states that it contains accumulated losses or hidden reserves providing a more reflection of financial strength in the context of central banks (Perera et al., 2011).

Empirical studies claimed that above mentioned measurement as the best representative measurement of CBFS based on several few key features of the measurement such as it is a more transparent proxy of measurement, it adopts the stock concept to measure CBFS and it is a more reliable indicator which is calculated based on the data provided by International Financial Statistics (IFS) (Stella, 2005; Stella, 2008; Benecka et al., 2012). Also it has been selected as the only measurement which indicates a significant relationship with economic outcomes after a comprehensive analysis by employing several measurements in a study (Perera et al., 2011).

Relying on standardized and widely available data set that ensures comparability across countries and using Total Assets as the scaling factor which helps to capture the degree of currency mismatches in the central bank’s balance sheet have been pointed out as the prominent advantages of this measurement. Moreover, it is stated that this is a broad measure of capital to assets which is widely available on relatively high standardized and high frequency basis which has been employed in previous studies (Mora et al., 2012).

Accordingly, this measurement can be depicted as follows.

CBFS=(Equity+Other Item Net)/(Total Assets)

Despite the advantages of this measure, some of drawbacks also have been discussed as failing to capture market value of some assets and liabilities, overlooking certain financial components such as contingent liabilities that only materialize with a lag and inclusion of idiosyncratic features in Other Item Net which might not be fully comparable across countries (Mora et al., 2012).
In this study, it is used the ratio of capital plus OIN as a percentage of total assets to assess the financial strength of central banks in the selected sample of countries following related empirical studies (Klüh & Stella, 2008; Perera et al., 2011; Mora et al., 2012).

**Consequences of Central Bank Financial Strength**

Empirical studies present different viewpoints related to CBFS and its impact on economic outcomes. Accordingly, majority of scholars highlight the CBFS and its relation with attainment of monetary policy objectives to discuss the consequences of CBFS.

It is stated that weak CBFS can hamper policy capacity and its outcomes (Stella, 2008). Further, it is mentioned that weak CBFS can constrain the smooth conduct of monetary policy thereby resulting a dependency on the support from treasuries. Then it would affect the primary concern on price stability and ‘to compromise its operational independence and also to impose inefficient restrictions on the financial system to suppress inflation’ (Stella, 1997, as cited in Perera et al., 2011, p. 16).

It is argued that central bank losses may influence the central bank to change the operations of central banking to guarantee its survival (Sweidan, 2011, as cited in Perera et al., 2011). Therefore, it is appeared to be that CBFS is positively associated with good policy performance which implies that financially weak central banks would undermine the macroeconomic stability (Stella, 2008).

Moreover, it is described that financial weakness of central bank would lead to financial losses which have to be settled through financial repression, reserve money creation or debt issuance which will results a monetary expansion in the economy (Stella, 2005). If central bank fails to withstand to potential shocks in their balance sheets due to the weak financial position, it would be difficult to fulfill its policy obligations which would weaken the credibility of central banks.

Another idea developed regarding the CBFS is that it is required to maintain adequate level of financial strength to absorb losses and to credibly achieve policy objectives. It is argued that treasury support for central bank is not an appropriate and reliable option and also it cannot be expected such support on timely basis considering historical occasions. Moreover, it is emphasized that central bank distress and fiscal distress are associated (Stella 2008). Also stabilizing the financial strength with treasury support requires transferring real resources to
central bank. Such options could cause monetary expansion which would erode central bank capital thereby generating higher inflation rates (Stella, 1997, as cited in Perera et al., 2011).

All these findings conclude that to achieve policy objectives as well as to maintain efficiency in central banking, it is a necessity to have an adequate level of financial strength for central banks. It would be unable to meet the basic functions of central banks causing financial distress in the economy due to inadequate CBFS (Stella & Lonnberg, 2008).

Other key aspect of CBFS is that it provides central banks to act more credibly. Having an adequate level of financial strength provides central banks to survive in adverse situations without hampering policy objectives. It is stated that if central banks are financially weak one of options available to central banks is relieving some of policy goals such as price stability or maintaining a fixed exchange rate which constrain macroeconomic stability (Stella, 2005).

Finally, it can be concluded that determining financial strength of a central bank requires a careful analysis both in balance sheet and economic environment to ensure that the central bank will be able to meet its policy objectives successfully without hampering macroeconomic stability (Stella, 2005).

**Linking Central Bank Financial Strength and Price Stability**

It is commonly believed that high and volatile inflation affect consumption and investment decisions which ultimately results an impact to the economy as a whole. Persistent inflation in goods and services creates higher social costs. Accurate predictions of inflation could also enable the Central Bank to conduct its monetary policy effectively and efficiently and thereby achieving the objective of price stability (Rathnasiri, 2011).

Majority of central banks set price stability as the primary objective of monetary policy believing it as crucial pre condition of the economy to smooth functioning. Hence, it can be observed in the monetary system making the central bank as an agent with the mandate and reputation for maintaining price stability. Governments often pass laws and follow customs granting their central banks authority and authority to pursue price stability making the central bank an agency with the mandate and reputation for maintaining price stability (Cukierman, Webb & Neyapti, 1992).
Linking price stability with CBFS opens to both empirical and theoretical arguments. This is an area which is subject to debate. According to the literature, many scholars argue that linkage between CBFS and macroeconomic outcomes including price stability as a prominent macroeconomic variable are unlikely to exist providing that this is an irrelevant idea to investigate. But it has been presented two approaches such as pragmatic approach and theoretical consideration to link these two concepts (Klüh & Stella, 2008).

According to pragmatic approach, the discussion on CBFS and inflation are carried out. It is stated that financial difficulties of central bank would weaken the achievements of anti-inflationary policies resulting transfer of excess liquidity to financial system. It is stated that ‘motives such as self-interested behavior of central bank representatives in terms of reputation, personal prestigious and future employment opportunities and also, intentions to generate stable flow of seignorage revenues can lead to a tendency to factor CBFS in monetary policy decisions’ (Perera et al., 2011, p. 13).

In theoretical considerations, it is provided that in circumstances where treasury support is not available for a loss making central bank, it would tend to lower the cost of monetary operations as the first option adjusting minimum reserve requirements. It is discussed that such procedures would involve some economic costs such as financial repression affecting the financial development (Klüh & Stella, 2008).

Moreover, it is argued that if the central bank goes for a reprinting of money based on interest free liabilities to repay its obligation as the second option, excess liquidity would flow to the economy. If sterilization process is not conducted to absorb the excess liquidity back, then there could be a possibility of inflationary pressures (Perera et al., 2011). On the other hand, if central bank sterilizes the excess liquidity by issuing debt securities, it would have to be incurred an additional interest cost (Klüh & Stella, 2008).

In sum, all these arguments support the view of existing relationship between CBFS and price stability. Accordingly, this study will attempt to model the relationship in between CBFS and price stability in South Asian context to fill the prevailing research gap.

**Variables Selection**

By following the previous empirical literature on CBFS, a set of explanatory variables is included in the model. Prior to selecting these additional explanatory variables, a plethora of
previous studies has been referred. For example, in prior literature, inflation has been regressed using a broad range of explanatory variables including broad money growth, per capita income, budget deficit, output gap, nominal interest rates, nominal exchange rates, economic openness, import prices, foreign inflation, oil and/or commodity prices, expected inflation etc. (Moser 1995; Cuckierman, Webb and Neyapti 1992; Perera et al. 2011; Perera et al. 2013).

**METHODOLOGY**

**Research Design and Sample Selection**

The main purpose of this research is to empirically analyze the relationship between central bank financial strength and price stability within a framework of panel data with special reference to South Asia. Therefore, this research is conducted as a quantitative research where data collection methods and techniques follow a quantitative research design.

South Asia is the targeted population for this study. Out of total population of eight countries: Afghanistan, Bangladesh, Bhutan, India, Nepal, Maldives, Pakistan and Sri Lanka, only four countries were selected as the sample mainly based on the availability and accessibility of data. Accordingly, Sri Lanka, India, Pakistan and Nepal were the selected countries within the region. Hence, a purposive sampling method was employed to select the countries out of the total population.

**Selection of Other Variables**

In the presence of wide range of explanatory variables to inflation, the step-wise regression method was used to justify the selection of most appropriate variables that can be included in the regression model to keep model less complex and to provide the more focus on inflation and CBFS. Accordingly, only Broad Money Growth, Foreign Inflation and first lag of dependent variable have been utilized to the model following similar studies and after comparing the results of other explanatory variables (Perera et al. 2011; Perera et al. 2013).

**Conceptual Framework**

Variables used in the model and their measurement are indicated by the conceptual framework. Other than to the main independent variable; central bank financial strength several other explanatory variables have been included to the model to enhance the model
validity. The dependent variable; price stability has been measured through using consumer inflation as a proxy to price stability.

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Independent Variables</th>
<th>Dependent Variable</th>
</tr>
</thead>
</table>

Source: Compiled by author (2017)

Data Sources and Data Collection

Since this study is analyzing the macro economic variables, secondary data were used to conduct the study. All the variables are expressed as annual percentages except the main independent variable which is in the form of ratio. The required data was retrieved from various sources such as International Financial Statistics (IFS) of International Monetary Fund, World Development Indicators of World Bank and also from respective central banks, Central Bank of Sri Lanka (CBSL), Reserve Bank of India (RBI), State Bank of Pakistan (SBP) and Nepal Rastra Bank (NRB).
These data consist four South Asian countries; Sri Lanka, India, Pakistan and Nepal. Unbalanced panel data regression was carried down due to the unavailability of data for two countries namely Pakistan and Nepal where central bank capital and other item net account balance in IFS database were not published after 2007 and 2008 respectively. Accordingly, unbalanced panel data with one hundred and twenty-nine observations altogether were used to conduct the analysis and the detailed breakdown of the date set was depicted by the following table.

**Table 1: Characteristics of the panel data series**

<table>
<thead>
<tr>
<th>Country</th>
<th>Time period</th>
<th>Number of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td>1980-2015</td>
<td>36</td>
</tr>
<tr>
<td>India</td>
<td>1980-2015</td>
<td>36</td>
</tr>
<tr>
<td>Nepal</td>
<td>1980-2008</td>
<td>29</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1980-2007</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>129</td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)

Model Specification for the Study

Since there is no particular theoretical model to adopt in this study, the model was specified to best fit to the data set where researcher was given the freedom to alter the model where needed. Accordingly, the model was constructed following the empirical model by Perera et al. (2011, 2013).

Model:

\[ Y_{it}=\alpha+\beta_1 X_{it}+\beta_2 X_{it}+\beta_3 X_{it}+\beta_4 Y_(i,t-1)+\epsilon_{it} \]

Where \( Y_{it} \) is Consumer inflation over given period \( t \). \( X_{it} \) corresponding to variables, which can have an effect on Consumer inflation: independent variables. Therefore, the equation express as follows.
CPI\_INF=\alpha+\beta\_1 \ CBFS+\beta\_2 \ BM\_GROWTH+\beta\_3 \ CPI\_OECD+\beta\_4 \ CPI\_INF\_t-1+\epsilon\_it

Where,

CPI\_INF = Year on year change of consumer price index

CBFS = Central Bank Financial Strength

BM\_GROWTH = Broad money growth

CPI\_OECD = Foreign inflation

CPI\_INF\_t-1 = Lagged value of CPI\_INF (dependent variable)

DATA PRESENTATION AND ANALYSIS

Prior to the estimation of model, the data set was adjusted to the unit root problem following Levin, Lin and Chu (LLC) and Im, Pesaran and Shin (IPS) test statistics. Accordingly, all the variables have been converted into first order integration.

**Estimation Results**

CPI\_INF=\alpha+\beta\_1 \ CBFS+\beta\_2 \ BM\_GROWTH+\beta\_3 \ CPI\_OECD+\beta\_4 \ CPI\_INF\_t-1+\epsilon\_it

Accordingly, Pooled regression model was constructed using period weights and white period coefficient covariance to improve the model. The significance of the relationship between the independent variables and the dependent variable was assessed by the following criteria.

**Significance of Parameter**

H0: There is no significant relationship in between the two variables

H1: There is a significant relationship in between the two variables

Decision Rule: Reject H0 if P value < 0.05
The results are summarized by the following table.

**Table 2: Significance of parameters of the model**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>P value</th>
<th>Level of significance</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.001388</td>
<td>0.2878</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBFS</td>
<td>-0.009622</td>
<td>0.0001</td>
<td>0.05</td>
<td>The relationship is significant</td>
</tr>
<tr>
<td>BM_GROWTH</td>
<td>-0.043010</td>
<td>0.0000</td>
<td>0.05</td>
<td>The relationship is significant</td>
</tr>
<tr>
<td>CPI_OECD</td>
<td>0.436569</td>
<td>0.0806</td>
<td>0.05</td>
<td>The relationship is not significant</td>
</tr>
<tr>
<td>CPI_INFT-1</td>
<td>-0.234612</td>
<td>0.0000</td>
<td>0.05</td>
<td>The relationship is significant</td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)

**Overall Significance of the Model**

To assess the overall significance of the model, following decision criteria was used.

H0: The model is not significant as a whole

H1: The model is significant as a whole

Decision Rule: Reject H0 if P value < 0.05

In accordance with the test statistics, the model was significance as a whole.

**Table 3: Overall significance of the model**

<table>
<thead>
<tr>
<th>Probability of F statistic</th>
<th>Level of significance</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0000</td>
<td>0.05</td>
<td>The model is significant as a whole</td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)
Other test statistics of the model are summarized as follows.

**Table 4: Other test statistics of the model**

<table>
<thead>
<tr>
<th>R2</th>
<th>Adjusted R2</th>
<th>S.E. of Regression</th>
<th>Durbin Watson Stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4769</td>
<td>0.4589</td>
<td>0.0417</td>
<td>2.31</td>
</tr>
</tbody>
</table>

Source: Compiled by author (2017)

According to the empirical results, it can be observed a significant negative relationship in between central bank financial strength and price stability in South Asia which is compatible with most of the empirical studies. According to the model, a positive change of 1 percent in central bank financial strength, ceteris paribus, will result a 0.96 percent decrease of inflation level in selected South Asian countries at the presence of other explanatory variables. In other words, when the financial strength of central bank increases, the inflation level tends to decline which will ultimately result price stability as a macroeconomic outcome.

In assessing the overall significance of the model, F value is considered which is appeared to be significant. R2 and Adjusted R2 values are significant with 46 percent of explanatory power of the variance in the model.

The model for the study can be specified based on the empirical results as follows.

\[
\text{CPI-INF} = -0.0014 - 0.0096 \text{CBFS} - 0.043 \text{BM_GROWTH} + 0.4366 \text{CPI_OECD} - 0.2346 \text{CPI-INF}_{t-1}
\]

**CONCLUSION AND RECOMMENDATION**

This study attempts to provide evidence of probable relationship between central bank financial strength and price stability in South Asian context. The empirical result of the study proves that price stability, measured by inflation is broadly related to central bank financial strength in particularly a significant negative relationship. Therefore, it is concluded that higher financial strength of central banks will tend to lower the inflation providing stability in the prices of an economy.
The findings of this study is compatible with the previous similar studies in this field. Accordingly, significant negative relationship between Inflation and CBFS has been proven by several other studies (Stella 2005; Klüh and Stella 2008; Perera et al. 2011; Perera et al. 2013).

These empirical observations offer several policy implications stressing the need of the financial soundness regardless of the monetary authority inherent to central banks. Accordingly, central banks should attempt to avoid losses by implementing appropriate policies in order to maintain favorable balance sheet position with adequate financial health as there is a significant impact from the financial strength of central banks on price stability which generates a downward bias in inflation.

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Determinants of Migration and Remittances: Evidence from Rural Sector of Sri Lanka

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Rathnayake, K.K.H.M., Uva Wellassa University, Sri Lanka

ABSTRACT

Employing a nationally representative data set, this study attempts to find the determinants of migration and remittances of rural sector of Sri Lanka. In identifying the determinants, we estimated several multinomial logit models separately based on the status of migration and receipt of remittances. The results reveal that human capital characteristics are not major positive determinants of rural sector migration and receiving remittances implying that households with better education remain in the rural sector. Rural households with more members tend to have more migrants while it is a negative determinant of receipt of remittances. Results also suggest that rural households receive more remittances from internal migrants when they have school age children. Based on these results, this study concludes that people diversify into different income earning strategies such as migration when they have more household members while education has contributed positively to keep the rural households in the sector. Therefore, the retaining human capital can be used in the rural development process if proper policies are implemented.

Keywords: Determinants, Migration, Remittances, Rural sector, Sri Lanka
INTRODUCTION

Change of residence from one administrative area to another within the same country is known as internal migration while change of residence from the recognized borders of one country is known as international migration (Department of Census and Statistics, 2015). Balance and redistribution of population and imbalances of physical and human resources in a country change as a result of internal migration. According to Department of Census and Statistics (2015), 16.9% of Sri Lankan population is a lifetime migrant within the country and the highest percentage of lifetime migrants are found in Colombo District followed by Gampaha. The lowest is recorded in Baticoloa District. The dominant age group of migration is 25-39 years whereas many female migrants belong to the age group of below 25 years (Department of Census and Statistics, 2015). It is also interesting note that about 20.2% of population in Sri Lanka has changed the district of residence at least once.

Main purpose of migration is to find better paying employment opportunities and working conditions (Jayawardhana and Jaythilaka, 2009) and economic consideration (Eelens and Schampers, 1990). Major reasons for internal migration are denoted as diversification of income portfolio (World Bank, 2007) survival strategy, poverty reduction strategy and to accumulate of assets (Jayawardhana and Jaythilaka, 2009). Overall, much of internal migration occurs due to economic reasons prevailing sending regions (Perera, 2005; IOM, 2005; Eelens and Schampers, 1990; Department of Census and Statistics, 2015). Among the very reasons, seeking employment opportunities (Perera, 2005), income disparity among regions (World Bank, 2007) can also be considered as major determinants of internal migration. In other words internal migration is a consequence of rising regional inequalities in Sri Lanka (World Bank, 2007). Although the case is such Department of Census and Statistics (2015) shows that the marriage is the most prominent factor for internal migration. Perera (2005) reveals that improved levels of income earnings, improved working condition and housing, better services and opportunities for labor participation are a consequence of internal migration. However, World Bank (2007) indicates that opportunities through internal migration are limited. According to the same report by World Bank (2007), internal migration in Sri Lanka has doubled between the periods of 1996/97 and 2003/04 due to the widened economic performances between rural areas and the rest of the country. The major role plays by the migration are its contribution to households through remittances.
Middle East region dominates the foreign employment market in Sri Lanka accounting majority of them as unskilled workers and housemaids. Although it is considered as a low wage compared to the wages earned by high skilled and professional migrant workers, earnings abroad is quite higher, often several times the amount a worker can earn back at home. Moreover, casual workers, when they are in the home country, do not usually have regular work due to seasonality, changing weather conditions, etc. As a result, workers tend to work abroad for a higher, regular wage even for a fixed period. This explains why there is a constant supply of labour from poorer countries like Sri Lanka to ME region. According to the Sri Lanka Bureau for Foreign Employment (SLBFE), the main administrative body regulating migration, more than one million Sri Lankans are employed abroad and there was an outflow of about 263,443 persons in 2015. Middle East region dominates the foreign employment market in Sri Lanka accounting for more than 90% of departures from the country (Central Bank, 2016). Within the Middle East region Saudi Arabia, Qatar, United Arab Emirates (U.A.E) and Kuwait accounted for 84.34% of total departures for foreign employment in 2015 (Central Bank, 2016). Moreover, in 2015 greater part of the remittances (54%) originates from the Middle Eastern housemaids and the unskilled workers (57.4% of total migrants). Among Saudi Arabia, Qatar, Kuwait and UAE, Saudi Arabia has received the largest amount of annual migrants from 2007 to 2012 with a peak of 97,964 in 2012. After then, the migrant flow has reduced to 80,887 in 2013 by being second to Qatar. When observing the performance of Qatar it can clearly be seen that the migrant flow has increased gradually with slight fluctuations until 2014 and declined to 65,139 migrants in 2015. According to the SLBFE, increase in job opportunities has been the main reason for the increased migrant flows in those countries. On the other hand, Bahrain, Jordan, Lebanon, and Oman show similar trends and they have low number of migrants when comparing with first four countries. Those countries still hold a large proportion of Sri Lankan migrants when considering other countries where Sri Lankan labour migration occurs.

However, according to the economic and social statistics of central bank of Sri Lanka (2016) migration to Middle East has reduced from 277,994 in 2014 to 240,659 in 2015. 92.6% of international migrants are in the age group between 18-59 years of age among which 72% are from rural sector. In every age group more females have gone abroad than more males in estate sector of Sri Lanka. 54.2% of male population that is abroad for reasons of employment is temporary residents of Saudi Arabia, Qatar and Emirates while 66% of female population
that is temporary residents abroad is found to be residents of Kuwait, Saudi Arabia, and Emirates (Department of Census and Statistics, 2015).

Decisions regarding participating off-farm activities like migration are primarily made at household level (Taylor et al., 2003). However it should be worthwhile mentioning that studies on labour migration issues in the rural sector and especially the household characteristics that affect the migration and remitting decision have not been adequately carried out in Sri Lanka especially giving more emphasis on rural sector. Therefore, we are interested in investigating household characteristics which are assumed to affect members of the household in making the decision to migrate and remit. For example, number of dependents, household size etc. can be important factors affecting migration decision of rural households in Sri Lanka (Dharmadasa and De Zoysa, 2012). Therefore, a study highlighting importance of determinants of migration and remittances will add to the existing literature by providing important implications on what household level characteristics influence the migration and decision remitting and on what policy should be implemented in targeting rural sector.

DETERMINANTS OF MIGRATION AND REMITTANCES – A REVIEW OF LITERATURE

The major determinant of migration proposed in neoclassical theory is the wage differential between the sending region and the receiving region of migrants. The basis of Todaro (1969) and Harris and Todaro (1970) models is also the wage differentials although their major focus is on the expected earnings \(i.e.\) actual urban earnings times the unemployment there). More recent finding by Nonthakot and Villano (2008) reveal that disparity of wage between farm and non-farm sectors generate farm labor out migration from lower wage rate areas. Apart from wage differentials, Cai and Wang (2003) investigate the spatial patterns and determinants of large scale migration in China and they find that differences in expected income and extent of marketization between regions are important factors in determining the migration flows. Taylor \(et\ al.,\) (2003) in their study on rural urban migration in China show that rapid creation of off farm enterprise due to economy’s expansion has led to increase in labor migration out of agriculture. Housen \(et\ al.,\) (2013) highlight the reason for limited international migration from many low income countries and they reveal that lack of human capital, especially high skilled labor or qualified professionals, is the major cause for limited
migration. Sjaastad (1962) concentrates on human capital variables like age and education. Human capital theory of Sjaastad (1962) reveals that age is a major determinant of migration and shows that migration decreases with the age. Larson and Mundlak (1997) opine that migration rates are higher in countries with younger population. It is also noted in the migration literature that education levels of migrants and other household members positively influence the migration decision. This is highlighted by Sjaastad (1962), Adams (1989), Larson and Mundlak (1997), Mora and Taylor (2006), and Matsumoto et al., (2006). Almost all the authors stress that propensity to migrate increases with higher education levels. Giving emphasis on the link between schooling and migration, Matsumoto et al., (2006) further show that local language abilities (measured by the number of local languages one can speak) increase the propensity to migrate and participate in non-farm activities. Mincer (1978) and Stark (1991) find that household size is one of the major determinants in migration and it increases with the increase in family size in the source country while Mendola (2008) shows that number of working family members increases the benefits of migration as family members working in different labor markets provide insurance for the members left behind with regard to the available opportunities. Mendola (2008) further explains that household size and type of residence are positively associated with migration decision. Sri Lankan estate sector is lagging behind other sectors and people there still live mostly in quarters with limited space called line rooms. This gives rise to a condition where more migration can be expected from the estates. New Economics of Labor Migration (NELM) also considers household as a major determinant of migration and perceives migration as a risk sharing behavior of households. It is evident that family size is a major determinant in migration decision and the movement of people from estates has increased with the increasing family sizes (Dharmadasa and de Zoysa, 2012).

Lee (1966) explains two types of factors affecting migration. They are push factors and pull factors. Push factors of migration are poverty, low income, small land holdings, lack of jobs and low wages whereas pull factors are higher wages for highly skilled laborers and strong network at the potential destination (World Bank, 2007). In a study carried out in Bangladesh, Ullah (2004) reveals that both push and pull factors affect the migration decision and they mention those factors as the search for work, landlessness, extreme poverty, loss of income, easy access to informal sectors in cities and joining families or relatives.
The number of poor people in a country or a region and the average quality of life also depend on how equally—or unequally—income is distributed (Soubbotina, 2004). The distribution of income could always be changed by migration due to the remittance effect while inequality within sending areas and receiving areas could promote migration (Deshingkar, 2006). Uneven development and interregional inequalities may also lead to driving people from one region to another (World Bank, 2007; Deshingkar, 2006). It is interesting to see that income inequality related to caste, tribe, gender, and ethnicity is also important in shaping migration (Deshingkar, 2006; Dharmadasa and de Zoysa, 2012). Distance from origin to destination, which reflects the accessibility to transport network, cost and risk of participation in migration and accessibility to information and markets (Greenwood, 1970; Zhu and Luo, 2010) also play significant role migration decision.

Among the household characteristics, educational level of household heads (Lewin et al., 2012) and experience in a particular type of work significantly influence the migration decision while household ownership is also found to be a major determinant. Root and De Jong (1991) find that in Philippines, higher educational level of adult members with few real estates is related to migration of some family members. In contrast, Dharmadasa and de Zoysa (2012) show that house ownership in tea estates in Badulla district of Sri Lanka does not have influence on the decision to have a migrant member in a family. They further show that experience of the household head in tea estate work has a negative association with having a migrant in a family. Another influencing factor coming out of Mincer’s (1978) finding on migration is that there is an effect of wife’s wage rate and educational level on propensity to migrate. Shields and Shields (1993) find that wife’s educational level has a strong positive impact on the migration. They further notice that the higher the wife’s wage rate, the lower the family’s migration propensity is. Lewin et al., (2012) indicate that probability of migration is negatively associated with age of the household head and the head being a female. Number of dependents defined as household members who are not currently employed (Zhu and Luo, 2010) has a strong linkage with migration decision as they are the people who stay at home protecting their properties (Zhao, 1999). However, some other studies (Zhu and Luo, 2006; Dharmadasa and de Zoysa, 2012; Lewin et al., 2012) show that the propensity to have a migrant in families reduces with the increase in number of dependents due to the fact that dependents have to be cared for.
It is not surprising that migration is determined by economic as well as non-economic factors at household level and individual level. Zhao (1999) states that decision to migrate by Chinese people, is affected by non-economic forces and they generally choose rural non-farm work over migration although migration offers large monetary returns. His findings are contradictory to the general view in such way that more educated people would like to engage in non-farm work over migration although in many cases better educated people positively selected into migration. In this study, the author further explains that the major impediment to migrate is the lack of safety during transportation and in destination cities as well as forced separation from families.

Migration is a viable economic decision made by the citizens in a country to relax their income related risks while remittances from migrants serve as insurance for households in the country of origin (Lucas and Stark, 1985). International migration has become a feature of globalization and it is one of the major sources through which foreign exchange comes to developing countries. The impact of remittances on households is mixed. Therefore, by identifying why migrants remit or the factors that motivate them to remit would be important as they are directly related with the migrant as well as household characteristics. In 1980’s, loss of human capital due to migration was considered as a negative impact on the developing countries although the impact of remittances on the country of origin is vast. Sending remittances home can be considered as a family adaptation strategy. However, sending money home depends on individual characteristics. Major motive to remit depends on altruism or self-interest (Lucas and Stark, 1985). However, if a migrant’s major intention which affects his decision is to improve the condition of the household or family members left behind, he or she tends to remit as he or she has an obligation to do so. Lucas and Stark (1985) term this as “an implicit family agreement” in a family framework of decision making where remittances are endogenous to migration process. In macro sense, intention to remit by migrants depends on the portfolio management decision; migrants’ savings that are not needed for consumption may be remitted.

Individual education level (Johnson and Whitelaw, 1974) and the number of children (Lucas and Stark, 1985) that the migrant has are positively related to migrants’ decision to remit. At household level, if the migrant is the household head, tendency to remit is higher and they remit more due to the obligation towards family (Oberoi et al., 1989). Massey and Basem (1992) find that where migrants own physical properties or business at their origin, they remit
and invest on more productive activities. In a study based on a data set from Germany, Sweden and Belgium, Lianos (1997) shows that the volume of remittances sent is affected by the level of income of migrant, the rate of inflation, the exchange rate, the rate of interest and the number of migrants in a family. The author also notices that the level of unemployment also affects the remittance sending behavior but not always. However, in Turkey, neither variation in exchange rate nor changes on real return on investments affect flow of remittances (Straubbaar, 1986). Hunte (2004) argues and confirms that sending remittances decreases with the increase in household income.

**METHODOLOGY**

**Data**

This study uses data from the Household Income and Expenditure Survey (HIES) conducted by the Department of Census and Statistics in Sri Lanka 2009/2010 period. This survey was conducted over a period of 12 months (July 2009 to June 2010) to capture seasonal variations. Data set comprises 19,958 households and it is representative at the national level for rural, urban and estate sector areas. Data is on demographic and socio-economic variables, and detailed information about income and expenditures of each household. As this survey was not designed to gather information on migrant and remittance information, it had collected data on current remittances and transfers from outside the country and from within the country. This study employs only the data that belong to 12,857 rural households. The data include 10714 non migrant households and 2135 migrant households. Among the migrant households, 1525 households are local (internal) migrant households and 610 households are international migrant households. Out of the migrant households, 986 households receive remittances and 1157 households do not receive remittances. Among the remittance receiving households 518 households receive internal remittances and 468 households receive international remittances.

**Empirical Strategy**

Central objective of this paper is to examine the factors that affect migration and the receipt of remittances. When looking at the nature of the data set, the decision to migrate could be considered as of four types as no migration, internal migration, international migration and
both internal and international migration. In other words, rural sub sample can mainly be
divided into those three types of households. Therefore, multinomial logit regression model
was used as the functional model in this study in finding the determinants. The economic
theory behind this model is expected utility theory. The model is based on the hypothesis that
the unobservable parts of the utility functions are independently and identically distributed
with the type 1 extreme value distribution.

Let $U_{ij}$ denote the utility that the household derive by choosing one of the three outcomes and
where $\gamma_j$ varies and $X_{ij}$ remains constant across alternatives; and $e_{ij}$ is a random error term
reflecting intrinsically random choice behaviour, measurement or specification error and
unobserved attributes of the alternative outcomes.

$$U_{ij} = \gamma_j X_{ij} + e_{ij}$$

The multinomial logit model (Babcock et al., 1995) is given by:

$$P_{ij} = \frac{\exp(X_j \beta_j)}{\sum_{j=0}^{4} \exp X_j}$$

For $j = 1 \ldots 4$

Let also $P_{ij}$ ($j = 1, 2, 3, 4$) denote the probability associated with the three choices for total
rural sector sample, with $j = 1$ denoting households with no migrants, $j = 2$ denoting
households with internal migration and $j = 3$, denoting households with international
migration and $j = 4$ denoting households with both types of migrants. Among the four
categories of migration, households with no migration are used as the base category.

We also focused on analyzing the determinants of sending remittances. The migrants sub
sample was used for this purpose. Thus, $j=1$ denotes non-remittance receiving households, $j=2$
denotes local remittance receiving households’ and $j=3$ denotes international remittance
receiving households in the multinomial logit model. In this sample, non-remittance receiving
households were used as the base category. Multinomial logit models were separately used for
rural sector households and sub sample of migrant households within the rural sector.
Table 1: Description of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unit of Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Household Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Age of household head</td>
<td>Years</td>
</tr>
<tr>
<td>Education level of household head</td>
<td>Years</td>
</tr>
<tr>
<td>Gender of household head</td>
<td>dummy where 1= male, 0=otherwise</td>
</tr>
<tr>
<td>Marital status of the household head</td>
<td>dummy where 1= Married, 0=otherwise</td>
</tr>
<tr>
<td>Number of members over age 15</td>
<td>Number</td>
</tr>
<tr>
<td>Total household size</td>
<td>Number</td>
</tr>
<tr>
<td>Number of workers over age 15</td>
<td>Number</td>
</tr>
<tr>
<td>Number of young dependents</td>
<td>Number</td>
</tr>
<tr>
<td>Number of old dependents</td>
<td>Number</td>
</tr>
<tr>
<td><strong>Human Capital Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Number of members over age 15 with above A/L education</td>
<td>Number</td>
</tr>
<tr>
<td>Number of members over age 15 with A/L education</td>
<td>Number</td>
</tr>
<tr>
<td>Number of members over age 15 with O/L education</td>
<td>Number</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 6-10 education</td>
<td>Number</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 1-5 education</td>
<td>Number</td>
</tr>
<tr>
<td>Number of members over age 15 with no education</td>
<td>Number</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td></td>
</tr>
<tr>
<td>Sinhala household</td>
<td>dummy where 1=Sinhala, 0=otherwise</td>
</tr>
<tr>
<td>Sri Lankan Tamil household</td>
<td>dummy where 1= Sri Lankan Tamil, 0=otherwise</td>
</tr>
<tr>
<td>Indian Tamil household</td>
<td>dummy where 1= Indian Tamil, 0=otherwise</td>
</tr>
<tr>
<td><strong>Wealth</strong></td>
<td></td>
</tr>
<tr>
<td>Livestock Owner</td>
<td>dummy where 1= yes, 0=otherwise</td>
</tr>
<tr>
<td>Agricultural Land Owner</td>
<td>dummy where 1= yes, 0=otherwise</td>
</tr>
<tr>
<td>Durable Assets owned</td>
<td>Percentage</td>
</tr>
<tr>
<td><strong>Distance</strong></td>
<td></td>
</tr>
<tr>
<td>Distance to Divisional Secretariat Office</td>
<td>Minutes (a proxy for distance)</td>
</tr>
<tr>
<td>Distance to Grama Niladari Office</td>
<td>Minutes (a proxy for distance)</td>
</tr>
</tbody>
</table>

RESULTS AND DISCUSSION

This section summarizes the results of the study. First, the summary statistics of total sample and migrant sub sample is presented and next the results of the multinomial logit models are presented.

Summary Statistics

The Table 2 summarizes the data related to rural sector and Table 3 summarizes the data related to migrant subsample within rural sector of Sri Lanka. The data here are described in
an abbreviated form. The Table 2 presents the results related to t-tests that were used to compare the differences between migrant and non-migrant households.

Table 2: Summary Statistics of Selected Variables of Rural Households

<table>
<thead>
<tr>
<th>Variable</th>
<th>Non Migrant Households (Mean)</th>
<th>Internal Migrant Households (Mean)</th>
<th>International Migrant Households (Mean)</th>
<th>t-test (Non Migrant Households Vs. Internal Migrant Households)</th>
<th>t-test (Non Migrant Households Vs. International Migrant Households)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of household head</td>
<td>50.92</td>
<td>51.00</td>
<td>48.92</td>
<td>-0.49</td>
<td>3.44***</td>
</tr>
<tr>
<td>Education level of household head</td>
<td>7.81</td>
<td>8.05</td>
<td>7.77</td>
<td>-2.31**</td>
<td>0.45</td>
</tr>
<tr>
<td>Total household size</td>
<td>4.08</td>
<td>4.87</td>
<td>5.02</td>
<td>-17.62***</td>
<td>-12.97***</td>
</tr>
<tr>
<td>Number of members over age 15</td>
<td>2.98</td>
<td>3.96</td>
<td>3.84</td>
<td>-25.52***</td>
<td>-13.10***</td>
</tr>
<tr>
<td>Number of workers over age 15</td>
<td>1.43</td>
<td>1.13</td>
<td>0.97</td>
<td>11.17***</td>
<td>11.51***</td>
</tr>
<tr>
<td>Number of young dependents</td>
<td>1.11</td>
<td>.98</td>
<td>1.25</td>
<td>4.61***</td>
<td>-3.44***</td>
</tr>
<tr>
<td>Number of old dependents</td>
<td>.35</td>
<td>1.56</td>
<td>1.38</td>
<td>-63.03***</td>
<td>-28.86***</td>
</tr>
<tr>
<td>Number of members over age 15 with above A/L education</td>
<td>.07</td>
<td>.064</td>
<td>.03</td>
<td>.65</td>
<td>3.29***</td>
</tr>
<tr>
<td>Number of members over age 15 with A/L education</td>
<td>.51</td>
<td>.49</td>
<td>.46</td>
<td>.77</td>
<td>1.57</td>
</tr>
<tr>
<td>Number of members over age 15 with O/L education</td>
<td>.34</td>
<td>.29</td>
<td>.30</td>
<td>2.37**</td>
<td>1.24</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 6-10 education</td>
<td>1.37</td>
<td>1.21</td>
<td>1.31</td>
<td>5.16***</td>
<td>0.94</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 1-5 education</td>
<td>.49</td>
<td>.45</td>
<td>.45</td>
<td>1.99**</td>
<td>1.42</td>
</tr>
<tr>
<td>Number of members over age 15 with no education</td>
<td>.11</td>
<td>.10</td>
<td>.09</td>
<td>.17</td>
<td>0.94</td>
</tr>
<tr>
<td>Distance to Divisional Secretariat office</td>
<td>35.07</td>
<td>37.26</td>
<td>34.19</td>
<td>-3.32***</td>
<td>1.13</td>
</tr>
<tr>
<td>Distance to Grama Niladari office</td>
<td>12.28</td>
<td>12.51</td>
<td>11.98</td>
<td>-0.87</td>
<td>0.82</td>
</tr>
</tbody>
</table>

*Significance at 10% ** Significance at 5% *** Significance at 1%

The table shows very important contrasts among three types of households. Household heads in families with no migrants are older than those in international migrant families. Household heads in internal migrant families are more educated and their mean education level is 8 years. According to the literature, family size is a major determinant of migration and our results reveal that internal and international households have more family members. It could also be seen from the results that these households have more number of working age members. However, number of members who are employed either in government or private sector is less...
in migrant families. Number of members over age 15 is higher in non-migrant families in comparison to migrant families. In the case of young and old dependents, data reveals that there are more old dependents in internal as well as international migrant families although it is not such with young dependents i.e. more number of young dependents is found in international migrant families in comparison to families with no migrants while it is opposite with regard to internal migrant families. It is evident from literature that Human capital characteristics are important determinants of migration decision. Therefore, we used number members with different education levels as one indicator of migration decision. Summary statistics presented in the table suggests that more educated people are found in families without migrants. This is contradictory to what is found in literature. Our expectation is that there must me more number of members with better education in all types of migrant families. However, the case is more different in rural sector in Sri Lanka.
Table 3: Summary Statistics of Selected Variables of Migrant Sub Sample of Rural Households

<table>
<thead>
<tr>
<th>Variable</th>
<th>Non Remittance receiving households (Mean)</th>
<th>Internal Remittance receiving households (Mean)</th>
<th>International Remittance receiving households (Mean)</th>
<th>t-test (Non Remittance receiving households vs. Internal Remittance receiving households)</th>
<th>t-test (Non-Remittance receiving households vs. International Remittance receiving households)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of household head</td>
<td>52.27</td>
<td>48.46</td>
<td>47.82</td>
<td>3.66***</td>
<td>4.63***</td>
</tr>
<tr>
<td>Education level of household head</td>
<td>7.90</td>
<td>8.26</td>
<td>7.82</td>
<td>-2.06**</td>
<td>1.03</td>
</tr>
<tr>
<td>Total household size</td>
<td>4.87</td>
<td>4.85</td>
<td>5.07</td>
<td>0.94</td>
<td>-2.33**</td>
</tr>
<tr>
<td>Number of members over age 15</td>
<td>4.05</td>
<td>3.73</td>
<td>3.81</td>
<td>3.32***</td>
<td>1.77*</td>
</tr>
<tr>
<td>Number of Workers over age 15</td>
<td>1.28</td>
<td>.89</td>
<td>.84</td>
<td>5.37***</td>
<td>6.57***</td>
</tr>
<tr>
<td>Number of young dependents</td>
<td>.88</td>
<td>1.22</td>
<td>1.32</td>
<td>-3.94***</td>
<td>-5.87***</td>
</tr>
<tr>
<td>Number of old dependents</td>
<td>1.53</td>
<td>1.56</td>
<td>1.39</td>
<td>-1.64</td>
<td>3.46***</td>
</tr>
<tr>
<td>Number of members over age 15 with above A/L education</td>
<td>.07</td>
<td>.04</td>
<td>.01</td>
<td>1.45</td>
<td>3.64***</td>
</tr>
<tr>
<td>Number of members over age 15 with O/L education</td>
<td>.54</td>
<td>.38</td>
<td>.45</td>
<td>3.39***</td>
<td>1.06</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 6-10 education</td>
<td>.31</td>
<td>.22</td>
<td>.32</td>
<td>3.06***</td>
<td>-1.17</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 1-5 education</td>
<td>1.24</td>
<td>1.21</td>
<td>1.28</td>
<td>0.83</td>
<td>-0.99</td>
</tr>
<tr>
<td>Number of members over age 15 with no education</td>
<td>.47</td>
<td>.42</td>
<td>.43</td>
<td>1.15</td>
<td>0.73</td>
</tr>
<tr>
<td>Percentage of durable Assets owned</td>
<td>24.94</td>
<td>24.93</td>
<td>25.79</td>
<td>0.33</td>
<td>-1.06</td>
</tr>
<tr>
<td>Distance to Divisional Secretariat office</td>
<td>35.91</td>
<td>39.84</td>
<td>33.55</td>
<td>-3.42***</td>
<td>2.56**</td>
</tr>
<tr>
<td>Distance to Grama Niladari office</td>
<td>12.43</td>
<td>13.26</td>
<td>11.18</td>
<td>-2.29**</td>
<td>2.83**</td>
</tr>
</tbody>
</table>

*Significance at 10%  ** Significance at 5%  *** Significance at 1%

The table 3 shows summary statistics related to migrant subsample within rural households. t-test results reveal that household head is older in families with no remittances while education level of the household head is higher in internal remittance receiving households. However, mean education level is 8.26 years. It is also evident that families do not receive remittances have less number of members in their families in comparison to households with international
remittance receiving households while both internal and international remittance families have less number of members over age fifteen and employed people. The table further reveals that remittance receiving households have more young dependents while there are more old dependents in households that do not receive international remittances. With regard to human capital variables, more are the educated people in households that do not receive remittances.

**Estimated Results of Econometric Model**

In finding the determinants of migration and remittances, we estimated two multinomial logit models for total sample and migrant subsample. In estimating the multinomial model for total sample, we considered four types of households *vise* no migrant, internal migrant, international migrant and households having both types of migration. In estimating the determinants of remittances, we considered three types of households *vise* households that do not receive remittances, receive internal remittances and receive international remittances respectively.

**Table 4: Multinomial Logistic Regression Results for Total Sample**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Internal Migration</th>
<th>International Migration</th>
<th>Internal and International Migration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Household Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of household head</td>
<td>0.2720***</td>
<td>0.3096***</td>
<td>0.3421***</td>
</tr>
<tr>
<td>Age square</td>
<td>-0.0035***</td>
<td>-0.0039***</td>
<td>-0.0045***</td>
</tr>
<tr>
<td>Education level of household head</td>
<td>-0.1355***</td>
<td>-0.1360***</td>
<td>-0.1469***</td>
</tr>
<tr>
<td>Gender of household head</td>
<td>-1.9522***</td>
<td>-1.5351***</td>
<td>-2.0093***</td>
</tr>
<tr>
<td>Marital status of household head</td>
<td>-0.3663***</td>
<td>-0.3847***</td>
<td>-0.4143</td>
</tr>
<tr>
<td>Total household size</td>
<td>4.4130***</td>
<td>4.0848***</td>
<td>5.2373***</td>
</tr>
<tr>
<td>Number of members over age 15</td>
<td>-2.6551***</td>
<td>-2.4458***</td>
<td>-3.4390***</td>
</tr>
<tr>
<td>Number of workers over age 15</td>
<td>-0.4051***</td>
<td>-0.5855***</td>
<td>-0.1240</td>
</tr>
<tr>
<td>Number of young dependents</td>
<td>-4.6929***</td>
<td>-4.2280***</td>
<td>-5.7237***</td>
</tr>
<tr>
<td>Number of old dependents</td>
<td>3.7597***</td>
<td>3.5188***</td>
<td>5.1207***</td>
</tr>
<tr>
<td><strong>Human Capital Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of members over age 15 with above A/L education</td>
<td>-1.6369***</td>
<td>-1.8870***</td>
<td>-2.3140***</td>
</tr>
<tr>
<td>Number of members over age 15 with A/L education</td>
<td>-1.6638***</td>
<td>-1.4366***</td>
<td>-2.3023***</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 6-10 education</td>
<td>-1.4362***</td>
<td>-1.2952***</td>
<td>-1.8230***</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 1-5 education</td>
<td>-1.8560***</td>
<td>-1.9312***</td>
<td>-2.3022***</td>
</tr>
<tr>
<td>Number of members over age 15 with no education</td>
<td>-1.6823***</td>
<td>-1.6369***</td>
<td>-2.3728***</td>
</tr>
</tbody>
</table>

**Network**
Table 4 presents results for the multinomial logit regression which was run to identify the determinants of migration in rural Sri Lankan household. Surprisingly, the results reveal that most of the variable affects the migration decision negatively. It could be seen from the results that only age of the household head, household size and number of old dependents affect the migration decision positively when household characteristics are concerned. Age provides a proxy for experience in working any sector. Therefore, with experience household heads have understood the importance of migration of one more members from their households. Sometimes, we can expect that tendency to migrate may reduce when the households have more old dependents as they should be taken care of. However, tendency to migrate internally or internationally increases with more number of old dependents. Household size is expected to be positively associated according to the migration theories. In far with those theories, household members tend to migrate with more number of members in the households. It is a fact that human capital characteristics affect positively on the migration decision. In the case of individual decision making, individuals with better education tend to migrate. However, we considered household level human capital characteristics. The results reveal that almost all the human characteristics affect the migration negatively. Apart from this, networks play an important role in migration decision as it reduces cost of migration. Therefore, we used the nationality as a proxy for network. Hence, being a Sinhala household has a potential advantage in migrating within the country as most of the people in the country are Sinhala. However, it has a negative effect on international migration. If the rural households have agricultural lands, their tendency to migrate internally is more. This is the major problem in rural sector in Sri Lanka. It is a fact that most of the rural households are farmers in Sri Lanka.
and they need more labor for their farming activities. However, most of the members in farming community especially the younger generation are not interested in farming. This tendency could be seen in the category which consists of both types of migrants. On the other hand, more the rural people have durable assets; the less will be the migration internally. The durable assets they own show their wealth. It could be assumed that wealthy people tend not migrate internally. The distance variable shows the cost of migration and it could be assumed that rural people may not migrate if they have to travel a long distance to get their work done from Divisional Secretariat and Grama Niladhari. However, our results suggest that distance has positive effect on migration. The major reason would be that the Divisional Secretariat is located most cases in a city and if they feel to migrate, distance will not be an issue when they see the opportunities available in the cities.

Table 5 presents the results of the multinomial logit model that was estimated in finding the determinants of sending remittances.

Table 5: Multinomial Logistic Regression for Migrant Sample

<table>
<thead>
<tr>
<th>Variable</th>
<th>Receive Internal remittance</th>
<th>Receive International remittance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristics of Household</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of household head</td>
<td>0.0494*</td>
<td>0.0391</td>
</tr>
<tr>
<td>Age square</td>
<td>-0.0005*</td>
<td>-0.0004</td>
</tr>
<tr>
<td>Education level of household head</td>
<td>0.0338</td>
<td>0.0228</td>
</tr>
<tr>
<td>Gender of household head</td>
<td>-0.6904***</td>
<td>-0.1301</td>
</tr>
<tr>
<td>Marital status of household head</td>
<td>-0.2674**</td>
<td>-0.2398*</td>
</tr>
<tr>
<td>Total household size</td>
<td>-0.4818***</td>
<td>0.3342</td>
</tr>
<tr>
<td>Number of members over age 15</td>
<td>0.4644*</td>
<td>-0.1564</td>
</tr>
<tr>
<td>Number of workers over age 15</td>
<td>-0.4588***</td>
<td>-0.5354***</td>
</tr>
<tr>
<td>Number of young dependents</td>
<td>0.6559***</td>
<td>-0.1622</td>
</tr>
<tr>
<td>Number of old dependents</td>
<td>0.0541</td>
<td>-0.0262</td>
</tr>
<tr>
<td><strong>Human Capital Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of members over age 15 with above A/L education</td>
<td>-0.3255</td>
<td>-1.5096***</td>
</tr>
<tr>
<td>Number of members over age 15 with A/L education</td>
<td>0.1646</td>
<td>0.0324</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 6-10 education</td>
<td>0.2728*</td>
<td>-0.0749</td>
</tr>
<tr>
<td>Number of members over age 15 with grade 1-5 education</td>
<td>0.2728</td>
<td>-0.3377*</td>
</tr>
<tr>
<td>Number of members over age 15 with no education</td>
<td>-0.1942</td>
<td>-1.0494***</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sinhala household</td>
<td>0.6677</td>
<td>0.2809***</td>
</tr>
</tbody>
</table>
In most cases head of the household is the father or the mother of the family. They have a significance decision over the migration as well as sending remittances by those migrants. Keeping with this fact, our results of the Table 5 suggest that age of the household head is a positive significant determinant in sending remittances. It is also evident that migrants send remittances when the household has more young dependents and more family members over age fifteen. Most importantly household size is a negative determinant of receipt of internal remittances. This is a contradictory finding because our expectation is that migrants will send remittances when the household has more members. World Bank (2007) finds that most of the internal migrants do ad hoc jobs in town and cities and their day to day earnings is sufficient for their living only. Therefore they tend not to remit although their family size is bigger. When the household has more number of employed people, the household may not need the assistance from the migrants as they earn sufficiently from their employment. Therefore, migrants tend not to remit when the household has more employed people. In the case of receipt of remittances, human capital characteristics play a negative role in international migration. However, having more members with 6-10 years education level has a positive significant effect on the receipt of internal remittances. Propensity receive remittances from international remittances is high if the household is Sinhala while Sri Lankan Tamil households also receive more remittances from their internal migrants. Majority of rural households in Sri Lanka is Sinhala and many are the Sinhala Migrants. Therefore, they tend to remit to their household left behind. On the other hand, next majority in the rural sector is Sri Lankan Tamils and they also receive remittances from their internal migrants.

CONCLUSION

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<table>
<thead>
<tr>
<th>Sri Lankan Tamil household</th>
<th>0.6078***</th>
<th>-1.3439</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Tamil household</td>
<td>-0.5725</td>
<td>-1.3439***</td>
</tr>
</tbody>
</table>

**Wealth**

| Agricultural land owner | -0.0513 | -0.1929 |
| Livestock owner         | 0.1343  | -0.0429 |
| Percentage of durable assets owned | 0.0014 | 0.0012 |

**Distance**

| Distance to Divisional Secretariat office | 0.0055 | -0.0011 |
| Distance to Grama Niladari office        | 0.0015*** | -0.0074 |
| Constant                                 | -2.1725*** | -0.4983 |

*Significance at 10%  ** Significance at 5%  *** Significance at 1%
This paper studied the determinants of migration and receipt of remittances by analyzing household data collected by Department of Census and Statistics with the use of multinomial logit regression models. Migration and receiving remittances by the rural household is very important in developing the rural sector. In a way, the remittances from migrants could be used as an input in agricultural production of rural households. On the other hand remittances contribute to enhance the education level of households. Therefore, decision to migrate and to receive remittances from migrants depends on human capital characteristics. However, our study concludes that human capital characteristics are not major positive determinants of rural sector. Increasing the household size means an extra burden to the households as more people are to be fed. Therefore, income earning capacity of the household should somehow increase. Or they have to diversity their income. Therefore, the household members choose to migrate internally or internationally to relax this constraint. This could be seen from the results that propensity migrate increase with increase household members. However, this is not the case with remittance receipt. Household size is a negative determinant in receiving remittances from internal migrants. Migrants tend to remit more when they have young dependents i.e. school age children. This is because they have a responsibility towards these school age children. Most the people in rural sector are engaged in agricultural activities. However, propensity to migrate is very high when they are engaged in agricultural activities as interest of younger generation to engage in agricultural sector has lost. Finally, this study concludes that human capital characteristics contribute to keep the household members within the rural sector. Therefore, the retaining human capital can be used in the rural development process if proper policies are implemented.

REFERENCES


Ensuring Women’s Land Right in Northern East of Sri Lanka in a Period of Transitional Justice
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ABSTRACT

In this paper the author intends to discuss land rights of women in war affected areas of Sri Lanka (North and East) in light of International standards and United Nations Security Council Resolution 1325. Thirty years armed conflict in Sri Lanka has given rise to many land issues in Northern and Eastern provinces. While both women and men suffer due to weak governance mechanisms that are insufficient to protect land rights, it is important to note that such a situation would adversely affect women than men. United Nations Security Council Resolution 1325 could be envisaged as a feminist attempt to create a gender sensitive environment for good governance based on democracy and the rule of law in conflict and post-conflict situations. Even though the war enabled women to undertake new roles in the society as head of the household, women are discriminated in both state and private land ownership due to social and legal norms which restrict women’s role in the society. In the present context, women’s right to land will empower women economically independent, reduce sexual exploitation against women and ensure the well-being of her children and dependents. In order to conclude my discussion, I would like to say that the state must recognize that women play an important role in structuring the nature of peace which is an important aspect in the post war reconstruction. The design of the research is mainly qualitative in approach.

Keywords: Women, Land Rights, Discrimination, and UNSCR 1325
INTRODUCTION

The manner in which the women’s land rights are denied by direct and indirect acts are discussed in this paper with especial emphasis on the laws, policies, administrative practices and customs which discriminate women’s rights to own, control and acquire land based on their sex. Furthermore, the societal attitudes which deny women’s land rights based on their marital status, ethnicity, religion and language are discussed in depth to provide a better understanding as to the current situation in Sri Lanka.

ANALYSIS AND FINDINGS

Land rights under International and National Legal Framework:

Globally, there has been an increased focus on land rights of women. Under International Conventions, right to land is covered by right to property.\(^2\) Few Articles in the Convention on Elimination of Discrimination Against Women (hereinafter referred to as ‘CEDAW’), have recognized the land rights of women.\(^3\) The 1978 Constitution of Sri Lanka impliedly recognizes the land rights.\(^4\) In addition to this, the Thirteenth Amendment to the Constitution contains provisions in relation to land. Article 10 of the Women’s Charter (1993) is also relevant in respect of land rights of women.

Non-discrimination and substantive equality under the CEDAW and 1978 Constitution of Sri Lanka:

CEDAW requires the States to eliminate discrimination against women\(^5\) and it further recognizes the right to substantive equality. Accordingly, CEDAW seeks to eliminate both intended (direct) and unintended (indirect) discriminations.\(^6\) Direct discrimination against

\(^2\) Universal Declaration on Human Rights Art-17(1), Article 2,11 (1) of International Convention on Economic Social Cultural Rights and Article 26 of International Convention on Civil and Political Rights

\(^3\) Articles 1, 2, 5(a), 13(a) and (b), 14(g), 15 and 16(h) of Convention on Elimination of Discrimination Against Women


\(^5\) Article 1 of Convention on Elimination of Discrimination Against Women

\(^6\) Article 1 “For the purposes of the present Convention, the term "discrimination against women" shall mean any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of
women constitutes different treatment explicitly based on the grounds of sex and gender. Indirect discrimination against women occurs when laws and policies which appear to be gender neutral result in discriminating women in relation to implementation and practice of same. Indirect discrimination can exist in relation to structural and historical patterns based on women’s ethnicity, religion, culture, language, caste and class.

The word substantive equality focuses on substance and reality rather than mere forms. This is reflected in the third world feminist ideology, where it emphasizes that the discrimination on women is not only based on sex, but also based on culture, religion, ethnicity which provides for different standards of treatment for women. This substantive equality and third world feminist ideology require a state to consider women’s experiences, their situations and the disadvantages they face to ensure equality for women.

In the national level, the 1978 Constitution of Sri Lanka entrenches the principles of equality and non-discrimination. Furthermore, Article 12 (4) also contains provisions that allow for special measures to be taken to advance the rights of women. Despite these positive developments, laws and administrative practices continue to discriminate women in the area of land rights.

**Direct discrimination under Thesawalamai Law and Muslim Law (Private land):**

Paragraph 9 of the General Recommendation No.28 on Article 2 of CEDAW requires the states parties to protect women against discrimination by private actors and take steps directly aimed at eliminating customary and all other practices of prejudice. In Sri Lanka, the 1978 Constitution has guaranteed the continued operation of all existing written and unwritten laws even after the enactment of the Constitution. However, some of the customary laws marginalize women as they reflect the patriarchal attitudes.

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7 Paragraph 16 of General recommendation No.28 on Article 2 of the Convention on Elimination of Discrimination Against Women
9 Article 12(2) of The Constitution of Democratic Socialist Republic of Sri Lanka 1978
The United Nations Human Rights Committee stated that “the capacity of women to own property may not be restricted on the basis of marital status or any other discriminatory grounds.” Therefore, it is necessary to examine to what extent women have control over their dowry or cheedanam. In the Northern Province, land constitutes a major component in the dowry and intestate succession. Accordingly, even if women may own 80% of the land in Northern province, they do not have significant decision in making power over land due to the role played by the husband in relation to managing land belonging to women. Section 6 of the Matrimonial Rights and Inheritance Ordinance makes mandatory for married women governed by Thesawalamai to obtain her husband’s consent to alienate her immovable property, though section 8 provides for obtaining consent from the District courts in certain instances under prescribed manner. Due to the armed conflict, certain situations have arisen where the husband has disappeared without a trace as to his whereabouts. In some other instances, husband is abroad as a refugee and is not having any communication with his wife. These instances have made it impossible for the women to obtaining the consent of the husband to deal with her own property. Furthermore, the court litigation is costly and time consuming. Many women do not have knowledge about this provision. On the other hand, the consent of the court will only be granted to a particular transaction which needs to be brought to the notice of the court and the consent would not be of general nature that can be applied by the petitioner wife to any transaction of her choice. Perhaps, Thesawalamai Code recognizes some restrictions on the husband’s property rights. According to part IV:1 of the Code, it is necessary for the husband to give only one tenth (1/10) part of his property without the consent of the wife and children. This restriction the husband refers to only a donation outside the family. There is no provision which restricts husband from donating all his property to his family members. However, the JMRO removed these limitations while retaining the restriction on the wife.

Patriarchal attitudes are reflected in some judicial decisions. In the case of Vijayaratnam v. Rajadurai, it was held that this requirement of the consent of the husband with regard to the

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12 Matrimonial Rights and Inheritance Ordinance No -01 of 1911
13Ponnupillai v Kumaravetpillai (1963) UKPC 23 (23 July 1963) and Theivanapaillai v Nalliah (1961)
14 1966 69 NLR 145
alienation of wife’s property is an incident of the husband’s marital power. In the case of Chellappa v Kumarasamy\textsuperscript{15} it was mentioned that the wife’s subordination to her husband is a general rule in Thesawalamai. Section 6 of JMRIO and judicial attitudes witness that women governed under the Thesawalamai law are directly discriminated based on their marital status.

Article 16 (h) of the CEDAW Convention requires states to ensure “the same rights for both spouses in respect of the ownership, acquisition, management, administration, enjoyment and disposition of property, whether free of charge or for a valuable consideration”. Article 15 (2) of the CEDAW Convention require states to ensure equal rights for women to administrate property and conclude contracts. The husband’s control over dowry property increases women’s lack of economic independence. It is essential to note that under General Law\textsuperscript{16} and Kandyan Law, there is no restriction as such. A woman under these systems has complete control over her property, including her dowry property except in the case where the property has been donated to the husband.

Furthermore, under the Matrimonial Rights and Inheritance (Jaffna) Ordinance\textsuperscript{17}, the widow is entitled to a specified portion of the dead person’s property. While the Matrimonial Rights and Inheritance Ordinance grants a widow \(\frac{1}{2}\) of the entire property of her dead husband,\textsuperscript{18} Jaffna Matrimonial Rights and Inheritance Ordinance, as interpreted by the judiciary,\textsuperscript{19} permits a widow \(\frac{3}{4}\) of the entire Thediathettam property.\textsuperscript{20} In both occasions, to inherit the husband’s intestate property, they must produce their marriage certificates. During the armed conflict, many government offices were destroyed and the legal documents were either lost or destroyed. Being women they have to look after domestic work and having to travel to get government documents and get registered as rightful owners of property are both time

\textsuperscript{15} 1915 18 NLR 435
\textsuperscript{16} In the case of Karunanayake Vs Karunanayake ( 1937) 39 New Law Report p.275 at 281
Per Maartensz J mentioned that “it is a custom in this island to give a dowry” and it was shown in evidence that it was the custom in the country to hand over the money or gift to the husband and that he could not take it absolutely, but had to preserve it for the wife. The district court held the sum of money given to the husband and claimed by him as a wedding gift was a dowry intended for the wife. In the absence of expression of intention to the effect become a free will gift to the man, but presumed as having been intended for the wife to bear the burden of marriage. ( 1937) 39 NLR p.275 at 281 cited by Savitri G, The legal status of the female in the Sri Lankalaw on Family relations, "Colombo: M.D. Gunasena&Co.Ltd 1980 at p.30
\textsuperscript{17} Ponnupillai v Kumaraavetpillai (1963) UKPC 23 ( 23 July 1963) and Theivanapaillai v Nalliah (1961)
\textsuperscript{18} No 15 of 1876 S.22
\textsuperscript{19} S. 20 of The Jaffna Matrimonial Rights and Inheritance Ordinance No -01 of 1911 and its interpretation in Manikkavasagar v. Kandasamy1986(2) SLR 8
\textsuperscript{20} See ss. 19, 20 of The Jaffna Matrimonial Rights and Inheritance Ordinance No -01 of 1911
consuming and cumbersome. During an interview conducted by the author of this paper with a widow, it was revealed that if a woman wanted to get legal documents for her lands, government officers expect sexual pleasure as a bribe from widows.

In the Eastern Province, majority of the population belong to Muslim ethnicity. Under Muslim law women are entitled only to a half of what a male is entitled, in other words one third of the property. Muslim women are directly marginalized and considered as a sub ordinance to men. This discrimination against women is based on Muslim religious values and patriarchal attitudes. These customary laws directly discriminate ownership of land rights of women.

**Direct discrimination under the Land Development Ordinance (State land):**

In the post conflict era, the state allocates new lands of those who have lost their lands due to war. The Land Development Ordinance (hereinafter referred as ‘LDO’), 21 and the State Lands Ordinance 22 are the two main laws regulating the alienation of state land in Sri Lanka. According to section 48 B (1) of the LDO, a spouse who has not been nominated by the permit holder has only a life interest in the land. Limited rights of the spouse are further denied if she decides to remarry, as the title to the land will then devolve to the nominated successor or if there is no nominated successor, to the person who is entitled to succeed under the Third Schedule of the Ordinance. On remarriage, a widow loses the right to cultivate if she has not been nominated and she cannot nominate a successor. Though, this provision applies to widowers too, in the post conflict era the law causes great hardship to women living in the conflict affected areas. According to the Ministry of Child Development and Women’s Affairs, ‘about 89 000 females were widowed due to the war.’ 23 Hence, this provision limits the life choices available to a young widow and it impacts adversely upon the economic independent by denying women’s land right based on her remarriage. In this situation women’s contribution to family and cultivation is disregarded. Furthermore, this provision discriminates all widows who live in all over the island to own, control and access the land.

Furthermore, according to the Third Schedule, succession, thus has a clear preference for male heirs and violates the principle of gender equality articulated in the Constitution for

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21 No. 19 of 1935  
22 No. 8 of 1947  
23Daily Mirror on 30.09.2010, *Even though the news paper report says ‘widowed due to the war’ the statistics refer only to the widows of the North and the East*
distribution of state land. The State Lands Ordinance in section 10 also contains the similar discriminatory provisions. Accordingly, the land rights of women are denied based on their sex and remarriage.

**Indirect Discrimination- by Administrators**

**Head of the house-hold:**

In the post war era, female heads of the house-holds are common phenomenon in the Northern and Eastern Provinces among Tamils and Muslims. However, this administrative practice discriminates women’s land rights based on sex and gender. Even where the law appears to protect land rights of women, obstacles may still appear because of the administrative practices. The term “head of the household” is gender neutral but it is interpreted as a reference to a male head of the household and since the land is granted for agricultural purposes, priority is given to male applicants. This is a sociologically complex issue, while no laws decree that the head of the house should be a man. There is a common understanding among administrators as well as communities, and a man is identified as the head of the household. Accordingly, the father, husband and elder son become the head of the household. A woman becomes a head of house-hold largely in the physical absence of the man. This can be seen in the LDO. The provisions of the LDO refers to a ‘permit holder’ a law which is gender neutral but administrative practices do not recognize women as heads of the household and administrative practices favour the male. This is an example where the law in its implementation is indirectly discriminatory of women as under this law, males are generally granted land permits. In the post war era this has a special concern for situations in which the husband’s death is not documented or where the husband is missing. CEDAW committee’s concluding observations to Sri Lanka\(^\text{24}\) and Women’s groups have raised the issue of legal reform with the government.\(^\text{25}\)


Joint Ownership:

Furthermore, in the post conflict era, the joint ownership would enable women to have an equal footing in deciding on issues related to their land and livelihoods. The Land Commissioner’s Department revealed that there was no express prohibition in law conferring joint ownership title. It has emerged as a practice. The Attorney General has given an opinion on this issue which states that joint ownership is possible under the State Land Ordinance. Land related government officials interviewed by Centre for Policy Alternatives have stated that for a clear title, it is best to recognize only one owner or claimant to land and that joint ownership will only further complicate existing issues. Their key contention was that clear title should be given priority and the concept of joint ownership was not in line with this goal.

The fact that the woman’s contribution towards the household is not accounted for irrespective of her contribution to the process of cultivation through her efforts, running the household and caring for the children. These administrative practices discriminate women’s land rights based on gender.

Indirect Discrimination- by Attitudes

Male:

Even though the state does not directly discriminate with regard to access to land for settlement schemes, due to the attitude prevailing among men, it indirectly discriminates women’s land rights.

“Men believe that if the traditional role as a male provider and female caregiver is maintained, there is no need for property ownership by women. Women, on the same lines, believe ownership of property can cause marital disharmony. Furthermore, there are subtle indications that ownership of property does equip women with power to negotiate their status within the


family and assert themselves. However, ownership of property does not seem to take the principal role in empowering women”.

Due to these attitudes, internally displaced women face many difficulties upon returning to their land, especially those who attempt to return and settle down in their lands. Male relatives of the woman's husband - sometimes distant male relatives - will contest a woman's claim to the land. In some cases, upon her return, she will find that her husband's male relatives have already seized the land and have occupied the land.

Another major challenge for women in the post conflict context is the lack of income generation. Due to denial of their land rights, women are unable to engage in traditional forms of livelihood because their new areas especially when alternative land plots given. Some women are employed as labourers in farms, but wages are low and work is irregular. Denial of access to land has lead them to be economically exploited ,typically receiving lower wages than men for the same type of labour work.

Female:
The impact of war forced women to come out from their historical duties and play a new role to economically support their dependents and as bread winners or earners. In Sri Lankan Tamil women continue to be constructed as the reproducer, nurturers and disseminators of tradition, culture, community and nation. Such perceptions have not only legitimized the surveillance and disciplining of women’s bodies and minds in the name of communal and national morality and honour, but have also re-inscribed the expectation that whatever women may do; they are primarily mothers and wives. They have to marry and have children and the domestic burdens are solely theirs. Therefore, women often are under the impression that they will not receive land and therefore they do not ask for it. According to interviews conducted by the author, it was revealed that women were under the impression that if the

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registration is made under the husband’s name, it would be easier to get loans and amount of
the loan would be higher. It has been frequently men who are seen travelling to meet with
officials in order to report land issues, obtain documents and request loans.31

Judiciary:

In the background of discriminatory provisions, the importance of the role of a judge as an
adjudicator cannot be underestimated. That role is even more important in a context where the
entire system of male dominated administration has been largely insensitive to questions of
gender justice. In the case of Anula Kumarihamy v Mahaweli Authority of Sri Lanka32 is
worth scrutiny in terms of the injustice that could result to a female, where the judiciary fails
to be gender sensitive.

Multiple Discrimination based on Ethnicity, Language, Religion and Caste:

As per the above discussion, legislative provisions, administrative mechanism and judicial
practices show that women are discriminated in the area of land rights based on sex and
marital status. Due to the Tamil community’s more caste bound nature patriarchal norms carry
stronger ideology and psychological barriers. The third world feminist says discrimination do
not enforce on women only on sex but also in the name of the culture, ethnicity, religion and
different standards are used to treat them. Therefore, in this part, I intend to discuss how
women are discriminated in the area of land rights based on her ethnicity, language and
caste.

Due to these social norms and patriarchal attitudes, many women take a back seat, letting the
male family members play a more active role over land related issues, relegated by what is
considered ‘accepted, behaviour even if the land may be written in the name of the women, as
in the case of dowry land.33 This attitude prevents women from claiming their legal rights.
Ethnic issues further impact on women’s land rights. Compared to their counterparts in the

31WAN,(2013) “ Ashraf Nagar : The courageous struggle of peasants against the forcible land acquisition in
Ampara District”, Groundviews, 19 January, referred by Dushyanthini Kanagasabapathiillai, “ Living with
insecurity : Marginalization and sexual violence against women in north and east Sri Lanka,
Men? Critiquing Discriminatory Laws, Regulations and Administrative Practices relating to Land and
33 Mera Velayuthan, (2009), Women’s Land Right in South Asia: Struggle and Diverse Context, Economic and
Sinhala community, Muslim and Tamil women heads of households continue to shy away from taking leading roles in the community. Due to this, non participation, women’s problems related to land do not come into the attention of the state.

Being a Muslim and Tamil woman who speaks only Tamil, encounter significant difficulties due to the long standing problem of lack of official state administrators who speak Tamil language. For example the police, Grama Niladhari’s and most of the officials who interact with these women in society do not speak Tamil. This is a challenge for women to access state agencies. This has restricted women’s ability not only to exercise their rights over land they own, but also to access where women are restricted from improving and enjoying the income derived from the land, using the land as collateral for the loan and the depositing of the land.

In the North and East Province, religion is used as a weapon to marginalize women. Muslim Law discriminates and marginalizes women in many areas. Hindu social structure is culturally patriarchal and high caste conscious. Therefore, Tamil women live within these restrictive boundaries set by their traditional concepts.

Caste is still a major issue in conflict affected areas. In North, Vellarars control all power, land, jobs and political opportunities. They still accord to Brahamans the deference they traditionally received from south India. Therefore, Jaffna Tamils hold themselves apart from other Tamils from elsewhere. People belonging to a low caste still face many difficulties in purchasing land in an area where there is a high concentration of people belonging to a higher caste. Furthermore, people belong to higher caste refuse to grant passage through their land. Many female headed households are typically located in rural villages, where roads are poor, most do not benefit from the development plans. In this situation women’s land rights are denied indirectly based on their caste. Due to denial of land rights women are unable to engage in traditional form of livelihood especially in new areas when alternative land plots

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given. Some women are employed as labourers on farms where the wages are low and work is irregular. Thus, the denial of access to land has leaded them to economic exploitation.\textsuperscript{37}

\textbf{Research Problem}

Despite the fact, the women’s rights are ensured under the International and National law, the legal system of Sri Lanka facilitates violation of women’s land rights in times of war and peace. How, the prevailing discrimination against women could be addressed in light of UNSCR 1325?

\textbf{Research Questions}

The main research question to be analyzed is does the Sri Lankan legal system adequately protect women’s land rights in the Post war era?

What are the International and National standards related to land rights of women?

Why land rights are important for women in the Post war era?

To what extent women are directly and indirectly under the in Sri Lankan legal system?

How women’s land rights could be protected in light of UNSCR 1325?

\textbf{Objective of the research /study}

The main objective of this research is to discuss land rights of women in the war affected areas of Sri Lanka (North and East) in light of International standards and United Nations Security Council Resolution 1325.

\textbf{HYPOTHESIS}

While both women and men suffer due to weak governance mechanisms that are insufficient to protect land rights, it is important to note that such a situation would adversely affect women than men. United Nations Security Council Resolution 1325 could be envisaged as a feminist attempt to create a gender sensitive environment for good governance based on democracy and the rule of law in conflict and post-conflict situations.

\textsuperscript{37} The Graduate Institute Geneva, (2013) \textit{Every day Resistance: Female Headed House Hold in Northern Sri Lanka, Geneva}, referred in supra note.35 at, p.10
METHOD

The design of the research is mainly qualitative in approach. This research will be conducted as a literature review based on secondary sources. The reason for selecting a qualitative method is that this is primarily a desk study reflecting the abiding interest of the subject of the researcher and the availability of resources. Mainly Statute, case law, book chapters, journal articles, electronic databases, International Conventions, General Recommendations, and etc will be used throughout the research.

LITERATURE SURVEY

One of the emerging literature in this post of era is based on women and their land rights. However, currently no research has been carried out in the perspective of protecting land rights of Women in light of the UNSCR 1325. This is a gap that needs to be discussed. Therefore, the writer envisages reexamining the National and International standards related to land rights of women. Prevailing direct and indirect discrimination against women and how that could be over - come in the light of UNSCR 1325 with a feminist perspective.

THEORETICAL FOUNDATION

“Women’s rights in, access to and control over land, housing and property is a determining factor in women's overall living conditions, particularly in developing countries. It is essential to women's everyday survival, economic security and physical safety and, some would argue, it is the most critical factor in women's empowerment and their struggle for equality in gender relations.”

The above statement emphasizes the importance of land rights of women. Land has become essential to women’s everyday survival, safety, economic physical security. Furthermore, denial of their land ownership and control over land, make women more vulnerable and marginalized in the post–conflict era.

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Thirty years armed conflict in Sri Lanka has given rise to many land issues in Northern and Eastern Provinces. While both women and men suffer due to weak governance mechanisms that are insufficient to protect land rights, it is important to note that such a situation would more adversely affect women than men. The prevailing situation in Northern and Eastern Provinces of Sri Lanka is a clear example of how women are affected by weak governance mechanisms as to land rights. Agriculture is the primary form of livelihood and the major source of income for a majority of the population living in Northern and Eastern Provinces. Accordingly, in these societies, men engage in paddy farming, highland cultivation and the economic support for the family is given by men. In the postwar era, due to death, disappearances, detention or permanent or temporary disability of male family members and loss of documentary evidence have deprived women of their sole means of income. Therefore, a large number of conflict affected women are not having an independent means of income due to their economic dependence on male family members.

In post-conflict period, women are forced to be responsible for running their households and they are imposed with the responsibility to generate income through cultivation of land or working as agricultural labourers. Therefore, the land rights of women become more important in order to ensure women’s welfare in a post conflict society.

Furthermore, a woman’s independent as an individual is heavily depended on their right to own and have a control over the land. In order to empower women, it is necessary to recognize their land rights in the post conflict era. Even though, the war lead women to undertake new roles in the society as head of the household, women are discriminated in relation to both state and private land ownership due to social and legal norms which restrict women’s role right as to property. The research is mainly based on feminist approach.

**RECOMMENDATIONS**

It has been observed that due to legal, administrative and cultural practices directly and indirectly violates women’s land rights. This discrimination prevents women participation in decision making process, their protection, prevention of violence and recovery from their vulnerability. In its concluding comments for Sri Lanka in 2011, the CEDAW committee...
remarked upon the low level participation of women in decision making process and public. Feminist scholars argue that states are obliged to combine transitional justice tools with a gendered historical analysis particular in the area of reconstruction. These strategies offer a way to address the pillars of UNSCR 1325 and abolish discrimination against women. The Security Council adopted on women peace and security on 31 October 2000. The resolution reaffirms the important role of women in the prevention and resolution of conflicts, peace negotiations, peace-building, peacekeeping, humanitarian response and in post-conflict reconstruction and stresses the importance of their equal participation and full involvement in all efforts for the maintenance and promotion of peace and security. However, the existing direct and indirect discrimination breaches the UNSCR 1325 requirement of protection, prevention and participation

According to UNESCAP good governance has eight characteristics. They are participatory, follow the rule of law, consensus oriented, accountable, transparent, responsive, effective, efficient and equitable. In order to establish rule of the law and good governance, legal, institutional and attitudinal changes should take place within the system.

**Amendments to the Discriminatory provisions and Affirmative action:**

During the transitional justice period, in order to diagnose, restore trust in state institution and ensure the rule of law, it is necessary to amend discriminatory provision in special laws and LDO in order to abolish direct discrimination against women. Articles 2, 5, 13, 15 and 16 of CEDAW mention the state's obligation ‘to take all appropriate measures, including legislation, to modify or abolish existing laws, regulations, customs and practices which constitute discrimination against women’ with special reference to gender stereotyping and aspects of economic and social life and marriage and family relations. Paragraphs 2 (a), (f) and (g) require state parties to provide legal protection and to abolish and amend discriminatory laws and regulations. Legal changes can be done by amending the discriminatory laws.

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Affirmative action is a tool to eliminate gender based discrimination and ensures gender justice. In order to recognize women’s land rights and address disadvantages suffered by women in the post conflict era affirmative action can be used. This will help to use wide variety of methods to eliminate direct and indirect discrimination against women and ensure relief and recovery. Thus, affirmative action can be used in the post conflict era to ensure land rights of women in the North and East, especially in circumstances of misplacement and loss of documents.

Since there are no legal barriers and the law is adherewith regard to joint ownership, an administrative circular should be released by the relevant government authority granting authority to government officials to give joint ownership of land to married couples. A change in the policy will ensure that government abides by the equality provisions in the Constitution and eliminate discrimination against women in owning land. A similar view is reflected in the recent supreme court judgment.41

**Increase Women Participation in Decision Making Process:**

“Too often when we do not undertake specific actions to draw attention to the issue that affect women, what happens is that men and the experience of men become the yardstick by which judgments are made.”42

This statement emphasizes the importance of the women’s participation. UN SCR 1325 has firmly indicated that women concerns must be included in all aspects of peace making, peace building and reconstruction. Women have different experience, than men which may allow them to bring different perspective as to issues and possible solutions. Therefore, women participation in the decision making process becomes more important in post conflict era. The President appointed a panel consisting eight members, the Lessons Learnt and Reconciliation Commission (LLRC), to inquire into and report on matters which have taken place in the period between 21st February 2002 and 19th May 2009. This Commission is modeled on the South Africa Truth and Reconciliation Commission. However, there is no mention of women’s concern in the mandate. Exclusion of women during conflict transformation could

41 Nandasena Wickramasekara Rajapaksha v Daughters of Wanniarachchi Kankanamalagge SC Appeal No 125/2010
mean that authorities may not fully address the inequalities that have been exacerbated by war ranging from economic hardships and land ownership.

The President appointed a 19 member President Task Force (TF) on Northern Development on May 7th 2009 to look into resettlement, development and security in the Northern Province. However, there is no women member of the TF and this is a significant gap.\(^{43}\) This witnesses the fact that the women’s issues are not priorities or state did not take measures to ensure substantive equality for women. One woman on the Commission will not have the ability to call for any meaningful gender sensitive inquiry. The government should have mandatory quotas for women in local, national and international decision making forums. In order to ensure equal and effective participation of women, it is necessary to create an enabling environment that support the participation of all women from different culture social, economic and geography backgrounds.

CONCLUSION

Land rights remain a significant issue in Sri Lanka. The above recommendations are needed to prevent further land rights violation and uphold the goals of equity and equality in the transitional justice period. These legal, institutional and attitudinal changes will ensure women’s participation in decision making, which will ensure their protection and prevent discrimination against women. All these efforts will provide relief for women and recover from their past experiences.

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\text{“The risk of poverty and the physical well-being of a woman and her children could depend significantly on whether or not she has direct access to income and productive assets such as land, and not just access mediated through her husband or other male family members.”}^{44}\]

According to the above mentioned statement in the present context, women’s right to land will empower women economically, reduce sexual exploitation against women and ensure the


well-being of her children and dependents. The community would respect and value the contribution of a woman if she is a land owner. In order to conclude my discussion I would like to state that the state must recognize that women play an important role in structuring the nature of peace which is an important aspect in the post war reconstruction.

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Konarasinghe, K.M.U.B., Institute of Mathematics and Management, Sri Lanka

ABSTRACT

The forecasting occupancy guest nights is an essential discipline in Marketing Strategy, Yielding across various channels, purchase decisions, expansion plans and various decisions about staffing and hotel maintenance in tourist hotels. Colombo city and Greater Colombo is the highest regions of night occupancy by international tourist in Sri Lanka. The high occupancy will increase the demand for accommodation. Therefore the hotel industry should adopt revenue management practices to maximize profits and optimize operations. This study was focused on identifying suitable forecasting techniques for occupancy guest nights of international tourist. Monthly data of foreign guest nights for the period of January 2008 to December 2016 were obtained from Sri Lanka Tourism Development Authority (SLTDA). The Decomposition additive and multiplicative models and Seasonal Autoregressive Integrated Moving Average (SARIMA) were tested for forecasting. The Anderson–Darling test, Auto-Correlation Function (ACF), Durbin-Watson test, and Ljung-Box Q (LBQ)-test were used as the goodness of fit tests in model validation. The best fitting model was selected by comparing the relative measurements of errors and the absolute measurements of errors. The residuals of both Decompositon; additive and multiplicative models were found normally distributed, but not independent. Both relative and absolute measurements of errors of the model ARIMA (1,0,1)(2,1,1)4 are very low in model fitting. The residuals of ARIMA (1,0,1)(2,1,1)4 were found normally distributed and independent. Therefore, future night occupancy by the foreign guest in Colombo city and Greater Colombo can be forecasted by past night occupancy by foreign guest, past errors and seasonal components. The study concluded that SARIMA performs better than Decomposition models in forecasting occupancy guest nights. However, the SARIMA model is not capable in capturing the cyclical variations. Therefore, it is recommended to test the Circular Model for de-trended data for better forecasting.

Keywords: Occupancy Guest Nights, Decomposition Techniques, SARIMA
INTRODUCTION

The scientifically-based forecasting models need to achieve cognitive desires of a modern human. It can be judgment, knowledge (intuition) and statistical modeling. Over the past years, tourist arrivals show increasing trend in Sri Lanka. It increases tourism demand for accommodation capacity of Classified, Unclassified and Boutique Hotels located at tourist occupied areas. The Greater Colombo region (Colombo South and North), Colombo city, South Coast region, East Coast region, Hill Country region, Ancient Cities region and Northern region are the highly occupied by international tourist. According to the Sri Lanka Tourism Development Authority (SLTDA) reports, Greater Colombo and Colombo city are the highest occupancies among other regions.

Figure 1 shows the increasing trend of night occupancy at Colombo and Greater Colombo by international tourist.

Research Problem

Tourist arrivals in Sri Lanka have been increasing over the past years. Colombo city and Greater Colombo are the highly occupied areas by international tourists (SLTDA, 2016). The high occupancy will increase the demand for accommodation; hence the competition in hotel
industry also will increase. Therefore the hotel industry should adopt revenue management practices to maximize profits and optimize operations. This can be achieved by accurate forecasting of occupancy by tourist (Schwartz and Hiemstra 1997). It is a well-known fact that accurate forecasting is a critical component of efficient business operations. But it was hard to find attempts of forecasting occupancy guest nights for various cities in Sri Lankan context. On the view of the above, the study was focused on identifying suitable forecasting techniques to occupancy guest nights of international tourist in Colombo city and Greater Colombo in Sri Lanka, as a starting point for forecasting occupancy guest nights.

**Objective of the Study**
The objective of the study is as follows;

1. To Forecasting Foreign Guest Nights in Colombo and Greater Colombo of Sri Lanka

**Significance of the Study**
Tourism is the third highest foreign income generator to Sri Lankan economy from 2014 to 2016 (SLTDA, 2016). Tourist arrivals to Sri Lanka are increasing every year. Colombo city and Greater Colombo are the highly occupied areas by international tourists. Forecasting occupancy guest nights is very important for various planning and strategy developments. The results of this study can be used to plan their promotional offers and create demand by hoteliers. Low occupancy for an upcoming period, hotels can decide to run the promotion on all online channels to create demand as well promotions for their customers. If high occupancy owing to high demands then managers can choose to yield and sell on low cost or high rate channels to maximize profits. Hotel Financial Controller needs forecasting information to understand cash/credit flow for a hotel as that needs to be considered for multiple expenses that will be generated in different departments such as food and beverages, laundry, transport etc., and including rooms. Occupancy forecasting will help food and beverages to know how many resident guests are expected at breakfast and other meals, a similar forecast for other departments like laundry, mini bar, etc. Occupancy forecasting will help purchase of perishable as well as non-perishable goods during low occupancy period a hotel may decide to reduce various offerings such as buffet and, coffee shop need to purchase a lot of perishable food item will not be there. In addition, the results of this study can be used to plan their course of actions in all areas for near future. Further expansion plans, the decision about staffing and hotel maintenance and be decided through accurate forecasting of occupancy guest night.
LITERATURE REVIEW

The studies based on forecasting guest nights are very limited. Therefore the literature review is focused on forecasting hotel room occupancy rates and guest nights. Multivariate models were widely used on forecasting hotel room occupancy rates and guest nights. In addition, soft computing techniques; Artificial Neural Network (ANN) also used for the purpose. The literature review in the following manner;

- Studies based on forecasting guest nights
- Studies based on forecasting hotel room occupancy rates

Studies Based on Forecasting Guest Nights

Brannas, and Nordstrom (2000) model the number of Norwegian guest nights in Swedish hotels and cottages and demand analysis. They consider a model for the number of hotel and cottage visitors for a region at a certain day. Their random variables are the number arriving guest to the region and mean a number of arriving guest at a time. Integer-valued autoregressive model and monthly arrival data from Norway used for this study. They concluded that most of the explanatory variables are significant and the estimation power is high. Lim and Chan (2009) focus on Autoregressive Moving Average (ARMA) and Seasonal Autoregressive Integrated Moving Average (SARIMA) approach to examine and forecast tourist accommodation demand in New Zealand using hotel-motel room nights. They concluded that the model performance is satisfactory selected for short-term forecasting.

Studies Based on Forecasting Hotel Room Occupancy Rates

An investigate the best modeling technique for forecasting weekly hotel occupancy from big data sources is the objective of the study conducted by Pan and Yang (2017). Charleston, South Carolina in the United States is the test destinations of their study. They used Autoregressive Integrated Moving Average with External Variables (ARIMAX) and Markov Switching Dynamic Regression (MSDR) model. The results of their study revealed that ARMAX models are superior to MSDR models in forecasting on weekly hotel occupancy. Baldigara and Koić (2015) analyze and model the net occupancy rates of bed-places in the Croatian hotel industry. They used Naive model, the Holt-Winters exponential model and the SARIMA models for this purpose. The results show that the Holt-Winters model
outperformed the seasonal naive and the seasonal ARIMA model. Examine whether the web traffic data of a local destination marketing organizations website helps to improve the accuracy of forecast demand for hotel rooms and hotels' occupancy rates is the purpose of the study of Yang, Pan and Song (2014). Weekly data on hotel occupancy rates and the hotel room nights sold in the Charleston area South Carolina, the USA used by them. ARMA (Auto-Regression Moving Average) model by including the explanatory variables as direct predictors and TAR (Threshold Auto-Regression) model incorporates the explanatory variable in an indirect way by treating it as a threshold variable was tested. Their study concluded that the ARMAX models incorporating the additional web traffic data can improve forecasting accuracy in predicting large values for the hotel demand series.

Andrew, Cranage and Lee (1991) investigate the accuracy of Box Jenkins ARMA and Exponential Smoothing models on occupancy forecasts in major center-city hotel USA. They used monthly occupancy data. Both models show a high level of forecasting accuracy.

Chen and Malinda (2015) examine the behavior of room occupancy rates of hotels in Bali Indonesia. They applied Autoregressive Fractionally Integrated Moving Average and Fractionally Integrated Generalized Autoregressive Conditional Heteroskedasticity (ARFIMA-FIGARCH) model and the Iterated Cumulative Sums of Squares test (ICCS) method for multiple structural breaks. The results of the study revealed that ARFIMA–FIGARCH model is better in forecasting.

Brannas and Nordstrom (2011) model the daily number of occupied hotel rooms in three large Swedish cities. Daily time series data for the occupied hotel rooms, capacity, and price of rooms utilized by them. They used binomial autoregressive model used in forecasting. The performance of the model is high. Zakhary, Atiya, Shishiny, and Gayar (2009) proposed new Monte Carlo simulation approach for the occupancy forecasting problem for Plaza Hotel, Alexandria, Egypt. They concluded that proposed model gives superior results in forecasting.

Law (1998) used neural networks into hotel occupancy rate forecasting in Hong Kong hotel industry. The results of this study revealed that neural networks approach performs better than multiple regression and naïve extrapolation in forecast room occupancy.

Multivariate time series techniques are heavily used in hotel room occupancy rates and guest nights forecasting the horizon. Brannas and Nordstrom (2000), Lim and Chan (2009) confirmed that the Integer-valued autoregressive, ARMA and SARIMA models are suitable
for forecasting guest nights. Pan and Yang (2017) and Yang, Pan and Song (2014) says that ARIMAX is suitable in forecasting on weekly hotel room occupancy rates. Baldigara and Koić (2015) confirmed that the Holt-Winters exponential model is superior to SARIMA in forecasting hotel room occupancy rates. In addition, ARFIMA–FIGARCH and Neural Networks tested by researchers for forecasting occupancy rates. The suitable models were ARMA and SARIMA, ARIMAX and Holt-Winters exponential models. It has been observed that forecasting guests’ nights or occupancy rates rarely examined in Sri Lankan context.

**METHODOLOGY**

Monthly data of foreign guest nights for the period of January 2008 to December 2016 were obtained from annual reports of 2008 -2016 published by SLTDA. Time series plots and Auto-Correlation Function (ACF) were used for pattern identification. The Decomposition additive and multiplicative models and SARIMA were tested for forecasting. The Anderson–Darling test, ACF, Durbin-Watson test, and Ljung-Box Q (LBQ)-test were used to test the validation criterion and fit the model. Forecasting ability of the models was assessed by three measurements of errors; Mean Absolute Percentage Error (MAPE), Mean Square Error (MSE) and Mean Absolute Deviation (MAD) in both model fitting and verification process.

**Decomposition Techniques**

In Decomposition, a time series is described using a multifactor model. The model is:

\[ Y_t = f(T, C, S, e) \]  
\[ (1) \]

Where;

- \( Y_t \): Actual value of time series at time \( t \)
- \( f \): Mathematical function of
- \( T \): Trend
- \( C \): Cyclical influences
- \( S \): Seasonal influences
- \( e \): Error

Decomposition is to separate the time series into linear trend and seasonal components, as well as error, and provide forecasts. There are two general types of decomposition models; Additive and Multiplicative models. Multiplicative models can be used when the size of the seasonal pattern depends on the level of the data. This model assumes that as the data increase
so does the seasonal pattern. Most time series plots exhibit such a pattern. The multiplicative model is:

\[ Y = T \times C \times S \times e \]

(2)

The additive model uses when the size of the seasonal pattern does not depend on the level of the data. In this model, the trend, seasonal, and error components are added. Model is as follows:

\[ Y = T + C + S + e \]

(3)

**Autoregressive Integrated Moving Average (ARIMA)**

ARIMA modeling can be used to model many different time series, with or without trend or seasonal components, and to provide forecasts. The forecast profile depends upon the model that is fit. The advantage of ARIMA modeling compared to the simple forecasting and smoothing methods is that it is more flexible in fitting the data. However, identifying and fitting a model may be time-consuming, and ARIMA modeling is not easily automated. The model as follows;

An ARIMA model is given by:

\[ \phi(B)(1 - B)^d y_t = \theta(B)e_t, \]

Where; \( \phi(B) = 1 - \phi_1 B - \phi_2 B^2 \ldots \phi_p B^p \)

\[ \theta(B) = 1 - \theta_1 B - \theta_2 B^2 \ldots \theta_q B^q \]

(4)

\( e_t \) = Error term

D = Differencing term

B = Backshift operator \((B^s Y_t = Y_{t-s})\)

Analogous to the simple SARIMA parameters, these are:

Seasonal Autoregressive - (Ps)

Seasonal Differencing - (Ds)

Seasonal Moving average parameters - (Qs)

Seasonal models are summarized as ARIMA (p, d, q) (P, D, Q),
DATA ANALYSIS

Data analysis is organized technique-wise, as follows:

- Forecasting foreign guest nights in Colombo city
- Forecasting foreign guest nights in Greater Colombo

Forecasting Foreign Guest Nights in Colombo City

Dataset was outliers free. Time series plots and ACF’s were obtained.

Forecasting by Decomposition Techniques for Guest Nights in Colombo City:

The Decomposition Multiplicative and Additive models run for night occupancy by the foreign guest in Colombo city with four seasons; season 1 is January - March, Season 2 is April - June, season 3 is July - September and season 4 is October - December. For example; Figure 4 is the plots for the seasonal analysis of Multiplicative model;
According to the Figure 4; night occupancy of seasons 1 and 2 are below the average, while the night occupancy of the other two seasons is above the average. Figure 5 is the Time Series Trend model of decomposition plot of the Multiplicative model. It is clear that the pattern of fits is somewhat similar to the pattern of actual arrivals. Measurement errors of the model, MAPE, MSD, and MAD are satisfactorily small in model fitting. Figure 6 is the plots for the seasonal analysis of Additive model; Figure 7 is the Time Series Trend model of decomposition plot of the Additive model;

According to the Figure 6; night occupancy of seasons 1 and 2 are below the average, while the night occupancy of the other two seasons is above the average. Figure 7 is the Time Series Trend model of decomposition plot of the Additive model. It is clear that the pattern of fits is somewhat similar to the pattern of actual arrivals. Measurement errors of the model, MAPE, MSD, and MAD are satisfactorily small in model fitting. The summary of seasonal indices is given in Table 1.
Table 1: Summary Results of Seasonal Indices for Colombo city

<table>
<thead>
<tr>
<th>Multiplicative Model</th>
<th>Additive Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trend Model</td>
<td>Trend Model</td>
</tr>
<tr>
<td>$\ln Y_t = 0.9070 + 0.0116524t$</td>
<td>$\ln Y_t = 10.6478 + 0.0142071t$</td>
</tr>
<tr>
<td>Season</td>
<td>Index</td>
</tr>
<tr>
<td>1</td>
<td>0.99270</td>
</tr>
<tr>
<td>2</td>
<td>0.99380</td>
</tr>
<tr>
<td>3</td>
<td>1.00633</td>
</tr>
<tr>
<td>4</td>
<td>1.00717</td>
</tr>
</tbody>
</table>

According to the table 1, seasonal indices for the periods of 1, 2, 3 and 4 of the multiplicative model are 0.99270, 0.99380, 1.00633 and 1.00717. Seasons 1 and 2 are below the average, while the night occupancy of other two seasons is above the average. It means the number of night occupancy for the periods of 1 and 2 are below the average, while the night occupancy of the other two seasons is above the average of night occupancy by the foreign guest in Colombo city.

The results of the additive model are same to multiplicative model. The table 1, seasonal indices for the periods of 1 and 2 of the additive model are -0.142923 and -0.075150. It means the number of night occupancy for the seasons, 1 and 2 are (0.142923 and 0.075150) below the average number of night occupancy by the foreign guest in Colombo city. Seasonal indices for the periods 3 and 4 are 0.162552 and 0.055522. It is clear that the number of arrivals for the seasons, 3 and 4 are above the average number of night occupancy by the foreign guest. The ACF of the fitted models and Anderson-Darling, Durbin-Watson and Ljung-Box Q (LBQ)-tests were used for residual analysis. Figure 8 is the ACF of the Multiplicative model; Figure 9 is the ACF of the Additive model. Both ACF’s confirmed the correlation of residuals.
The residuals of both models are normally distributed, but not independent. It confirms that the models do not meet the validation criterion. The summary measures of the model fitting of the multiplicative model are given in Table 2.

**Table 2: Model Summary of Multiplicative Model**

<table>
<thead>
<tr>
<th>Trend Model</th>
<th>Model Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \ln Y_t = 0.9070 + 0.0116524t )</td>
<td>MAPE ( 2.10835 )</td>
</tr>
<tr>
<td></td>
<td>MAD ( 0.23935 )</td>
</tr>
<tr>
<td></td>
<td>MSE ( 0.08110 )</td>
</tr>
<tr>
<td></td>
<td>Normality ( P = 0.264 )</td>
</tr>
<tr>
<td></td>
<td>Independence ( h=1 )</td>
</tr>
</tbody>
</table>

Both relative and absolute measurements are very low in model fitting. But those are not sufficient for model verification. The Anderson-Darling Normality test confirmed the normality of residuals; the LBQ test did not confirm the independence of residuals \( (h=1) \). The results of the additive model are similar to the multiplicative model. Both multiplicative and additive models show lower measurement of errors but they did not fulfill the model validation criterion, as residuals were not independent. The summary measures of the model fitting of the additive model are given in Table 3. The results of the additive model are similar to the multiplicative model.
Table 3: Model Summary of Additive Model

<table>
<thead>
<tr>
<th>Trend Model</th>
<th>Model Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln Y_t = 10.6478 + 0.0142071t$</td>
<td>MAPE</td>
</tr>
<tr>
<td></td>
<td>2.18091</td>
</tr>
<tr>
<td></td>
<td>MAD</td>
</tr>
<tr>
<td></td>
<td>0.24197</td>
</tr>
<tr>
<td></td>
<td>MSE</td>
</tr>
<tr>
<td></td>
<td>0.09012</td>
</tr>
<tr>
<td></td>
<td>Normality</td>
</tr>
<tr>
<td></td>
<td>$P = 0.701$</td>
</tr>
<tr>
<td></td>
<td>Independence</td>
</tr>
<tr>
<td></td>
<td>$h = 1$</td>
</tr>
</tbody>
</table>

Forecasting by SARIMA for Guest Nights in Colombo City:
The SARIMA model runs for night occupancy by the foreign guest in Colombo city with four seasons.

Table 4: Model Summary of SARIMA

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Fitting</th>
<th>Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARIMA (1,0,1)(2,1,1)$_4$</td>
<td>MAPE</td>
<td>MAPE</td>
</tr>
<tr>
<td></td>
<td>1.1926</td>
<td>1.1979</td>
</tr>
<tr>
<td></td>
<td>MSE</td>
<td>MSE</td>
</tr>
<tr>
<td></td>
<td>0.0345</td>
<td>0.0317</td>
</tr>
<tr>
<td></td>
<td>MAD</td>
<td>MAD</td>
</tr>
<tr>
<td></td>
<td>0.1366</td>
<td>0.1437</td>
</tr>
<tr>
<td></td>
<td>Normality</td>
<td>$P = 0.136$</td>
</tr>
<tr>
<td></td>
<td>$h = 0$</td>
<td></td>
</tr>
</tbody>
</table>

The results of SARIMA are given in Table 4. The model ARIMA(1,0,1)(2,1,1)$_4$ describes a model that includes 1 autoregressive parameter, 1 regular moving average parameter, 2 seasonal autoregressive parameters and 1 seasonal moving average parameter and these parameters were computed for the series after no differenced with, and one seasonally differenced. Both relative and absolute measurements of errors of the model are very low in model fitting. The Anderson-Darling Normality test confirmed the normality of residuals; the LBQ- test confirmed the independence of residuals ($h = 0$). Under the verification also the measurements of errors were very low. Therefore, future night occupancy by the foreign guest in Colombo city can be forecasted by past night occupancy by foreign guest, past errors and seasonal components. Figure 10 and 11 are the Time Series Plot of actual Vs fits and actual Vs forecast of the ARIMA (1,0,1)(2,1,1)$_4$ model. The fitted line in Figure 10 follows the similar pattern of the series. Actual and fitted are closer to each other. The deviation of the actual and forecast is very less (Figure 11).
The study tested Decomposition models and SARIMA models on night occupancy by the foreign guest in Colombo city. According to the results shown in Table 5, Decomposition additive and multiplicative models were not fitted, as models do not satisfy the model validation criterion. But the residuals of SARIMA satisfied the model validation criterion. The relative measurement of SARIMA is very low in fitting. Absolute measurements are same in fitting.

**Table 5: Model Comparison Colombo city**

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Fitting</th>
<th>Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAPE</td>
<td>MSE</td>
</tr>
<tr>
<td>ARIMA (1,0,1)(2,1,1)₄</td>
<td>1.193</td>
<td>0.035</td>
</tr>
<tr>
<td>Decomposition Multiplicative</td>
<td>2.10835</td>
<td>0.081</td>
</tr>
<tr>
<td>Decomposition Additive</td>
<td>2.181</td>
<td>0.090</td>
</tr>
</tbody>
</table>

**Forecasting Foreign Guest Nights in Greater Colombo**

The dataset was outliers free. Time series plots and ACF’s were obtained.
Time series plot of the guest night (Figure 12), shows the pattern of night occupancy by the foreign guest in Greater Colombo. The behavior of the series clearly shows that there is an increasing trend and which has not constant mean and variance. It is known as non-stationary series. Figure 13 is the ACF of night occupancy by the foreign guest in Greater Colombo confirmed that the series is not stationary. The pattern of ACF suggests seasonal behavior.

**Forecasting by Decomposition Techniques for Guest Nights in Greater Colombo:**

The Decomposition Multiplicative and Additive models run for night occupancy by the foreign guest in Greater Colombo with four seasons as Colombo city. Figure 14 is the plots for the seasonal analysis of Multiplicative model;

According to the Figure 14; night occupancy of seasons 1 and 2 are below the average, while the night occupancy of the other two seasons is above the average. Figure 15 is the Time Series Trend model of decomposition plot of the Multiplicative model. It is clear that the pattern of fits is somewhat similar to the pattern of actual arrivals. Measurement errors of the
model are satisfactorily small in model fitting. Figure 16 is the plots for the seasonal analysis of Additive model; Figure 17 is the Time Series Trend model of decomposition plot of the Additive model.

Figure 16 shows night occupancy of seasons 1 and 2 are below the average, while the night occupancy of the other two seasons is above the average. The time series trend model of decomposition plot of the additive model shows that the pattern of fits is somewhat similar to the pattern of night occupancy by the foreign guest. Measurement errors of the model are satisfactorily small in model fitting as the multiplicative model. The summary of seasonal indices is given in Table 6.

**Table 6: Summary Results of Seasonal Indices for Greater Colombo**

<table>
<thead>
<tr>
<th>Multiplicative Model</th>
<th>Additive Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trend Model</td>
<td>Season</td>
</tr>
<tr>
<td>$lnY_t = 10.6485 + 0.0141970t$</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Table 6 is the summary results of seasonal indices. The periods of 1, 2, 3 and 4 of the multiplicative model are 0.98738, 0.99303, 1.01502 and 1.00457. Seasons 1 and 2 are below the average, while the night occupancy of other two seasons is above the average. It means the number of night occupancy for the periods of 1 and 2 are below the average, while the night occupancy of the other two seasons is above the average of night occupancy by the foreign guest in Greater Colombo.
The results of the additive model are same to multiplicative model. The table 1, seasonal indices for the periods of 1 and 2 of the additive model are -0.142923 and -0.075150. It means the number of night occupancy for the seasons, 1 and 2 are (0.142923 and 0.075150) below the average number of night occupancy by the foreign guest in Greater Colombo. Seasonal indices for the periods 3 and 4 are 0.162552 and 0.055522. It is clear that the number of arrivals for the seasons, 3 and 4 are above the average number of night occupancy by the foreign guest.

The ACF of the fitted models and Anderson-Darling, Durbin-Watson and Ljung-Box Q (LBQ)-tests were used for residual analysis. Figure 18 is the ACF of the Multiplicative model; Figure 19 is the ACF of the Additive model. Both ACF’s confirmed the correlation of residuals.

The residuals of both models are normally distributed and correlated. It confirms the models do not meet the validation criterion. The summary measures of the model fitting of the multiplicative model are given in Table 7.

<table>
<thead>
<tr>
<th>Trend Model</th>
<th>Model Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \ln Y_t = 10.6485 + 0.0141970 t )</td>
<td>MAPE 2.18204</td>
</tr>
<tr>
<td></td>
<td>MAD 0.24212</td>
</tr>
<tr>
<td></td>
<td>MSE 0.09002</td>
</tr>
<tr>
<td></td>
<td>Normality P = 0.672</td>
</tr>
<tr>
<td></td>
<td>Independence h=1</td>
</tr>
</tbody>
</table>
Both relative and absolute measurements are very low in model fitting. But those are not sufficient for model verification. The Anderson-Darling Normality test confirmed the normality of residuals; the LBQ test did not confirm the independence of residuals (h=1). The result of both additive models is similar to the multiplicative model and night occupancy by the foreign guest in Greater Colombo. Both multiplicative and additive models show lower measurement of errors but they did not fulfill the model validation criterion, as residuals were not independent. The summary measures of the model fitting of the additive model are given in Table 8.

### Table 8: Model Summary of Additive Model

<table>
<thead>
<tr>
<th>Trend Model</th>
<th>Model Fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln Y_t = 10.6478 + 0.0142071t$</td>
<td>MAPE: 2.18091</td>
</tr>
<tr>
<td></td>
<td>MAD: 0.24197</td>
</tr>
<tr>
<td></td>
<td>MSE: 0.09012</td>
</tr>
<tr>
<td></td>
<td>Normality: $P = 0.701$</td>
</tr>
<tr>
<td></td>
<td>Independence: $h = 1$</td>
</tr>
</tbody>
</table>

### Forecasting by SARIMA for Guest Nights in Greater Colombo:
The SARIMA model runs for night occupancy by the foreign guest in Greater Colombo with four seasons as Colombo city.

### Table 9: Model Summary of SARIMA

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Fitting</th>
<th>Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARIMA (1,0,1)(2,1,1)$_4$</td>
<td>MAPE: 1.1694</td>
<td>MAPE: 1.9953</td>
</tr>
<tr>
<td></td>
<td>MSE: 0.0293</td>
<td>MSE: 0.0763</td>
</tr>
<tr>
<td></td>
<td>MAD: 0.1309</td>
<td>MAD: 0.2336</td>
</tr>
<tr>
<td></td>
<td>Normality: $P = 0.269$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Independence of Residuals: $h = 0$</td>
<td></td>
</tr>
</tbody>
</table>

The results of SARIMA are given in Table 9. It is similar to the results of night occupancy by the foreign guest in Colombo city. The model ARIMA(1,0,1)(2,1,1)$_4$ describes a model that
includes 1 autoregressive parameter, 1 regular moving average parameter, 2 seasonal autoregressive parameters and 1 seasonal moving average parameter and these parameters were computed for the series after no differenced with, and one seasonally differenced. Both relative and absolute measurements of errors of the model are very low in model fitting. The Anderson-Darling Normality test confirmed the normality of residuals; the LBQ test confirmed the independence of residuals \( h=0 \). Under the verification also the measurements of errors were very low. Therefore, future night occupancy by the foreign guest in Greater Colombo can be forecasted by past night occupancy by foreign guest, past errors and seasonal components. Figure 20 and 21 are the Time Series Plot of actual Vs fits and actual Vs forecast of the ARIMA \((1,0,1)(2,1,1)\) model. The fitted line of figure 19 follows the similar pattern of the series. Actual and fitted are closer to each other. The deviation of the actual and forecast is very less (Figure 21). The performance of the model shows the less deviation and captures the pattern of the series as much as possible.

The study tested Decomposition models and SARIMA models on night occupancy by the foreign guest in Greater Colombo. According to the results shown in Table 10, Decomposition additive and multiplicative models were not fitted. It is very clear that the residuals of the model do not satisfy the model validation criterion. But the residuals of SARIMA satisfied the model validation criterion. The relative and absolute measurements of SARIMA are very low in model fitting. These results are very much similar with night occupancy by the foreign guest in Colombo city.
Table 10: Model Comparison Greater Colombo

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Fitting</th>
<th>Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAPE</td>
<td>MSE</td>
</tr>
<tr>
<td>ARIMA ((1,0,1)(2,1,1)_{4})</td>
<td>1.169</td>
<td>0.029</td>
</tr>
<tr>
<td>Decomposition Multiplicative</td>
<td>2.182</td>
<td>0.090</td>
</tr>
<tr>
<td>Decomposition Additive</td>
<td>2.181</td>
<td>0.090</td>
</tr>
</tbody>
</table>

Estimated Foreign Guest Nights in Colombo and Greater Colombo of Sri Lanka for the period of January 2017 to December 2018 shown in Table 11.

Table 11: Estimated Night Occupancy of Colombo city and Greater Colombo

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Number of Estimated Guests Colombo City</th>
<th>Number of Estimated Guests Greater Colombo</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>January</td>
<td>207547</td>
<td>142074</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>215327</td>
<td>147913</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>206172</td>
<td>143792</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>205158</td>
<td>140233</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>197731</td>
<td>137891</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>218546</td>
<td>154072</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>234523</td>
<td>152781</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>203036</td>
<td>141642</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>211045</td>
<td>144203</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>221067</td>
<td>151064</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>239588</td>
<td>160389</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>243885</td>
<td>161569</td>
</tr>
<tr>
<td>2018</td>
<td>January</td>
<td>236627</td>
<td>160758</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>247992</td>
<td>168390</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>243966</td>
<td>166615</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>238291</td>
<td>162889</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>232361</td>
<td>160909</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>253676</td>
<td>176867</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>270656</td>
<td>176153</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>242388</td>
<td>165874</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>248087</td>
<td>167669</td>
</tr>
</tbody>
</table>
DISCUSSION

Forecasting occupancy guest nights is a wide study area in tourism industry across the world. But, it was hard to find attempts of forecasting occupancy guest nights for various cities in Sri Lankan context. As such, the study was forced on forecasting occupancy guest nights in Colombo City and Greater Colombo; the highest occupancy regions by the international tourist in Sri Lankan tourism.

The series of occupancy guest nights of Colombo City and Greater Colombo follow wave-like pattern with the trend. In general, time series with wave-like patterns are modeled by either Decomposition techniques or SARIMA. The decomposition approach was not successful in this study, while, the SARIMA was highly successful. However, a wave-like pattern may contain both seasonal and cyclical variation, but the SARIMA is unable to separate them.

The Circular Model of Konarasinghe (2016) is a recently developed univariate forecasting technique, which can be used to capture both seasonal and cyclical patterns. Therefore, it is recommended to test the Circular Model for de-trended data, in order to see whether it improves the forecasting.

CONCLUSION

The analysis of the study begins with pattern recognition of occupancy guest nights in Colombo City and Greater Colombo regions. The study concluded that the SARIMA is a suitable technique for forecasting occupancy guest nights. Results of the study agree with the study of Lim and Chan (2009) in forecasting guest nights.

REFERENCES


A Literature Analysis on Impact Assessment of Power Sector Reforms on Power Generation

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Sriyalatha, M.A.K., University of Sri Jayewardenepura

ABSTRACT

Power sector reforms is one of the buzz word that most of the electricity sector stakeholders are talking. Most of the countries and utilities are in different stages of the reform pathway and continuing the reform process with obstacles. Stakeholders believes that electricity sector utilities should perform in an efficient and productive way to deliver the service in a quality manner and to contribute to enhance the overall economic prosperity of the countries. This paper reviews 115 literature including journal articles, books and other type of study reports published during 1980s and after wards on electricity sector reforms and impacts of the reforms in terms of electricity generation. Under this review fairly large set of research efforts, both empirical and normative, on implementation of reforms, regulation, and impact measurement and assessment as well as the application of such assessment methods for Sri Lankan context are analytically discussed. Sri Lankan energy sector has been regulated since 2009 and there are very few articles available on the electricity sector reforms implementation and even in them it lacks impact assessment studies on. Hence in this literature review the indicators to measure the impacts of power sector reforms of various other countries were identified which can be applied for measurement of impact of reforms implemented in Sri Lanka and the methods those can be used for measurement of impacts of reforms in terms of electricity generation were identified. Under the literature review it was identified generation capacity, labor productivity, Operation & Maintenance, average duration of interruption, capacity utilization, Transmission and distribution losses, Price of electricity and non-availability of power plants as indicators. As per this exercise it is recommended the most appropriate method for the assessment of impact of reforms on electricity generation in Sri Lanka is the quantitative productivity improvement analysis.

Keywords: Power Sector Reforms, Impact Measurement, Electricity Generation
INTRODUCTION

Electricity is a vital and essential service in any economy as it is an input of the production of majority of all the goods and services. Further electricity is an essential ingredient for industrialization and economic growth (Jarvis, 2012) and it is also an important final good and public good (Byrne and Mun, 2003), consumed by households. Electricity generation is the production of electricity which involves the transformation of another form of energy into electrical energy (Steiner, 2000). To use electricity there is no necessity to have energy source in the same place as electricity can be generated somewhere else and can be transmitted through long distance from the point of generation to the point of utilization using high voltage transmission lines and low voltage distribution lines. Michael Faraday pioneered series of invention in eighteen thirties to introduce electricity in creating the modern electricity driven society (Bosselman et al., 2010). To Sri Lanka electricity was introduced in 1895 when Messrs. Boustead brothers opened a small Thermal power station in Colombo Fort area to provide electricity to few offices, some Government buildings and streets in the Colombo Fort area. The Electricity Ordinance No.5 was passed in year 1895 regarding the electricity supply, subsequently amended by Act No.36 of 1906. Department of Electrical Undertakings was established in October 1926. In 1935 the State Council passed the Electricity Board Establishment Ordinance No.38 of 1935 and however in 1937 Electricity Board was dissolved and reestablished the Department of Government Electrical Undertakings. The Department of Electrical Undertakings was renamed as Department of Electricity and in1969 Ceylon Electricity Board(CEB)was formed in 1969 by Act No 17 of 1969. (CEB Historical Data Book 2016). Most of the industries, services of Sri Lanka are directly depending on the electricity services and sector performance is vital. Electricity sector reforms is one of the important area where promotes performance and productivity of the service. Sri Lanka introduce the legal framework of electricity sector regulation in year 2009. Hence it is important to evaluate the impact of the reforms.

Prompted by the poor or low performance of the electricity sector utilities, reforms were introduced by most of the countries to resolve financial problems and to avoid looming power shortages (Byrne and Govindarajalu, 1997). The main aspects of the power sector reforms are regulation, competition and liberalization (Mario and Isaac, 2000) and power sector reform is a genuine attempt at institutional reform (Skyner, 2010). In past same utilities were involving with electricity generation and wired business i.e. Transmission and distribution. However,
with the introduction of the reforms those utilities were limited to one area either generation or wired business. First liberalization of electricity sector done by Chile in 1982 (Rudnick and Raineri, 2014). The objective of the implementation of reforms and regulation for the electricity sector is the efficiency management (Phillips, 1993) of the electricity sector.

This paper reviews literature on Power sector reforms and impact assessment of the Power Sector Reforms. Power Sector Reforms and impacts discussed in many academic and professional discipline. This topic is draws researchers from the disciplines such as economics, political science, Engineering, technology, accounting, management, finance so and so forth. The 115 items reviewed were published in print or online since 1980.

The main objective of the literature survey is to identify the most appropriate methodology to assess the impact of power sector reforms introduced to Sri Lanka. The specific objective of this literature survey were coined with the target of extracting the status quo of frontline knowledge of regulatory impact assessment as implemented in other regulatory domains and the economic and social scientific development in this area. The development of the factored knowledge as well as the analyzed knowledge forming into economic and social theories are vital to be contextually and consistently brought into the picture.

**Power Sector Reforms**

Reform means the improvement or amendment of what is wrong or unsatisfactory in any sector (Merriam-Webster Online Dictionary) when comes to the electricity sector it is electricity sector reforms. Power sector reforms involves Structural reform, competitive neutrality, Privatization, Immediate opening, Regulatory authority access to the monopoly infrastructure, unbundling, Market design gradual privatization (Babatunde, 2011) with the objective to enhance the quality and productivity of energy supply (Joskow, 1998; Garmendia et al., 2004) can lead to significant improvements in operating performance (Kessides, 2012). There are few market mechanisms of electricity sector. If local energy utility provides all the energy services called Natural Monopoly (Schmidt, 2000; Joskow, 2008) and when a single entity owning the entire relevant infrastructure it is called integrated natural monopoly (Rupasinghe, 2002), and if more firms or companies in the picture the investment for infrastructure is high and irrecoverable and sunk cost(Ghafoor and Weiss, 1999) could be in underutilizing condition and wasting (Chester, 2007; Thomas et al., 2010) and services like electricity should provide by government as a national duty(Dash, 2006; David, 2005).
monopolistic market financially independent public regulator (Samarajeewa, 2002) should be there to regulate (Thomas et al., 2010) and to look after customers interests (Chester, 2007). However customer invariably is dependent on supplier as electricity is an essential good (Gillbert and Kahn, 2007) and consumer’s view of power as a public right (USAID, 2005). Regulatory reform is focused on functional separation of generation, transmission and distribution, introduction of competition in generation (Steiner, 2000). In natural monopoly, market forces are the public intervention, regulation, history (Growitsch et al., 2009) and political pressure (Eberhad, 2005; Dubash and Rajan, 2001). Regulated markets exists when competitive markets cannot survive long and do not produce competitive results or results are unsatisfactory (Phillips, 1993).

The tariff is indicator of overall efficiency and average total cost, or unit cost dependent on the unit price (Diewart and Nakamura, 1999). Independent regulator from political, commercial and consumer interest (Dubash and Singh, 2005) can consult all relevant parties during the regulatory process for justifiable decisions (Kennady, 2003) and there are four principal components of this regulation control of entry, price fixing, prescription of quality and service and the imposition of an obligation to serve all applicants under reasonable conditions (Kahn, 1988).

Due to the regulation management practices and organizational forms of government-owned electricity companies have been changed significantly (Chester, 2007). This is very important as if the regulator has no total control over the utility without influence from the government the independence regulatory mechanism would not be established. (Kennedy, 2003; Phillips, 1993; Jamison et al., 2005) and the role of the regulator is crucial in monopolistic and limited competitive generation industry (Mathur and Johal, 2004). Advancement of technology and operation and maintenance cost is one of the important factor to determine efficiency improvement of the utility after the regulation (Yadav et al., 2015).

In competitive markets, competition and market size are important determinants of firm size and market concentration. By establishing Regulatory commissions, it is expected to promote competition, but basically they use their powers for the regulation and determination of tariff (Rao, 2000). It was explained that regulation is restriction for competition (Kahn, 1988). Sometimes it can be seen that there are electric utilities in some of the countries which separates the business into part of a holding company that can act as an umbrella company over several diverse operating companies. (Schmidt, 2000). Hence focus of the operating
company only on one area and they can improve the efficiency and productivity of the particular area. To introduce more reforms for the electricity sector Government should intervene (Bredesen and Nilsen, 2013) as the need should be identified for a more comprehensive reform process. Reforms will reduce the shortages of electric power and of capital to fund power system expansion (Kristov, 1995). As such, there is a movement away from the focus of compliance and control towards one of efficiency, effectiveness and cost savings through the introduction of commercial business practices and competitive markets (Broadbent and Guthrie, 1992; Lapsley, 1993). These changes have led to a shift away from a traditional administrative approach of public sector organizations to one that fosters managerialism and economic rationalism, the underlying philosophies of new public management (NPM) (Parker and Guthrie, 1993). The philosophies surrounding NPM involve the advocacy of formal rational management, an emphasis on the necessity for clear goals, corporate plans, and above all, internal and external accounting systems with clear responsibility lines for output performance measurement. Management technologies involved in promoting these changes have included structural redesign, re-engineering of budget processes, responsibility focus, performance agreements, out sourcing selected services and functions, and competition (Parker & Guthrie, 1993; Hoque and Moll, 2001).

The open up for the electricity sector for private power producers is one of the aspect of the reforms (Dsa et al., 1999; Alberto, 2004) Basically this is called as open access and deregulation (Rudnik et al., 1995; Rudnik et al., 1996; Rudnik et al., 1997; Byrne and Mun, 2003; Dubash and Singha, 2005). Further Levi-Faur, (2004) expressed that deregulation is the removal of economic, political, and social limitations on the business to ensure efficiency, quality and secure product. Rudnik et al., (1997) explained the forces behind for the deregulation as political reform, regulatory failures, high tariffs, managerial insufficiency or global economic crisis. This can be called as liberalization achieving open market through regulation of monopoly (Hammer, 1998) includes three main components of institutional reforms, open access, and establishment of proper regulatory regimes (Balasooriya et al., 2007) and liberalization and privatization is reducing public expenditure (Mario and Isaac, 2000). However, privatization will not be formed miracle to resolve the issues such as inefficiency of electric power sector, underpricing, subsidizing, overstaffing and inadequate maintenance (Ghafoor and Weiss, 1999). Reform is a political process and used political parties in different manner (Chen, 2010) and the restructuring of the power sector has to be
considered with ideological contest or value conflicts between proponents and opponents (Lee and Ahn, 2004). In Sri Lanka we are also facing similar issues with further reforms. Hence it is necessary to identify and measure the impacts of power sector reforms of Sri Lanka to explore the possibilities on further reforms.

Impacts of Power Sector Reforms on Electricity Generation

Electricity sector reforms have as multidimensional activities and interacting factors (Jamsab, 2005) and ongoing process and it is not clear to assess impacts or proper evaluation of the impact of electricity reform using econometric analysis to come to a conclusion (Pollitt, 2009). Limited literature that focuses on the impact on economic performance of reform in the electricity sector in developing countries (Jamasb et al., 2014). Steiner, (2000) used the approach of cross-country and time-series variation to explain the impact of indicators of regulation and industry structure on efficiency and prices.

Some of the impact assessment of the electricity regulation conducted in qualitative method (Growitsch et al., 2009; Sankar and Ramachandra, 2000; Chester, 2007) and qualitative methodology is appropriate to study dynamic/ongoing process (Foster et al., 2006) Some of the researchers used a multi-method qualitative approach Hooks and Palakshappa, (2009) and comparative case study approach (Foster et al., 2006; Srivastava, 2011) to study the relationships of the utilities after deregulation of electricity sector Purkayastha, (2001). Jain, (2004) explains about the reform experiences and how to shape the reforms. According to the comparative study conducted by Mizrahi and Tevet, (2014) on Israel electricity sector reforms concluded that utility sector reforms should give priority to variables related to national institutions and politics, and only secondary attention to techno economic and transnational forces.

There are some studies used quantitative methodology (Wattana and Sharma, 2011) and several approaches have been used in the literature to assess impacts of power sector reforms. These include social cost-benefit analysis (Galal et al., 1994; Anaya, 2010; Toba, 2007; Tishler et al., 2006; Santhakumar, 2003; Pollitt 2007) econometric analysis (Nepal and Jamasb, 2012a; Sen and Jamasb, 2012; Cubbin and Stern, 2006) efficiency, productivity and service quality improvement analysis Wattana and Sharma, (2011), macroeconomic analysis and specific case studies Estache and Romero, (1999). However, some of the researchers have done some
studies to measure the impacts of the reforms based on productivity. Productivity is a measure of performance (Ondrej and Jiri, 2012). A comprehensive analysis on the performance of the Thai electricity industry during the period 1980-2006 done while assessing the influence of reform on it (Wattana and Sharma, 2011). An axiomatic approach namely, Malmquist Total Factor Productivity (TFP) index, explained trend of productivity growth by Yadav et al., (2013) and concluded that slight productivity growth happened due to technological change (frontier shift) over the period under observation using Data Envelopment Analysis (DEA), further DEA used (Wattana and Sharma, 2011; Pombo and Taborda, 2006; Migueis et al., 2012; Yunos and Hawdon, 1997). DEA can be use as non-parametric linear programming technique for measuring efficiency of a multiple input output entity (Domah, 2004) with consistence data (Miguéis, et al., 2012) and also productivity improvement also can be assessed under TFP using DEA method as a non-parametric technique (Wattana and Sharma, 2011). According to that study it was revealed that the productivity has been improved mainly driven by technological improvements not by the reform or regulation of the electricity but Brunekreeft, (2003) stressed that regulation sets the platform for productivity gains. However, it is difficult to analyze changes in single-factor productivity factors under the total-factor framework by using the traditional DEA-Malmquist index (MI) therefore Honma and Hu, (2009) applied a new index proposed by Hu and Chang, (2009). Called Total-Factor Energy Productivity Change Index (TFEPI) that integrates the concept of the total-factor energy efficiency index into the MI. Moreover, they separated TFEPI into change in relative energy efficiency. Emmons, (1997) pointed out the how do the regulation, public ownership, and competition caused to reduce electricity prices and enhance allocative efficiency. The effect on electricity market operation caused by the technical requirements has highlighted by Bajpai and Singh, (2009) as instantaneous supply and demand balance is important. In any system technical requirement is very important to ensure system reliability and quality of the supply. Wattana and Sharma, (2011) used two approaches namely, Index Approach (IA) and Frontier Approach (FA) for measuring the performance of the electricity sector. Under the frontier approach Wattana and Sharma, (2011) discussed about the behavioral approach and axiomatic approach for measurement of efficiency. Further he describes about the Stochastic Frontier Analysis (SFA) as commonly use parametric approach and DEA as commonly use non-parametric approach.
Cross evaluation can be used for assess the impacts of reforms of countries or utilities based on the availability of data (Yadav et al., 2015). For analyze the efficiency improvement of Utilities Parametric methods such as SFA estimates a cost or production function had been used (Zhang et al., 2010). Lee, (1995) explained using production function that generation, transmission and distribution could not be conducted independently without losing efficiency. Study was conducted using a constrained cost model and found that re-regulation of the electricity generating reduced costs and radically improving the utilization of capital and boosting the average scale of operations basically productivity improvement of the utility (Foreman-Peck and Hammond,1995). According to the results of study conducted by Fabrizio et al., (2007) results suggested that restructuring can achieve efficiency gain. To measure the relative efficiency of the German distribution utilities used the traditional DEA and SFA, including the multi-output multi input version of the distance function, mainly as a verification method (Hirschhausen et al.,2006) and found that efficiency of the distribution utilities has been improved.

To analyze the effects of regulatory reforms, Ida et al., (2007) assume a trans log cost function based on Ying, (1990) which is parametric method include regression analysis (Jamashb et al., 2015). The indicators were long-term total cost input are labor, fuel and capital, output quantities are power generation, power transmission-and-distribution. Based on the input parameters and output indicators it was expressed about the effects of the reforms. Further they calculated direct and indirect effects of electricity sector reforms. finally concluded with that there are considerable direct effects and less indirect effects on the efficiency due to reform. Zhang et al., (2008) used panel model that controls for country effects and time effects was used. The service quality is reliability and adequacy electricity supply (Lowrence, (2002) quoted by Wattana and Sharma 2011) variable (Holt,2005) is measured with the indices of average duration and average frequency of electric outages and found that regulation does not cause quality deterioration (Ter-Martirosyan, 2003). Basically this variable is applicable for the electricity distribution sector.

The regulation, competition and privatization variables under the study impacts of all three aspects privatization, competition and regulation using by one equation. Further they used methodology to reduce the impacts of correlation of privatization, competition and regulation
and used panel data and strategy of balance data set used to minimize the effect of missing data of some of the countries.

![Composition of Previous researches](image)

**Figure 1: Illustration of Methodologies used for impact assessment**

### Table 1: Summary of the approaches from literature reviewed

<table>
<thead>
<tr>
<th>Approach</th>
<th>Authors</th>
<th>No. of articles</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>social cost-benefit analysis</td>
<td>Galal et al., 1994; Anaya, 2010; Toba, 2007; Tishler et al., 2006; Santhakumar, 2003; Jain, 2004; Pollitt, 2007</td>
<td>07</td>
<td>18.9%</td>
</tr>
<tr>
<td>Econometric analysis</td>
<td>Nepal and Jamasb, 2012a; Sen and Jamasb, 2012; Zhang et al., 2008; Cubbin and Stern, 2006</td>
<td>04</td>
<td>10.8%</td>
</tr>
<tr>
<td>Efficiency and Productivity analysis</td>
<td>Ida et al., 2007; Yadav et al., 2013; Lee, 1995; Wattana &amp; Sharma, 2011; Pombo &amp; Taborda, 2006; Migueis et al., 2012; Yunos and Hawdon, 1997; Bajpai and Singh, 2009; Honma &amp; Hu, 2009; Domah, 2004; Zhang et al., 2010; Foreman-peck and Hammond, 1995; Emmons, 1997; Miguéis, et al., 2012; Hirschhausen et al., 2006; Ida and Kuwahara, 2002; Rudnick and Zolezzi, 2001</td>
<td>17</td>
<td>45.9%</td>
</tr>
<tr>
<td>Service quality</td>
<td>Holt, 2005; Ter-Martirosyan, 2003; Lawrence, 2002</td>
<td>03</td>
<td>8.1%</td>
</tr>
<tr>
<td>specific case studies</td>
<td>Chisari, Estache and Romero, 1999; Foster et al., 2006; Srivastava, 2011; Mizrahi and Tevet, (2014); Chester, L., 2007; Dsa et al. (1999)</td>
<td>06</td>
<td>16.2%</td>
</tr>
</tbody>
</table>
Figure 2: Methodologies and approaches can be used for analysis of impacts of reforms

It was compared the reform programs and performance impacts with the performance indicators of some of the previous literature (Reyes and Tower 2009; Gratwick and Eberhard, 2008; Eberhard and Gratwick, 2011, cited in Kessides, 2012) and found that there is a relationship of the reforms and performance improvement of the electricity sector.

For DEA methodology selection of input and output is the most important step in the process of performance evaluation (Yadav et al., 2013). Several indicators were given to evaluate the effectiveness of the reforms on power generation such as labor productivity, installed capacity, Losses, addition of IPPs, among others. Further power shortage and cost of generation are some of the indicators of electricity reforms (Jamashb, 2014). Electricity dispatches from the generator will be selected through merit order based on the variable cost. (Lalor and Garcia, 1996). That means the variable cost also one of the indicator. By the parametric study conducted by Atkinson and Halverson, (1984) explained that the generalized cost function is estimated with data for regulated electric utilities. By the study conducted by Sharma et al., (2005) explained the technical and economic indicators such as Energy deficit, capacity additions, peak power deficit, per capita usage of the electricity, Transmission and Distribution losses, plant availability, plant load factor, forced outage ratio, further as economic indicators he explained average production cost, average tariff, average cost recovery as a % of generation cost. According to Chisari et al., (1999) indicators to measure the impact of the reforms are Efficiency gains, Labor Productivity gains, Increase in investment, improvement in quality (loss reduction) and change of legal tariff. Zellner’s Seemingly Unrelated Regressions (SUR) method was used by Ida et al., (2007) to evaluate the effectiveness of power sector reforms. He used trans log cost function based on Ida et al., (2004) to analyze the effect of power sector reforms in Japan. Fischer and Galetovic, (2000) highlighted the importance of electricity shortage in terms of the effectiveness of the reforms. Electricity price increase was studied by Boccanfuso et al., (2009). The productivity index of the electricity generation was calculated using three inputs i.e. Utilizing fuel, labor, and capital and pointed out incentive mechanisms to improve the productivity in electricity sector (Nelson and Wohar, 1983). It is important to achieve production efficiencies with the reforms and objectives are efficiency in resource usage and securing adequate revenue (Hossain, 1993).
Some of the researchers measure the performance of the utilities after the reforms using labor productivity (Fischer et al., 2003; Nagayama, 2007; Mota, 2003.), percentage of energy loss in the system (Rudnic and Zolezzi, 2001; Fischer et al., 2003; Anaya, 2010 Bhatia and Gulati, 2004). Dsa et al., (1999;), increase of the installed capacity (Fischer et al., 2003; Gratwick and Eberhard, (2008); Eberhard and Gratwick, (2011); Cubbin and Stern, (2006), Interruption time Pombo and Taborda, (2006).

A few studies related to the restructuring process taking place in Sri Lanka have been published in the past (Kalpage, 1996, Silva, 2011, Siyambalapitiya, 2002,) focus and review various aspects of the reform process like utility privatizations, regulatory commissions, economic impacts etc. Political costs are very important in the governmental decision-making process (Sabolić and Grčić, 2010), this is very important aspect when any government has to think about the political damage to the future of the political party or group. Power Sector Reforms largely depends on the support of the people are carried alone from planning to implementation Idris, (2013).

Table 2: Summary of the studies and indicators used

<table>
<thead>
<tr>
<th>Performance impacts indicators</th>
<th>Study scope</th>
<th>Authors</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed capacity</td>
<td></td>
<td></td>
<td>Electricity Policy Research Group, University of</td>
</tr>
<tr>
<td>Topic</td>
<td>Country</td>
<td>Author(s)</td>
<td>Journal/Publication</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>-------------</td>
<td>----------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Cost of electricity generation distribution and combined generation and distribution and institutional factors</td>
<td>United States</td>
<td>Emmon,(1997)</td>
<td></td>
</tr>
<tr>
<td>Capital used in generation process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel used in generation process</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution losses</td>
<td>India 1992</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unbundling and privatization of some State Electricity Boards.</td>
<td></td>
<td></td>
<td>Economic and Political Weekly</td>
</tr>
<tr>
<td>Efficiency and cost of the supply</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
transmission and distribution liberalization of the retail section started for high-demand power users

The level and rate of growth of technical efficiency and productivity, quality of service. Generation capacity.

| 28 developing countries including Countries from Africa, Asia etc.1980-2001 | Cubbin and Stern,2006 | The World Bank Economics |

Good regulatory control gives positive and statistically significant effect on electricity industry outcomes such as per capita generation capacity levels (Cubbin and Stern, 2006). Skyner, (2010) pointed out that if the government accelerate structural reforms which enhance competitiveness and productivity and to improve governance and transparency of the sector. In the study of Zhang et al., (2008) concluded that the competition in electricity generation is more important than privatization or regulation by independent regulator in bringing about performance improvements. Meanwhile some of the countries like Nigeria, were not able to achieve the targets of reforms as the deterioration in the quality and reliability of power supply services is poor and effective management of the power system and a strong political will is essential to ensure adequate, reliable, and cost-effective power supply (Babatunde, 2011).

**Method for Impact Assessment of Power Sector Reforms on Power Generation of Sri Lanka**

There are two econometric methods which can use for assessment of impacts of electricity sector reforms. Under the econometric method the application of statistical methods to economic data that aims to give empirical content to economic relations. Implementation of the econometric methods to assess the impacts panel data analysis method cannot be used for electricity sector of Sri Lanka as there is no sufficient regulated utilities to set a panel data. The usage of time series analysis also difficult as there were major policy changes during the period concerned such as change of government and policies which would have impact on reforms. Successfulness of the reforms depend on the country-specific constitutional, legal, economic, and political differences (Cubbin, and Stern, 2006). For instance, Sri Lanka
commenced the regulatory process in 2009, then government introduced some different policies for Economy and other financial aspects because of the government change. Therefore, it is difficult to differentiate the changes in the econometric domain parameters and power sector parameters as why do such changes happened because of the reforms or change of government policies.

When comes to the qualitative analysis there are few methods to use impact assessment such as case studies and comparative studies etc. The electricity sector is highly technical area and if any researcher wants to study the impacts it is necessary to show the findings with strong arguments with figures. So qualitative analysis is not able to provide such analysis. Further the attitudes towards the reforms are not that much favorable in the Sri Lankan society and special among the stake holders of the electricity sector. Hence the qualitative analysis is not an appropriate way to address the impact assessment on performance of the electricity sector due to the reforms initiated by the government.

Now the remaining methodology is quantitative analysis. Under the quantitative analysis there are two sub methods efficiency improvement analysis and productivity improvement analysis. When comes to the electricity sector reforms the objective of the reforms is basically improvement of productivity enhancement rather than efficiency improvement. In generally, electricity sector is a service oriented sector but generation sector is highly technical. Efficiency improvement was applied for other sub area of electricity sector such as distribution sector which is dealt with customers directly (Hirschhausen, 2009). Hence productivity improvement analysis is most appropriate for regulated business as regulatory aspect promote the productivity (Ondrej and Jiri, 2012). Then there are two methods Total factor productivity analysis and partial factor productivity analysis. Normally partial factor productivity analysis is appropriate for the goods production sector as that analysis is basically based on the two inputs of the process labor and money. There are inherent issues with partial factor productivity (Nyshadhan and Rao, 2000). However, the electricity generation is also producing electricity through a process. But when researcher wants to do analysis of performance due to reforms it is necessary to consider other factors. Hence Total productivity assessment is appropriate for this assessment. However, there are two methods in TFP Axiomatic analysis and index analysis. For impact assessment of the reforms on electricity
generation both methods can be used. Hence for Sri Lankan context also both methods can be used to assessment of impact of sector reforms on electricity generation.

DISCUSSION

Adequate, quality and reliable supply of electricity in a country is very important for achieving socioeconomic and technological development. Most of the countries have implemented electricity reform and those are in regulated market, competitive market and deregulation/Liberalization. Some of the countries assessed the impacts of the reforms using either qualitative or quantitative methodologies depend on the availability of data. This literature overview and the collection of articles that follows is intended to provide the basis for a debate over the international experiences that inform and have shaped Sri Lanka’s efforts in electricity sector reforms. There are two reasons why such a debate is timely. First, Sri Lanka electricity sector is poised at a critical juncture. The Electricity Act 20 of 2009 had been passed in year 2009 and even after 8 years of regulatory reforms no single study found in this regard. But policies and regulations that will put into place the vision of the Act are continued to be formulated and implemented in Sri Lanka. Government would think about the Political costs due to further reforms of electricity sector, to minimize the political disturbance or damages due to the electricity sector reforms and would prefer to select the least damage option. According to the findings of Jamasb et al., (2015) reform outcomes in developing countries can be adverse during the initial stages of reforms. Now Sri Lanka also in an initial stage of the reform process, hence the impact assessment is utmost important to consider further reforms and decision making process.

CONCLUSION

The arguments of having with extra force to utility service industries through reforms are not just because they are highly capital intensive and most of their assets are very long lived and but also the electricity sector performance effects on performance of all most all the sectors including industrial, service sectors so and so forth. Ultimately the performance of electricity sector causes either negative or positive impact of economic growth of the country. So, an effective institutional framework is essential to sustain growth in output, efficiency, and capacity for commercialized utility service industries like electricity. To conduct the impact of reforms of electricity generation sector it is recommended to follow quantitative total factor
productivity analysis. However, as a future research area it is suggested to conduct a research on Axiomatic and index approach to select most appropriate approach for Sri Lankan context.

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Impact of University Physical Facilities on Students Satisfaction: A Comparative Analysis based on Two Selected State Universities in Sri Lanka

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Fernando, R.L.S., University of Sri Jayewardenepura, Sri Lanka

ABSTRACT

In this competitive environment, universities in a fierce competition for the best and the brightest students. Accordingly, knowledge about how student satisfaction is developed can be used by universities to develop strategies that make them more attractive for prospective students. In this study, the attention is paid to explore and compare the impact of university study facilities have on student satisfaction at state universities in Sri Lanka. Accordingly, university study facilities such as lecture room facilities, ICT facilities, accommodation facilities and entertainment facilities work as the independent variable of the study while student satisfaction works as the dependent variable. The undergraduates of Rajarata and Wayamba Universities were the population of the study, out of the 288 students were selected as the sample based on stratified sampling techniques. Necessary data was collected through researcher-administrated questionnaires and analyzed through SPSS 20 version. Descriptive statistics, factor analysis, correlation and regression tests were used to address the research question. According to the findings of the study, lecture room facilities and accommodation facilities have statistically significant impacts on student satisfaction at both universities. However, the impact of ICT facilities on student satisfaction was statistically significant at Rajarata University but it was insignificant at Wayamba University. On the other hand, the impact of entertainment facilities was significant at Wayamba University but the impact was insignificant at Rajarata University. Hence, based on the findings the study recommends both universities to invest more on lecture room facilities and accommodation facilities to enhance the level of student satisfaction.

Keywords: Student Satisfaction, Lecture Room Facilities, ICT Facilities, Accommodation Facilities, Entertainment Facilities
INTRODUCTION

Students are one of the key strategic entities of a university on which a university also depends, so satisfying them is much more important in a competitive environment to attract more students for studies. Student satisfaction is a short-term feeling resulting from an evaluation of educational experiences, services and facilities encountered by a student during his/her learning process (Elliot & Shin, 2002; Weerasinghe & Dedunu, 2017; Weerasinghe & Fernando, 2017). It is multidimensional in nature and is influenced by many different factors in which university physical facilities are at top of the influencing list. University physical facilities are the things that have been established in and around a university for its smooth operation. It works as a source of competitive advantages in a competitive environment and distinguishes a university from its competitors (Douglas, et al., 2006). Moreover, physical facilities of high quality and standard often influence students’ university selection (If Price, et al., 2003; Douglas, et al., 2006), their learning process (Lewis, 2000) and ultimately to the institute image (Nguyen and LeBlanc, 2001). Further, external facilities which are around the university also bring substantial economic benefits to students (Harris, 1997). The cultural and social vibrancy of cities makes students alive (Andrea & Benjamin, 2013). Accommodation and public transport facilitate student social interaction enabling them to take part in various activities outside universities within the learning period (Elliot & Shin, 2002). However, low-quality unsuitable facilities have been found to damage and reduce student satisfaction in higher education (Hassanbeigi and Askari, 2010; Hanssen & Solvoll, 2015). Accordingly, university psychological facilities are considered as one of the key strategic sources of gaining competitive advantage in higher education institutes.

University study facilities in Sri Lanka have not received the desired attention at both the government and the management of the institutions since last few decades (Pathmini et al, 2012). As noted by Wijesiri (2014) inadequate maintenance of services and infrastructures of universities are very common in Sri Lankan universities. Perera, (2013) also stated that many universities in Sri Lanka do not maintain adequate accommodation facilities for their students. The process has already encouraged many students’ catastrophes in the universities. Not only that, it has been noted by National Education Commission of Sri Lanka, 2009 that there is a greater need now for state universities and higher education institutes to compete for funds and to generate income innovatively without depending exclusively on the state grant as there is a declining trend in the state contribution to financing higher education in real terms. The decision greatly deteriorates development of newly established regional state universities. Resulting now, irrespective of the types, all state universities have to take new initiatives to develop its physical facilities to meet students’ requirement. Especially in this process regional state universities should priorities satisfaction drives well compared to urban state universities.
due to lower financial feasibility. Therefore, identifying what facilities make students more satisfied is much more important to invest limited money among activities. Further, the Rajarata and Wayamba Universities are comparatively young and similar aged universities that have a long journey to go. As regional universities, both must be received fair attention and treatment from relevant authorities in the development process that can be assessed through a comparative study. Accordingly, the focus of this study goes to analysis and compare the impacts of university study facilities on student satisfaction at state universities in Sri Lanka.

SURVEY OF LITERATURE

There has been much attention given by many scholars on the role of facilities in the higher education industry and it is still a debatable topic. As Temple, (2008) stated even if a relationship exists between the physical and learning environment it is a complex one. Maintaining adequate facilities is imperative but not sufficient to satisfy students. Facilities are the things that are fixed for a specific purpose by an entity for its smooth operation. In a university, facilities can be categorized as internal and external based on the location which is available. Internal facilities mean things that are available on university premises and the facilities which support students in their learning process and the facilities those from outside the universities are called external facilities. As stated by Farahmandian, et al., (2013) university facilities contain lecture rooms, faculty buildings, university theater, auditorium, exam halls, library, technology facilities (Aldridge & Rowley, 1998; Yusoff, et al., 2015); computer laboratories, playground, parking, hostels, study areas, furniture etc. Nasser (2008) framed university facilities by classroom facilities, library resources, computer services, health services, financial aid services, counseling services and sports facilities. Karna & Julin (2015) stated workshop facilities, laboratory facilities, general purpose facilities, computer accessibility and outdoor areas as main categories of university facilities.

The university location is one of the important factors where a bundle of facilities is available with embedded meaning for individuals (Andrea & Benjamin, 2013) especially basic facilities such as water, electricity, recreation, public transport, safety, and entertainment. When a university is located at a gorgeous place, it can easily attract more students for programs because learning occurs not only in lecturer rooms but also in ad-hoc spaces where students can get together (Karna & Julin, 2015). A study by McLaughlin & Faulkner, (2012) emphasizes that university students want flexible learning spaces that can adapt to individual and collaborative work with a strong emphasis on social learning. Andrews and Powell (2009) emphasize that interactive spaces also serve as a signal to the academic community that the university will encourage and enable changes to teaching and learning practices. However, Douglas et al., (2006) portray that physical facilities of a university are not important with
regard to student satisfaction but it works as a key determining factor of students’ choice in selecting universities. It is fairly predictable, considering the main functions of universities. Nevertheless, student perspectives reveal that factors related to learning experiences, such as IT facilities and learning equipment, are highly important (Douglas et al., 2006). The appearance of physical facilities of an institution is not a matter for students because students don’t rate an institute on the basis of building and physical appearance but on the grounds of quality of education (Khan, et al., 2011). Several studies have been conducted by various researchers to find out the impact of university facilities on student satisfaction in the higher education industry. As stated by Yusoff, (2015) that there is a positive significant relationship between classroom environment such as decoration, layout, lighting, cleanliness with student satisfaction in a Malaysian higher education setting. This study further reported that better-performing students are more satisfied with the student support facilities and class sizes than the poor performers. A direct impact of facility management services on educational outcome was found by Kok et al, (2011) in which facility management services like lighting, heating, ventilating, air conditioning, classroom design, audiovisual, ICT equipment, cleaning, and maintenance have direct effects on educational outcome. Hanssen & Solvoll (2015) explored factors associated with overall student satisfaction in the Norwegian university system. The study found that reputation of the institution, the attractiveness of host university city and quality of university facilities especially social areas, auditoriums, and libraries, have strong influencing power on overall student satisfaction. Student and staff satisfactions about university facilities in Finland were examined by Karna and Julin (2015), who found that facilities which related to core university activities, such as teaching and research facilities, have a greater impact on both student and staff satisfaction than supportive factors like accessibility, bus stops, cycleways and walkways. Further, it was found that physical facilities are potentially more important than general infrastructure in which library facilities were the best explanatory factor for overall satisfaction. In addition, the study highlighted that students are more satisfied with factors related to a comfortable learning environment, public spaces and campus accessibility. However, staff was satisfied with laboratory and teaching facilities. Well managed cafeterias play grounds, parking facilities, and other arrangements of physical facilities are important for student satisfaction (Malik, et al, 2010). Andrea & Benjamin (2013) found that students’ overall satisfaction with the location is relatively positive and it further identified that students are more satisfied with socializing, sense of community, community assets, and the city's natural environment. Hanssen & Solvoll (2015) found that the host city has a strong influencing power on overall student satisfaction in Norwegian universities. The study further revealed that available job opportunities, safety and entertainment facilities around the university are more important in determining student satisfaction. University location was identified as one of the important factors which determined students satisfaction and decisions about where to study (Worthington & Higgs,
2004), Contrary to the above literature Douglas et al., (2006) indicated that physical facilities of a university are not important with regard to student satisfaction but it works as a key determining factor of student’s choice in selecting universities. This was further strengthened by Navarro, et al., (2005) highlighting a negative influence of student enrolment and physical facility on student satisfaction. Further Marzo-Navarro, et al., (2005); Farahmandian, et al., (2013) highlighted a statistically insignificant relationship between university physical facilities and student satisfaction.

METHODOLOGY

University Study Facilities

- Lecture Room Facilities
- ICT Facilities
- Accommodation Facilities
- Entertainment Facilities

Student Satisfaction

Figure 3: Conceptual Framework

The study was an applied, quantitative and deductive one. The purpose was to examine the impact of university study facilities on student satisfaction based selected state universities in Sri Lanka. The study developed a conceptual framework to meet the research objective based on an extensive literature survey as mentioned above and on which the hypotheses were developed. According to the conceptual framework lecture room facilities, computer laboratories, accommodation facilities, and entertainment facilities work as independent variables and student satisfaction works as the dependent variable of the study. The cross-sectional comparative study collected data from November to December 2016. Undergraduates of the Universities of Rajarata and Wayamba were the population of the study in which about 10% of students were selected as the sample of the stratified sampling technique. In order to achieve the aim of this research, a structured questionnaire was used. The questions were in two sections: Section A consisted of personal data of the respondent and section B consisted of questions about the five essential variables; lecture room facilities, computer laboratories, accommodation facilities, entertainment facilities and student satisfaction. The questions in section B followed Likert scale it ranges from one (1) to five (5). Where 1 was used to denominate “strongly disagree” and 5 to “strongly agree”. The collected data were analyzed using SPSS 20 version statistical software. Confirmatory factor analysis was used to ensure the discriminant and convergent validities of the model. ANOVA test is used to compare the facilities among variable and correlation and regression were used to test the hypotheses. Results are presented using tables and figures.
DATA ANALYSIS

A total of 350 questionnaires were administered in two universities out of which 288 were returned showing 82.6% response rate which was considered highly adequate because similar studies conducted in higher education by Abdullah (2006) administered 560 questionnaires and received 381 usable questionnaires; Hanssen & Solvoll distributed 5232 questionnaires and received 1547 completed questionnaire producing a 28% response rate.

The present study ensured face validity of the questionnaire distributing it among few academics at the Rajarata University and the questionnaire was developed touching relevant dimensions of the construct which were found through literature review, to ensure the content validity. Further, confirmatory factor analysis was used to test the construct validity and discriminant validity of the study.

According to the confirmatory factor analysis, the estimated values of the items were greater than 0.7, and the lowest estimate value was 0.721. It indicated that an item explains more than 70% variation of its respective dimension. KMO values of all dimensions were greater than 0.5. Accordingly, both estimate and KMO values were above the standard level (Estimate 0.7 and KMO 0.5) of convergent validity of the test (Hair, 1998). Further, according to the table 1, Average Variance Extracted values of the construct were greater than 0.5. Those statistics evidenced the convergent validity of the test.

The results of the discriminant validity are also presented below in Table 1. According to the test result, the composite reliability of respective variables was greater than 0.8 and diagonal values of AVE are greater than the squared correlation estimates where discriminant validity is ensured (Hair, 2008).

### Table 11: Rotated Component Matrix Table

<table>
<thead>
<tr>
<th>Items</th>
<th>Components</th>
<th>AVE</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequacy of lecture rooms</td>
<td>0.512</td>
<td>0.737856</td>
<td></td>
</tr>
<tr>
<td>Quality of audio-visual facilities</td>
<td>0.726</td>
<td>0.472924</td>
<td>0.819</td>
</tr>
<tr>
<td>Indoor air quality</td>
<td>0.832</td>
<td>0.307776</td>
<td></td>
</tr>
<tr>
<td>Furniture Arrangement</td>
<td>0.824</td>
<td>0.321024</td>
<td></td>
</tr>
<tr>
<td>Adequacy of computer labs</td>
<td>0.711</td>
<td>0.494479</td>
<td></td>
</tr>
<tr>
<td>Availability of internet facility</td>
<td>0.749</td>
<td>0.438999</td>
<td></td>
</tr>
<tr>
<td>Data Transferring Using Flash drivers</td>
<td>0.684</td>
<td>0.532144</td>
<td>0.807</td>
</tr>
<tr>
<td>Quality of technical staff assistance</td>
<td>0.719</td>
<td>0.483039</td>
<td></td>
</tr>
</tbody>
</table>
Adequacy of hostel facilities 0.707 0.500151
In-door facilities of hostels 0.727 0.471471
Water supply 0.623 0.611871
Quality of foods at canteen 0.781 0.501 0.390039 0.856
Availability of boarding places 0.637 0.594231
Affordability of outside boarding fees 0.758 0.425436
Walkways and social areas 0.589 0.653079
Attractiveness of natural environment 0.647 0.532 0.581391 0.815
Availability of shopping centers 0.718 0.484476
Safety 0.921 0.151759
Learning Experiences 0.803 0.355191
Future studies 0.852 0.766 0.274096 0.929
Recommendation to others 0.916 0.160944
Decision to study 0.926 0.142524

Demographic Analysis

Table 12: Sample profile

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>66</td>
<td>22.9</td>
</tr>
<tr>
<td>Female</td>
<td>222</td>
<td>77.1</td>
</tr>
<tr>
<td>Academic year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second year</td>
<td>150</td>
<td>52.1</td>
</tr>
<tr>
<td>Third year</td>
<td>138</td>
<td>47.9</td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rajarata University</td>
<td>132</td>
<td>45.8</td>
</tr>
<tr>
<td>Wayamba University</td>
<td>156</td>
<td>54.2</td>
</tr>
</tbody>
</table>

According to the sampling profile presented in table 2, it is worth noting that 22.9% of the sample was represented by males and the rest (77%) was females, and they are somewhat over-represented in the sample. This was mainly due to increased entry of females to higher education in Sri Lanka. According to student enrolment reports 54132 female students have registered at government universities in the year 2015, it was 62.8% of total enrolment (University Grants Commission, 2015). The second-year students represented 52% of the sample and rest was represented by the third year student (48%). The highest number of undergraduates was from Wayamba University of Sri Lanka (54.2%) and the minimum number from University of Rajarata (45.8%). More than half of the...
respondents are following the Accountancy & Finance (29.7%) and Business Management (22.2%) degree programs in the two universities. It implies that still, students prefer these two-degree programs even though there are more specialized avenues in higher education.

Reliability Test

Table 13: Coefficient of Reliability

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Number of Items</th>
<th>Alpha Coefficient (RJT)</th>
<th>Alpha Coefficient (WAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>4</td>
<td>0.887</td>
<td>0.932</td>
</tr>
<tr>
<td>LR</td>
<td>4</td>
<td>0.842</td>
<td>0.808</td>
</tr>
<tr>
<td>ICT</td>
<td>7</td>
<td>0.693</td>
<td>0.729</td>
</tr>
<tr>
<td>ACC</td>
<td>5</td>
<td>0.710</td>
<td>0.776</td>
</tr>
<tr>
<td>ENT</td>
<td>4</td>
<td>0.650</td>
<td>0.455</td>
</tr>
</tbody>
</table>

RJT: Rajarata University       WAY: Wayamba University

In order to ascertain the reliability of the items in the questionnaire, a Cronbach’s a reliability test was conducted separately for two universities. As shown in Table 3, it can be seen that the Cronbach’s alpha coefficient of Rajarata University ranges from 0.650 to 0.887 and Wayamba university range from 0.655 to 0.932. All Alpha values except entertainment facilities are in line with the standard scale 0.7. Accordingly, observed items showed a good internal consistency.

Comparative Analysis

Table 14: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Items</th>
<th>Rajarata</th>
<th>Wayamba</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Room</td>
<td>Adequacy of lecture rooms</td>
<td>2.83</td>
<td>3.83</td>
</tr>
<tr>
<td>Facility</td>
<td>Quality of audio-visual facilities</td>
<td>2.56</td>
<td>3.34</td>
</tr>
<tr>
<td>Mean 2.96</td>
<td>Indoor air quality</td>
<td>2.66</td>
<td>2.17</td>
</tr>
<tr>
<td></td>
<td>Furniture Arrangement</td>
<td>2.70</td>
<td>3.67</td>
</tr>
<tr>
<td>ICT Facilities</td>
<td>Adequacy of computer labs</td>
<td>2.99</td>
<td>3.94</td>
</tr>
<tr>
<td>Mean 2.8</td>
<td>Availability of internet facility</td>
<td>2.57</td>
<td>3.67</td>
</tr>
<tr>
<td></td>
<td>Data Transferring Using Flash drivers</td>
<td>1.57</td>
<td>1.21</td>
</tr>
<tr>
<td></td>
<td>Quality of technical staff assistance</td>
<td>3.07</td>
<td>3.39</td>
</tr>
<tr>
<td>Accommodation</td>
<td>Adequacy of hostel facilities</td>
<td>2.87</td>
<td>3.47</td>
</tr>
<tr>
<td>Facilities</td>
<td>In-door facilities of hostels</td>
<td>2.44</td>
<td>2.94</td>
</tr>
<tr>
<td>Mean 2.76</td>
<td>Water supply</td>
<td>2.33</td>
<td>2.95</td>
</tr>
</tbody>
</table>
Quality of food at canteen 1.68 2.53
Availability of boarding places 2.69 3.72
Affordability of boarding fees 2.67 3.03

Entertainment Facilities
Walkways and social areas 3.84 3.42
Attractiveness of environment 3.94 3.38
Availability of shopping centers 3.12 4.10
Safety 4.23 4.18

Student Satisfaction
Personal Experiences 3.40 4.28
Future studies 3.14 4.08
Recommendation to others 3.26 4.42
Decision to study 3.37 4.16

Comparison of Lecture Room Facilities
According to the descriptive statistics presented in table 04, the overall satisfaction level with lecturer rooms has an average mean score of 2.96 which denotes student dissatisfaction with lecturer room facilities. This is further broken down into the respective facilities including adequacy, quality of the audio-visual facility, indoor air quality, and furniture arrangement. When comparing aforesaid facilities among two universities it was found that Wayamba University has adequate lecture room facilities (mean 3.83) than Rajarata University. Further students of Rajarat University are highly dissatisfied with the quality of multimedia facilities than Wayamba University. The indoor air quality of lecture rooms at both Rajarata and Wayamba Universities are very lower because these two universities are located in the dry zones where the average temperature is about 32°C -34°C (Department of Meteorology, 2016). Often from June to September the temperature in the North Central Province where the Rajarata University is located, North Western Province where the Wayamba University is located experience above-average temperature. Though, the student had a moderate view about furniture arrangements in lecture rooms at Rajarata Universities, students of Wayamba satisfied about furniture arrangement at lecture rooms.

Comparison of ICT Facilities
Though modern education has blended with advanced technology since many years ago, undergraduates of Rajarata University are suffering from a lot of ICT related problems. According to the descriptive statistics presented in table 04, available ICT facilities and the internet access are not adequate for the students in University of Rajarata, however, students of Wayamba University satisfied about available ICT facilities and the internet access. It is important to mention here that irrespective the university, all respondents delineated a strong dissatisfaction towards the ability to obtain data by
flash drivers from the main computer center. In order to protect the computers from the harmful virus, the universities do not allow students to plug personal flash drivers to the system as a clause. However, it is well accepted that regardless of virus infects, flash drives are the easiest and cheapest way to transfer digital data from one device to another where e-mail access is limited.

Comparison of Accommodation Facilities

As per the descriptive statistics presented in table 04, the overall mean value of accommodation and related facilities is 2.76. It shows student displeasure toward accommodation and related facilities at the universities. The study further explored and compare the issue under different related facilities attached to accommodation such as adequacy, in-door facilities, water supply, quality of food, outside boarding places and boarding fees among the universities. According to the descriptive statistics, respondents of the Wayamba University satisfied more about available hostel than the students of Rajarata University. However, all respondents are not satisfied with in-door facilities of the hostel such as occupancy ratio, study facilities, washrooms, tables, ventilation etc. Perera, (2013) identified that not only current students but some recently passed out students also are occupying university hostels without any permission. This raised the occupancy ratio of a room, water bill, electricity bills and even maintenance costs. Further students have to depend on minimal facilities with great difficulty particularly in using bathrooms, toilets and hostel canteens. As per the comparative statistics, students at both Universities highly dissatisfied about the water supply to hostels. Water is a serious unsolvable issue in many selected state universities in Sri Lanka as it is dependent on natural weather conditions and rainfall of the area. Specially Rajarata and Wayamba universities are often jeopardized by drought during a certain period every year which interrupts continuous water supply to the hostels as well. Still, universities are unable to find in-house solutions for the prevailing water issue. Further, students at both universities given a low score for the quality of foods at canteen unanimously because more than half of the students tend to eat from outside than in-house canteens and rest satisfy with instant foods and pre-cooked meals. When comparing private accommodation facilities among the universities, it was found that students can easily find private boarding places around university Wayamba and boarding fee also is high around the university than Rajarata.

Comparison of Entertainment Facilities

When observing the different characteristics of student questionnaire, it can be stated that overall satisfaction of student with entertainment facilities which are around the Universities has an average mean score of 3.77 which denotes that students are satisfied with available entertainment facilities. The comparative analysis of entertainment facilities in and around the universities found that students of Rajarata University highly satisfy with available walkways and social areas than the students of
Wayamba University. Walkways and social areas contribute to learning, offering spaces for exchanging ideas and the development of teamwork skills in the learning process (Hanssen & Solvoll, 2015). The attractiveness of the university environment is also significantly higher at Rajarata University than Wayamba University. However, availability of shopping centers around universities is comparatively low around Rajarata University. Further safety in and around the universities are highly valued by the students. Especially in the Sri Lankan university system, student behavior is shaped by university subculture and it works as a protective layer around them, from external disturbances.

The overall student satisfaction was calculated with a standard questionnaire instructing them to state their degrees of satisfaction towards the four satisfaction questions. The responses for the questions demonstrate that students are satisfied (mean 3.82) with the university facilities and its environment. The students at both universities satisfied with the university system based on their personal experience of encountered services and majority are also happy about the decision they made to register in their respective universities. Further, students of two universities competitively recommend their universities for prospecting students and all students like to continue their postgraduate studies at the same university again. Overall, student satisfaction of Wayamba University is significantly higher than the satisfaction of Rajarata University.

**Correlation Analysis of Rajarata University**

**Table 15: Correlation Coefficients**

<table>
<thead>
<tr>
<th>Variables</th>
<th>SS</th>
<th>LR</th>
<th>ICT</th>
<th>ACC</th>
<th>ENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LR</td>
<td>.331*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT</td>
<td>.418*</td>
<td>.464*</td>
<td>1.00</td>
<td></td>
<td></td>
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<tr>
<td>ACC</td>
<td>.282*</td>
<td>.432*</td>
<td>.385*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>ENT</td>
<td>.215*</td>
<td>.256*</td>
<td>.188*</td>
<td>.289*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Note:** * significant at 5% level or better

The correlation coefficients were measured as per Table 5, to examine the association among variables of Rajarata University. According to Table 05 correlation coefficients of lecture room facilities, ICT facilities, accommodation facilities and entertainment facilities with student satisfaction were positive and statistically significant at 0.05 percent level. It indicated that all aforesaid variables have significant positive associations with student satisfaction at Rajarata University in Sri Lanka.
Regression Analysis of Rajarata University

To examine multicollinearity, the study estimated the variance inflation factors (VIF) and they ranged from 1.860 to 2.540, which is well below the critical value of 10, the value that indicates the possibility of a multicollinearity problem (Hair, 1998). Durbin Watson statistic as per the test was 1.831 and was very close to 2, indicating the absence of a heteroscedasticity problem in the data set. The F-test indicates good model fit and regression standardized residuals of the model were symmetrical and normally distributed. Hence, the statistical properties are generally good and indicate that the estimation results are credible. The explanatory power of the model ($R^2$) is 0.36, suggesting that the model explains 36% variance of student satisfaction. The signs of the estimated coefficients are positive and support the prior assumptions regarding the impacts of the explanatory variables in the conceptual framework on student satisfaction.

Table 16: Determination of Coefficients

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.813</td>
<td>.854</td>
<td>0.000*</td>
</tr>
<tr>
<td>Lecture Room Facilities (LR)</td>
<td>0.310</td>
<td>.098</td>
<td>0.000*</td>
</tr>
<tr>
<td>ICT facilities (ICT)</td>
<td>0.507</td>
<td>.132</td>
<td>0.000*</td>
</tr>
<tr>
<td>Accommodation Facilities (ACC)</td>
<td>0.290</td>
<td>.257</td>
<td>0.014*</td>
</tr>
<tr>
<td>Entertainment Facility (ENT)</td>
<td>0.102</td>
<td>.221</td>
<td>0.067</td>
</tr>
</tbody>
</table>

Dependent Variable: Student Satisfaction

Note: * significant at 5% level or better

The results, as presented in Table 6, the determinant coefficient of lecture room facilities is 0.310. It is statistically significant at 0.05 level. Accordingly, 0.31% variation of student satisfaction in Rajarata University is affected by a one-point change of lecture room facilities. As per the regression result, the determinant coefficient of ICT facilities is 0.507 and it is statistically significant at 0.05 level. Resulting, change of ICT facilities by 1% will lead to change student satisfaction by 0.507% at Rajarata University. The regression coefficient of accommodation facilities of Rajarata University is 0.290. It is statistically significant at 0.05 level. The regression coefficient of entertainment facilities is 0.102 and it is statistically insignificant at 0.05 level. Accordingly, the change of entertainment facilities does not lead to change student satisfaction at Rajarata University.
Correlation Analysis of Wayamba University

Table 7: Correlation Coefficients of Wayamba University

<table>
<thead>
<tr>
<th>Variables</th>
<th>SS</th>
<th>LR</th>
<th>ICT</th>
<th>ACC</th>
<th>ENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LR</td>
<td>.315</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT</td>
<td>.286*</td>
<td>.416*</td>
<td>1.00</td>
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</tr>
<tr>
<td>ACC</td>
<td>.402*</td>
<td>.446*</td>
<td>.550*</td>
<td>1.00</td>
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<tr>
<td>ENT</td>
<td>.361*</td>
<td>.208*</td>
<td>.168*</td>
<td>.355*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: * significant at 5% level or better

According to Table 07 correlation coefficients of lecture room facilities, ICT facilities, accommodation facilities, and entertainment facilities with student satisfaction are positive and statistically significant at 0.05 percent level. It indicated that all mentioned independent variables have statistically significant positive associations with student satisfaction of Wayamba University in Sri Lanka.

Regression Analysis of Wayamba University

According to the test result, the VIF values of the variables are ranged from 2.640 to 3.860, which is also well below the critical value of 10 (Hair, 1998). Durbin Watson statistic also is very close to the standard (1.831). It indicates the absence of a heteroscedasticity problem in the data set. The F-test indicates good model fit and regression standardized residuals of the model were symmetrical and normally distributed as per the above test. Hence, the statistical properties are generally good and indicate that the estimation results are credible. The explanatory power of the model ($R^2$) is 0.29, suggesting that the model explains 29% variance of student satisfaction.

Table 8: Determination of Coefficients of Wayamba University

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.830</td>
<td>.071</td>
<td>0.000*</td>
</tr>
<tr>
<td>Lecture Room Facilities (LR)</td>
<td>0.322</td>
<td>.093</td>
<td>0.000*</td>
</tr>
<tr>
<td>ICT facilities (ICT)</td>
<td>0.148</td>
<td>.186</td>
<td>0.131</td>
</tr>
<tr>
<td>Accommodation Facilities (ACC)</td>
<td>0.327</td>
<td>.049</td>
<td>0.000*</td>
</tr>
<tr>
<td>Entertainment Facility (ENT)</td>
<td>0.344</td>
<td>.072</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Dependent Variable: Student Satisfaction

Note: * significant at 5% level or better
The results, as presented in Table 8, the determinant coefficient of lecture room facilities is 0.322. It is statistically significant at 0.05 level. Accordingly, 0.32% variation of student satisfaction in Wayamba University is affected by a one-point change of lecture room facilities. As per the regression result, the determinant coefficient of ICT facilities is 0.148 but it is statistically insignificant at 0.05 level. Resulting, change of ICT facilities by 1% will not make any change in student satisfaction at Wayamba University. The regression coefficient of accommodation facilities of Wayamba University is .327. It is also statistically significant. The further study measured the impact of entertainment facilities on student satisfaction at Wayamba University. According to the regression table, regression coefficient of entertainment facilities is 0.344 and it is statistically significant at 0.05 percent level. Accordingly, the change of accommodation facilities and entertainment facilities by one percent will lead of change student satisfaction by 0.327 and 0.344 percent respectively at Wayamba University.

RESULT DISCUSSION

As per the regression results impact of lecture room facilities on the student, satisfaction is statistically significant at 5% level at both universities. Teaching is a core activity of a university, therefore the factors associated with teaching like lecture room has a strong impact on student overall satisfaction. The finding is similar to few previous studies such as Hill, 1995 and Douglas, et al., 2006. As stated by Yusoff, (2015) classroom environment such as decoration, layout, lighting, cleanliness, makes a greater impact on student satisfaction in higher education. According to the regression result, the impact of ICT facilities on student satisfaction is statistically significant at Rajarata University but not in Wayamba University. In this competitive learning, environment ICT plays an important role connecting students to updated information which facilitate for competitive advantages. In a university computer centers allow students to use computers, particularly for data analysis, it is perceived as a skill which cannot be learned by simply reading a book and needs practice in order for it to be acquired (Azemi, 1995). Though there are around three thousand students in the Rajarata University only one computer lab which can accommodate 100 students, is there, for both Faculty of Management Studies and Faculty of Social Sciences. Resulting additional ICT facilities which are available at the university may enhance the level of satisfaction of students in Rajarata University. However, students of Wayamba University do not motivate by the provided ICT facilities. The reason may be the existing government policy to release laptops to university students at zero interest rate with a collaboration of Bank of Ceylon, Peoples' Bank and Singer Sri Lanka. Consequently, undergraduates are able to purchase at a maximum of Rs.75,000.00 new laptop without any down payment keeping their Mahapola scholarship which is given to every undergraduate by the government, as collateral. Consequently, available desktop computers do not motivate student as long as having their own laptops in the university environment.
As per the regression result, the impact of accommodation facilities on student satisfaction is statistically significant at both universities. Many Sri Lankan university students come from remote areas and so, they need accommodation facilities in or near the university. If the university provides adequate accommodation for a student, they concentrate all effort on their studies without bothering about housing. Prior researchers have also emphasized that students perform well in their studies if they have safe, comfortable living conditions in their student housing (Kaya & Erkip, 2001; Amole, 2005; Hassanain, M.A., 2008). Further student accommodation is part of the university facilities that students take into consideration before making a choice of the university they intend to attend, among other considerations (Price et al., 2003). Resulting accommodation facilities had a significant impact on student satisfaction.

The study finally explored the impact of entertainment facilities on student satisfaction around the universities. Entertainment is very much important to relax and maintain mental health and physical fitness of human beings and university undergraduates are no exceptions. Hence, the places where students can relax their minds away from hard studies will make a big impact on student satisfaction. Resulting, a significant impact was found of the factor on student satisfaction in the University of Wayamba but the impact of entertainment facilities on student satisfaction was statistically insignificant at the Rajarata University.

**CONCLUSION AND RECOMMENDATIONS**

In this competitive environment, universities are in a fierce competition to admit the best and the brightest students. Accordingly, knowledge about how student satisfaction is developed can be used by universities to develop strategies that make them more attractive for prospective students (Hanssen & Solvoll, 2015). In this study, attention was paid to explore and compare the influences on student satisfaction by university facilities at Rajarata and Wayamba universities. The impacts were identified using data from a survey conducted among the students at the two universities. According to the regression results, the lecture room facilities and accommodation facilities have a significant impact on student satisfaction at both universities. The impact of ICT facilities on student satisfaction was statistically significant at Rajarata University however it was insignificant at Wayamba University. On the other hand, the impact of entertainment facilities on student satisfaction was significant at Wayamba University and it was insignificant at Rajarata University. These findings suggest that the university can improve student satisfaction by investing in the aforesaid significant university facilities.

Based on the findings the study recommends that both universities should improve their lecture room facilities and accommodation facilities to enhance the level of student satisfaction. The lecture room facilities can be developed by fixing high-resolution projectors with quality flawless audio facilities,
ceiling, and wall fans to control indoor air quality. Further, the study recommends universities to control indoor air quality fixing air-condition machines as both universities are located in tropical areas. Moreover, findings of the study recommend universities to provide ample in-house hostel facilities to all students with proper controls. Hostels should be designed to absorb natural illumination and ventilation to make students feel fresh at any time. Overhead water tanks with appropriate capacity should be placed on top of every hostel to mitigate the problem of water supply. To enhance the quality of foods at the canteen, yearly renewable licenses should be given for cafeterias and renewal should be based on past performance and number of student complaints about the food. Private hostels can be rented by the Rajarata University with recommended facilities to fill the shortage of accommodation. Finally, the study recommended Wayamba University to invest in entertainment facilities to enhance the level of student satisfaction furthermore. In this process, university management should exert pressure on local politicians to prioritize the facilities that support the expectation of the students, especially because of the positive impact students have on local businesses. Thus, the university and student union should inform local politicians about what services students expect from the host city such as walkways, parking, shopping centers and safety…etc. Consequently, making the city more attractive to students could prove profitable for local authorities as an increase in student population will increase revenues for businesses and, in turn, result in higher tax revenues for the city in which the university is located (Hanssen & Solvoll, 2015).

The study was limited to two selected regional universities of Sri Lanka from which data were collected by a survey conducted among only Management undergraduates, however further studies can be carried out on undergraduates of all selected state universities in Sri Lanka and moreover a comparison of the facilities among regional and metropolitan universities or with private universities of the country may be carried out.

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Reshaping Governance for Economic Development and Policy Implementation in Nepal
Shilpakar, R., Tribhuvan University, Nepal

ABSTRACT

Nepal has pressing needs of uplifting itself from 'least developed' to 'developing' nation by 2022. Despite more than six decades of development endeavors to implement the written constitutions (written in 1959, 1990, the Interim Constitution 2007, and Constitution of Nepal 2015) where every citizen is entitled to an equal say in the conduct of public affairs, and expresses the determination to create an egalitarian society by adopting good governance practices have not been able to accelerate the process of growth of the country. This paper aims at reviewing the governance practice in Nepal in implementation its constitution for the welfare of its people. Qualitative analysis and critical review and findings on governance practices and its implementation in policy reforms in Nepal are the methodologies adopted in this paper.

Good governance obviously is a complex and multi-faceted challenge, seeking for how to get better government and better policies. However, it claims to have a positive link between good institutions and development outcomes. Governance in the context of Nepal postulates the realization of a vision grounded in the protection of "life, liberty and property" underlined in the constitutions.

The 1959 Constitutions written by the palace operatives was unilaterally issued, which dismissed the elected parliament, and assumed absolute power by the king. Nepal’s political development and governance challenges had been linked to conflict, political instability, underdevelopment, insecurity and corruption had worsen, which adversely affected the macroeconomic condition of the country. New constitution and the governments of the 1990s aimed at bringing development, good governance and remedy to structured inequalities, including regional economic disparities. But the leaders tended to see power, position, and privileges as their right given the struggles and sacrifices of the past. The 2007 Interim Constitution is the first Nepali constitution to have a separate section for local governance. The discrepancy between legal provisions and actual practice, as evidenced for example: problems of corruption and lack of accountability of political parties had explicitly acknowledged in the 2008 Strategy Action Plan Against Corruption.

The Constitution of Nepal 2015 has spread hopes amongst the people in Nepal. But it should be understood that fulfilment of the "basic need" is the yardsticks of development, and good governance is the life line. Development and governance are both a goal and a process. Thus, it requires a system of monitoring, reporting and reviewing to ensure the actions and improvements required to achieve these aims continue to be implemented and political willingness.
Keywords: Economic Development, Constitution, Good Governance, Least-developed

INTRODUCTION

The United Nations (UN) General assembly in 1971 officially established the category of Least Developed Countries (LDCs) with special needs given their geographical and environmental impediments besides low income, weak human assets and economic vulnerability. Altogether 49 countries of the world including Nepal have been listed in LDCs. Nepal as a "Least Developed Country has pressing needs of uplifting itself from 'least developed' to 'developing' nation by 2022. Despite more than six decades of development endeavors to implement the written constitutions (written in 1959, 1990, the Interim Constitution 2007, and Constitution of Nepal 2015) where every citizen is entitled to an equal say in the conduct of public affairs, and expresses the determination to create an egalitarian society by adopting good governance practices have not been able to accelerate the process of growth of the country as expected.

Most of the LDCs are characterized by conflict, post-conflict and unstable political situations. Gender-based violence continues to be rife in LDCs, where the historical marginalisation of women has been compounded by poverty. Most LDCs have ratified the convention on the elimination of all form of discrimination against women but few have opted to ratify the optional protocol. Some LDCs have promulgated gender laws but customary laws and practices still hinder women from accessing justice. Numbers of issues that needs to be addressed during its uplifting efforts to the 'developing' nation' could be:

1. Why LDCs are not able to balance their economic, social, and environmental development?
2. Why LDCs face number of challenges in more inclusive and sustainable development path?
3. How such situation could be improved?

All the above question has ONE common answer that is adaptation of "GOOD GOVERNANCE" while implementing its constitution.

OBJECTIVES AND METHODOLOGY

This paper aimed at reviewing the governance practice in Nepal and discuss the effects of governance in implementation of economic policy for the macroeconomic growth. Methodology adopted in this paper is qualitative analysis based on reviews of literatures on policy implementation for the growth in the context of good governance agenda in Nepal. Review of implementation strategies, institutional frame, achievements and critical constraints of reforms programs are discussed in light of governance as a backbone for success and failure of growth policy implementation.
Governance

Governance is defined as the exercise of authority through formal and informal traditions and institutions for the common good, thus encompassing: (1) the process of selecting, monitoring, and replacing governments; (2) the capacity to formulate and implement sound policies and deliver public services, and (3) the respect of citizens and the state for the institutions that govern economic and social interactions among them (Kaufmann, 2003).

No one will disagree that good governance is central to the successful pursuit of development. Good governance obviously is a complex and multi-faceted challenge, seeking for how to get better government and better policies. However, it claims to have a positive link between good institutions and development outcomes. However, there is considerable controversy about governance priorities and the types of governance capabilities that are critical. Disagreements are basically on the role of markets versus other social, political and technological characteristics that are necessary for the sustainability of the growth. Two prominent theories of good governance approaches for economic growth are widely argued. Good governance as a market-promoting governance strategy; and growth-promoting approaches. The market-promoting governance strategy emphasizes on maintaining efficient markets and restricting the activities of state to the provision of necessary public goods so as to minimize rent seeking and government failure. Whereas, growth-promoting approaches to governance argues that within the given structural limitations of markets in developing countries, successful development requires critical governance capacities of states to accelerate private and public accumulation and to ensure productivity growth. Sustainability of particularly, the structural reforms is critical for development of the country. Motivated by the beauties of the reform models, many developing countries are found setting goals they cannot achieve, and in addition, even if they could have been achieved, these goals are not sufficient to ensure sustainable growth. These situations have made good governance approach a bit problematic.

Growth and Governance Policies

Most of the developing countries are decolonized in around the last fifty years to sometime in the early 1980s. They realized the need of sound economic policy and appropriate governance capacities for radical growth economic. The concern of most developing countries and international agencies during this period was to accelerate the creation of growth-enhancing sectors in developing countries. But, they failed to give much attention to the development of governance capabilities appropriate for the effective implementation of these strategies.
The results of this first phase of post-colonial growth strategies were therefore very mixed. A few countries did break out of poverty in a sustained way by the late 1960s. Countries, like South Korea and Taiwan, emerged as economic giants. A number of other countries like Brazil, Pakistan and India initially achieved much higher growth rates compared to their growth rates in the first half of the twentieth century. But in these countries productivity growth in the emerging industrial sectors was not high enough and there was a growing perception by the mid-sixties that these strategies were becoming unsustainable. But most worrying was a larger group of countries, many of them in Africa, where import-substituting industrialization resulted in much more limited growth and industrialization (Amsden, 1989; Wade, 1990).

During 1980s, second phase of development policy, structural adjustment was the major focus because of serious budgetary crises in many developing countries. Rent seeking, corruption and other governance issues now became policy concerns. Though, reforming the state was an essential component of the structural adjustment program, governance reform was not yet at the center of the reform agenda. It was believed that the reform of the state would follow from and be achieved through the structural adjustment itself, by removing the incentives for rent seeking and corruption.

The results of structural adjustment policies in the eighties were generally very poor. Many African countries experienced recessions, and growth was poor in other countries that adopted these policies. In almost every country where liberalization was carried out, there appeared to be an increase in corruption and rent seeking (Harriss-White, 1996; Harriss-White & White, 1996).

The poor performance of structural adjustment programs led to the development of New Institutional Economics which focused on the role of the state to ensure the conditions necessary for market economies to work efficiently. Good governance conditions like: low corruption, democratic accountability, the rule of law and pro-poor service delivery occupied the heart of development strategy. The new consensus builds on the earlier commitment to liberalization and market-driven growth and good governance approach began to be adopted as the mainstream development agenda in the 1990s. It is considered the third phase of growth and governance policies. Economic performance in many of the poorest developing countries remains still low, and growth in others is based on vulnerable low technology sectors and commodities that are sensitive to terms of trade changes and are unlikely to display the growth in productivity that is necessary to achieve sustainable improvements in living standards.
Critical observations of the historical evolution of the good governance agenda would be that governance capabilities are closely connected to the development strategies that states are supporting. That is the successes and failures of each phase depended basically with the match and mismatch of the requirements of the economic strategy being followed by the developing countries and the governance capabilities that were required for effectively implementing it.

**Practice of Good Governance in Economic Development and Policy Implementation in Nepal**

The belief that every citizen is entitled to an equal say in the conduct of public affairs is the heart of good governance. Governance in the context of Nepal postulates the realization of a vision underlined in the constitution, a vision grounded in the protection of "life, liberty and property" of people, where development of each person would be linked to the harmonious development of the society. Direct participation of the citizens at all the levels of decision-making that affects them enforces the ethical basis of good governance.

In 1959 and after eight years of fall of Rana Regime King Mahendra unilaterally issued a constitution written by the palace operatives. Then, using “constitutional provisions”, the king dismissed the elected parliament, and assumed absolute power in 1960. The king started a Party-less Panchayat Democracy, which was to be very different than the panchayat practiced from the ancient times (The traditionally practiced system of justice and welfare is known in the Indian sub-continent as Panchayat System which use to work based on communal brotherhood, equality and consensus).

Good panchas were appointed to district panchayats and then to central panchayat. Nepal was divided into 14 zones, 75 districts, 3,600 village panchayats, and some town panchayats. This system quickly dismantled the traditional social harmony while successfully retaining the economy and political power on the hand of traditional elites (Dhakal, P. 2008).

The popular uprising of 1990 was a revolt of people to be free from the conditions of oppression and deprivation entrusted the political leaders the task of upholding freedom, equity, peace, prosperity, and democracy. But the leaders tended to see power, position, and privileges as their right given the struggles and sacrifices of the past (Hachhethu 2008: 155). Increasing election costs and unstable governments - from 1990 to 2002 there were twelve governments - resulted in parties in power accelerating accumulation, less certain of their tenure in government. In all, the first decade of multi-party democracy was marked by high levels of corruption and weakened formal control institutions. This impacted the credibility of rule of law and the regulatory functions of the state.
The failure of the new constitution and the governments of the 1990s to bring development, good governance and remedy structured inequalities, including regional economic disparities, provided fertile ground for the “People’s Movement” started by Communist Party of Nepal – Maoist (CPN-Maoist) in 1996. Peace agreement was signed between the CPN-Maoist and political parties in November 2005.

The 2007 Interim Constitution is the first Nepali constitution to have a separate section for local governance. The preamble to the Good Governance Act, 2008 stresses the need to make public administration “pro-people, accountable, transparent, inclusive and participatory” and to transform “the administrative mechanism into a service delivery mechanism and facilitator”. Strategies include the empowerment of women and promotion of gender justice and the upliftment of ethnic, Dalit and economically and socially backward classes. Beyond the Interim Constitution, the government’s Three Year Interim Plan (2007/08 to 2009/10) specified decentralization as the main means for enhancing good governance, development, people’s participation and people’s empowerment.

Of course, having the relevant laws, rules, and regulations in place, does not guarantee that they are observed or implemented. The discrepancy between legal provisions and actual practice, as evidenced for example: problems of corruption and lack of accountability of political parties are explicitly acknowledged in the 2008 Strategy Action Plan Against Corruption. The plan, however, is unclear on monitoring and sanctions; and the general failure of political actors to abide by existing policies and plan does not bode well for the implementation of the strategy.

Legal frameworks and past and current policy initiatives stress commitments to decentralization for good governance and meaningful state-citizen interactions. However, despite the attention garnered by the decentralization process, meaningful devolution of power and authority to local bodies has yet to occur. Furthermore, no serious attempt has been made to implement real decentralization.

Thus, despite decades of international aid, Nepal remains one of the poorest countries in the world with a GDP per capita average of US$ 470 (World Bank 2009) which has increased to US$ 707 (MoF, 2013) and adverse, but improving, social indicators. The promotion of capable state structures and systems, accountable institutions as well as sustainable, inclusive and equitable economic growth continues to be challenging. Building the new state in Nepal involves attending to the broader governance and anti-corruption agenda (World Bank 2009: 47).
Global indicators on the status of governance in Nepal reveal several issues of concern. In 2009, Nepal rated below the 50th percentile in all six dimensions of the World Bank’s World-Wide Governance indicators (i.e. political stability, the absence of violence, government effectiveness, and regulatory quality, rule of law and control of corruption). Lack of political stability was clearly reflected, as were declining rates of government effectiveness, regulatory quality, rule of law and control of corruption as compared to 2004 ratings. The graph of Governance Status of Nepal in 2014 is given below:

**Governance Status of Nepal, 2013**

According to the Global Integrity Report that assesses strengths and weakness of national level anti-corruption systems, in 2009 Nepal had an overall rating of “weak” (67/100). Notably, while the legal framework scored 84/100, actual implementation scored only 50/100, resulting in a “very large” implementation gap of 34. The report stated that, “While many corruption-related legal reforms were adopted in 2007, their implementation has been stalled as the government’s focus shifted to peace building, conflict resolution, social inclusion and elections.” While all such ratings are subject to methodological debate, they highlight clear concerns relating to governance and accountability in Nepal. A summary of the 2010 Global Integrity Report for Nepal is given below:
Summary of 2010 Global Integrity Report for Nepal

Nepal: Integrity Indicators Scorecard
Overall Score: 67 (+/- 1.77) - Weak
Overall Implementation Gap: 34

<table>
<thead>
<tr>
<th>Category I</th>
<th>Civil Society, Public Information and Media</th>
<th>80</th>
<th>Strong</th>
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<tbody>
<tr>
<td>I-1</td>
<td>Civil Society Organizations</td>
<td>91</td>
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<tr>
<td>I-2</td>
<td>Media</td>
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<td>I-3</td>
<td>Public Access to Information</td>
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<th>Category II</th>
<th>Elections</th>
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<th>Very Weak</th>
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<tr>
<td>II-1</td>
<td>Voting &amp; Citizen Participation</td>
<td>78</td>
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<tr>
<td>II-2</td>
<td>Election Integrity</td>
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<tr>
<td>II-3</td>
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<table>
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<tr>
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<td>III-2</td>
<td>Legislative Accountability</td>
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<tr>
<td>III-3</td>
<td>Judicial Accountability</td>
<td>52</td>
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<tr>
<td>III-4</td>
<td>Budget Processes</td>
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<th>Category IV</th>
<th>Administration and Civil Service</th>
<th>63</th>
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<td>Civil Service Regulations</td>
<td>51</td>
<td>Very Weak</td>
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<td>IV-2</td>
<td>Whistle-blowing Measures</td>
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<td>IV-3</td>
<td>Procurement</td>
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<td>IV-4</td>
<td>Privatization</td>
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<th>Category V</th>
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<td>Moderate</td>
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<tr>
<td>V-2</td>
<td>Supreme Audit Institution</td>
<td>80</td>
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</tr>
<tr>
<td>V-3</td>
<td>Taxes and Customs</td>
<td>81</td>
<td>Strong</td>
</tr>
<tr>
<td>V-4</td>
<td>State-Owned Enterprises</td>
<td>68</td>
<td>Weak</td>
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<tr>
<td>V-5</td>
<td>Business Licensing and Regulation</td>
<td>67</td>
<td>Weak</td>
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<table>
<thead>
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<th>Category VI</th>
<th>Anti-Corruption and Rule of Law</th>
<th>68</th>
<th>Weak</th>
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<td>VI-1</td>
<td>Anti-Corruption Law</td>
<td>67</td>
<td>Weak</td>
</tr>
<tr>
<td>VI-2</td>
<td>Anti-Corruption Agency</td>
<td>73</td>
<td>Moderate</td>
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<tr>
<td>VI-3</td>
<td>Rule of Law</td>
<td>69</td>
<td>Weak</td>
</tr>
<tr>
<td>VI-4</td>
<td>Law Enforcement</td>
<td>63</td>
<td>Weak</td>
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</tbody>
</table>

Although the Nepal has been facing enormous governance challenges linked to recent conflict, ongoing political instability, underdevelopment, insecurity and corruption the current transition towards peace and democracy offers high opportunity for positive change. The promise of a new
Nepal, commitments from all the major political parties to deepen democracy and voices for change from the population serve as a foundation for the restructuring of state-citizen relations. A progressive framework of laws and policies, a rich history of associational life and a vibrant media sector further provide an enabling environment for good governance and social accountability in Nepal (Tamang S. & and Malena C, 2011).

**Constraints of Development in Nepal**

Country’s prosperity and the welfare of its people are determined by the pace of accumulating physical and human capital, by how efficiently the capital is used, and by how equitable access is to opportunities that growth and development generate. The most striking constraint of economic development in Nepal in interrelated governance factors is political in nature. Both public and private sectors are also constrained by a lack of government capacity, authority, and leadership. Corruption and rent seeking impose excessive costs on and delays in decision making (ADB, DFID, and ILO, 2009).

Nepal could have been concentrating on uplifting itself from 'least developed' to 'developing' country by now, had a 10-year conflict and equally long 'transition’ not dragged us down and kept us there. As a result, governance was weakened and not only economic, but also political, social, environmental, and all kinds of quality of life indicators were badly affected. The economic indicators on capital expenditure from FY 2000/01 to 2015/016 (table 2) reports about 71 percent achievements in an average.

Economic growth and spending are interrelated. Capital expenditure builds physical and social infrastructure, which helps attract more investment, which, in turn, helps create more jobs and raise taxes, which again will lead to more expenditure. The table 2 also indicates that until a decade ago, funds were an issue for Nepal. There was less money for public spending because of low government revenue. Most of the annual budget was for regular government expenditure and few as left for capital expenditure. Loans, grants and aid from foreign governments have been the focus of successive governments, which have been begging for money without realizing that they have not been able to spend what they already have. As a result, a large chunk of the country’s development budget is financed by the development partners, which is around one-third of the total budget. Slow spending is always a concern among the donor community.

What’s holding back Nepal’s economic growth then? “The problem lies in the government’s inability to prepare concrete and well-thought-out project plans. Because of this, Nepal lacks ready-to-implement projects. This is the reason why the government has not been able to make proper use of
funds pledged by development partners,” Country Director (Nepal) of the Asian Development Bank (ADB) Kenichi Yokoyama told THT. “This calls for the need to create a project bank, which can keep good stock of detailed reports of projects considered critical for Nepal’s economic development.”

Perhaps the key binding constraints to investment in Nepal is the political instability. nor rekindle growth. Government change will take place in a few months, which will provide yet another excuse for not spending. Political issues have always dominated over the national economy and development issues and the country are stuck with political issues for decades. This has resulted into Low absorption capacity and builds the pressure to finish the budget at any cost when the fiscal year is about to close. Spending budgets within a short duration leaves opportunity for kickbacks, corruption and commissions. Political parties and bureaucrats often benefits from such a filthy development practice and culture.

Backed by political instability, the culture of begging for money without conducting proper homework has been developed as a culture in Nepal. Perhaps spending management is not something that is taken seriously in our culture, which is reflected in our government, development or corporate spending. Thinking small has been the culture as Corruption and margin of profit can be higher in small and tiny projects. Therefore, allocations to tiny and small projects have soared in the last few years putting big projects at bay.
Table 2: Government Budget allocation in Capital Expenditure and its Achievements

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Estimated Budget Expenditure</th>
<th>Budget Allocation for Capital Expenditure</th>
<th>% of Budget Allocation for Capital Expenditure</th>
<th>Actual Expenses in Capital Expenditure</th>
<th>% of Actual Expenses against Budget allocation</th>
<th>% of Actual Expenses against Estimated Budget Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2000/01</td>
<td>91,621,335</td>
<td>48,108,589</td>
<td>52.51</td>
<td>37,065,903</td>
<td>77.05</td>
<td>40.46</td>
</tr>
<tr>
<td>2 2001/02</td>
<td>99,792,219</td>
<td>50,470,279</td>
<td>50.58</td>
<td>24,773,423</td>
<td>49.09</td>
<td>23.26</td>
</tr>
<tr>
<td>3 2002/03</td>
<td>96,124,796</td>
<td>38,679,675</td>
<td>40.24</td>
<td>22,356,102</td>
<td>57.80</td>
<td>22.55</td>
</tr>
<tr>
<td>4 2003/04</td>
<td>102,400,000</td>
<td>29,292,954</td>
<td>28.61</td>
<td>23,095,610</td>
<td>78.84</td>
<td>22.55</td>
</tr>
<tr>
<td>5 2004/05</td>
<td>111,689,900</td>
<td>31,577,521</td>
<td>28.27</td>
<td>27,340,719</td>
<td>86.58</td>
<td>24.48</td>
</tr>
<tr>
<td>6 2005/06</td>
<td>126,885,100</td>
<td>37,233,854</td>
<td>29.34</td>
<td>29,606,604</td>
<td>79.52</td>
<td>23.33</td>
</tr>
<tr>
<td>7 2006/07</td>
<td>143,912,300</td>
<td>44,976,412</td>
<td>31.25</td>
<td>39,729,916</td>
<td>88.34</td>
<td>27.61</td>
</tr>
<tr>
<td>8 2007/08</td>
<td>168,995,600</td>
<td>55,261,682</td>
<td>32.7</td>
<td>53,516,101</td>
<td>96.84</td>
<td>31.67</td>
</tr>
<tr>
<td>9 2008/09</td>
<td>236,015,897</td>
<td>91,310,086</td>
<td>38.69</td>
<td>73,088,864</td>
<td>80.04</td>
<td>30.97</td>
</tr>
<tr>
<td>10 2009/10</td>
<td>285,930,000</td>
<td>106,284,793</td>
<td>37.17</td>
<td>40,509,769</td>
<td>38.11</td>
<td>14.17</td>
</tr>
<tr>
<td>11 2010/11</td>
<td>337,900,000</td>
<td>129,538,178</td>
<td>38.34</td>
<td>47,327,681</td>
<td>36.54</td>
<td>14.01</td>
</tr>
<tr>
<td>12 2011/12</td>
<td>339,219,814</td>
<td>72,607,090</td>
<td>21.4</td>
<td>51,390,717</td>
<td>70.78</td>
<td>15.15</td>
</tr>
<tr>
<td>13 2012/13</td>
<td>345,145,826</td>
<td>66,134,610</td>
<td>19.16</td>
<td>54,598,425</td>
<td>82.56</td>
<td>15.82</td>
</tr>
<tr>
<td>14 2013/14</td>
<td>438,517,207</td>
<td>85,099,731</td>
<td>19.41</td>
<td>66,694,726</td>
<td>78.37</td>
<td>15.21</td>
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<tr>
<td>15 2014/15</td>
<td>515,706,237</td>
<td>116,755,042</td>
<td>22.64</td>
<td>88,754,708</td>
<td>76.02</td>
<td>17.21</td>
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<td>16 2015/16</td>
<td>693,143,617</td>
<td>208,877,242</td>
<td>30.13</td>
<td>122,350,430</td>
<td>58.58</td>
<td>17.65</td>
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<tr>
<td>17 2016/17</td>
<td>1,048,921,354</td>
<td>311,946,325</td>
<td>29.73</td>
<td>204,324,842</td>
<td>65.5</td>
<td>12.75</td>
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<tr>
<td>Average Expenses</td>
<td>32.53</td>
<td>70.94</td>
<td>22.39</td>
<td></td>
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<tr>
<td>Source: Ministry of Finance</td>
<td>Budget Speech of various 2001</td>
<td>-</td>
<td>201</td>
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Government's Effort for Sustainable Growth

Nepal, under a succession of development plans, has committed to sustained growth of income and employment, poverty eradication, and improved income distribution. In pursuit of these goals, the government has undertaken a number of key reforms. But, political stability, improvements in governance, and improvement in saving and investment would be necessary for sustainability.

This section of the paper outlines some of the reviews of literatures on various processes of reforms targeted towards achieving the constitutional visions in the light of adopting good governance as a key element necessary for successful implementation of growth policies.

Structural Adjustment Program (SAP)

Economic growth of the country requires implementation its constitution which ensures promoting of good governance. Governance simply means "the process of decision making and the process by which decisions are implemented". It encompasses not just government, but also the private sector and civil society (individuals and groups) and the systems, procedures and processes (‘the process by which we collectively problem-solving exercise is done to meet the society’s needs — government is use as the instrument for the process’) in place for planning, management and decision-making.

In 1959, king Mahendra promulgated the constitution with the preamble spoken about the "establishment of an efficient monarchical form of government". All executive power lay in the hands of the monarch and was to be "exercised by him either directly or through ministers or other officers subordinate to him" (article 10). The latter had only the right to convey recommendations. The power distribution in the legislative sphere was similar. There was a parliament, which shall consist of His Majesty and two Houses, to be known respectively as the Senate (mahasabha) and the House of Representatives (pratinidhi sabha) (article 18).

The then, elected government (of the Nepali Congress) though, had a great majority (winning 74 out of 109 seats) in parliament the government had no constitutional right to implement decisions; according to the constitution, this right lay in the hands of the king. Later, king Mahendra established panchayat system a so called traditional Nepali system to restore absolute royal power praised the new panchayat system as an indigenous one: which will remove the centuries-old poverty, ignorance, and
backwardness of the country and which will nourish to maturity and fruitfulness the tree of democracy rooted in our soil and suited to our conditions.

But, an autocratic party-less Panchayat system proved unsuitable, as is apparent from the present experience of the country with. Lack of accountability and transparency in governance led to rampant rent-seeking practices. Poverty and livelihood problems deepened further. As a result, the authoritarian regime encountered a series of political, economic and social upheavals. 1979 referendum was a weak tool to calm down the mass protest due to high levels of dissatisfaction and frustration among citizens.

As a result of Nepal’s political development governance challenges linked to conflict, political instability, underdevelopment, insecurity and corruption had worsened which adversely affected the macroeconomic condition of the country.

In the following decade (1980s), Nepalese economy had experience quite unfavourable situation. The GDP growth rate has skidded into near stagnation, increasing fiscal deficit due to low internal revenue mobilization, fast growing public expenditure and swelling debt burden. Most of the public enterprises are running under loss. State owned banks were unable to recover significant portions of their loan and persist the negative interest rate. The performance of industrial and agriculture sector was very poor with low capital utilization, low quality product, lack of competition, protectionist industrial policy, bureaucratic delay, corruption, etc. High growth import in comparison to export caused widening the current account deficit, leaded the sharp drop in foreign exchange reserve. The country's BOP remained in the red for three consecutive years, in 1982/83 through 1984/85. As a first step, the Nepali currency was devalued by 14.7 percent on November 30, 1985. Despite the top most priority on social sector poverty, unemployment, inequality further widened (Ghimire, 2004).

This forced Nepal to negotiate a standby credit arrangement with the IMF. Accordingly, Nepal implemented an economic stabilization programme in 1984/85. This was followed by the Structural Adjustment Programme of IMF and the World Bank in 1986/87. The main objectives of the Adjustment Programmes, was to achieve macroeconomic stabilization (increase resource mobilization, investment efficiency, better financial management of public enterprises, increased productivity and employment in agriculture sector through increased private sector participation in agriculture, industry and forestry).
For developing the SAP reform packages only higher level political and bureaucratic authorities (the central bank and the Ministry of Finance) were involved in the process. The National Planning Commission (NPC) who is responsible for designing policies and programmes and implementation and co-ordination was least involved in the development of reform package. This has weakened the mechanism for internal feedback and independently evaluation. For implementation of projects new institutional arrangement within the Ministry of Finance was set up for programme budgeting exercise and loan release. These new institutional arrangements were made through government policy pronouncements and ad hoc decisions (Khanal, D. R., 2005).

**Enhance Structural Adjustment Facilities (ESAF)**
The first Peoples’ Movement and the formal introduction of multi-party democracy in 1990, drafted a new Constitution to bring development, good governance and remedy for structured inequalities, including regional economic disparities. In the sphere of political development, there remains a serious gap between the ruling elites and the population at large, problems of social and economic inequality are compounded by impunity, and the legacy of panchayat nationalism continues to contour identities, economic and social relations and access to political space. These characteristics of Nepali political life have impacted the ability and capacity of the state to manage its resources in an efficient and responsible manner and to deliver quality services to the public. It has also resulted in the undermining of the legitimacy of the state (Tamang S. & and Malena C, 2011).

Despite the fact that decentralized governance was the basic tenet of the constitution of 1990, the top-down administrative structure and development practices remained pre-dominant. The district and village level tiers formed during the panchayat period were kept intact. At a time when democracy was demanding fair participation and representation of marginalized people in the governance system, no legal or institutional mechanisms were introduced (Khanal, D. R., 2005).

The main motivating factors behind the Enhance Structural Adjustment Facilities (ESAF) were restoration of democracy followed by formulation of a new democratic constitution, commitments of main political parties to expediting economic growth and poverty reduction, rising expectations of the people, and pressure from the mushrooming civil society organizations for change. In 1992, Nepal entered into ESAF of the IMF with the objectives of raising GDP growth about 5 percent annually in the next three years; reducing annual inflation to 5 percent; limiting the current account deficits to 9.6 percent.
of GDP and reducing fiscal deficit to 7.8 percent of the GDP by the year 1995. The process of economic liberalization was initiated only after the restoration of multi-party democracy system in the country in 1991.

Highest priority was given to maintaining macroeconomic stability and thereby enhancing sustainable growth and development. Overall, the main purpose of reform was to eliminate distortions, correct misalignment of relative prices affecting resource allocation and efficiency in use, create incentives for the private sector, augment supply through price led incentive mechanism, and enhance efficiency and competitiveness for sustained growth and poverty reduction.

Due to autocratic culture of the panchayat regime the governance structure and institutional set up at the grass-root level were not strong enough to cope with the new development challenges posed by the ESAF. Therefore, the immediate task initiated by the first elected government was to reform the civil service in order to make it efficient and result oriented. A High-Level Administration Reform Commission was formed in 1992 recommended to redefining the state's role in the context of a liberal market. The issue of administrative reform has got prominence in the government agenda (HMG, 2002). It was experience that problem of corruption and bad governance is posing major hurdles to improved performance of the government. Thus, CIAA is made more powerful and effective.

Democratic experiences of 1990 to 2003 show that political parties made certain epoch-making contribution in terms of strengthening democratic culture and practices in Nepal. The decentralized system of governance would not have been possible in Nepal had there not been political institutions that were not committed to fulfilling legitimate demands of the people. Despite their full commitment to democratic principles, political parties failed to nurture democratic culture and practices within and across their organizational structure and in their functioning. Thus, lack of inner party democracy characterized by a centralized decision-making system, and hierarchical and sometimes bureaucratic organizational structure were major factors contributing to political parties' failure in institutionalizing and strengthening democratic culture. This jeopardized a process of strengthening the nascent democratic institutions. Many unfair practices and unethical means were embraced both in political parties and in the governments, that were at variance with democratic norms, values and culture. This had adversely affected the reform process of the nation.
Guarantee of property rights and enforcement of contracts through various legal and other means are equally necessary for reducing transaction costs and promotion of a market-based competitive system. After implementation of the Enhanced Structural Adjustment Facility (ESAF) program with support from the International Monetary Fund (IMF) in 1992, more than 140 acts comprising new and revised ones have come into existence along with new institutional arrangements set up in a number of areas in Nepal. The constitution of Nepal guarantees property right to its citizens. The company and contract law also make provisions of ownership and contractual rights in the respective areas. However, despite the various acts and institutional arrangements, numerous problems still remain to be resolved. The reforms implemented abruptly had constrained institution building since the process adopted did not take into account local conditions. Because of weak enforcement capacity or willingness, policy led distortions have come to the forefront constantly (HMG/UNIDO, 2002, and FNCCI and World Bank, 2000).

Constitution of Nepal, 2015
The constitution of Nepal 2015 is the seventh constitution of Nepal. This is the first constitution made and adopted by the Constituent Assembly (CA) which was specifically elected for this purpose. It was proclaimed by the President of Nepal on September 20, 2015. The constitution expresses the determination to create an egalitarian society on the basis of the principles of proportional inclusion and participation, to ensure equitable economy, prosperity and social justice by adopting competitive multi-party democratic governance system, civil liberty, fundamental rights, human rights, adult franchise, periodic elections, complete press freedom and an independent, impartial and competent judiciary, and the concept of rule of law.

It would be too early to predict the possible impact of this constitution. Though, the constitution was welcomed by the majority of the people of Nepal, some ethnic Madhesi (plains based) parties are not happy with both the process of finalizing the constitution and its final contents.

Success in implementation of the constitution will depend on the process, its nature and the people who are responsible for its implementation. Adaptation of governance principle would be one of the major challenges for the government in this respect.
Nepal’s image as one the most corrupt countries in the world has taken a further beating in the annual report published by, Transparency International on Corruption Perception Index (CPI), 2015. The report indicates that Nepal has slipped four positions down, from 126th position with a score 29 points in 2014, to 130th position with a score of 27 points in 2015. Although Nepal’s score in civil society’s access to public sector, imports and exports of goods and public procurement is relatively satisfactory as compared to previous years, corruption on indicators relating to performance of public position holders scored worst.

The survey reflected performance of Nepali government, Parliament and judiciary was poorly reflected, demonstrating government’s total indifference towards fighting corruption. As a result, action taken against public servants involved in abusing authority was weak, and there exist strong inclination among civil servants towards abusing authority for personal gains. The report further claimed that the rare commitments made by the government to adopt zero tolerance on corruption proved nothing but lip service. Before May 2013, absence of constitutionally appointed commissioners at the Commission for Investigation of Abuse of Authority (CIAA), the apex anti-graft body, and ineffectiveness of other anti-corruption bodies, were said to be responsible for rampant corruption in Nepal.

Despite having 16 anti-corruption agencies and significant works carried out by the CIAA in controlling corruption, Nepal have broken that record of 2011, where it was ranked 154th among 182 surveyed countries, with a score of 2.2 on a scale of 0 to 10.

This situation, of course had added further difficulties in implementing newly made constitution to flow hope of graduating the country from least developing to the developing country within 2022.

**CONCLUSION**

Economic growth of the country requires implementation of its constitution which ensures promoting of good governance which simply means "the process of decision making and the process by which decisions are implemented", by all the three actors of development (the government, the private sector and the civil society). Perhaps the key binding constraints to Nepal's Economic Development is the political instability, and growth of political bureaucracy, which resulted in lack of accountability and transparency in governance and led to rampant rent-seeking practices. Be it, the 1959 constitution led by the king; new Constitution, 1990 drafted with the introduction of multi-party democracy in the Country;
or the 2007 Interim Constitution, the first Nepali constitution to have a separate section for local governance. Political parties failed to nurture democratic culture and practices within and across their organizational structure and in their functioning, instead gave birth to the political bureaucracy in the country. The Government's Effort for Sustainable Growth (the SAP and ESAF) has been only a tool to prolonging their regime.

The constitution of Nepal 2015, advocating new structure of the governance (federalism) is spreading new hopes in the people. The local level and elections at provincial level and constitution is expected to provide new infrastructure for the economic development of Nepal.

There are different paths (models) of development, but a common denominator is the "basic need" (secure food, social justice, employment, participation and independence). Whatever the structure of governance be, it should be understood that there should be a simultaneous progress towards these five goals. Simply, underdeveloped countries are those who failed to fulfill these yardsticks of development. Development and governance are both a goal and a process. If it is needed to achieve good governance and sustainable growth, it is essential to use appropriate principles and mechanisms to get there. This also requires a system of monitoring, reporting and reviewing to ensure the actions and improvements required to achieve these aims continue to be implemented. Above all, political willingness.

REFERENCES


The Relationship between Child’s Birth Weight and Socioeconomic status of Parents: The Case of USA

Dissanayake, D.M.S.B., University of Colombo, Sri Lanka.

ABSTRACT

Child’s birth weight is steadily associated with mortality risk during the early infant age and parents’ socio-economic background. Also known to associate with developmental problems that occur in childhood. The objective of this study was to indentify the relation-ship between child’s birth weight with selected explanatory socio-economic variables; father’s age, father’s education, father’s colour (white, black or other) mother’s age, mother’s education, mother’s colour (white, black or other), mother’s average per day cigarette smoking & average per week drinking alcohol during pregnancy, one or five minute medical test in pregnancy period, and having a male baby. This study was conducted using secondary data of 1832 observations to identify the factors determinant to single live birth weight in United States. The all diagnostic tests carried out relate to cross-sectional data, and used STATA statistical soft ware for the data analysis.

The results showed significant relation-ship between child’s birth weight with five minute medical test in pregnancy period and mother’s cigarette smoking during pregnancy. When spending more time on medical testing leads to increase in birth weight and increasingly average per day cigarette smoking leads to decrease in birth weight. Further it provoked that child’s birth weight has a positive relationship with gender of the baby mainly a male. There were no relationships between father’s age, education & race, mother’s age, education, race, and her average per week alcohol consumption during pregnancy to birth weight. Cigarette smoking during pregnancy reciprocally associates with child’s birth weight. Gender of child and five minute medical testing during pregnancy period had an optimistic association with birth weight. The paper concluded that United States government should consider appropriate preconscious measures to lessen the effect of these socio-economic factors to lower birth weight. Further, research is needed to identify the similarities within Sri Lanka.

Keywords: Birth Weight, Mother’s Cigarette Smoking During Pregnancy, Male Baby
INTRODUCTION

Child’s birth weight is one of the most available and misunderstood variable in epidemiology (Int J Epidemiol. 2002). A baby's weight at birth is steadily associated with mortality risk during the first year after birth. It is also known to associate with developmental problems occur in childhood to a lesser extent. Epidemiological analyses often consider birth weight as on the causal pathway to measure health outcomes. There have been numerous studies done to reveal links between the socio-demographic characteristics of a mother such as mother’s age, cigarette smoking, inadequate prenatal care, urban poverty, and race with the birth weight of an infant.

This study aimed to find the relationship between child’s birth weight with selected socio-economic independent variables; father’s age, father’s education, father’s colour (white, black or other) mother’s age, mother’s education, mother’s colour (white, black or other), mother’s average per day cigarette smoking & average per week drinking alcohol during pregnancy, one or five minute medical test in pregnancy period, and having a male baby, using secondary data of vital records of 1832 observations in United State. Further, this study is needed to identify the similarity within Sri Lanka.

Empirically however, low birth weights are more common internationally and locally, and this makes it is important to study the central issues identified above: investigation for determinants to birth weight in the case of USA to minimize the potential peril factors for lower birth weight.

LITERATURE REVIEW

Low birth weight has been used as the foremost indicator of poor health among newborns for many years. Studies done by Breslau et al. (1994); Brooks-Gunn, Klebanov, and Duncan (1996) follow ups indicate that low birth weight babies have lower scores on a variety of tests of intellectual and social development. Currie and Hyson (1996) find that low birth weight was predictive of lower schooling attainments, earnings, and employment probabilities. Behrman and Rosenzweig (2001) find that the higher birth weight twin is not only taller but also goes on to get more schooling. Conley and Bennett (2000) find that low birth weight reduces the probability of high school graduation in models that include mother fixed effects. Almond, Chay, and Lee (2005) question whether low birth weight has a major causal influence on
health. Nevertheless, several recent studies by Black, Deverux, and Salvanes 2005; Royer 2005; Oreopoulos et al. (2006) confirm that low birth weight is associated with poorer child outcomes.

Emanuel et al. (1992) document a positive association between infant birth weight and parent birth weight. Coutinho, David, and Collins (1997) use Illinois vital statistics records to show that there is an intergenerational correlation in birth weight. Conley and Bennett (2000) document that income during pregnancy has no effect on the risk of low birth weight when the mother’s birth weight is controlled or when family fixed effects are included in the model. However, Conley and Bennett (2001) also estimate models with mother fixed effects and find that if the mother was low birth weight, then income at the time of the birth has a significant impact on the probability that the child is low birth weight. Conley and Bennett (2001) suggest that there is an interaction between poverty at the time of the child’s birth and maternal low birth weight in the production of child low birth weight. Herrnstein and Murray (1994) argue that factors such as intelligence that determine economic status are inborn and are passed from one generation to the next. Charles and Hurst (2003) argue that much of the intergenerational correlation in labor market and savings behaviors of parents and children is due to similar learned behaviors. Drake and Walker (2004) review the literature regarding intergenerational correlations in birth weight. Research by Caspi et al. (2003) and Moffit et al. (2005) suggest that carriers of specific genes are more likely to develop future pathologies only when they are exposed to specific environmental influences.

METHODOLOGY

This study carries using secondary data of necessary records of 1832 samples to identify the factors determinant to single live birth weight in United States. To determine the distribution of the birth weight among infants categorize to three groups of women; U.S.-born whites, U.S.-born blacks, and U.S.-born others, who were 16 to 44 years of age taken for the analysis. Moreover, the study grouped child birth weight; 1) less than 1168g, 2) less than 1501g, 3) low birth weight groups less than or equal 2500g and above 2500g, 4) low birth weight groups less than 2000g and above 2000g. In addition, contrast two groups of mother’s age which are below 23 and 20 years. The all diagnostic tests conduct relevant to cross-sectional data analysis and used statistical soft ware, STATA for the data analysis.
The below proposed multiple regression models is to learn more about the relationship between child’s birth weight and parent’s socio-economic factors:

\[
bwght = f (mage, meduc, mwhite, mblk, moth, fage, feduc, fwhite, fblk, foth, omaps, fmaps, 
cigs, drink, male,...)
\]

(The abbreviations; bwght-child’s birth weight, mage-mother’s age, meduc-mother’s education, mwhite-white mother, mblk- mother black, moth- mother others, fage- father’s age, feduc- father’s education, fwhite- father white, fblk- father black, foth- father other, omaps-one minute medical test, fmaps- five minute medical test, cigs- mother’s per day cigarette smoking during pregnancy, drink-mother’s per week alcohol consumption during pregnancy, male- having a male baby)

Incorporating these explanatory variables, child’s birth weight model specified in linear form becomes;

\[
bwght = x_0 + x_1mage + x_2meduc + x_3mwhite + x_4mblk + x_5moth + x_6fage + x_7feduc \\
+ x_8fwhite + x_9fblk + x_{10}foth + x_{11}omaps + x_{12}fmaps + x_{13}cigs + x_{14}drink + x_{15}male + \epsilon
\]

**DATA ANALYSIS AND OUTCOME**

In this study, 1832 infants mean birth weight is 3401.12g (SD ± 576.54) with a standard deviation of, and the said birth weight deviate minimum of 360g to maximum of 5204g. More clearly in table-2 shows more birth weights are between 3000g-4000g ,and less birth weight are can be observe over 5000g and under 2000g (table-2 at the Appendix-1).
Table 2: contains data for a variable birth weight

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observation</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>bwght</td>
<td>1832</td>
<td>340.12</td>
<td>576.54</td>
<td>360</td>
<td>5240</td>
</tr>
</tbody>
</table>

When the group mothers age below 23 years, and when it categorized to four groups with six years age interval. The table-3 (At the Appendix-1) shows the highest mean birth weight is 3433g for the age group 30-36 years, and these recorded 744 births out of 1832. The heights number of the birth 802 for the age group 23-29 years with mean birth weight of 3404g. The lowest number of birth (132), and mean birth weight (3258g) are for the 16-22 years age group.

Likewise, when categorize the group mother’s age below 20 years with four years age interval and for five groups. In this table highest mean birth weight is 3440g for age group 30-34 years and it recorded 616 births out of 1832. The heights numbers of birth 673 which belongs to 25-29 years age group with the mean birth weight of 3417g. The lowest number of birth (26) and mean birth weight (3176g) are with below 20 years age group (Refer table-7 at the appendix-1).

Moreover, to identify the correlation between selected eight variables, categorize the group mother’s age to less than (<) 23 or less than (<) 20 years. When group mother’s age is less than 23 years the result shows, the dependent variable birth weight has a positive correlation with independent variable “five minute medical test” (0.1694), and show negative correlation with mother’s cigarette smoking(-0.0853) and drinking alcohol(-0.0209). Mother’s cigarette smoking represent highly negative correlate to birth weight when compare to drinking alcohol. Also, having a male baby (0.0867) represent a positive correlation to birth weight. The other selected independent variables; mother’s age (0.0431), father’s age (0.0662), and mother’s education (0.0396) have moderately low correlation to birth weight. When comparing the group mother’s age <23 years with group mother’s age <20 years, the results show a little change only in the group mother’s age coefficient, and no any difference in all other variables coefficient, and remain as the same (please refer table-9 & 10 at the appendix-1).

Run a regression when group mother’s age below 23 years, the given independent variables of group mother’s age, father’s age, mother’s education, drinking alcohol, and coefficient and their P values are respectively; -2.45(P=0.92), 5.90(P=0.06), 2.00(P=0.758), -12.71(P=0.629). After considering the P value of these selected variables, could be able to identified all the P values are more than to 5%. Hence, we
reject the null hypothesis and do not accept these variables as statistically significant. Moreover, this study could be able to conclude there is no any relation-ship between birth weight and the above said selected variables. When considering coefficient and P value of other selected variables; five minute medical test, cigarette smoking, male baby, are respectively; 46.35(P=0.00), 3.26(P=0.001), 26.81(P=0.00). After considering the P values, all P values are less than to 5%. Therefore, we failed to reject the null hypothesis and accept these variables are statistically significant. Finally, we could be able to conclude that there is a relation-ship between birth weight and five minute medical test, cigarette smoking, and male baby. Further, when run the regression after categorizing the group mother’s age below 20 years the above said circumstance occurred as the same with little deviation in their figures (please refer table-11 & 12 at the appendix-1).

In this study when consider the kernel density estimation, to estimate the probability density function of the variable of birth weight. The kernel density plot with the normal option, this compare show that a kernel density be little overlaid on the plot. However, this situation does not provide evidence for high multicollinarity (please refer figure-6 at the appendix-2).

When there is a perfect linear relationship among the predictors, the estimates for a regression model cannot be uniquely computed. The term collinearity implies that two variables are near perfect linear combinations of one another. When more than two variables are occupied it is often called multicollinearity, although the two terms are often used interchangeably. The primary concern is that as the degree of multicollinearity increases, the regression model estimates of the coefficients become
unstable and the standard errors for the coefficients can get wildly inflated. In this study Variance Inflation Factor (VIF) looks fine and there is no multicollinearity (please refer table-13 at the appendix-1).

CONCLUSION

In conclusion, this study brings to investigate the relationship between birth weight and selected socio-economic variables in the case of USA with 1832 observations. This study acknowledged there is no any relation-ship between father’s age, father’s race, father’s education, mother’s age, mother’s race, mother’s education, and her average per week alcohol consumption during pregnancy to child’s birth weight. But this study verifies the provide data have strong evidence of an association between birth weight to five minute medical test in pregnancy period, mother’s average per day cigarette smoking during pregnancy, and having a male baby. Moreover, when mother spending more time on taking medical advices lead to increase in child’s birth weight and also increasing average per day cigarette smoking during pregnancy tend to decrease in child’s birth weight. Further, the study identified that child’s birth weight has a positive relationship with the gender of the baby mainly a male.

These results reinforce the significance of post discharge, early intervention programs are necessary to trim down the risk of these factors to child’s birth weight problems not only in United State, also in Sri Lanka with identical variables to origin of the country.
REFERENCES


Appendix-1

Table 1: Summery Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
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<td>1832</td>
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<td>4.770991</td>
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<td>44</td>
</tr>
<tr>
<td>moduc</td>
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<td>17</td>
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<tr>
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<td>2.122058</td>
<td>1.233385</td>
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<td>9</td>
</tr>
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<td>npvis</td>
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<tr>
<td>bwght</td>
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<td>3401.122</td>
<td>576.5444</td>
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Table 2: contains data for a variable birth weight

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
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<tr>
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<td>3401.122</td>
<td>576.5444</td>
<td>360</td>
<td>5204</td>
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</tbody>
</table>

Table 3: Birth weight deviate

<table>
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<th>Percentiles</th>
<th>Smallest</th>
<th>Largest</th>
<th>Mean</th>
<th>Std. Dev.</th>
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<td>1660</td>
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<td>3401.122</td>
<td>576.5444</td>
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<tr>
<td>5%</td>
<td>2490</td>
<td>5089</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td>2746</td>
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<td></td>
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<tr>
<td>25%</td>
<td>3076</td>
<td>5089</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td>5089</td>
<td>5089</td>
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<td>576.5444</td>
</tr>
<tr>
<td>75%</td>
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<tr>
<td>90%</td>
<td>8025</td>
<td>5089</td>
<td>Variance</td>
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<tr>
<td>95%</td>
<td>1260</td>
<td>5160</td>
<td>Skewness</td>
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<td>99%</td>
<td>4690</td>
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<td>Kurtosis</td>
<td>5.217376</td>
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</table>
### Table 4: Summary of mother’s age group and birth weight

<table>
<thead>
<tr>
<th>Group of mother's age</th>
<th>Summary of birth weight, grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-22 ys</td>
<td>Mean: 3257.7197, Std. Dev.: 666.50762, Freq.: 132</td>
</tr>
<tr>
<td>23-29 ys</td>
<td>Mean: 3404.6783, Std. Dev.: 566.94503, Freq.: 802</td>
</tr>
<tr>
<td>30-36 ys</td>
<td>Mean: 3433.0094, Std. Dev.: 566.61346, Freq.: 744</td>
</tr>
<tr>
<td>37-44 ys</td>
<td>Mean: 3351.4675, Std. Dev.: 574.92253, Freq.: 154</td>
</tr>
<tr>
<td>Total</td>
<td>Mean: 3401.1223, Std. Dev.: 576.54443, Freq.: 1832</td>
</tr>
</tbody>
</table>

### Table 5: Table of Group of mother’s age

<table>
<thead>
<tr>
<th>Group of mother's age</th>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-22 ys</td>
<td>132</td>
<td>7.21</td>
<td>7.21</td>
</tr>
<tr>
<td>23-29 ys</td>
<td>802</td>
<td>43.78</td>
<td>50.98</td>
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<td>30-36 ys</td>
<td>744</td>
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<tr>
<td>37-44 ys</td>
<td>154</td>
<td>8.41</td>
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<tr>
<td>Total</td>
<td>1,832</td>
<td>100.00</td>
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</tr>
</tbody>
</table>

### Table 6: Table of Group of mother’s age

<table>
<thead>
<tr>
<th>Group of mother's age</th>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20 years</td>
<td>26</td>
<td>1.42</td>
<td>1.42</td>
</tr>
<tr>
<td>20-24 years</td>
<td>235</td>
<td>12.83</td>
<td>14.25</td>
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<tr>
<td>25-29 years</td>
<td>673</td>
<td>36.74</td>
<td>50.98</td>
</tr>
<tr>
<td>30-34 years</td>
<td>616</td>
<td>33.62</td>
<td>84.61</td>
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<tr>
<td>&gt;35 years</td>
<td>282</td>
<td>15.39</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>1,832</td>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

### Table 7: Summary of mother’s age group and birth weight

<table>
<thead>
<tr>
<th>Group of mother's age</th>
<th>Summary of birth weight, grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20 years</td>
<td>Mean: 3176, Std. Dev.: 710.39792, Freq.: 26</td>
</tr>
<tr>
<td>20-24 years</td>
<td>Mean: 3312.6638, Std. Dev.: 632.69706, Freq.: 235</td>
</tr>
<tr>
<td>25-29 years</td>
<td>Mean: 3416.8187, Std. Dev.: 557.37928, Freq.: 673</td>
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<tr>
<td>30-34 years</td>
<td>Mean: 3440.1218, Std. Dev.: 569.52147, Freq.: 616</td>
</tr>
<tr>
<td>&gt;35 years</td>
<td>Mean: 3372.9433, Std. Dev.: 564.70937, Freq.: 282</td>
</tr>
<tr>
<td>Total</td>
<td>Mean: 3401.1223, Std. Dev.: 576.54443, Freq.: 1832</td>
</tr>
</tbody>
</table>
Table 8: The correlation between variables

<table>
<thead>
<tr>
<th></th>
<th>mage</th>
<th>meduc</th>
<th>monpre</th>
<th>npvis</th>
<th>fage</th>
<th>feduc</th>
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</thead>
<tbody>
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Table-11: Regression with selected variables

| Variable  | Coef. | Std. Err. | t     | P>|t|     | [95% Conf. Interval] |
|-----------|-------|-----------|-------|---------|----------------------|
| bweight   | -2.449934 | 25.05366 | -0.10 | 0.922   | -51.58984 46.68997   |
| gmage     | -2.449934 | 25.05366 | -0.10 | 0.922   | -51.58984 46.68997   |
| fage      | 5.903766   | 3.168304 | 1.86  | 0.063   | -310503 12.11803    |
| meduc     | 2.006968   | 6.503443 | 0.31  | 0.758   | -10.7488 14.76273   |
| fmaps     | 198.9913   | 46.35599 | 4.29  | 0.000   | 108.0701 289.9125   |
| cigs      | -10.90982  | 3.269757 | -3.34 | 0.001   | -17.3230 4.96568    |
| drink     | -12.71415  | 26.30603 | -0.48 | 0.629   | -64.3104 38.8214    |
| male      | 96.36303   | 26.81507 | 3.59  | 0.000   | 43.7682 148.9577    |
| _cons     | 1371.184   | 429.319  | 3.19  | 0.001   | 529.1237 2213.245   |

Table-12: Regression with selected variables

| Variable  | Coef. | Std. Err. | t     | P>|t|     | [95% Conf. Interval] |
|-----------|-------|-----------|-------|---------|----------------------|
| bweight   | 1.159417 | 20.4555 | 0.06  | 0.955   | -38.96134 41.28017   |
| gmagen    | 1.159417 | 20.4555 | 0.06  | 0.955   | -38.96134 41.28017   |
| fage      | 5.590041  | 3.186238 | 1.75  | 0.080   | -6.594033 11.83949   |
| meduc     | 1.785193  | 6.545242 | 0.27  | 0.785   | -11.05255 14.62294   |
| fmaps     | 198.9068  | 46.34733 | 4.29  | 0.000   | 108.0017 289.8118    |
| cigs      | -10.90367 | 3.271998 | -3.33 | 0.001   | -17.3213 -4.86034    |
| drink     | -12.71907 | 26.34433 | -0.48 | 0.629   | -64.39047 38.95234   |
| male      | 96.56935  | 26.81421 | 3.60  | 0.000   | 43.97632 149.1624    |
| _cons     | 1374.719  | 428.9715 | 3.20  | 0.001   | 533.3404 2216.098    |

Table-13: Variance Inflation Factor

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Mean VIF | 1.27
Appendix-2

Figure 1: Birth weight box graph
Figure 2: Group mother’s age below 23 years

Figure 3: Group mother’s age below 20 years
Figure 4: Group mother’s age below 23 years

Figure 5: Group mother’s age below 20 years
Graph 6: Kernel density estimate

Figure 7: Group mothers age (< 23 years) with percentage.
Figure 8: Group of mother’s age (< 20 years) with percentage.
Study on Potential Entrepreneurial intentions of Higher Education Sector students in Brunei Darussalam

Rathmali, W.A.S., Charles Sturt University, Australia

ABSTRACT

In spite of the increasing recognition of entrepreneurship as a source of job creation, empowerment and economic dynamism in a rapidly globalising world, there has been a few systematic attempt to look at it from a youth angle. The tendency has been either to subsume the youth into the general adult population or to ignore their efforts to forge a livelihood through enterprise activities. This has resulted in the lack of adequate understanding of the potential benefits of youth entrepreneurship as a means of improving youth livelihoods. Hence, Youth, as they could be the entrepreneurs of tomorrow, have attracted considerable scholarly and public attention in the last decades.

This research is designed as a cross-sectional research which uses the individual as the unit of analysis. This research is also an explanatory research whereby the purpose is to identify and understand the entrepreneurial intentions of higher education sector students in Brunei and understand the factors affecting their decision. The study presented is based on other entrepreneurial intentions models from previous research work. The ultimate dependent variable was the entrepreneurial intentions of students. The model of data collection was a survey by self-administered questionnaire. The target population of this research were the students of selected higher learning institutions. The sample composed of 600 students.

The study concluded with interesting facts findings. Subjective norms were the main influential force towards entrepreneurial intentions, and the least influential factor was perceived behaviour control. Entrepreneurial knowledge and the entrepreneurial attitudes had a moderate influence towards entrepreneurial intentions. In the long run, more students will focus on entrepreneurship as their career preference. It will be really essential to have continuous career guidance and monitoring system since there will be possibilities/motives for them to divert their intentions from their real action/behaviours in the future.

Keywords: Potential, Entrepreneurial Intentions, Higher Education Sector, Students, Brunei Darussalam
INTRODUCTION

The unemployment rate in Brunei ranges 3.4% in 2010 to 2% in 2016. This is classified as frictional unemployment rather than structural unemployment. Out of registered job seekers, 70% of them are between the ages of 18-30. 93% are drop-outs from middle or primary schools.

It is very difficult for them to find job opportunities due to lack of education and experience. This is common among Association of Southeast Asian Nations (ASEAN) countries (Factbook, 2016).

Due to the unemployment, it is important to unlock the entrepreneurial potential among the youth and promote self-employment through Small and Medium-sized Enterprises (SMEs) by providing assistance and support to make young enterprises sustainable. To facilitate this, ASEAN nations would also need to build capabilities of young people by “investing wisely” in education and skills training. Many young people in ASEAN are, no doubt, adventurous enough to explore emerging sectors such as creative industries and green businesses. Public organisations, with private help, could easily act as incubators and accelerators in many fields (Duraman and Tharumarajah, 2010). Young people were also urged to acquire soft skills and mindset, such as determination and resilience, in order to be marketable in the employment market. At the same time, employers’ attitudes and mindset towards young people must change. Brunei is highlighting youth in areas such as the environment, rural development and helping to less fortunate (Duraman and Tharumarajah, 2010). The creation of jobs must be followed by a change in employer attitudes and mindset towards young people as these employers have to be willing to hire and invest in the young people’s strengths and their energy and enthusiasm to gain knowledge and experience which will, in turn, lead to the benefit of both the employers and the young people. The International Labour Organization (ILO) was projecting 73 million young people to be unemployed worldwide in 2015 (Hashim, 2010).

SMEs which from more than 95% of business entities in Brunei has the potential to play a prominent role in the knowledge-based enterprise drive. Towards this end, entrepreneurship training and guidance will be strongly focused on balanced curriculum, excellent facilities and enhanced teaching capacity at all levels of education. These are geared towards developing a strong knowledge base, skills, innovativeness and competitiveness in the individuals. The education systems and curriculum will develop the right skills and attitudes of students for higher education, self-employment or entry into the job market. High priority is given to the pursuit of science and technology-oriented education (Jamil, 2016).
All above activities are in line with Brunei national intention of developing SMEs and youth entrepreneurship development because to be successful and to be diversifying the Brunei economy; it needs entrepreneurs. If young people are losing the interest in entrepreneurship, it negatively affects the future of the economy and for the future of the nation. Therefore it is essential to understand young people’s attitudes towards entrepreneurship and to identify a way to proactively address this important issue. Young entrepreneurs are potential drivers of economic growth, social change and innovation through the businesses they found, the wealth they generate, the jobs they create and the power of their own personal examples. In this context, it is important to provide a platform to the young entrepreneurs to champion the cause of youth entrepreneurship and therefore contribute to the betterment and the prosperity of Brunei (Siddiqui and Al Athmay, 2012).

Several initiatives have already been laid out as a foundation for Brunei government’s efforts to expand local economic activities that can develop SMEs and provide more job opportunities for locals. Various steps have been taken to reduce Brunei’s dependency on oil and gas while preparing a basis for a more resilient and competitive economic development. SMEs could play a very important role for the country’s future in achieving ‘Vision 2035’. SMEs are valuable assets that need to be resilient and competitive in any situation, especially when the country one day no longer relies heavily on oil and gas production.

PROBLEM STATEMENT

Youth in a country should step up and take the lead by using organisations and associations as a way for them to develop themselves and country. Future innovation and economic growth will depend on future leaders with entrepreneurial skills and attitudes. Thus youth entrepreneurship is a key tool to develop the human capital necessary for the future, to unleash the economic potential of youth and promote sustainable development. Many different initiatives exist in Brunei Darussalam to promote youth entrepreneurship from providing training to youth who want to start their own business to venture capital funds to help promote these businesses, yet little is known about what works best and particularly what works best in different contexts.

Like other nations, young Bruneians are also facing many challenges, but the prospect of long-term unemployment after school paints a particularly bleak picture for social development and the future of youth. There is a lack of systematic research available on Brunei youth’s intentions towards entrepreneurship and their future plans, and consequently, more information is required for the development of suitable policy interventions to improve the employability of young people. The
government will accelerate efforts to diversify the economy by putting greater emphasis on SMEs development and job creation for young Bruneians. This study will provide insights into the potential entrepreneurial intentions of Higher Education Sector students of Brunei.

RESEARCH OBJECTIVES

This research attempts to understand Potential Entrepreneurial intentions among Students in Brunei Darussalam and in order to support the problem statement four sub-objective has been developed:

- To understand the relationship between Entrepreneurial knowledge and entrepreneurial intentions of Higher Education Sector (HES) students in Brunei
- To understand the relationship between Attitude towards entrepreneurship and entrepreneurial intentions of Higher Education Sector (HES) students in Brunei
- To understand the relationship between subjective norms (SN) and entrepreneurial intentions of Higher Education Sector (HES) students in Brunei
- To understand the relationship between perceived behaviour control (PBC) and entrepreneurial intentions of Higher Education Sector (HES) students in Brunei

ENTREPRENEURIAL INTENTIONS

The intention concept describe that new business formation is a deliberate and designed behaviour (Kruegar and Carsrud, 2000). The entrepreneurial intention was considered to be the first step in the surfacing and new business formation (Lee and Wong, 2011). The entrepreneurial intention has proven to be a primary predictor of future entrepreneurial behaviour (Schwarz, Wdowiak, Almer-Jarz and Breitenecker, 2009). Nevertheless, there are just a limited number of studies addressing influence factors for entrepreneurial intention at higher education sector levels (Wang and Wang, 2001). Also Understand what factors influence and shape students’ intention towards starting a venture is vital for developing the programs and policies to promote entrepreneurial behaviour (Barkotic and Kruzic, 2010). The study focuses on the central question “what are the factors that determine entrepreneurial intention among youth in Brunei”. Since the decision to become an entrepreneur may be plausibly considered as voluntary and conscious (Krueger et al., 2000), it seems reasonable to analyse how that decision is taken. In this sense, the entrepreneurial intention would be a previous and determinant element towards performing entrepreneurial behaviours (Fayolle and Gailly, 2004; Kolvereid, 1996). In turn, the intention of carrying out a given behaviour will depend on the person's attitudes towards that behaviour (Ajzen, 1991). More
favourable attitudes would make more feasible the intention of carrying it out, and the other way round. In this sense, this “attitude approach” would be preferable to those used traditionally in the analysis of the entrepreneur, such as the traits or the demographic approaches (Robinson et al., 1991; Krueger et al., 2000).

**Determinant of Entrepreneurial Intentions (Entrepreneurial knowledge, Attitude, subjective norms, perceived behaviour control)**

The overall tenet of the psychological theory of planned behaviour (Ajzen, 1991) is that planned behaviours (such as starting a business) are intentional and thus are predicted by intention towards that behaviour. The intention is best predicted by attitudes (attitude towards the behaviour, subjective norms and perceived behavioural control). In turn, exogenous influences (such as traits, demographics, skills and social, cultural and financial support) affect attitudes and indirectly intentions and behaviour (Shapero and Sokol, 1982). Entrepreneurship researchers empirically tested specific parts of the theory of planned behaviour using self-employment as the target behaviour (Kolvereid, 1996; Krueger et al., 2000; Luthje and Franke, 2003). In the case of entrepreneurship, the constructs of the theory of planned behaviour are defined as follows: ‘Attitude towards self-employment’ is the difference between perceptions of personal desirability in becoming self-employed and organisationally employed. Therefore, ‘high’ attitude towards self-employment actually indicates that the respondent is more in favour of self-employment than organisational employment (Kolvereid, 1996).

‘Subjective norm’ refers to perceptions of what important people in respondents' lives think about them becoming self-employed, weighted by the strength of the motivation to comply with them (Krueger et al., 2000). Scholars have enumerated various types of entrepreneurship education, which are targeted at specific audiences (Jamieson, 1984; Liñán, 2004). For example, education for awareness is for students who had no experience of starting a business. The purpose of the entrepreneurial awareness education is to allow students to develop entrepreneurial skills and to assist them in choosing a career (Liñán, 2004). Most university-level programs are intended to increase entrepreneurial awareness and to prepare aspiring entrepreneurs (Garavan & O’Cinneide, 1994). In this study, the arguments that we have developed is based on entrepreneurship education engendering greater awareness for students who had not already decided which career to pursue (e.g., employment versus entrepreneurship) or who had not experienced starting their own businesses prior to enrolling in entrepreneurship courses. Finally, ‘perceived behavioural control’ reflects the perceived ability to become self-employed (Kolvereid, 1996). In turn, ‘intention’ is defined as a state of mind directing a person's attention and action towards self-employment.
as opposed to organisational employment (Bird, 1988). The empirical results in entrepreneurship broadly confirmed the theory's predictions regarding the relationship between attitudes (attitude towards self-employment, subjective norm and perceived behavioural control, entrepreneurial education) and intention towards self-employment (Kolvereid, 1996; Krueger et al., 2000; Luthje and Franke, 2003).

CONCEPTUAL FRAMEWORK

The framework depicted is derived through the review of the literature, and it illustrates the conceptualization of the research topic in order to evaluate the entrepreneurial intention of higher education sector students in Brunei.

The framework presented in Figure 1 brings Theory of Planned Behaviour (TPB), participation in entrepreneurship knowledge, and personality traits together in one model. The 12 relationships identified in this model will be formulated into hypotheses. The major part of the research model is build up with the TPB (Ajzen, 1991; Mazzarol et al., 1999; Brännback et al., 2007). Past research had identified the TPB as an important model to explain the intentions and behaviour of people. Furthermore, the TPB model integrated the concept of attitudes. Attitude constructs have proven to explain an important part of the variance in widely varied behaviour and have been included in most recent entrepreneurial intentions frameworks (Autio et al., 2001; Lüthje and Franke, 2003).

![Conceptual Model](Image)

*Figure 4. Conceptual Model*
HYPOTHESIS (H)

The correlation analysis and p-value approach have been used to test the relationship between independent and dependent variables, and 95% confidence level has taken as the significance level.

H1 - Entrepreneurial knowledge is positively related to Entrepreneurial intentions

H1a - Entrepreneurial knowledge is positively related to risk-taking propensity

H1b - Entrepreneurial knowledge is positively related to proactive personality

H2 - Attitude towards entrepreneurship is positively related to entrepreneurial intentions

H2a - Attitude towards entrepreneurship is positively related to risk-taking propensity

H2b - Attitude towards entrepreneurship is positively related to proactive personality

H3 - Perceived behaviour control exercises the positive influence the entrepreneurial intentions

H3a - Perceived behaviour control exercises the positive influence on risk-taking propensity

H3b - Perceived behaviour control exercises the positive influence on proactive personality

H4 - Subjective norm is positively related to entrepreneurial intentions

H4a - Subjective norm is positively related to risk-taking propensity

H4b - Subjective norm is positively related to proactive personality

RESEARCH METHODOLOGY AND DESIGN

The study has gathered numerical and descriptive data to assess the relationship between the variables. This made it possible to produce statistical information on entrepreneurial intentions among higher education sector students in Brunei. For this study, secondary data also gathered from various sources such as Brunei government department’s websites, various national development plans and statistical reports, economic surveys, government reports and publications, journal, periodicals, internet sources and websites.
600 questionnaires were distributed among the Students in randomly selected higher learning institutions in Brunei. 450 questionnaires were received (75% response rate). This sample size is derived based on 114,000 population of young people (age 18-29), taken into considering the 5% margin of error (the deviation between the opinions of the respondents and the opinion of the entire population) and 95% confident level (how sure you can conclude your findings). However, the respondents are not restricted to students by area of study.

The mode of primary data collection was a self-administered questionnaire. The survey design was well suited to study in which individuals are used as a unit of analysis in order to measure generalizations (Gall and Borge, 1999) and also suitable for this study because the data needed to be collected from a large population in different institutions. According to Mugenda and Mugenda (2003), a descriptive research determines and reports the way things are, and attempt to describe possible behaviour, attitude, values and characteristics, in a similar way as this study.

The questionnaire has been developed based on Likert scale. The Likert scale is one of the instruments widely used in attitudes measurement research. A Likert scale provides a series of statements to which respondents can indicate the degree of agreement or disagreement. Respondents will be instructed to circle the number that best reflects how much they agree or disagrees with the statement. Marks have assigned to each statement, and “1” indicates the least favourable degree of response and “5” for the most favourable statement. And the questionnaire was divided into nine sections.

The first section of the questionnaire sought to ask personal information about the respondents. The second section sought information on experiences. Third part asked about family background. Respectively part four to part nine focused on attitude towards entrepreneurship, perceived behaviour control, risk-taking propensity, proactive personality, subjective norms, participating in entrepreneurial education.

A pilot study was conducted with 60 (10% of the sample) respondents to test the research instrument. Views given by the respondents during the pilot survey were analyzed and used to improve the questionnaire before actual collection of data. At the development stage, after the pilot-test, a separate test-retest was conducted. Ten respondents completed the questionnaire and were asked three days later to complete the same questionnaire again. An analysis of all answers to the questionnaire indicated a very high Pearson correlation of 0.98. In this study, Cronbach’s alpha was 0.818. This indicated a high level of internal consistency for the scale with this specific sample. As a general rule of thumb, scales are deemed
to be internally consistent when the Cronbach α is above 0.6 (Lacobucci and Duhachek, 2003). Then actual data were collected from the derived sample. Descriptive statistics and bivariate analysis were used to analyse the data. The Statistical Package for Social Sciences (SPSS) was used to aid the statistical analysis of the data.

FINDINGS

Demographics
The response rate was 75% which resulted in having 450 questionnaires for the data analysis. 450 youths (198 males, 252 females) ranging age 18 to 29 years (mean age range 20-22) studying in selected higher education institutions in Brunei Darussalam. Among the sample, the largest group of 34% was studying for the Higher National Diploma, and most of the respondents’ area of study was related to business management. The data was interpreted as demanded by the research questions. The analysis was done through descriptive, inferential and bivariate statistics.

Model 1 : Relationship with entrepreneurial knowledge and entrepreneurial intentions, risk-taking propensity, proactive personality (H1, H1a, H1b)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent variables</th>
<th>r value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Knowledge</td>
<td>Entrepreneurial intentions</td>
<td>.378</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>Risk taking propensity</td>
<td>.281</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>Proactive Personality</td>
<td>.438</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Table 17 : Relationship with entrepreneurial knowledge and entrepreneurial intentions, risk-taking propensity, proactive personality

- The result is significant at p < 0.05.
- It shows significance relationship with knowledge and Entrepreneurial intentions, Risk-taking propensity and proactive personality.

Model 2 : Relationship with entrepreneurial attitudes and entrepreneurial intentions, risk-taking propensity, proactive personality (H2, H2a, H2b)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent variables</th>
<th>r value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards entrepreneurship</td>
<td>Entrepreneurial intentions</td>
<td>.389</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk taking propensity</td>
<td>.276</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proactive Personality</td>
<td>.463</td>
<td></td>
</tr>
</tbody>
</table>
p value | < 0.001 | < 0.001 | < 0.001

Table 18: Relationship with entrepreneurial attitudes and entrepreneurial intentions, risk-taking propensity, proactive personality

- The result is significant at p < 0.05.

- It can be concluded that the Brunei students have positive attitudes about entrepreneurs, their money making abilities and qualities and about the contribution that entrepreneurs made towards national development. Yet, they are a bit reluctant to take a risk on starting their own businesses. They might be expecting supportive hand from the family, friends or any other supportive forces. This “budaya bergantung” (dependency culture) was highlighted by His Majesty in his speech at the opening ceremony of the Legislative Council meeting, 5th March 2015.

Model 3: Relationship with subjective norms and entrepreneurial intentions, risk-taking propensity, proactive personality (H3, H3a, H3b)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entrepreneurial intentions</td>
</tr>
<tr>
<td>Subjective Norms</td>
<td>r value</td>
</tr>
<tr>
<td></td>
<td>p value</td>
</tr>
</tbody>
</table>

Table 19: Relationship with subjective norms and entrepreneurial intentions, risk-taking propensity, proactive personality

- The result is significant at p < 0.05.

- It has indicated that individuals have strong intention to start a business if their parents are entrepreneurs. Entrepreneurial role models can be a strong influential factor towards entrepreneurial intentions.

- Previous researchers have found that individuals are more intend to start a business when they have relationships with others who are entrepreneurs themselves (Mupezeni et al., 2015) or know other people who are entrepreneurs (Muofhe and Du Toit, 2011; Uygun and Kasimoglu, 2013) and a significant association between having entrepreneurial role models and higher levels of subjective norms. The influence of subjective norms on intention to start a business is found in Angriawan et al. (2012); Derry et al. (2010); Fretschner and Weber (2013); Gird and Bagaim
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8th December 2017 | Colombo, Sri Lanka

(2008); Iakovleva et al. (2011); Souitaris et al. (2007). It can be summed up that the situation of the Brunei students is supporting the previous research findings related to subjective norms and entrepreneurial intentions.

Model 4: Relationship with perceived behaviour and entrepreneurial intentions, risk-taking propensity, proactive personality (H4, H4a, H4b)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entrepreneurial intentions</td>
</tr>
<tr>
<td>Perceived behaviour control</td>
<td>.286</td>
</tr>
<tr>
<td>r value</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Table 20: Relationship with perceived behaviour and entrepreneurial intentions, risk-taking propensity, proactive personality

- The result is significant at p < 0.05.
- Respondents have a low level of perceived behaviour. This is highly influenced by having high subjective norms. That means they are seeking a high level of dependence on their immediate social environment. Thereby they have less confidence in their own abilities and skills.
- It can be summed up that the Brunei students have less perceived personality, but this can be strongly developed through proper interventions by relevant stakeholders. Since subjective norms show a strong positive relationship between entrepreneurial intention and proactive personality.

OTHER FINDINGS

The results confirmed the age group of 19-20 and 21-22 have high intentions for entrepreneurship. The majority of males (48%) and females (42%) preferred to work in the public sector due to job security. It also highlighted that females (n=46) preferred to be entrepreneurs than males (n=26). This confirmed that females demonstrate more entrepreneurial intentions. It is worthy to note that the area of study had a strong influence on entrepreneurial intentions. Business management related students’ (67%) had higher intentions than other students. The study confirmed that females have more intentions on entrepreneurship and most preferred industry is food and beverages. Females tend to do the businesses in niche products and services. They are willing to do information technology related businesses which are a growing industry in Brunei and globally. This strongly suggested that females have the more risk-taking propensity and proactive personality than males.
CONCLUSION

Emerging young entrepreneurs may create new ventures and new job opportunities over the next five years in all regions. It is widely documented that young people believe that they have the capacity to start a business and that there are good business opportunities. It has been reported that approximately a third of all young entrepreneurs are driven to entrepreneurship by necessity. Youth Business International (YBI) states that 10% of youth are involved in either nascent or new business with the majority (80%) of these youth businesses being opportunity-driven. Hence, entrepreneurship awareness and the drive among higher education students towards entrepreneurship are getting better globally.

The results of the statistical tests largely validated the predictive power of the TPB model in the context of Brunei higher education students. The study is consistent with a growing body of empirical evidence from a variety of cultural and institutional contexts, such as Norway (Kolvereid, 1996), United State of America (Krueger et al., 2000), France and the United Kingdom (Soutaris et al., 2007), Spain (Liñan et al., 2011), Malaysia (Rasli et al., 2013). In sum, the results from the exploratory study suggest TPB is an appropriate theoretical anchor to study the potential entrepreneurial intentions of higher education students in Brunei. Subjective norms have a strong positive association with entrepreneurial intentions, while entrepreneurial knowledge, entrepreneurial attitudes, perceived behaviour control failed to reach that significance.

Furthermore, the study found out that respondents demonstrated a high dependence on the support of their immediate social groups. Due to this, the influence of subjective norms towards entrepreneurship is high. Brunei students are reluctant to accept the risk, demonstrate very low internal locus of control and less futuristic. Because of this nature of their behaviour, the results showed a low influence of perceived behaviour control on entrepreneurial intentions. Entrepreneurial education also had a low level of impact on entrepreneurial intentions and entrepreneurial attitudes. It is a profound fact that formal education is the main agent that inculcates the attitudes and the behaviour of the young generation. Therefore entrepreneurship education should be embedded in the school curriculum. Thereby entrepreneurship will become an attractive concept and alternative career choice.

The study systematically explored the influence of other factors such as age, gender, area of study and family background on entrepreneurial intentions among students in Brunei. Interestingly, females have more entrepreneurial intentions than males. This finding is in line with current SME ownership in Brunei, which proves that more than 50% SMEs in Brunei are run by females. The age range of 18 – 22
respondents had more entrepreneurial intentions than other age groups. Business-related courses had a high impact on entrepreneurial intentions than another study area. Moreover, still, the majority of the youths (45%) were likely to work in the government sector as their immediate career preference due to job security and low risk. But 16% of the respondents were more likely to take the risk on new venture creations. They might be the future entrepreneurs of Brunei. If there is a good mechanism to support them, perhaps one day they will become successful entrepreneurs. Another key finding was that even though the respondents have intentions to pursue entrepreneurship, most of them were not clear about what their businesses should be. That means even though the students have the willingness to become entrepreneurs they are not rich in idea generation and lack in implementation skills.

The education of students in entrepreneurship should be fostered at an early stage of their education. Attitude towards career alternative constitutes an important part which can develop during one’s study. Therefore, if students are not fully aware of entrepreneurship as an alternative, the students will never develop a positive attitude towards it. The student will instead develop a positive attitude towards employment career alternatives with which they are very familiar. This study found out that 45% the students prefered to work in public sector immediately after their studies.

Therefore it can be understood that through education, attitudes can be cultivated and developed. Therefore it is important for Brunei government and relevant policymakers to understand how to develop and nurture potential entrepreneurs even while they are still at schools. Strong government commitment in this matter is a prerequisite if the country wants to produce vibrant young entrepreneurs and thereby to diversify the economy and to cherish Brunei Darussalam’s Vision 2035.
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Interface for

Leadership, Organizational Behavior and Human Resources Management
ABSTRACT

Child labour is a worldwide phenomenon in discussion from diverse perspectives, including its legal, political, social and ethical implications. With the passage of the time, along with the development of society, child labour has been recognized as an impediment towards the ethical progress of a ‘civilized’ society. Even in Sri Lanka, child labour is recognized as an issue to be eliminated. Yet, the issue still prevails. The purpose of this paper is to uncover a covered area of child labour in the small tea estates of Sri Lanka and examine the complex nature of the ethical issues involved in child labour on the grounds of ethics and corporate social responsibility. Therefore, through the paper, based on empirical findings and relevant philosophical background and theories of ethics, the issue of child labour is examined. Consequently, the paper specifically examines and identifies the root causes, consequences and actions initiated by the stakeholders to mitigate the issue of child labour based on a research conducted in the Rathnapura district, covering four small tea estates and a government-owned tea estate. The case study method was employed for while observations, semi-structured interviews and visual methods were used to gather the required data. Finally, the paper suggests the urgent need to take preventive and corrective actions to eliminate the root causes and negative consequences of child labour for the betterment of the marginalized children working in small tea estates of Sri Lanka.

Keywords: Child Labour, Tea Industry, Small Tea Estates, Ethics and Corporate Social Responsibility
INTRODUCTION

The International Labour Organization (ILO) highlighted, approximately two hundred and eighteen million children, aged five to seventeen are engaged in some form of ‘productive economic activity’ by the year 2016 (ILO, 2017). Approximately, forty three thousand children have been identified and classified as child labourers in Sri Lanka by the Department of Census and Statistics (DSC) in 2016 (DSC, 2016). The discussion on the issue of child labour, i.e. determining whether the children should engage in economic work that would impact their overall development, has been a global, a continuous and a debatable topic over many decades (Adeborna and Johnson, 2015; DSC, 2016; ILO, 2017). Yet, arriving at a consensus is impeded due to the complex nature of the issue, bringing arguments for and against child labour. However, in the globalized civil society, with the intervention of human rights, child labour is recognized as an impediment towards the ethical progress of a civilized society, hence increasing the attention of the world to eliminate child labour (see Chowdry and Nair, 2002; Smestad, 2009; Kgosidintsi and Rakgoasi, 2011; Chanda, 2014). Considering the context of Sri Lanka, in line with the universal agenda, the public and the private sector have established targets, code of conduct, policies and principles to eliminate child labour. Particularly, the Sri Lankan government has established a target to eliminate child labour by 2016 as per a commitment made by ILO member states to eliminate worst forms of child labour by 2016 (Ministry of Labour Relations and Productivity Promotion, 2003). Despite the higher aspirations, the issue of child labour still exists, covered.

This paper narrates our experience of child labour in four small tea estates in Rathnapura district of Sri Lanka. The specific objectives of the research include, to examine the factors and consequences relating to the issue of child labour in the small tea estates of Sri Lanka, to critically analyze the actions taken by the stakeholders involved in the tea industry to overcome the issue of child labour, and finally to recommend suitable solutions supported by the principles of ethics and corporate social responsibility to overcome the issue of child labour in the small tea estates of Sri Lanka. To begin with the paper firstly examines the nature of the tea industry and the issue of child labour, investigating from its historical roots.

TEA INDUSTRY AND THE HISTORICAL ROOTS OF CHILD LABOUR IN THE TEA INDUSTRY

The roots of the issue of child labour in the tea estates of Sri Lanka are embedded in its history. Ceylon tea; world renowned for the finest and freshly hand plucked tea, has a history extending back to the
colonial period. Favorable geographical conditions including the suitable climate, fertile soil, mild sunlight, facilitated the quick expansion of tea as an industry. Soon, the industry was the prime among the triple commercial crops exported from Sri Lanka during the British colonial period (see Cave, 1990; Fernando, 2000). During the colonial period, when the tea industry started to integrate with the world economy, the owners and the investors started expanding the cultivated land extent to meet the escalating global demand (Fernando, 2000). As a result of the commercialization process, the need for efficient and cheap labour increased (see Cave, 1990; Fernando, 2000). When Sri Lankans refused the low labour rates and working in tea estates, the East Indian Trading Company brought South Indian families to work as tea pluckers (see Fernando, 2000; Wenzlhuemer, 2008; Ilyas, 2014). Consequently, the South Indians settled in the central hills with their families. At the early stages, South Indian children working with their parents in tea estates were seldom (Fernando, 2000). Hence, at the initial stages of the industry, child labour was restricted to the marginalized South Indian community (see Wenzlhuemer, 2008; Ilyas, 2014). However, with the expansion of the tea industry, different provinces, especially Uva and Sabaragamuwa province embraced tea plantation. Sinhalese living in these provinces employed their children to earn more income to the family due to economic pressures from the depression in 1880s and the taxes vested by the British government on the other cultivations (Wenzlhuemer, 2008). Therefore, the issue of child labour shifted to relate to poverty and a source of additional income, beyond the race or ethnicity in this background.

Earlier, employing children was not necessarily wrong to Sri Lankans. Even by the year 1981, Sri Lankans had employed children at least of one million to two million (see Goonesekere, 1993; DSC, 2016). Later on, child labour was recognized as a serious problem in the developing world. Consequently, the international community, especially the countries of the Global North started devising conventions and laws to protect the rights of the children (Chowdry and Nair, 2002). Aligning with the global initiatives; authorities of Sri Lanka, started devising policies and laws to reduce child labour in Sri Lanka (Goonesekere, 1993). Yet, the profit oriented tea estate owners exploited the children, to fill their pockets with money when the law was malfunctioning during the initial stages. On the other hand, due to the vulnerable nature of innocent children, their obedience and control; adults continued to exploit them, paying them relatively low wages (Kak and Pati, 2005).

Today, strict rules and regulations have forbidden child labour and the large tea estates are governed and monitored by the regulatory bodies, including the National Child Protection Authority, the Department of Labour and other Non-Governmental Organizations operating in Sri Lanka (DSC, 2016). Furthermore,
the global consumption patterns have also changed, where the informed consumers have started purchasing ethically produced tea (Blowfield, 2003). However, small tea holders are found to escape from the loopholes, still employing children. The criticality of the issue resides in the fact that, more than four hundred thousand small tea estate owners operate in Sri Lanka who account for 76% of tea production, contributing to the largest volume and labour in the tea industry (Central Bank of Sri Lanka, 2015). Besides, as per the DSC (2016), 2.2% of the child labourers were from estates. Therefore, it alarms; unless the issue is investigated from its root cause and heard the unheard voice of the children and their families, the possibility of the continuation of the issue without getting uncovered.

ETHICAL PRINCIPLES AND CHILD LABOUR

Ethics could be defined as a systematic study of right and wrong (French and Wokutch, 2005; Clegg et.al, 2007; Robbins and Coutler, 2010). Ethics are also unwritten rules of conduct which deals with the rightness or wrongness of actions (Jennings et.al, 1996; Vasishth and Rajput, 2010). Defining ethics, is therefore highly contested. Thus, through the passage of time, scholars have brought forward different philosophical notions to determine what is ethical and not. In this section, we analyze the issue of child labour reflecting on few selected philosophies of utilitarian, deontological and virtue ethics as the theoretical backgrounds to discuss the issue of child labour.

Utilitarian ethics, a branch of the consequentialism, proposes to determine the ethicality of an action based on the happiness, pleasure and the consequences to all the people (Desjardin, 2009). In other words, determining the ethicality based on the greatest good for the greatest number (Mill, 1863). From this perspective, two arguments are brought forward in relation to child labour by the scholars. One argument proposing child labour for the development of the developing nations, similar to how the industrialized countries achieved their development, while assisting the impoverished families by generating additional income by employing their children during the industrial revolution (see Agarwal, 2004; French & Wokutch, 2005, Lund- Thomsen, 2008). On the other hand, a counter argument is also brought forward by the scholars, against child labour from the perspective of happiness, where the majority of the working children would miss their happiness, pleasure of the childhood and negative long term consequences dragging them to a vicious poverty cycle due to the lack of physical, social and mental wellbeing (Kgosidintsi and Rakgoasi, 2011). Kant brought forward the notion of the deontological ethics, emphasizing on the categorical imperatives proposing on a universal law of the duties or standards of behaviour in determining ethicality of an action (see Kant, 1998; Clegg et.al, 2007). Accordingly,
deontologists refuse child labour, arguing it violates a fundamental human right and the profit oriented owners will exploit and use the obedient innocent children as a mean to achieve their profit ends. Adding to this perspective, Amartya Sen (2000) considers child labour as a barbarity of children to force to do work and emphasize that child labour is ‘effective slavery’, demonstrating how children are used as a mean to achieve other’s ends. Virtue ethics, focus on the moral character of an individual where it proposes to the consider breach of fairness, equality, trust, respect, empathy, justice as virtues when owners employ children (see Simpson, 1992; Murphy, 1999). Reflecting on the stated selected philosophies of ethics, it’s evident of the consciousness of the majority of the scholars on the demerits of employing children as labourers.

RESEARCH ON CHILD LABOUR IN SRI LANKA

As a result of the global concern about child labour and the development of the responsible authorities, by the late 20th century, macro and micro level initiatives have been taken to understand the issue of child labour. A large number of social surveys have been conducted to understand the nature of child labour in Sri Lanka. For example, social surveys to identify the number, gender, the impact on education, hazardous activities in which the children are involved etc. (Goonesekara, 1993; DSC, 2016; ILO, 2017).

However, reviewing the literature, threefold gaps were evident. Firstly, it was evident that a majority of the research in Sri Lanka was in a form of social statistical surveys to determine the numbers but not to understand the issue from its roots. Secondly, mainstream research has concentrated on the large tea estates as their research setting, where at present the issue of child labour is gradually reducing due to strict monitoring (Janak, 2000; Derby, 2009). Thirdly, only a handful of research has been conducted to understand the issues of child labour from an ethical perspective. Therefore, through this paper, we would try to fill the identified threefold gap, by examining the issue of child labour on the grounds of ethics and corporate social responsibility and concentrating on the covered research setting at the small tea estates. By revisiting the ethical principles, it will allow us to understand how moral philosophy can improve the economic analysis and thus inform the public policy in solving the issues relating to child labour in small tea estates of Sri Lanka (Hausman and McPherson, 2006).

METHODOLOGY

In order to uncover the issue of child labour, this research was conducted as a case study at four small tea estates and a large tea estate owned by the government in Rathnapura district. Case study was instrumented to capture the deep insights of child labour within a bounded context (Langhout and
Thomas; 2010; Bryman & Bell, 2011). Rathnapura district was selected considering the contribution to tea industry (approximately 8000 hectare cultivation), establishment of the small tea estates, previous records of employing children and the poverty indicators of the Department of Census and Statistics – 8.4% to the total poverty of the country (Central Bank of Sri Lanka, 2015; Ministry of Plantation Industries, n.d). Research participants included the children, tea estate workers, owners, estate superintendents and the grama niladari. As research methods, semi-structured interviews, observations and visual methods were instrumented. Semi-structured interviews were conducted subjected to ethical disclaimer of the vulnerable parties to hear their voices. Observations were vital in the research to realize the untold stories, especially when working with children. Visuals methods were aided to support our findings. The data were then analyzed based on a thematic approach to transcribe, translate and to make meaningful and convincing arguments (Mason, 2002).

FACTORS RELATING TO CHILD LABOUR

Through the research findings and the previous literature, it was evident that poverty is the major factor which drives the child labour in small tea estates (Basu and Van, 1998; Blunch and Verner, 2001; Abdullahi et. al., 2016). Workers in small tea estates earn not more than ten thousand rupees amidst the minimum wages imposed by the government. Hence, if there are children who can manage to work in the tea estate, parents see them as an opportunity to earn extra money. Therefore, children become ‘economically active’ (Auchter, 2014). Subsequently, owners consider children as a mere end to achieve their profitable targets and parents consider children as an end to achieve insurance for the income of the family. Parents also stated that they are not willing to take the children to work unless they have no option to manage the daily life. Only, when the parents foresee that they are unable to meet the targets, they bring their children to achieve the targets. One mother mentioned;

We are really poor sir. We can earn only an amount of Rs.10, 000 per month or sometimes less than that by working in the estates. So it’s really hard to survive. That’s why we take our children to the estate to help us when we are told to pluck the rows of tea plants. In rainy days we anyway bring our children, due to the difficulties (Fieldwork at Rathnapura, 2016)

Even though, parents somehow arrange the primary education for their children, a majority of the parents are unaware about the value of continuing education. Hence, they are incapable of making the secondary educational background to their children. When there are high workloads to their parents, parents ask
children to come during school hours to help them. We realized, when this becomes a practice, the children have lost interest of going to school and have dropped out from education. In this context, the illiterate and uneducated parents approve the children’s drop outs from secondary education. Hence, it is evident that the parental actions and the parental altruism also contribute in determining the issue of child labour (Seid and Gurmu, 2015; Bandara et.al. 2014; Kama, 2016).

Additionally, many of the children interviewed mentioned that they come after school and work on part time. Even though gradually full time child labour is reducing, in many developing countries, part time child labour is visible (see Basu and Van, 1998; Seid and Gurmu, 2015). During the interviews, most of the children mentioned that they like to help their parents and no one forced them to do so. Since they are effortless about their education and they have a lot of leisure time they come to help their parents. Thus, from this perspective to the utilitarian ethics, children highlights, they are happy by contributing to the income. However, we observed how the children have unconsciously got trapped by the vicious labour cycle as part time child labourers, by becoming mere ends for others’ happiness.

Furthermore, the estate workers have a limited connection with the outside world. They live in small houses called laims (line rooms) which are made of wood and metal, and built in a row with limited space. Day to day activities of the laim community are based around the estate which prevents them from going out to the society. A day care center called pulli madama, is located inside the estate to look after the small children when their parents go to work. Hence the children throughout the day, experience the life of laim community without knowing the outside world. Throughout the day, children only see how their parents work in the estate and pluck tea leaves. When children’s early socialization process occurs likely, it automatically influences the children to get used to the estate environment. Hence, making children to willingly come and help their parents to automatically end up as child labourers.
On the other hand, estate workers are also marginalized by the rest of the society. Consequently, they are unable to find employment outside the tea plantations. Thus, due to the immobility from the traditional job and the social marginalization the attitudes of the children are shaped such that, they only consider tea plucking or working in the estate as ‘the job’ trapping them to a vicious cycle.

The influence of the estate owners has also contributed to child labour. Through the fieldwork, we observed how the owners of the small tea estates pretend to treat their employees better, to win their loyalty. The owners have got the total control over the obedient workers and also to convince them to bring their children to work to cover up the work load. Not only that, we observed how owners get their household work done by the employee’s children. However, loyal employees think the owners act on their wellbeing. One female worker said:

Our master is very kind and helpful. He takes good care of us. So we would do whatever we can to win his heart so that he will help us more. (Fieldwork at Rathnapura, 2016)

Possessing this kind of a perception, we observed a high loyalty towards the owner from the way she spoke. But when we asked whether her children are working in the estate, she did not deny, but hesitated to answer. However, as we interviewed and observed, it was revealed how the owner has exploited the loyalty of these innocent people and persuade them to take their children to work.

Lower wage rates paid to children also encourage the owners of the tea estates to employ children to save the costs. Child labourers are often underpaid, if at all. Children receive a fraction of the adult’s wage, even when employed in the same type of work. Therefore, the children have become a substitute to adult workers (Bandara et.al. 2014). Also, children do not receive employment benefits, insurance, or social security. Thus, the employment of children becomes a competitive advantage for employers. Furthermore, the innocent and the obedient children become a good source to achieve the profitable targets of the owners allowing them to be exploited and utilized as labourers (Agarwal, 2004)

From the fieldwork, we were also able to understand how the regulatory deficiencies stimulate the use of child labour. Hence, the small tea estates owners enjoy an ultimate freedom to breach the rules and regulations. Grama niladari mentioned that some of the government officers are also induced by the owners to accept the bribes making the conditions worse. Therefore, as identified, poverty, uneducated parents, low wage rates, early socialization process with laim community, marginalization, lack of
occupational mobility, owners’ influence and regulatory deficiencies contribute as factors to encourage child labour in the small tea estates.

**CONSEQUENCES OF CHILD LABOUR**

It is recognized that the childhood is often the glorious period of life that should be led by freedom, security, proper education, and love of parents. Yet, working as a labourer, it will deplete all the rights of children in numerous ways (ILO, 2017). When the children work in tea estates, they experience a hard life. As a result, the children will be drifted not only in economic poverty, but in also multidimensional poverty (see Machado, 2009).

According to the ILO, the minimum age to commence light employment is twelve years and the minimum age for admission to regular work is fifteen years (ILO Convention No. 138, Article 7). A majority of the children we came across during field work, has dropped out of school in sixth or seventh grade. *Grama niladari*, confirmed our observation where he asserted how the children have withdrawn their access to proper education, evading them from reaching their personal ambitions. These children have not had the privilege of other children in their own age, such as to go to extra classes or to do any extracurricular activities in the school. One child mentioned, “I like to be a teacher in future”. But we wonder whether her dream is a reality, when she does not have the freedom of education and skill development when she is working as a labourer. Her small playful hands have become matured hands to pluck the tea leaves and help her mother to achieve the daily targets, sacrificing her education for an earning to the family. Lack of proper education, proper skill development and childhood will further drift their lives in poverty (Kak and Pati, 2012).

According to the UN convention for Children’s Right, children have the right for leisure and relax (DSC, 2016; ILO, 2017). But working children, work from morning to evening during weekends and during the afternoons of the weekdays, sacrifice their leisure. Child labourers work not only in tea estates, but sometimes also as house maids in the owner’s house. Attributed by both liberationist approach which argues domestic labour often causes more harm to children than labour market employment and also utilitarian ethics, it was evident, when children work, their right to have a playful childhood gets depleted (French, 2010).

Every child, we interviewed mentioned that they have not revealed to their friends in the school that they are working in a tea estate. They are anxious, they will be humiliated by their friends and isolated from
the groups, thus have projected a different image. This indicates the impact to the self-esteem of children and the influence on the identity formation process in their childhood, when they work as estate workers.

Children have a right for love, care and affection of parents and family (DSC, 2016; ILO, 2017). Yet the working children’s family background and the environment has emotionally neglected them, resulting loneliness and hopelessness. Day and night what they encounter is the poverty of their family. One child got filled with tears when she mentioned her loneliness to us by comparing herself to her friends in the school. High level of mental dissatisfaction has led to stress and depression among these children which has negatively affected their lives. Malnutrition, minimum facilities, unsafe and hazardous working conditions especially by the exposure to chemicals has led physical sicknesses (Machado, 2009; Kak and Pati, 2012; Mondal et.al, 2016)

Child labourers are treated similar to adult workers. Hence, they are inevitably facing verbal humiliation, blaming, punishments, discrimination and exploitation by the adult workers such as through rapes, sexual abuse, and drug addiction. There are recorded incidents of children getting raped and sexually abused; by working with adults in tea estates. One of news reports highlighted,

At least three children are raped in Sri Lanka each day, indicating that the incidence of sexual assault of minors is escalating […] Most of the victims lived on tea estates, in line rooms, where sexual molestation of underage children is not uncommon (Sunday Times, n.d)

Furthermore, there could be many other negative consequences to the future of these children through the child labour trap.

**ACTIONS INITIATED BY THE AUTHORITIES IN TEA INDUSTRY TO REDUCE CHILD LABOUR**

Considering the negative consequences of child labour, responsible authorities have initiated several programs and policies to reduce child labour. These actions can be broadly classified to three main types.

**Actions initiated by the government, legal framework and non-government organisations**

According to the prescriptions of the UNICEF organization, one of the main targets of the Sri Lankan government was achieving zero worst form of child labour in 2016. Furthermore, laws and regulations are imposed on the estate owners and workers by the Department of Labour and also by the National Child
Protection Authority (Ministry of Labour Relations and Productivity Promotion, 2003). Child labour is completely prohibited by the Employment of Women, Young Person and Children Act No. 47 of 1956 while the Education Ordinance No. 31 of 1939 control the use of child labour (DSC, 2016). Furthermore, these authorities are also providing catch up education, health and nutrition campaigns, awareness programs etc. However, there are many obstacles faced by the government in achieving their objective. For example the poor enforcement of labour standards, poor targets given to the social welfare programs and the weak attitudes of the children to move from work to school (Ministry of Labour Relations and Productivity Promotion, 2003).

**Actions initiated by the large tea estate owners**

To examine the practices of the large tea estate owners, we visited the Noragalle, government tea estate. As for the superintendent, adherence to laws and regulations is a must for large estates compared to the small estates. Therefore, they strictly adhere to the rules and follow the guidelines imposed by the Law. Most of the large tea estate owners have a separate Human Resource Management department, through which various benefits are offered to the employees. Moreover, children below the age of 18 are not permitted to enter the estate premises. As a special benefit, *pulli madama* for infants is maintained by the estate to ease the parents’ workload so that they are able to work without worrying about their children. The small kids without parents are sent into foster care with the assistance of the Division Secretariats’ office. Additionally, special sessions are organized by the estate to teach the parents about the importance of education of their children.

**Actions initiated by the small tea estate owners**

In the small tea estates, the owners play a main role in trying to minimize the use of child labour. They help the labourers mainly by paying the wages on time, providing advance payments when they are in need and providing study materials for the children. One of the labourers mentioned, Amarasekara mudalali is a god to us. He never thinks twice to provide us our necessities. He considers my daughter as a member of his family and also his daughter teaches my daughter her school work (Fieldwork at Rathnapura, 2016)

Use of child labour has reduced to a considerable level due to the steps taken by the *grama niladari* and the responsible village officers by observing and warning parents and owners. Despite the actions initiated by the key players in tea industry, these actions have deficiencies. As for the field work findings, it was evident, a prime reason for child labour in small tea estate is the lack of knowledge on the Industry
Laws and Labour Law among the small tea holders. According to grama niladari, whenever he or the representatives of the Department of Labour visit the estates the adult labourers or parents tend to hide their children. He mentioned, parents often lie mentioning that the children go to school and they stay at home afterwards. Similar truth was experienced by us even during the field work. Consequently, the implementation of Law will be difficult.

SUGGESTIONS TO OVERCOME THE ETHICAL ISSUE OF CHILD LABOUR

Considering the unethically of the underlying factors contributing to child labour, its negative consequences and the deficiencies of the actions taken by the stakeholders, we suggest few solutions based on philosophical foundations of ethics. The solutions are informed by the ethics and moral philosophies with the intention that it will improve both economic analysis and public policy (Hausman and McPherson, 2006).

For the responsible authorities, they could implement livelihood enhancement programs and introduce small tea estate workers to programmes such as Samurdhi. Furthermore, they could execute programs to educate the estate community about the negative consequences of child labour and develop strong community norms to avoid use of child labour. Additionally, they could institute day care centers and community learning centers. Even at the small tea estate levels, responsible authorities could consider introducing SA 8000 certification which encourages the small estate workers to develop, maintain and apply socially acceptable practices in their tea estates (Beyer, 2012). Authorities could take initiation to implement sustainable agricultural networks practices such as fair trade certifications, rain forest alliance certifications even at small tea estates, where by compliance, the issue of child labour would reduce. Large tea estates could strictly adhere to corporate code of conduct and a suppliers’ social responsibility standards when buying tea from small tea estates (Beyer, 2012). Public awareness of ethical purchasing should be enhanced globally where the consumers can demand the companies to reduce and eliminate child labour.

For the owners of the small tea estates, as explained by the deontological ethics, based on ethical reasoning, owners should not consider working children as mere ends to achieve their profitable targets but they should consider children as their own and do what is best for them. Such actions will help the owners to attain their ethical egoism where their profit motives are satisfied with zero or lesser cost to children. It is important that the owners invoke their virtue ethics and the ‘moral character’. This will avoid conflicts of interests; where interests of children will be protected when owners do not exploit the
children for personal interests. As per the stakeholder theory, estate owners have an ethical responsibility to a wide range of stakeholders including the employees as well. Therefore, it is utmost important that they are informed by the agency relationship, to not to make unethical requests from the employees to employ their children.

For the parents of child labourers, it’s vital that the estate workers are introduced/ and practiced alternative employment, self-employment or businesses such as handcrafting etc., where they can work on idle times to improve their income. This would allow the parents to ensure their household income security rather than using their child’s labour as a mean for income security. With altruistic parental actions child labour could be reduced in small tea estates (Seid and Gurmu, 2015; Kama 2016). As suggested, when all the stakeholders of the tea industry are informed by the ethics and the moral philosophies, naturally the economic policy and public policies will be improved.

SYNTHESIS

Despite the higher aspirations globally to eradicate child labour, still children work as labourers and most of the instances are covered from the attention. Through this research, we attempted to demonstrate the existence of child labour in the small tea estates of Sri Lanka which has been associated with historical roots and evidences. Understanding the issue of child labour inspired by the philosophical grounds of ethics would enable every stakeholder involved in the industry to understand the complex nature of issue. Therefore, through the research we have taken an initial attempt to demonstrate the importance of understanding the phenomena in different viewpoints of ethics. Therefore, inspired by the philosophical background of ethics we have demonstrated the factors contributing to child labour in small tea estates, negative consequences on children’s lives when working as an estate worker, deficiencies of the responsible stakeholders actions and finally to suggest actions to overcome the issue.

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Factors Affecting Training Transfer- Evidence from Public Sector in Sri Lanka

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ABSTRACT

The focus of this research is to understand the critical factors affecting the transferability of knowledge, skills and attitudes generated from training programmes conducted in the public sector in Sri Lanka. Government of Sri Lanka spends almost 17 Bn. Rupees annually for the training of public sector employees in anticipation of increasing the productivity in Sri Lankan public sector. Normally, course evaluation sheets, which merely assess the reaction of trainees show higher levels of rating in the Likert scale. However, the question is whether the trainees maintain or whether they are facilitated to maintain the drift they have shown in the reaction stage into the working environment. Hence, obtaining an understanding about the factors affecting the trainees’ applying the results of the training programmes to the working environment is a must to have productive training programmes at the end.

Since Public Management Assistant Service is one of the main operational level services in the country, it is decided to confine this study to the non-managerial level training and the population is confined to the Management Assistants of the Ministry of Public Administration and Management (MPA) who underwent training programmes at Sri Lanka Institute of Development Administration (SLIDA). Data were gathered through a questionnaire based on 3 main areas specifically: Course Attributes, Trainees characteristics and Environment and Organization Culture and multiple regressions have been used for the main analysis. This research is vital from practical stand point as it gives an inspiration to the public sector of Sri Lanka to explore whether existing training programmes are on the track. It is also to facilitate the training transfer at working place with the understanding on factors affecting the training transfer.

Keywords: Training Transfer, Course Attributes, Trainees’ Characteristics, Environment and Organization Culture
INTRODUCTION

This research will explore the critical factors affecting the transfer of training to the work environment. The government of Sri Lanka spends approximately 17 billion rupees (Government of Sri Lanka- budget estimate, 2017) yearly on staff training, anticipating improvement of productivity in the Sri Lankan public sector.

Ministry of Public Administration and Management (MPA) and Sri Lanka Institute of Development Administration (SLIDA), being the main institutions established to maintain the efficiency and effectiveness in the Sri Lankan Public Sector, have a huge responsibility to build the capacity of the public officers in Sri Lanka. As training is vital for enhancing efficiency and effectiveness it is a must to have a comprehensive understanding on the effectiveness of training, more specifically the volume of training transfer to the work environment. The decision-making authorities must be aware whether the training programmes achieve their objectives and how well the training institutions ensures the achievement of objectives. It is needed to have a clear idea whether the trainees have acquired the anticipated result of training (knowledge, skills and attitude) and apply what they have acquired from the programmes productively at the work place.

In the Sri Lankan context studies on training transferability is very rare and as mentioned above SLIDA is doing training evaluation up to reaction level only. However, Madagamage et.al. (2014) did similar type of a study by considering only class 3 officers of Sri Lanka Administrative Service and confined to the trainee characteristics and work environment factors and training design and the attributes of the trainers were not considered. Hence, it is decided to consider training design and the attributes of the trainers and to have a sample from management assistants as they belong to one of the main operational level services in the Sri Lankan public sector.

PROBLEM STATEMENT

Sri Lanka has one of the largest public sectors in the world. Currently, 1 out of 15 citizens is a public sector employee as result total number of public sector employees amounted up to 11.1million (Department of Census & Statistics, Sri Lanka, 2016). The government of Sri Lanka spends almost 17 billion rupees (government of Sri Lanka- budget estimate, 2017) annually for the training and capacity development of the public-sector employees. However, the performance of the Sri Lankan public sector still questionable and affects to the unsatisfactory level of the performance of Sri Lanka in internationally
recognized indexes such as Global Competitiveness Index. From 2016 to 2017 ranking of the Sri Lanka has dramatically dropped from 69 to 71 and the main reason behind the drawback is the week institutions. Institutions alone cannot perform without productive human resource. In other words, human resource is not productive enough to enhance the performance of the institutions for which lack in training transfer plays a major role. Although, transferability of training has become a popular topic in the arenas of HRD (Human Resource Development), Management and policy development quit a few studies have been contacted in the Sri Lankan context.

Therefore, do the public-sector officers transform what they have acquired from the training programme to the working place? is the question, for which the reasons are to be found out during this research.

OBJECTIVES OF THE STUDY

This study contains of 3 objectives.

1. To explore whether the training programmes conducted in the public Sector in Sri Lanka resulted to the transfer of knowledge, Skills and attitudes to the working place.
2. If then, what are the most critical factors affecting to the training transferability.
3. To give an insight to training institutions and to the organizations of the Sri Lankan public sector in formulating better training programmes.

LITERATURE REVIEW

Training evaluation has 4 levels namely: reaction, learning, behavior and results (Kirkpetrik, 2006). In the first level the reaction of the trainees upon the training is measured. In the second and third stages the knowledge enhancement happened due to training and the behavioral change occurred because of training measured respectively, whereas finally in the last level the final result of the training: how it(training) affected to the organization as a whole, is measured (Kirkpetrik,2006).

Measuring the reaction of trainees is the most common method used in the Sri Lankan context. In the world context too, reaction-only evaluation continues to be the most prevalent form of training evaluation (Goldstin,1980). The main disadvantage of the reaction-only strategy is that it offers little useful information to facilitate effective decision making. SLIDA too, uses reaction only evaluation system which merely focuses on course content, programme coordination and attributes of recourse persons. A
Likert scale is used to assess the respective areas. If the rating of resource person is less than level 4, the particular resource person is questioned to find out the causes of poor performance and a warning letter is issued accordingly.

Present Straining Evaluation System at SLIDA

![Figure 1: SLIDA Programme Evaluation System](image)

However, good ratings on the reaction evaluation do not always lead to enhance the job performance. Georgenson (1982) estimated only 10 percent of the training transferring to the job. Boldwing and Ford (1988) also noted that only 10 percent of training outcomes are transferred to the job while Rackman & Ruff (1991) mentioned that there was 87 percent loss of skills within one month of the completion of training.* *According to James Prochaska et, al.(1982), for behavioral change, an individual has to pass through a number of stages. Namely, Precontemplation, contemplation, Preparation, Action and Maintenance. (Prochaska,1982; Harris & Cole,2007). In the first stage, Pre contemplation there is no intention to change behavior in the future. If an individual is thinking about changing his behavior, specially within the next 3 months he is fallen into the second stage, Contemplation. In the third stage,
Preparation, individuals are intending to take action in the next month. Throughout the 4th stage individuals change the behavior to overcome issues. Finally, continuation of change is visible (Prochaska, 1982).

The training institute must explore whether this change is happening in the individual’s respective workplace. According to (Kirkpatrick, 2006) it takes 3 to 6 months to see whether there is a behavioral change. Effective application of knowledge, skills and attitude acquired during the training, to working place is considered as the positive transfer of training. (Newstrom 1984, Wexley and Latham 2002). Hence, Transfer of training is more than a function of learning in a training programme (Atkinson 1972, Fleishman 1953). Term transfer includes both maintenance of behaviour, and its capability of generalization to new applications (Broad and Newstrom, 2000). Training transfer is defined as “the application continued by learners to performance of jobs, individuals, community responsibilities of knowledge in learning activities” (Broad, 1997: p. 2). It is useful to think about evaluation of training with two levels of outcome, training outcomes and transfer outcomes. Training outcomes are measured during or just after the training programme and are the amount of original learning happens during a training programme and its retention. In contrast, Transfer outcomes are evaluated by measuring how trained skills have been maintained and generalised by the trainee after being on the job for some time (Baldwin and Ford, 1988). Researches in the field of training transfer have done significant improvement in finding factors affect distractively or constructively on workplace learning (Yasin, Nur, Ridzwan, Bekri, Arif, Mahazir and Ashikin, 2014).

Transfer of training is defined as transferring of knowledge, skills, attitudes gained through the training programme to the work of the respective trainee (Baldwin and Ford, 1998) Model of training transfer introduced by Baldwin and Ford (1998), is one of the most
significant model of training transfer grounded on the idea that the training transferability depends on training design, trainee characteristics and work environment as inputs. And the model emphasised that the retaining of the original learning which happened during the training programme as the training output. The model also highlighted the generalizing and maintaining the learning that occurred during the training as the conditions of transfer.

For this study too, similar attributes namely: course Attributes, environment and organization culture, attitudes and motivation of the trainees are studied to understand the training transfer. According to the existing literature and researches relating to factors affecting transfer of training, three broad categories can be identified. Namely, trainee characteristics, training design & delivery characteristics and work-environment & supervisory support characteristics (Subedi, 2004) which are almost similar to the categories selected for this study.

Well delivered programme is a key to its success. (Kirwan,2009). Understanding the principles of learning design delivery is a key to the accomplishment of learning behaviour (Kirwan, 2009). According to (Kirwan,2009:22), “Understanding these principles should provide a sound basis for choosing the
appropriate content, tools and techniques that have been proven to work, rather than leave participants at the mercy of the trainer’s preference.” (Kirwan, 2009:22). “No one would argue that a properly thought-out and well delivered programme is a key contributor to its success” (Kirwan, 2009:21) “Principles of learning design and delivery that have the most relevance for the attainment of learning transfer.” (Kirwan, 2009:21) The training design has been identified by many researchers as one of the most significant factors affecting training transferability (Brinkerhoff & Gill, 1992). While a significant number of scholars recognize the two forms of training design: instructional design and instructional method as the elements which maximize training transfer. Baldwin & Ford (1988), Garavalia (1993), (Wexley & Nemeroff, 1975), (Hagman & Rose, 1983).

Trainees’ personality and the motivation are the two broader areas mostly influence the training outcomes than others and more specifically number of attributes of trainees’ namely:

Conscientiousness, Self-efficacy, Motivation to learn, Learning and performance goal orientation, Instrumentality of training as the key to training results. (Tziner, Fisher, Senior and Weisberg, 2007). Promoting learning goal positioning and motivation to learn are the most significant factors in order to achieve training outcomes (Tziner, Fisher, Senior and Weisberg, 2007). Attribute, motivation to learn is further supported by a recent research and found out that the trainees enrolled in the training programmes on their own show higher tendency to transfer their training to the working place than mandatorily enrolled. (Curado, Hrnrqies and Riberio, 2015). It is natural in the humanity to see people are curious, dynamic and self-motivated. At their best they are enthused, determined to learn new skills and apply their abilities sensibly (Ryan and Deci, 2000). As (Tziner, Fisher, Senior and Weisberg, 2007) clearly mentioned that the wish of the trainees to acquire new skills resulted to have better performance end.

Conditions in organizations that either hinder or support to apply what has learnt in training programmes, in the working environment mentioned as “transfer climate” (Rouiller & Goldstein, 1993). Major attributes of environmental impact on training transfer such as supervisory support and opportunity to perform has been extensively studied in some researches. (Madagamage, Warnakulasooriya & Wickramasuriya, 2014) From the analysis done by (Curry & Chandler, 1999) it is revealed that the organization environment was a significant variable for the application of trainees’ learning. Holton, Seyler, Bates and Carvalho (1997) also studied the workplace support factors, “the transfer climate”, and found out that it significantly supports the trainees in transferring their knowledge in the working place. (Simosi, 2012) and (Kopelman, Brief and Guzzo, 1990) have recognized work environment as one of the key forerunners of training transfer and recognized organizational culture as a system of shared meaning.
and display of organizational behavior. The impact of organizational behavior on the trainees’ behavior has to be explored carefully to understand training transferability (Simosi, 2012).

Organizational culture affects through two main domains: training transfer climate and learning culture (Simosi, 2012). (Kirwan, 2009) has identified that the support from supporting services, peers, managers and the organization in general are the work environment factors that facilitate learning transfer. In terms of working environment support to the trainees (Pham, Segers and Gijselaers, 2013) suggest that the supervisors must acknowledged to support after training and allow the trainees to have more independence on the job to practice what they have learnt. However, in contrast to the training design and trainees attitudes, organization culture has drawn limited attention from training transfer researches (Simosi, 2012). This impression is reinforced by a research explored the field of “transfer literature”, the attention given to the work environment variables is relatively new as it increased in the last two decades (Burke & Hutchins, 2007) Although, they emphasized that the work environment variables are significantly influential for enhancing transfer (Burke & Hutchins, 2007).

**DESIGN /METHODOLOGY, DATA AND VARIABLES**

Approximately 500 non-managerial officers from MPA have under gone non-managerial training programme at SLIDA for the year 2014. Out of 19 training programmes conducted for non-managerial public officers by SLIDA, 7 programmes were selected for this research namely, customer care and public relations, establishment code and procedural rules, information technology, legal provisions, office management, pension matters, government procurement management and stores management. Purposive sampling method has been used for this study and questionnaire has been disseminated among 76 non-managerial officers from the Ministry of public Administration and Management among the participants for the selected courses. Data have been gathered through a questionnaire consists of 2 sections namely: background information section and the main questionnaire. Main questionnaire consists of 17 questions to get answers on 3 main areas namely: course attributes, environment and organization culture and trainees characteristics administrated among the sample of 76 participants and got response from 47 participants.

For this study, training transferability is defined as the effort that a trainee maid to apply what he or she has learnt from the training programme, to the current job as it is pretty much on par with the definitions of the existing literature. Content of the training programme, facilities given during the training programme and the attributes of the trainer considered for the training design and the level of satisfaction
of the trainee is considered with the above attributes. For the environment and the culture of the organization how far the trainee agree with the support given by the supervisors and support given by the peers are considered.
DATA ANALYSIS

Table 1: Demographic Data if the Participants

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<th>Frequency</th>
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</table>

Table 3: Coding of the Items

<table>
<thead>
<tr>
<th>Item Number/s</th>
<th>Main Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,5,6,7,8,9,10</td>
<td>Course Attributes</td>
</tr>
<tr>
<td></td>
<td>Independent Variables</td>
</tr>
<tr>
<td>11,12,13,14</td>
<td>Environment and Organization Culture</td>
</tr>
<tr>
<td></td>
<td>Independent Variables</td>
</tr>
<tr>
<td>2,3,15,16,17</td>
<td>Trainee Characteristics</td>
</tr>
<tr>
<td></td>
<td>Independent Variables</td>
</tr>
<tr>
<td>1</td>
<td>Transfer of Training</td>
</tr>
<tr>
<td></td>
<td>Dependent Variables</td>
</tr>
</tbody>
</table>
Table 2: Main categories of the questionnaire

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EffertTo_App</td>
<td>I tried to apply what I have learnt, to my job</td>
</tr>
<tr>
<td>2</td>
<td>Enhanced_Effi</td>
<td>My efficiency has been enhanced after training</td>
</tr>
<tr>
<td>3</td>
<td>Meet_Expect</td>
<td>My expectation to achieve new knowledge and skills has been met</td>
</tr>
<tr>
<td>4</td>
<td>SubKno_Consult</td>
<td>Subject knowledge of the trainers was high</td>
</tr>
<tr>
<td>5</td>
<td>Presentation</td>
<td>Presentation skills of the trainers were good</td>
</tr>
<tr>
<td>6</td>
<td>Facilities</td>
<td>Facilities during the training programme were sufficient</td>
</tr>
<tr>
<td>7</td>
<td>Overall_Status</td>
<td>Overall rating of the training was good</td>
</tr>
<tr>
<td>8</td>
<td>Good_Off</td>
<td>This training helped me to become a good Management assistant</td>
</tr>
<tr>
<td>9</td>
<td>Content</td>
<td>Content of the training relevant for my duties</td>
</tr>
<tr>
<td>10</td>
<td>Applicability</td>
<td>Everything I learnt from the training can be applied to my job</td>
</tr>
<tr>
<td>11</td>
<td>SuppFrom_HO</td>
<td>My higher officer helped me to apply what I acquired from the training to the job</td>
</tr>
<tr>
<td>12</td>
<td>InqBy_HO</td>
<td>My higher officer inquired about the training programme after I reported to the duty</td>
</tr>
<tr>
<td>13</td>
<td>Env_Cul</td>
<td>Organization culture and environment helped me to apply what I acquired from the training programme</td>
</tr>
<tr>
<td>14</td>
<td>SuppFrom_Peer</td>
<td>My peers helped me to apply what I acquired from the training to the job</td>
</tr>
<tr>
<td>15</td>
<td>Helpd_Duty</td>
<td>The knowledge and Skills acquired from the course helped me to perform my duties productively</td>
</tr>
<tr>
<td>16</td>
<td>IntroTo_Other</td>
<td>I would like to propose this training to another officer</td>
</tr>
<tr>
<td>17</td>
<td>Future_Parti</td>
<td>I hope to participate for future training programmes conduct by SLIDA</td>
</tr>
</tbody>
</table>

VALIDATION OF MEASUREMENT

the item, EffertTo_App (I tried to apply what I have learnt, to my job) has been selected as the most suitable DV which explains the training transfer in to the duties of the respective trainee. Croanbach’s alpha is used as a measurement of internal consistency of the items in the questionnaire. The Croanbach’s alpha for the 17 items was .858 which was higher than .80 and considered as a good internal consistency among the items. (Gliem and Gliem,2003). When the distribution of the data set was analyzed for the Shapiro-wilk test the reading was not significant. In other words, it rejects the null hypothesis and confirms that the data set was normally distributed. Stepwise multiple regression
has been used for this research to eliminate insignificant IVs and to keep most important IVs in the regression model. In stepwise multiple regressions the IVs are entered according to their importance of statistical contribution in explaining the variance of the DV.

Multiple regression analysis is used to analyze the relationship between Dependent variable (DV) and the Independent Variable (IV).

\[ y = \alpha + fA(a + b + c + d + e + f + g)B(h + i + j + k)C(l + m + n + o) \]  

\( Y = \) Transfer of training \( A = \) Course attributes \( B = \) Trainee Characteristics \( C = \) Environment and Organization Culture

\[ \text{Model} \quad R \quad R \text{ Square} \quad \text{Adjusted R Square} \quad R \text{ Std. Error of the Estimate} \]

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>.652a</th>
<th>.425</th>
<th>.412</th>
<th>.701</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>.733b</td>
<td>.538</td>
<td>.516</td>
<td>.570</td>
<td>.636</td>
</tr>
<tr>
<td>3</td>
<td>.774c</td>
<td>.599</td>
<td>.599</td>
<td>.599</td>
<td>.600</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Env_Cult  
b. Predictors: (Constant), Env_Cult, Enhanced_Effi  
c. Predictors: (Constant), Env_Cult, Enhanced_Effi, Helped_duty  
d. Dependent Variable: EffertTo_App

R square explains the amount of the variance in the dependent variable (EffertTo_App). In this model the R square score for the model 3 is .599, which means almost 60 percent of the EffertTo_App is explained by the model 3 which consists Env_cult, Enhanced_Effi and EffertTo_App. Hence, it is decided to accept model 3.

All three models are statistically significant as per the Anova test and it proves that there is a statistical significant relationship among the DV and the AVs.
Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. | Collinearity Statistics
--- | --- | --- | --- | --- | ---
1 (Constant) | 1.854 | .383 | 4.840 | .000 | 1.000 | 1.000
Env_Cult | .588 | .104 | .652 | 5.642 | .000 | 1.000 | 1.000
(Constant) | 1.327 | .385 | 3.449 | .001 | 1.000 | 1.000
Env_Cult | .392 | .113 | .434 | 3.467 | .001 | .702 | 1.424
Enhanced_Effi | .335 | .105 | .400 | 3.193 | .003 | .702 | 1.424
(Constant) | .603 | .464 | 1.301 | .012 | 1.000 | 1.000
Env_Cult | .240 | .123 | .265 | 1.954 | .031 | .530 | 1.887
Enhanced_Effi | .359 | .099 | .428 | 3.613 | .001 | .696 | 1.437
Helped_duty | .302 | .121 | .292 | 2.506 | .016 | .719 | 1.391

Table 5: Co Efficient Table

All 3 IVs in the model 3 positively affect to EffertTo_App (DV) since all the Beta weights for Standardized Coefficients range from plus .26 to plus .42. In other words, increase in 1 standard deviation in an IV in the model 3 increases .26 to .42 standard deviations in DV. If the Tolerance and the VIF (Variance inflation factor) are less than .01 and higher than 10.0 respectively, they indicate that the correlation of the respective independent variable with other independent variables are high and there is a high level of Multicollinearity (Pallant,2007). If the multiple correlation with other variables is high the reliability of the model is weakened. In this study, for all models, Tolerance is higher than .01 and VIF values are well below10.0. Therefore, it can be clearly concluded that there is no Multicollinearity issues in all models. Respective significance levels with regard to all models also below .05 and they are acceptable for further study.

Considering above facts and figures it is suggested to use the model 3 for further studies and rearrange the equation is as follows.

\[ y = \alpha + .359l + .302n + .240j + e \quad (2) \]

Where,

\( y \) = EffertTo_App

\( \alpha \) = Intercept

\( j \) = Env_Cult
When exploring the regression mode of the training transfer, it can be identified that IV, Enhanced_Effi is the highest contributor and responsible for approximately 36 present change in DV. The second most important IV, Helpd_Duty increased by 1 point the EffertTo_App (DV) is increased by 30 percent whereas 1 point increase in the Env_Cul leads to the approximately 24 enhancement in Helpd_Duty. It is noted that 3 IVs as a whole make significant impact in the DV by nearly responsible for 90 percent change.

CONCLUSION AND RECOMMENDATION

The above factors and figures reveal that there was transferability occurred after training. However, “When learning dose not transfer to the job, the two most likely reasons are that the work environment does not support the learned behavior and that the trainees think the training was irrelevant” (Garavaglia, 1993: 68). The research has proven the statement of Garavaglia with its findings. The above facts and figures reveal that the transfer of training highly relies on the trainees’ perception, more specifically if the trainees believe that the training supports to enhance their efficiency and helps to perform the duties well they tend to transfer what they have learnt in the training programme to their job. Those said believes can be happened primarily because of 2 main factors: the practicability of the course and the attitude of the trainees. The previous is affected from the very outset of training design to training delivery. Hence, it is a must to have a summative and formative analysis to explore whether this training focuses on the practical aspect which assists the mindset of the trainees to recognize it (training) as a catalyst for enhancing the efficiency and the job performance. And the latter is affected by the positive attitude of the trainees.

The practicality of the course can be achieved through more practical course content, training delivery through more practical examples, case studies, result oriented approach and utilizing trainers who possess not only the theoretical knowledge but also with more practical experience and specially who know the art of how to transfer their knowledge and skills effectively to the trainees. And the trainers should (Wexley & Nemeroff, 1975) (Hagman & Rose, 1983) be encouraged to use analogies as much as
they can since it helps to apply principles in various circumstances (Garavalia, 1993). Therefore right training design and selecting right trainer both go from strength to strength to attain practicability of the training.

On the other hand, the mindsets of the trainees have to be molded through training programmes on attitudinal change, positive thinking, team building etc., which helps to capture tip-offs for increasing productivity and efficiency, immerged during the trainings sessions.

Therefore, training institutes must focus not only to promote training programmes focus on subject matters directly relevant to the jobs of the respective trainees but also need to promote the trainings which decrease the negative thinking of the trainees. And the authorities too, must take the responsibility of promoting the trainees attending training programs of that nature.

Apart from the above 2 main factors working environment too, plays a significant role in transfer of training. And the authorities have to encourage building conducive working environment and culture for training transfer in order to transfer knowledge, skills and attitudes acquired from the training programmes to the respective job. This can be done by conducting continuous meetings in the working places, forming quality circles comprehensive performance revives, continues monitoring and communication by the supervisors, introducing training programmes to enhance networking and cordial relationship between and among subordinates, peers and supervisors etc.

Another significant finding of this research is that the trainees concern about efficiency and job performance of their own, which is noteworthy contrast to the usual criticism for Sri Lankan public sector employees; blamed for inefficient and unproductive service delivery. According to this research what matters most is the dearth of comprehensive training programmes focus practical applicability than theoretical jargons which assist the efficiency and productivity of the employees at the end.

One of the main limitations to be taken in to consideration in this study is the utilization of self-reporting as the method of gathering data on training transfer rather than using actual observation and/or examining the training transfer from the point of view of the trainees’ supervisor. Hence, it is suggested to cover those aspects in the future studies as also mentioned by (Wen & Lin, 2014).
REFERENCES


Ethical Orientation of HRM towards Employee Ethical Behavior: A Conceptual Model Development

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Opatha, H.H.D.N.P., University of Sri Jayewardenepura, Sri Lanka
Gamage, A.S., University of Sri Jayewardenepura, Sri Lanka.

ABSTRACT

Growing unethical behavior of employees in organizations is a serious global problem. The magnitude of negative consequences of the issue to organizations, society and the environment has increased scholarly attention to research for innovative, practical solutions through Human Resource Management (HRM). ‘The role of ethics in HRM is crucial, thus HRM functions in organizations should have an ethical orientation’ is an extensively debated facet of the ethical dimension of HRM over the past three decades. Recent studies have identified another connotation to the ethical dimension of HRM: Ethical Orientation of HRM (EOHRM). It is ‘to direct HRM functions to create, enhance and maintain ethicality within employees, to make an ethical work force in the organization’. EOHRM appears to be a novel concept in HRM literature. An extensive literature review identified eight gaps in the research theme. An integrated conceptual model was developed with six variables, derived from the identified key research gaps, to investigate the impact of EOHRM on employee ethical behavior through three mediating variables. Ethical attitude, ethical competence and employee personal character were identified as mediators on the relationship between EOHRM and employee ethical behavior. The ‘Intensity of organizational Code of Ethics’ has been proposed as an antecedent to EOHRM. This model will be tested in Licensed Commercial Banks operating in Sri Lanka in a future research. Being the first model developed to examine the impact of EOHRM on employee ethical behavior in the Sri Lankan business context, perhaps globally, it has considerable originality and directions for future research.

Keywords: Ethical Orientation of HRM, Ethical Attitude, Ethical Competence, Personal Character, Ethical Behavior
INTRODUCTION

“Business decisions aren’t always black and white. How can you trust that your workers will do the right thing?” (Neinert, D., 2014). Unethical behavior of employees is a growing concern in both developed and developing countries (Antonakas et al., 2014). Banks have not been spared from this issue. The Global Fraud Study, 2012/2013 conducted by the Association of Certified Fraud Examiners, Australia revealed that there have been 244 fraud incidents in the Banking and Financial Services industry. Out of 1,483 global occupational fraud incidents in more than 100 countries, the Banking & Finance industry had topped the list. The local business environment is of no exception to the global context. A recent white collar crime has been reported from HSBC Bank, Colombo, where five senior managers have been sacked after an investigation into allegations of manipulating employee incentives-linked performance records (www.sundaytimes.lk).

Human Resource Management (HRM) is an exclusive set of activities, functions and processes which are aimed at attracting, directing and maintaining the Human Resource (HR) of an organization (Lado and Wilson, 1994). Johnson (2003) argued that HR practices have an ethical foundation and deals with the practical consequences of human behavior. Thus, understanding the ethical framework of an organization is critical to address the problem of unethical behavior of employees in organizations (Armstrong, 2014). This need has been stressed by many researchers in the recent past (Palomina and Martinez, 2011; Debode et al., 2013;). HRM plays a vital role in promoting ethics in organizations (Ardichvili and Jondle, 2009; Palomina and Martinez, 2011; Dessler, 2013; Opatha, 2015). In order to have an ethical workforce, it is necessary to acquire, maintain and retain ethical employees in the organization (De Silva and Opatha, 2015). In the first instance, HRM functions should be ethically oriented to meet this challenge. Ethical orientation in each and every functional dimension of HRM is essential, as they contribute in creating, maintaining and sustaining an ethical context in the organization (Palomino and Martinez, 2011; Dessler, 2013; Arulrajah, 2015).

How Ethical Orientation of HRM (EOHRM) or ethical criteria embedded HRM functions could be directed as a ‘bundle’, to enhance ethicality within employees to generate an ethical workforce in the organizations has not been discussed in literature until very recently (De Silva, and Opatha, 2015). EOHRM is another connotation of the ethical dimension of HRM, and a new concept in HRM literature (De Silva et al., 2016). How EOHRM would impact on employee ethical behavior (EB) in organizations
has not been examined in extant literature, theoretically or empirically, precisely in Sri Lanka, and perhaps globally. Through a systematic review of two decades of literature in HRM functions, business ethics, employee ethical/unethical behavior and ethical decision-making behavior, authors identified eight theoretical and empirical research gaps in HRM functions and employee EB. The research problem of the study was formulated within the identified key research gaps:

“What is Ethical Orientation of HRM (EOHRM) and how does it impact on employee Ethical Behavior through identified mediating factors in organizations?”

The main objective of this study is to develop a Conceptual Model on EOHRM towards employee Ethical Behavior through identified mediating factors in organizations, to address the research problem of the study.

**METHODOLOGY**

A systematic literature review was conducted according to the archival method recommended by Tranfield et al. (2003), to build a reliable knowledge base in the research theme. The review started with a general search of literature in subjects: business ethics, HRM functions, employee ethical/unethical behavior, codes of ethics/conduct, ethical attitude, ethical competence, individual personal character, and ethical decision-making and behavior, published in refereed journals, conference proceedings, popular business journals, edited book chapters and text books by prominent authors, published over the past 20 years. Key words and phrases from the research theme, such as ethics and HRM functions, code of ethics/conduct, ethical or unethical behavior, ethical decision-making behavior etc. were used in the search. Several key on-line databases: JSTOR, SpringerLink, ScienceDirect, Wiley Online Library, SAGE journals, Taylor & Francis Online, and Emerald Insight were used in the literature search. Reading through the abstracts of about 100 research articles and few edited book chapters, about 60 articles were selected to review in detail. In addition, few text books and edited book chapters of prominent authors were studied.
LITERATURE REVIEW

Role of HRM in promoting employee Ethical Behavior in organizations
HRM is “the efficient and effective utilization of human resources to achieve goals of an organization” (Opatha, 2009, p. 7). Many scholars have stressed the importance of HRM in promoting ethics and employee EB in organizations. Hosmer (1994) argued that organizations which practice moral principles have a greater chance of success than the organizations which engage in corrupt and unethical practices. The standing of HRM functions has a strong impact on the organization’s ability to influence employee EB at work (Foote, 2001). The role of ethics in HRM is critical, thus HRM functions should have an ethical orientation (Tiwary, 2008). According to Palomino and Martinez (2011), HRM plays a critical role in promoting ethics in organizations through HRM practices and HR policies, as HRM practices are believed to have a strong influence on employees. Moreover, if HRM practices are handled badly, it reflects doubt and distrust of the company’s ethical policy and effort in promoting ethics in the organization.

HRM functions could play a proactive role in embedding ethics and values into HR architecture and throughout the organization (Thite, 2013). HRM functions (recruitment and selection, training and development, performance appraisal, pay and reward management and employee relations) play an active role in creating an ethical context in the organization (Parboteah et al., 2014). Embedding ethics into HRM functional dimensions through suitable organizational interventions and developing more benevolent ways of organizing work is seen as a new approach to the responsible organizations (Arulrajah, 2015). Further, Ethical Orientation of HRM (EOHRM) or ethical criteria embedded HRM functions directed as a ‘bundle’ could create, enhance and maintain ethicality within employees towards employee EB in organizations (De Silva and Opatha, 2015; De Silva et al., 2016). Hence, the role of HRM in promoting ethics and EB in organizations is undisputable (Caldwell et al., 2011).

Ethical Orientation of HRM (EOHRM)
The vision, ‘HRM should be concerned with the employee and societal well-being’ has been evolving over three decades. Carroll (1979) identified this facet as the Corporate Social Responsibility (CSR) or Corporate Social Performance (CSP) of an organization. An organization should perform its HRM functions ethically, in order to ensure justice and well-being of its stakeholders (Armstrong, 2014). This is...
the ‘social’ aspect of the ethical dimension of HRM, or how to treat employees ethically through HRM functions in organizations. In addition to the ‘social’ aspect, it is equally important to focus scholarly attention on other possible important aspects of the ethical dimension of HRM. This is necessary to address the increasing global problem on corrupt business practices and employee unethical behaviors in organizations (De Silva et al., 2016).

In contrast to the ‘social’ aspect, HRM functions could be ethically oriented as a construct to enhance ethicality within employees, to generate an ethical workforce in the organizations (De Silva and Opatha, 2015). This is another connotation to the ethical dimension of HRM, and it is labelled as ‘Ethical Orientation of HRM (EOHRM). It is ‘to direct HRM functions to create, enhance and maintain ethicality within employees to make an ethical workforce in the organization’ (De Silva et al., 2016). According to this definition, to create an ethical workforce through EOHRM ethical criteria should be embedded into dimensions and elements of respective HRM functions. In other words, this process involves functional incorporation of ethics into the HRM practices, in order to enhance ethicality within employees towards ethical behavior at work. ‘Ethicality’ is derived from the word ‘ethical’, which means moral beliefs and rules/obligations about the difference between right and wrong, or good and bad behavior of individuals or groups (De Silva and Opatha, 2015). The Ethical Orientation of HRM (EOHRM) is in contrast to performing HRM functions ethically or the ‘social/wellbeing’ aspect of the ethical dimension of HRM (De Silva et al., 2016).

HRM is “a system that attracts, develops, motivates, and retains employees, which ensures the effective functioning and survival of the organization and its members” (Jackson and Schuler, 1995, p.1). The concept EOHRM has been operationalized based on theories from prominent HRM literature (Opatha, 2009; Dessler, 2013; Jackson and Schuler, 1995). It has three dimensions: Acquire, Develop and Retain. The three dimensions are further divided into elements or ethical criteria embedded HRM functions. The dimensions of EOHRM are (i) Acquire (ethical criteria embedded elements: Job Analysis, Recruitment, Selection, Hiring, and Induction); (ii) Develop (ethical criteria embedded elements: Performance Evaluation and Training & Development); (iii) Retain (ethical criteria embedded elements: Pay Management, Welfare Management, Incentives Management, Management of promotions, Discipline management and Grievance management (De Silva and Opatha, 2015).
Key research gaps identified: EOHRM and employee Ethical Behavior (EB)

Authors reviewed the findings of selected meta-reviews on employee ethical decision-making and behavior in organizations. The review included selected empirical research published in indexed journals from 1994 to 2015. Six variables were identified through eight research gaps, in order to develop an integrated Conceptual Model on EOHRM and employee EB. Summary of the meta-reviews and key research gaps identified are presented in Table 1.

Table 1: Findings of meta-reviews and key research gaps identified

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Research gaps on EOHRM and EB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford and Richardson</td>
<td>1994</td>
<td>Identified how some traits of personality (eg. Machiavellianism) would influence employee EB and ethical decision making behavior. How Personal Character, ethical attitude or ethical competence of an individual would influence employee EB have not been examined.</td>
</tr>
<tr>
<td>Loe et al.</td>
<td>2000</td>
<td>This meta-review categorized the existent studies into four groups: (i) Awareness; (ii) Individual factors: cognitive moral development, moral philosophy, gender, age, education and work experience, nationality, religion, locus of control and intent; (iii) Organizational factors: opportunity, Codes of Ethics, rewards and sanctions, culture and climate, Significant others and (iv) Moral intensity of a moral situation. Above summary revealed that there are no existent studies on the impact of HRM functions, ethical attitude, ethical competence and personal character of employees on employee EB and ethical decision-making behavior.</td>
</tr>
<tr>
<td>O’Fallon and Butterfield</td>
<td>2005</td>
<td>Meta-review does not include how HRM functions, EOHRM, personal character, ethical attitude or ethical competence of employees influence employee EB or ethical decision-making behavior in organizations.</td>
</tr>
<tr>
<td>Trevino et al.</td>
<td>2006</td>
<td>-How HRM functions, EOHRM, personal character or ethical competence of employees would influence employee EB or ethical decision-making behavior have not been explored in the review.</td>
</tr>
<tr>
<td>Kish-Gephart et al.</td>
<td>2010</td>
<td>Influence of HRM or EOHRM on employee EB and ethical decision-making behavior has not been examined. Influence of any interacting variables (mediators or</td>
</tr>
</tbody>
</table>
moderators) on the relationship: EOHRM and employee EB has not been explored.

How Codes of Ethics would influence HRM functions or EOHRM has not been examined in the previous studies.

The individual characteristics that impact on employee EB in previous studies do not include ethical attitude, ethical competence or personal character of employees.

Craft, J.L. 2013
Do not include HRM functions, EOHRM, personal character, ethical attitude or ethical competence of employees among the many factors identified towards employee EB in this review.

MacDougall et al. 2014
This meta-review identified behavioral ethics models developed from 1969 to 2008 and does not include any model with EOHRM functions approach towards employee EB.

Existent literature does not include studies that investigate the moderating or mediating effect of variables on the link: EOHRM and employees EB.

Lehnert et al. 2015
The meta-review summarized over 400 published research articles conducted over the past 30 years.

**Recommended: More future research is needed with regard to interaction effects (moderators and mediators) on employee ethical decision-making and behavior, as only 8% of the total studies have investigated such effects.**

The influence of EOHRM on employee EB or ethical decision-making behavior has not been examined in previous studies.

Source: Developed by the researchers (2017)

**Gap 1: (Theoretical and Empirical)**

The results of meta-reviews in Table 1 revealed that a very few studies have examined the impact of selected HRM functions on employee ethical behavior (e.g., Training and development, rewards and sanctions). Research on the impact of EOHRM or ethical criteria embedded HRM functions directed as a ‘bundle’ on employee EB in organizations has not been explored. For instance, under ‘Organizational/Situation’ factors the extent literature had considered factors such as opportunity, codes of ethics, rewards and sanctions, culture and climate, significant others (Loe et al., 2000; Lehnert et al., 2015), but not EOHRM. Few studies have empirically tested how selected HRM functions (e.g.,
Training, reward and sanctions), could enhance employee EB at work (Loe et al., 2000). Hence, there is logical evidence that none of the previous studies have theoretically or empirically examined the impact of EOHRM on employee EB in organizations (De Silva et al., 2016).

This gap in existent literature has been considered as the main research gap in this study. The Research Problem of the study has been framed within this key research gap.

Gap 2, Gap 3 and Gap 4: (Theoretical and Empirical)
The results of meta-reviews revealed that there are no theoretical or empirical evidence on studies that examined specific relationships between EOHRM and the three variables identified: employee ethical attitude, ethical competence and personal character of employees.

Gap 5, Gap 6 and Gap 7: (Theoretical and Empirical)
Two recent meta-reviews (Kish-Gephart, et al., 2010; Lehnert, et al., 2015) reported that the existent studies have not examined any mediating or moderating factors that would influence employee ethical decision-making and behavior in organizations.

Further, EOHRM is a new concept in HRM literature, relatively unexplored in previous literature (De Silva et al., 2016). The specific mediating effects of (i) employee ethical attitude, (ii) ethical competence and (iii) personal character of employee on the relationship between EOHRM and employee EB, has neither been theoretically argued nor empirically examined in the existing literature, in the global context. Hence, these three research gaps are considered important in the present study. The three variables are considered as mediators between the link: EOHRM and employee EB in the proposed Conceptual Model.

Gap 8: (Theoretical and Empirical):
Codes of Ethics/Conduct has been identified as an ‘organizational environmental factor’ that influence employee EB in organizations in the existing empirical studies (Kish-Gephart et al., 2010). However, there are no theoretical arguments or empirical evidence with regard to a direct link between Code of Ethics and EOHRM, or the impact of Code of Ethics as an antecedent on EOHRM, in the meta-reviews (refer Table 1). Intensity of organizational Code of Ethics (ICE) is the level to which definitions and details of ethical principles are available in the Code of Ethics. This reflects the quantity and quality of the ethical principles in the Code of Ethics. How ICE would impact on EOHRM has not been explored in the previous literature. This is identified as the eighth research gap in this study.
Variables identified through the eight research gaps enabled to develop the proposed Conceptual Model (Figure 1).

**The Conceptual Model: EOHRM towards employee Ethical Behavior**

Based on the eight research gaps identified, available empirical evidence, scholarly arguments in textbooks of prominent authors, the General Systems Theory (von Bertalanffy, 1950, cited in Jackson and Schuler, 1995) and logical believes of the authors, an integrated Conceptual Model was developed (refer Figure 1) to address the research problem. The Model displays the proposed relationships and effects among identified variables. This is a multi-level model with six variables: Intensity of organizational Ethics, EOHRM, Ethical Attitude, Ethical Competence, Personal Character and employee EB in organizations (refer Figure 1).

![Figure 1: The Conceptual Model: EOHRM and employee Ethical Behavior](image)

Eight hypotheses were developed through deductive approach, to examine the relationships and effects of the six variables in the Conceptual Model (refer Figure 1).

**Intensity of organizational Code of Ethics (ICE) and EOHRM**

A Code of Ethics is a formal guideline created by an organization to direct its employees in their present and future behaviors at work (Kaptein and Schwartz, 2008). Stevens (2009) identified that a Code of Ethics documents the core philosophical principles and values of the organization, and stipulates the ethical conduct/behavior anticipated of its employees. Codes of Ethics/conduct are effective instruments for shaping employee ethical behavior in organizations (Kaptein and Schwartz, 2008; Stevens, 2009).
Organizations use Code of Ethics as a management tool to communicate ethical policies and direct employee behavior at work (Kaptein and Schwartz, 2008; Stevens, 2009; Erwin, 2011; KPMG and Kaptein, 2014). Thus, existent literature supports the view that Codes of Ethics play a critical role in HRM functions influencing ethical behavior of employees at work. Hence, the authors logically believed that there is a positive relationship between the Code of Ethics and HRM functions in an organization.

In order to create an ethical workforce through EOHRM, an organization should insert ethical criteria into HRM functions and direct them as a ‘bundle’ towards employee ethical behavior (De Silva, et al, 2016). To facilitate this effectively, an organization should follow an ethical benchmark or a Code of Ethics as a forerunner, to be guided to embed ethical criteria into HRM functions. Based on research gaps the Intensity of organizational Code of Ethics (ICE) has been identified as a forerunner or an antecedent to EOHRM in the proposed Conceptual Model (refer Figure 1). The ICE is the level to which definitions and details of ethical principles are available in the Code of Ethics, and ICE vary among organizations depending on the availability and clarity of ethical principles included in the Codes. Above empirical evidence and logical arguments led to the premise that there would be a positive and significant correlation between the ICE and EOHRM in organizations. This premise led to the first hypothesis of the study H1:

H1: Intensity of organizational Code of Ethics (ICE) is positively and significantly related to Ethical Orientation of HRM (EOHRM) in organizations.

Relationship between EOHRM and employee Ethical Behavior

Paauwe (2009) argued that HRM functions at the organizational level affect the attitude and behavior of employees at the individual level. The standing of HRM functions has a high impact on HRM’s ability to influence employee ethical behavior in organizations (Foote, 2001). HRM functions could influence ethical behavior of employees in organizations (Dessler, 2013). According to the General Systems Theory, if certain practices are implemented they will provide positive outcome (Alsabbah and Ibrahim, 2014). HRM functions could influence employee ethical behavior in organizations (Parboteeaha et al., 2014), since HRM functions have a strong link to employee behavior (Armstrong, 2014; Opatha, 2009). Hence, HRM has a strong link to employee ethical behavior. Further, EOHRM is to direct HRM functions to create, enhance and maintain ethicality within employees, to make an ethical work force in the organization, or the ‘bundle’ of ethical criteria embedded HRM functions directed to enhance employee
ethical behavior in organizations (De Silva et al., 2016). Hence, authors logically believed that EOHRM would significantly and positively influence employee Ethical Behavior in organizations. This notion directed to the second hypothesis of this study H2:

**H2:** EOHRM is significantly and positively related to employee Ethical Behavior in organizations.

**Relationship between EOHRM and employee Ethical Attitude (EA)**

Ethical attitude always means an attitude with regard to ethics. ‘Ethics’ are moral beliefs and rules or obligations about right and wrong (Opatha, 2010; Robbins et al., 2014; Opatha and Teong, 2014). Further, EA could be considered as a concept which consists of three components: (i) ethical evaluation (cognition), (ii) ethical feelings (affect) and (iii) intention to behave ethically (behavioral) towards an object, people or events. Here the attitude ‘object’ is ethics. In order to generate, enhance and maintain an ethical workforce in an organization, the employees’ knowledge, skills and attitudes should be complimented with ethical values or moral principles (Savaneviciene and Stankeviciute, 2012). HRM practices at the organizational level affect the attitude and behavior of employees at the individual level (Paauwe, 2009). HRM systems influence employee attitudes and behaviors, as well as organizational outcomes (Kopelman, et al., 1990, cited in Bowen and Ostroff, 2004). “Every human being has attitudes which have a significant impact on his/her behavior (Opatha, 2015, p. 74). Hence, HRM functions have a strong influence on employee attitude. Accordingly, authors logically believed that Ethical Orientation of HRM or EOHRM would positively and significantly influence employee EA. This framed the third hypothesis:

**H3:** Ethical Orientation of HRM (EOHRM) is positively and significantly related to Ethical Attitude of employee in organizations.

**Relationship between EOHRM and employee Ethical Competence (EC)**

Ethical Competence is the character strength, ethical awareness, moral judgement skills and willingness to do good (Kulju et al., 2015). It is “the sensitivity of managers and professionals to moral issues in their organizational structurers, followed by judgement and action” (Pohling, et al., 2016, p. 3). Employee EC could be considered as ‘the extent to which the employee possesses knowledge and skills in respect of ethics’. In an organization EC reflects an employee’s ability to take ethical decisions and behave ethically. Ethical criteria embedded Recruitment and Selection guarantee that the organization gets
employees with the right attitude of ethics. Ethical criteria embedded Induction and Training & Development ensure that the employees get the right ethical competence (knowledge and skills with regard to ethics), in order to make ethical decisions and behave ethically at work. Accordingly, authors believed that ethical criteria embedded HRM functions or EOHRM has a positive and significant influence on employee EC in organizations. Based on this logical argument, authors developed the fourth hypothesis of the study:

**H4: Ethical Orientation of HRM (EOHRM) is positively and significantly related to Ethical Competence of employee in organizations.**

### Relationship between EOHRM and employee Personal Character (PC)

Personal Character is “a person’s moral attributes or it is the nature of his/her moral qualities or characteristics” Opatha (2010, p. 17). Further, it is the degree to which a person processes virtues (good habits: honesty, empathy, benevolence etc.) and vices (bad habits: anger, jealousy, greed etc.). Hence, “a person with good character can be considered as a person who has virtues to the maximum extent and has minimum or no existence of vices” (Opatha, 2010, p. 17). According to the General Systems Theory, if certain practices are implemented it will result in positive consequences (Alsabbah and Ibrahim, 2014). Accordingly, authors believed that ethical criteria embedded HRM functions or EOHRM can have a strong influence on the ‘personal character’ of an employee. When ethical criteria are rooted into HRM functions such as Induction, Training & Development, Performance Appraisal, Compensation etc. they can be influenced to enhance virtues (good habits) and eliminate/minimize vices (bad habits) in the Personal Character of an employee. Hence, authors logically believed that EOHRM has a positive and significant influence on employee Personal Character. This notion directed to the fifth hypothesis (H5) of the study.

**H5: Ethical Orientation of HRM (EOHRM) is positively and significantly related to Personal Character of employee in organizations.**

### Mediating effect of employee EA on the link between EOHRM and employee EB

Employee EA surfaces between the time the independent variable, EOHRM activates to influence employee EB, the dependent variable of the study. Employee EA has a temporal time dimension to EOHRM. How does EOHRM influence employee EB? We believe that the influence of EOHRM on
employee EB occurs through employee EA. EOHRM operates at time one first, then employee EA (mediating variable) activates at time two. Lastly, employee EB will activate at time three. Based on evidence in extant literature and scholarly arguments, authors logically believed that employee EA helps to explain the influence of EOHRM on employee EB in organizations. This logical belief and premise led to the sixth hypothesis of the study:

\[ H_6: \text{The relationship between EOHRM and employee Ethical Behavior is significantly mediated by Employee Ethical Attitude in organizations.} \]

**Mediating impact of employee EC on the link between EOHRM and employee EB**

The authors argued that employee EC (mediator) is a variable that surfaces between the time the Independent Variable (EOHRM) operates to influence the Dependent Variable (employee EB). Employee EC has a time dimension (a temporal quality) to EOHRM. How does EOHRM influence employee EB? We believe that the influence of EOHRM on employee EB occurs through employee EC. First, EOHRM activates at time one, then employee EC (being the mediating variable) activates at time two. Next, employee EB will activate at time three. Our logical belief is that employee EC helps to explain the influence of EOHRM on employee EB. This belief led to the seventh hypothesis H7:

\[ H_7: \text{Employee Ethical Competence has a significant mediating relationship between EOHRM and employee Ethical Behavior in organizations.} \]

**Mediating influence of employee PC on the link: EOHRM and employee EB**

The authors believed that employee PC (mediator) is a variable that surfaces between the time the Independent Variable (EOHRM) operates to influence the Dependent Variable (employee EB). Employee PC has a time dimension (a temporal quality) to EOHRM. Authors believed that the influence of EOHRM on employee EB occurs through employee PC. First, EOHRM activates at time one (T1), then employee PC (being the mediating variable) activates at time two (T2). Next, employee EB will activate at time three (T3). Hence, authors logically believed that employee PC helps to explain the influence of EOHRM on employee EB. This belief directed to the eighth hypothesis H8:

\[ H_8: \text{Employee Personal Character significantly mediates the relationship between EOHRM and employee Ethical Behavior in organizations.} \]
General Systems Theory

In addition to the above specific empirical and theoretical evidence, the ‘General Systems Theory (GST) has been considered as the Grand theory to strengthen the overall relationships among variables in the Conceptual Model (refer Figure 1). In the GST, the unit of analysis is understood as a complex of interdependent parts (von Bertalanffy, 1950, cited in Jackson and Schuler, 1995, p. 239). Further, “an open (vs closed) system is dependents on the environment for ‘inputs’, which are transformed during ‘throughput’ to produce ‘outputs’ that are exchanged in the environment” (p. 239).

As an exceptional view to the GST, Katz and Kahan (1978), cited in Jackson and Schuler (1995, p. 239) identified HRM as “a subsystem implanted in a larger organizational unit”. This ‘Open System View’ of HRM has been further developed by Wright and Snell (1991), cited in Jackson and Schuler (1995, p. 239), and introduced a ‘competence management model’ of organizations. In Wright and Snell’s model, the employee skills and abilities were ‘inputs’ from the environment, employee behavior was the ‘throughput’ or the ‘process’ and employee satisfaction and performance were the ‘outputs’. In this instance HRM functioned as a subsystem to acquire, utilize, retain and displace competencies of employees. The GST has been used by many researchers (Wright and Snell, 1991; Kozlowski and Salas, 1994, cited in Jackson and Schuler, 1995) to explain how HRM functions could be utilized to achieve organizational goals. Hence, authors too considered the GST as the ‘Grand’ theory of this study to theoretically explain the relationships among variables in the Conceptual Model (refer Figure 1).

Applying the GST to the proposed Model, the Intensity of organizational Code of Ethics (i.e. the antecedent to EOHRM) has been considered as the ‘inputs’ from the organizational environment. EOHRM or Ethical criteria embedded HRM functions directed as a ‘bundle’ is the ‘throughput’ that enhances ethicality within employees in the ‘process’. The ‘output’ is the enhanced ethicality within employees (ethical attitude, ethical competence, moral Personal Character) towards ethical behavior of employees in the organization. Supported by the GST, authors logically believed that there are positive and significant relationships and effects among variables in the proposed Conceptual Model (refer Figure 1).
FUTURE RESEARCH

EOHRM appears to be a novel concept in HRM literature. This article offers direction for future empirical investigation. The proposed Conceptual Model (refer Figure 1) will be empirically tested in a future study in the Sri Lankan context.

CONCLUSION

Authors explored another facet of the ethical dimension of HRM, named Ethical Orientation of HRM or EOHRM. It is how the ethical criteria embedded HRM functions directed as a ‘bundle’ could create, enhance and maintain ethicality within employees towards ethical behavior. EOHRM is a different aspect of HRM, such as the Green HRM, Strategic HRM, Ethical HRM or CSR-HRM. The EOHRM also can be labelled as ‘Moral-HRM’ (De Silva et al., 2016), as it deals with enhancing morality or ethicality of employees in the organization. Since EOHRM appears to be rather a new concept, there are no theoretical or empirically evidence on the relationship of EOHRM and employee EB, specifically in Sri Lanka, and perhaps globally. Further, the authors proposed that the ‘Intensity of organizational Code of Ethics (ICE)’ is an antecedent to EOHRM. Employee EA, EC, and PC of employees have been proposed as mediating variables on the relationship between EOHRM and employee EB in organizations. This study has considerable originality in HRM-Ethics literature, and direction for future research.

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Development and Validation of a Measuring Instrument of Work-Family Conflict in Sri Lanka

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ABSTRACT

Work and family are considered to be the most important spheres in an individual’s life. Effective and efficient management of the interface between work and family is one of the current issues among employees in Sri Lanka. Advances in technology, increasing the labour force participation rate of women, changing the demographic structure of women and the gender role ideology etc. have caused the work family interface more blended and vulnerable to cause the work family conflict. Work–family conflict has been defined as “a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible is some respect” (Greenhaus & Beutell, 1985). From the literature review, six dimensions of work-family conflict were identified.

The purpose of this study is to develop and validate a measure that captures all dimensions of work–family conflict for usage of research situations in Sri Lankan context. A structured Questionnaire was distributed among 53 professionals of Engineers, Medical Officers, University Academics and Accountants in the public sector organizations in Sri Lanka using random sampling techniques during the period of November 2014 to December 2014. Responses were obtained only from 33 employees in a usable form. Data were analyzed using SPSS packages under descriptive statistics, reliability and validity estimates and exploratory factor analysis. Six factors causing work family conflict were identified. These scales showed adequate levels of internal consistency, dimensionality and discriminant validity of the sample. This study is significant to employees, family members, human resource managers, medical officers, psychologist and researchers. The limitations of the study are that all of the measures were self-reported that common method variance may have influence and the scale was validated only one sample. Additional validation of the scale across private organizations and different occupations are needed to further establish the scales and provide generalizability.

Keywords: Work–Family Conflict, Interface, Professionals, Dimensions, Sri Lanka
Development and Validation of a Measuring Instrument of Work-Family Conflict in Sri Lanka

INTRODUCTION TO THE STUDY

Work and family are considered to be the most important domains for each life. Advances in technology have made the path to work more time by means of e-mail, mobile phones and laptop computers from one domain to another domain. Besides, the labour force participation rate of women in Sri Lanka has also increased significantly from 25 percent in 1986 and 34.8 percent in 2014 (Central Bank Reports, Sri Lanka, 1988 & 2014). So the demographic structure of women and the gender role also have changed dramatically. Furthermore, employees are juggling to manage multiple roles such as employee, wife or husband, parent etc. These have caused the work family life spheres more vulnerable and lead to work family conflict. Duxbury et al. (1993) claimed that professionals work longer hours than other groups of workers, which can amplify work–family conflict. The term, work-family conflict, generally refers to the inter-role conflict in which the role demands from work are incompatible with role demands from family (Greenhaus & Beutell, 1985). Initially the work family conflict will confine to individual’s family and later it will affect to the organization and finally affects the society at large.

The purpose of this study was to develop and validate a measure that captures all dimensions of work–family conflict for usage of research situations in Sri Lankan context.

LAND MARKS OF LITERATURE REVIEW-WORK-FAMILY CONFLICT, ITS DIMENSIONS, PREDICTORS AND CONSEQUENCES

Gender as a social construct is widely seen to affect the division of labour in the spheres of home and work despite being culturally and historically variable (Crompton, 1999). Greenhaus and Beutell (1985) define work-family conflict as “a form of inter-role conflict in which the role pressures from work and family domains are mutually incompatible in some respect. That is participation in the work (family) role is made more difficult by virtue of participation in the family (work) role”. Interrole conflict is a form of role conflict in which the sets of opposing pressures arises from participation in different roles.

The authors define work family conflict as an interrole conflict situation in terms of time based, strain based and behavioural based in which noncompliance of role demands from one domain (work) causing ineffective functioning in another domain (family) due to insufficient physical and psychological resources.

Consistent with Greenhaus and Beutell’s (1985) definition, three forms of work–family conflict have been identified in the literature: (a) time-based conflict, (b) strain-based conflict, and (c) behavior-based conflict. Time-based conflict may occur when time devoted to one role makes it difficult to participate in
another role, strain-based conflict suggests that strain experienced in one role intrudes into and interferes with participation in another role and behavior-based conflict occurs when specific behaviors required in one role are incompatible with behavioral expectation in another role (Greenhaus & Beutell, 1985).

In 1991, Gutek et al. argued that each of these three forms of work–family conflict has two directions that is work can interfere with family and family can also interfere with work. So the following six dimensions were identified.

I. Time based work interference with family
II. Time based family interference with work
III. Strain based work interference with family
IV. Strain based family interference with work
V. Behaviour based work interference with family
VI. Behaviour based family interference with work

Predictors of Work family conflict could be classified from the literature into work related predictors, family related predictors and demographic related predictors. In the case of work related predictors, numerous studies found that working longer hours or longer days can seriously boost work family conflict. Moreover, work family conflict was found to be predicted by greater work demands (Yang et al., 2000), a greater time commitment to work (Parasurman and Simmers, 2001). The family related predictors includes children at home (Carlson, 1999), family support and number of dependents, family disagreements, higher involvement in family and greater time demands on family (Carlson and Perrewe, 1999) were identified.

Furthermore, in demographic variables, the findings of studies on work family conflict that compare the experiences of men and women are not consistent with each other. Some studies found that women report more conflict between work and home than men (Gutek et al., 1991) whereas others found that men and women report similar levels of conflict (Emslie et al., 2004). In contrast, some of the research revealed that men experience a higher level of work family conflict than women (Parasurman and Simmers, 2001). Gender role perspective states that work is for men and domestic responsibilities and housekeeping are for women (Gutek et al., 1991). That is, men are the breadwinners and women are the homemakers called as gender role ideology. From the literature, this concept is also play major role in work family conflict.

The possible consequence of work family conflict can be classified in accordance with literature into physical outcomes (e.g. poor appetite, headache, somatic pain etc.), psychological outcomes (e.g. depression, lower marital satisfaction, psychological distress, etc.), behavioral outcomes (e.g. heavy alcohol drinking, cigarette use, etc.), and work related outcomes (e.g. lower job satisfaction, absenteeism, turnover intention, poor work-related role performance etc.).
THEORETICAL BACKGROUND AND MEASUREMENT OF WORK FAMILY CONFLICT

Theoretical Background
There are different theoretical perspectives that have been used to explain the relationship between work–family conflict, its predictors and potential consequences. Prominent theories relevant to Work-family conflict are Role theory, Role conflict theory from conservation of resources theory, Theory of Spillover and Work family border theory. These theories are explained in the following manner.

Role theory
Work family conflict researchers heavily depend on role theory. If a theory is mentioned at all, work–family conflict researchers have relied mainly upon role theory (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). This theory is based on the concept that an individual’s life is comprised of a number of roles, including work role as well as roles outside of work (e.g., spouse, friend etc). Role conflict occurs when two (or more) sets of pressures occur at the same time such that compliance with one set makes it more difficult to comply with the other set (Kahn et al., 1964).

Role conflict theory from conservation of resources theory
According to role conflict theory, individuals have a fixed and finite amount of psychological and physiological resources to expend on fulfilling their role obligations (Edwards & Rothbard, 2000). Involvement in multiple roles will exhaust these resources and ultimately, impair role functioning.

Theory of Spillover
Spillover is a process by which an employee’s experience in one domain affects their experience in another domain (Hart, 1999). Theoretically, spillover is perceived to be one of two types: positive or negative (Crouter, 1984). According to this theory “workers carry the emotions, attitudes, skills and behaviors from their work role into their family life and vice versa” (Lambert, 1990).

Work family border theory
Another theory that guides this research is the Work/Family Border Theory. In the work/family border theory, Clark (2000) argues that the primary connection between work and family systems is not emotional, but human. The theory claims people are border crossers who make daily transitions between two worlds, the world of work and the world of family. People shape these worlds, mold the borders between them, and determine the border crosser’s relationship to that world and its members (Clark, 2000). This theory focuses on identifying the factors that create work and family conflict, and tries to find ways to manage these two spheres and the border between them, in order to reach a balance between work related roles and family related roles (Clark, 2000).
Measurement of work family conflict

Researchers have measured work family conflict in many ways. They use the forms and directions of work family conflict. It has been commonly used as a multidimensional approach for measuring work family conflict. Researchers have noted that work–family conflict is a bi-directional relationship with work-based sources of conflict influencing the family and family-based sources of conflict influencing work. Netemeyer et al. (1996), constructed and validated a 10-item measure that included items for both directions of work–family conflict (WIF and FIW - four dimensions) including time based and strain based. However, the above authors did not consider behavioural based work–family conflict. Carlson, D. S., Kacmar, K. M., & Williams, L. J. (2000), has constructed and initial validated 18 items of a multidimensional measure of work-family conflict considering all six dimensions of time based, strain based and behavior based work–family conflict.

Justification for the construction of a new instrument for Work-family conflict

Most of the work-family conflict researches have been conducted in western industrialized nations such as United States, Australia, the United Kingdom and Western Europe countries etc. These countries are individualistic culture and family structure is mostly nucleus family without social support. Even though a number of work family conflict scales are developed in Western, it’s questionable whether those work-family conflict scales are fully valid in Sri Lankan settings as Sri Lanka is a collectivistic culture in nature, most of the family structure is extended family structure with social support and to some extent of nucleus family structure and family welfare is also given priority. Besides, Sri Lankan political, economic and employments variables are also mostly different with that of Western countries. Under these circumstances, the construction of a new instrument for Work-family conflicts in Sri Lanka is paramount important.
RESEARCH METHODOLOGY

Forms of work-family conflict
Based on research objectives and having done a literature survey, the necessary forms of work – family conflict were identified based on findings of Greenhaus and Beutell (1985), Gutek et al. (1991) and Carlson et al. (2000). This shows in Figure 1 as follows.

![Diagram of forms of work-family conflict]

**Figure 1: Forms of work-family conflict**

Operationalization of Work-family conflict
The work family conflict concept was operationalized using the definition of work-family conflict of Greenhaus and Beutell (1985), forms of conflict of Carlson et al. (2000) and two directions of work family conflict that is work can interfere with family and family can also interfere with work identified by Gutek et al. (1991).

<table>
<thead>
<tr>
<th>Definition</th>
<th>Dimensions</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Greenhaus and Beutell (1985) defined work-family conflict as “a form of inter-role conflict” in which the role pressures from work and family domains are mutually incompatible in some</td>
<td>1. Time-based work interference with family</td>
<td>1. My work is being taken more time so that I feel difficult to fulfill my family obligations.</td>
</tr>
<tr>
<td></td>
<td>2. Strain based work interference with family</td>
<td>2. I am very often distracted by mental thoughts of work while I am spending quality of time with family.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. I am often missing my family activities as I have to attend a</td>
</tr>
</tbody>
</table>

Table 1: Operationalization of variables
That participation in the work (family) role is made more difficult by virtue of participation in the family (work) role.

2. Gutek et al. (1991) argued two distinct constructs (two directions of work-family conflict) work to family conflict and family to work conflict.


This leads to a six-dimensional model of work-family conflict.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Time-based family interference with work</td>
<td>4. I am normally put off things at work due to family commitments need more time.</td>
</tr>
<tr>
<td></td>
<td>5. The time I spend on family responsibilities often interfere with getting to work on time and accomplish work assignments.</td>
</tr>
<tr>
<td></td>
<td>6. Sometimes, I miss some of work activities due to time consuming more on family responsibilities.</td>
</tr>
<tr>
<td>3. Strain-based work interference with family</td>
<td>7. My work related strains make me difficult to fulfill family activities/responsibilities.</td>
</tr>
<tr>
<td></td>
<td>8. I am often so emotionally drained at work when I returned to home from work it is preventing me from accomplishing family commitments.</td>
</tr>
<tr>
<td></td>
<td>9. My spouse and children are complaining me that after returned to home only I am irritable to them.</td>
</tr>
<tr>
<td>4. Strain-based family interference with work</td>
<td>10. I could not accomplish my work tasks effectively as I am so exhausted by my family responsibilities.</td>
</tr>
<tr>
<td></td>
<td>11. Because of my family related strains at home, I could not concentrate at work.</td>
</tr>
<tr>
<td></td>
<td>12. The stress at home makes me to preoccupy with family related expectations at work.</td>
</tr>
<tr>
<td>5. Behavior-based work interference with family</td>
<td>13. My problem-solving behaviors at my work make me difficult to solve in family matters at home.</td>
</tr>
<tr>
<td></td>
<td>14. The decision making behavior I use in my work is counterproductive at home to me.</td>
</tr>
<tr>
<td></td>
<td>15. The behaviors I perform at work do not help me to be a better parent and spouse at home.</td>
</tr>
<tr>
<td>6. Behavior-based family interference</td>
<td>16. My behaviors at home are not effective to function well at my job.</td>
</tr>
<tr>
<td></td>
<td>17. Behavior that is effective and necessary for me at home would be counterproductive at work.</td>
</tr>
</tbody>
</table>
RESEARCH DESIGN

Research instrument – Questionnaire survey
After studying different research approaches, it was concluded that survey questionnaire is the best approach to be adopted in this research. From the literature review, a survey questionnaire was developed to collect the data for this study.

SAMPLING FRAMEWORK

This research has been conducted among a sample of 33 professionals including Medical officers, Engineers, Accountants and University academics selected using simple random sampling techniques in the public sector Organizations in Sri Lanka.

DATA COLLECTION TECHNIQUES

Primary data was collected through the use of a written structured questionnaire that was hand delivered and posted by postal mail to randomly selected professionals. Parts of the Questionnaires were hand delivered after explaining the purpose of the research also. Each questionnaire was prefaced by a paragraph explaining objectives of the survey. Of the 53 distributed questionnaires, 33 were retuned and the response rate is approximately 62%. Data collection was taken place during the period of November 2014 to December 2014.

DATA ANALYSIS

Based on the collection of data, an analysis of the data for this study has done using SPSS packages in three ways. As a first step, descriptive statistics of mean was generated. Next reliability and validity tests were conducted. Finally exploratory factor analysis has been conducted.

According to Table 1, work– family conflict was operationalized under six dimensions but performed an exploratory factor analysis (not confirmatory factor analysis) to search any new dimension or disregard any existing dimensions. This is due to a validity problem as the work – family conflict construct was operationalized in the western cultural settings and this may be an argument in Sri Lankan context.
regarding its validity. Besides, behavioural based form of work – family conflict is difficult to operationalize in the field. Moreover, according to Kailasapathy et al.,(2014), the behavioural based form of work – family conflict dimension was discarded in recent work family conflict related study in Sri Lanka and used time and strain based work-family conflict measures only. Besides, according to Navaneethakrishnan,K (2015), psychological based work-family conflict could be considered as a new dimension in a collectivist society in work-family conflict studies. These insights were taken into account to perform exploratory factor analysis.

**Descriptive statistics**

The descriptive statistics of mean for the sample has been calculated from the following Table 2.

**Table 2: Descriptive Statistics of work family conflict measures**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timebasedwork1</td>
<td>33</td>
<td>2.00</td>
<td>5.00</td>
<td>4.2222</td>
<td>.87820</td>
</tr>
<tr>
<td>Timebasedwork2</td>
<td>33</td>
<td>3.00</td>
<td>5.00</td>
<td>4.3333</td>
<td>.59409</td>
</tr>
<tr>
<td>Timebasedwork3</td>
<td>33</td>
<td>4.00</td>
<td>5.00</td>
<td>4.3889</td>
<td>.50163</td>
</tr>
<tr>
<td>Timebasedfam1</td>
<td>33</td>
<td>3.00</td>
<td>5.00</td>
<td>4.0556</td>
<td>.80237</td>
</tr>
<tr>
<td>Timebasedfam2</td>
<td>33</td>
<td>2.00</td>
<td>5.00</td>
<td>3.7778</td>
<td>1.00326</td>
</tr>
<tr>
<td>Timebasedfam3</td>
<td>33</td>
<td>2.00</td>
<td>5.00</td>
<td>4.1667</td>
<td>.85749</td>
</tr>
<tr>
<td>Strainbasedwork1</td>
<td>33</td>
<td>3.00</td>
<td>5.00</td>
<td>4.2778</td>
<td>.57451</td>
</tr>
<tr>
<td>Strainbasedwork2</td>
<td>33</td>
<td>3.00</td>
<td>5.00</td>
<td>4.1667</td>
<td>.85749</td>
</tr>
<tr>
<td>Strainbasedwork3</td>
<td>33</td>
<td>3.00</td>
<td>5.00</td>
<td>4.2222</td>
<td>.73208</td>
</tr>
<tr>
<td>Strainbasedfam1</td>
<td>33</td>
<td>3.00</td>
<td>5.00</td>
<td>4.2222</td>
<td>.64676</td>
</tr>
<tr>
<td>Strainbasedfam2</td>
<td>33</td>
<td>2.00</td>
<td>5.00</td>
<td>4.2222</td>
<td>.87820</td>
</tr>
<tr>
<td>Strainbasedfam3</td>
<td>33</td>
<td>2.00</td>
<td>5.00</td>
<td>4.0556</td>
<td>1.05564</td>
</tr>
<tr>
<td>Behabasedwork1</td>
<td>33</td>
<td>2.00</td>
<td>5.00</td>
<td>4.0000</td>
<td>.90749</td>
</tr>
<tr>
<td>Behabasedwork2</td>
<td>33</td>
<td>3.00</td>
<td>5.00</td>
<td>4.1111</td>
<td>.75840</td>
</tr>
<tr>
<td>Behabasedwork3</td>
<td>33</td>
<td>2.00</td>
<td>5.00</td>
<td>3.6111</td>
<td>.91644</td>
</tr>
</tbody>
</table>
Mean of WFC= 4.118

Based on this mean value from the Table 2, the work family conflict for the sample is 4.11 and it indicates that the sample of professionals has a severe work family conflict.

**Reliability**

Reliability of a measure is established by both consistency and stability. Reliability means whether the items measuring a concept fit with each other once they are taken as one set. It measures how well the items are positively correlated to one another. The more these items are correlated to each other, more the reliability is established.

Reliability of Work family conflict has been measured using SPSS packages with internal consistency coefficient Cronbach alpha, and found the overall Cronbach alpha is 0.784 which indicate a very high internal consistency. This shows in the following Table 3. However, internal consistency for each dimension is also need to be measured separately.

**Table 3: Reliability Statistics – Work-family conflict**

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.784</td>
<td>18</td>
</tr>
</tbody>
</table>

The next step is to find the reliability for the each dimension. In the literature review three dimensions were identified. They are time based work family conflict, strain based work family conflict and behavioural based work family conflict. Reliability analysis for these shows in the following Table 4.3, Table 4. and Table 5.
According to Table 4, the Cronbach’s Alpha value for the six items included in Time-based work-family conflict is 0.566.

According to Table 5, the Cronbach’s Alpha value for the six items included in Strain-based work-family conflict is 0.807.

According to Table 6, the Cronbach’s Alpha value for the six items included in Behavioural-based work-family conflict is 0.493.

The next step of instrument development was to examine whether any deletion of any items could improve the reliability (Cronbach’s Value) for each dimension. In this aspect, please refer to the following Table 7.
Table 7: Item-Total Statistics - Time based work- family conflict

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Cronbach’s Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timebasedwork1</td>
<td>20.7222</td>
<td>4.918</td>
<td>.366</td>
<td>.490</td>
</tr>
<tr>
<td>Timebasedwork2</td>
<td>20.6111</td>
<td>5.663</td>
<td>.388</td>
<td>.498</td>
</tr>
<tr>
<td>Timebasedwork3</td>
<td>20.5556</td>
<td>6.379</td>
<td>.191</td>
<td>.562</td>
</tr>
<tr>
<td>Timebasedfam1</td>
<td>20.8889</td>
<td>6.458</td>
<td>.003</td>
<td>.647</td>
</tr>
<tr>
<td>Timebasedfam2</td>
<td>21.1667</td>
<td>3.794</td>
<td>.592</td>
<td>.342</td>
</tr>
<tr>
<td>Timebasedfam3</td>
<td>20.7778</td>
<td>5.007</td>
<td>.358</td>
<td>.494</td>
</tr>
</tbody>
</table>

Cronbach’s Alpha for Time based work- family conflict is 0.556. As one see in Table 4.6, if item of Timebasedfam1 to be deleted reliability Cronbach’s Alpha could be improved from 0.556 into 0.647. Hence item4 (Time basefam 1) was deleted from the Questionnaire.

Table 8: Item-Total Statistics - Strain based work- family conflict

<table>
<thead>
<tr>
<th>Item</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Cronbach’s Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strainbasedwork1</td>
<td>20.8889</td>
<td>9.987</td>
<td>.439</td>
<td>.803</td>
</tr>
<tr>
<td>Strainbasedwork2</td>
<td>21.0000</td>
<td>7.412</td>
<td>.806</td>
<td>.715</td>
</tr>
<tr>
<td>Strainbasedwork3</td>
<td>20.9444</td>
<td>8.997</td>
<td>.542</td>
<td>.782</td>
</tr>
<tr>
<td>Strainbasedfam1</td>
<td>20.9444</td>
<td>9.938</td>
<td>.381</td>
<td>.811</td>
</tr>
<tr>
<td>Strainbasedfam2</td>
<td>20.9444</td>
<td>7.820</td>
<td>.676</td>
<td>.749</td>
</tr>
<tr>
<td>Strainbasedfam3</td>
<td>21.1111</td>
<td>7.399</td>
<td>.592</td>
<td>.778</td>
</tr>
</tbody>
</table>
Cronbach's Alpha for Strain-based work-family conflict is 0.805. As one see in Table 8, No any item to be deleted as the existing reliability Cronbach's Alpha is 0.803. Besides Cronbach's Alpha if Item Deleted is less than 0.805.

**Table 9: Item-Total Statistics-Behavioural based work-family conflict**

<table>
<thead>
<tr>
<th>Item-Total Statistics-Behavioural based work-family conflict</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behabasedwork1</td>
<td>20.5000</td>
<td>6.265</td>
<td>.207</td>
<td>.471</td>
</tr>
<tr>
<td>Behabasedwork2</td>
<td>20.3889</td>
<td>6.958</td>
<td>.124</td>
<td>.504</td>
</tr>
<tr>
<td>Behabasedwork3</td>
<td>20.8889</td>
<td>4.693</td>
<td>.629</td>
<td>.214</td>
</tr>
<tr>
<td>Behabasedfam1</td>
<td>20.2222</td>
<td>4.889</td>
<td>.524</td>
<td>.276</td>
</tr>
<tr>
<td>Behabasedfam2</td>
<td>20.2222</td>
<td>7.124</td>
<td>.085</td>
<td>.519</td>
</tr>
<tr>
<td>Behabasedfam3</td>
<td>20.2778</td>
<td>6.918</td>
<td>.020</td>
<td>.577</td>
</tr>
</tbody>
</table>

As one see in Table 9, No any item to be deleted as the existing reliability Cronbach's Alpha is 0.493 for Behavioural based work family conflict. Besides Cronbach's Alpha if Item Deleted is less than 0.493 except item of Behabasedwork2 (0.504) that is insignificant. So it is not necessary to delete any items in this category.

**Split – half reliability for work – family conflict**

For detailed reliability analysis, split–half reliability analysis has been conducted. This shows in Table 10. According to this Table 10, Cronbach's Alpha values were satisfactory with 0.68 and 0.699 respectively.

**Table 10: Split – half reliability for work – family conflict**
Reliability Statistics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1</td>
<td>.680</td>
<td>9</td>
</tr>
<tr>
<td>Cronbach's Alpha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part 2</td>
<td>.699</td>
<td>9</td>
</tr>
<tr>
<td>Total N of Items</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Correlation Between Forms</td>
<td>.493</td>
<td></td>
</tr>
<tr>
<td>Spearman-Brown Coefficient</td>
<td></td>
<td>Equal Length: .660</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unequal Length: .660</td>
</tr>
<tr>
<td>Guttman Split-Half Coefficient</td>
<td>.655</td>
<td></td>
</tr>
</tbody>
</table>

a. The items are: Timebasedwork1, Timebasedwork2, Timebasedwork3, Timebasedfam1, Timebasedfam2, Timebasedfam3, Strainbasedwork1, Strainbasedwork2, Strainbasedwork3.

b. The items are: Strainbasedfam1, Strainbasedfam2, Strainbasedfam3, Behabasedwork1, Behabasedwork2, Behabasedwork3, Behabasedfam1, Behabasedfam2, Behabasedfam3.

Validity

If the constructs are operationalized incorrect or if they cause confusion or doubts with other concepts, these measures are said that they are not valid. Validity is the measures that the measuring instrument is fit for the intended measuring purposes. A tedious calculation exercise was carried out to ensure that these measures are derived properly and then the procedure is said test of reliability and validity. A researcher’s first job in assessing validity is to check the face validity and content validity. Content validity ensures that the measure is inclusive of an adequate and representative set of items that covers the concept. The validity of an instrument refers to the extent to which it measures what was intended to be measured. The validity of the scales utilized in this study was assessed for construct validity. Face validity is also a measure of content but not as strong as establishing it through a literature review. It is done by showing the questionnaire to a few subject specialist or experts of the concept and gets their validation of the construct. Once the content is validated the next step is to test for the reliability.
Unidimensionality, discriminant validity and external validity.
The above calculations and factor analysis show that many of the measurement items had strong loadings on the construct indicating unidimensionality and construct validity. To confirm discriminant validity of measurement items, the loadings off all items should have greater loading on that construct. In order to do the above assignment cross loading of all items were executed. None of the factors have achieved this condition in the above estimates. The sample used for this analysis is only 33. Inadequate samples would have led this situation. External validity is actually related to generalizing. Since this assignment is done according to a pilot survey, external validity could not be achieved.

Sampling adequacy test and Barlett's Test of Sphericity
Since, the appropriateness of data for factor analysis needs to be established, the sampling adequacy test was performed through Kaiser-Meyer-Olkin (KMO) statistic If, KMO values greater than 0.6, then it is considered as adequate (Kaiser and Rice, 1974). In this sample analysis, the Kaiser-Meyer-Olkin measure of sampling in this analysis is 0.348. Since the sampling size is 33, it is obvious that the sample size is inadequate. Barlett's Test of Sphericity (233.594, df. 276, Sig.0.00) show that the values are significant and hence, acceptable implying that non-zero correlations existed at the significance level of 0.000, it provided an adequate basis for proceeding with the factor analysis. Table 11 provides the SPSS output of data for factor analysis.

Table 11: Sampling adequacy test and Barlett's Test of Sphericity
KMO and Barlett’s Test
<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</th>
<th>Approx. Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartlett's Test of Sphericity</td>
<td>df</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>.348</td>
<td>233.594</td>
</tr>
</tbody>
</table>

Factor analysis
Exploratory Factor Analysis was done to identify the salient factors causing work family conflict and to group the constructs into manageable factors. The Principle Components method for extraction was employed with the Varimax Rotation with Kaiser Normalization. The rotation converged in six iterations,
and factors with Eigen values greater than one were retained. Further, in order to assess the appropriateness of the data for factor analysis, the communalities derived from the factor analysis were reviewed.
The results of factor analysis are presented in the following Table 13.
<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>% of Variance</td>
</tr>
<tr>
<td>1</td>
<td>4.903</td>
<td>27.241</td>
</tr>
<tr>
<td>2</td>
<td>3.040</td>
<td>16.889</td>
</tr>
<tr>
<td>3</td>
<td>2.240</td>
<td>12.443</td>
</tr>
<tr>
<td>4</td>
<td>1.877</td>
<td>10.425</td>
</tr>
<tr>
<td>5</td>
<td>1.514</td>
<td>8.409</td>
</tr>
<tr>
<td>6</td>
<td>1.129</td>
<td>6.274</td>
</tr>
<tr>
<td>7</td>
<td>.815</td>
<td>4.529</td>
</tr>
<tr>
<td>8</td>
<td>.722</td>
<td>4.010</td>
</tr>
<tr>
<td>9</td>
<td>.624</td>
<td>3.469</td>
</tr>
<tr>
<td>10</td>
<td>.441</td>
<td>2.449</td>
</tr>
<tr>
<td>11</td>
<td>.333</td>
<td>1.850</td>
</tr>
<tr>
<td>12</td>
<td>.143</td>
<td>.797</td>
</tr>
<tr>
<td>13</td>
<td>.100</td>
<td>.553</td>
</tr>
<tr>
<td>14</td>
<td>.081</td>
<td>.452</td>
</tr>
<tr>
<td>15</td>
<td>.032</td>
<td>.178</td>
</tr>
<tr>
<td>16</td>
<td>.003</td>
<td>.019</td>
</tr>
<tr>
<td>17</td>
<td>.002</td>
<td>.014</td>
</tr>
<tr>
<td>18</td>
<td>-7.606E-018</td>
<td>-4.225E-017</td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
### Table 13: Factor Analysis of Component Matrix

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timebasedwork1</td>
<td>.672</td>
<td>.194</td>
<td>.268</td>
<td>.076</td>
<td>-.122</td>
<td>.381</td>
</tr>
<tr>
<td>Timebasedwork2</td>
<td>.091</td>
<td>.778</td>
<td>.146</td>
<td>.288</td>
<td>-.188</td>
<td>.148</td>
</tr>
<tr>
<td>Timebasedwork3</td>
<td>-.090</td>
<td>.640</td>
<td>-.305</td>
<td>.140</td>
<td>.422</td>
<td>-.280</td>
</tr>
<tr>
<td>Timebasedfam1</td>
<td>.183</td>
<td>-.163</td>
<td>-.476</td>
<td>-.037</td>
<td>.190</td>
<td>.660</td>
</tr>
<tr>
<td>Timebasedfam2</td>
<td>.465</td>
<td>.322</td>
<td>-.276</td>
<td>.739</td>
<td>-.040</td>
<td>.059</td>
</tr>
<tr>
<td>Timebasedfam3</td>
<td>.209</td>
<td>.207</td>
<td>.469</td>
<td>.470</td>
<td>.462</td>
<td>-.114</td>
</tr>
<tr>
<td>Strainbasedwork1</td>
<td>.558</td>
<td>-.643</td>
<td>.057</td>
<td>-.118</td>
<td>-.159</td>
<td>-.224</td>
</tr>
<tr>
<td>Strainbasedwork2</td>
<td>.852</td>
<td>.362</td>
<td>-.275</td>
<td>.031</td>
<td>-.027</td>
<td>-.107</td>
</tr>
<tr>
<td>Strainbasedwork3</td>
<td>.538</td>
<td>.110</td>
<td>-.617</td>
<td>.132</td>
<td>-.435</td>
<td>-.214</td>
</tr>
<tr>
<td>Strainbasedfam1</td>
<td>.621</td>
<td>-.404</td>
<td>.076</td>
<td>.273</td>
<td>.278</td>
<td>-.107</td>
</tr>
<tr>
<td>Strainbasedfam2</td>
<td>.805</td>
<td>.114</td>
<td>.113</td>
<td>-.348</td>
<td>-.033</td>
<td>-.189</td>
</tr>
<tr>
<td>Strainbasedfam3</td>
<td>.657</td>
<td>.127</td>
<td>-.333</td>
<td>-.424</td>
<td>.145</td>
<td>.215</td>
</tr>
<tr>
<td>Behabasedwork1</td>
<td>.555</td>
<td>-.574</td>
<td>-.026</td>
<td>.269</td>
<td>-.346</td>
<td>-.226</td>
</tr>
<tr>
<td>Behabasedwork2</td>
<td>.448</td>
<td>-.316</td>
<td>-.021</td>
<td>-.160</td>
<td>.734</td>
<td>-.147</td>
</tr>
<tr>
<td>Behabasedwork3</td>
<td>.580</td>
<td>-.257</td>
<td>.549</td>
<td>-.010</td>
<td>-.057</td>
<td>.356</td>
</tr>
<tr>
<td>Behabasedfam1</td>
<td>.703</td>
<td>.451</td>
<td>.334</td>
<td>-.205</td>
<td>.041</td>
<td>-.018</td>
</tr>
<tr>
<td>Behabasedfam2</td>
<td>-.100</td>
<td>-.319</td>
<td>.412</td>
<td>.552</td>
<td>-.057</td>
<td>.065</td>
</tr>
<tr>
<td>Behabasedfam3</td>
<td>.040</td>
<td>.514</td>
<td>.598</td>
<td>-.383</td>
<td>-.228</td>
<td>-.164</td>
</tr>
</tbody>
</table>
Extraction Method: Principal Component Analysis.

a. 6 components extracted.

<table>
<thead>
<tr>
<th>Table 14: Component Matrix for grouping the factors - Component Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Timebasedwork1</td>
</tr>
<tr>
<td>Timebasedwork2</td>
</tr>
<tr>
<td>Timebasedwork3</td>
</tr>
<tr>
<td>Timebasedfam1</td>
</tr>
<tr>
<td>Timebasedfam2</td>
</tr>
<tr>
<td>Timebasedfam3</td>
</tr>
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<td>Strainbasedwork1</td>
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<td>Strainbasedwork2</td>
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<tr>
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</tr>
<tr>
<td>Behabasedwork1</td>
</tr>
<tr>
<td>Behabasedwork2</td>
</tr>
<tr>
<td>Behabasedwork3</td>
</tr>
<tr>
<td>Behabasedfam1</td>
</tr>
</tbody>
</table>
Extraction Method: Principal Component Analysis.

a. 6 components extracted.

<table>
<thead>
<tr>
<th>Component</th>
<th>Theoretical dimensions</th>
<th>Variable loaded</th>
<th>Factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Time based work interference with family</td>
<td>Timebasedwork1</td>
<td>.672</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strainbasedwork2</td>
<td>.852</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strainbasedfam1</td>
<td>.621</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strainbasedfam2</td>
<td>.805</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>.657</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Behabasedfam1</td>
<td>.703</td>
</tr>
<tr>
<td>2</td>
<td>Time based family interference with work</td>
<td>Timebasedwork2</td>
<td>.739</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Timebasedwork3</td>
<td>.470</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strainbasedwork1</td>
<td>-.643</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Behabasedwork1</td>
<td>-.574</td>
</tr>
<tr>
<td>3</td>
<td>Strain based work interference with family</td>
<td>Strainbasedwork3</td>
<td>-.617</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Behabasedwork3</td>
<td>.549</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Behabasedfam3</td>
<td>.598</td>
</tr>
<tr>
<td>4</td>
<td>Strain based family interference with work</td>
<td>Timebasedfam2</td>
<td>.739</td>
</tr>
<tr>
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<td></td>
<td>Timebasedfam3</td>
<td>.470</td>
</tr>
<tr>
<td>Variable</td>
<td>Initial</td>
<td>Extraction</td>
<td></td>
</tr>
<tr>
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<td>------------</td>
<td></td>
</tr>
<tr>
<td>Timebasedwork1</td>
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<td>.753</td>
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</tr>
<tr>
<td>Timebasedwork2</td>
<td>1.000</td>
<td>.752</td>
<td></td>
</tr>
<tr>
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<td>1.000</td>
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<tr>
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<td>.639</td>
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<tr>
<td>Timebasedfam2</td>
<td>1.000</td>
<td>.828</td>
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<td>Behabasedwork2</td>
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<tr>
<td>Behabasedfam2</td>
<td>1.000</td>
<td>.646</td>
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</tr>
</tbody>
</table>
RESULTS

Eighteen items of measure for measuring work-family conflict were developed and validated. Out of 18 items, 17 items are validated to measure work family conflict construct. The average value of work family conflict for professionals under study was 4.11. This shows a severe work family conflict was among the professional. The internal consistency found the overall Cronbach alpha is 0.784 which indicate a very high internal consistency. Spilt – half reliability for work – family conflict, Cronbach's Alpha values were satisfactory with 0.68 and 0.699 respectively. Barlett's Test of Sphericity ( 233.594, df. 276, Sig.0.00) show that the values are significant and hence, acceptable implying that non-zero correlations existed at the significance level of 0.000, it provided an adequate basis for proceeding with the factor analysis. Kaiser-Meyer-Olkin (KMO) statistic If, KMO values greater than 0.6, then it is considered as adequate (Kaiser and Rice, 1974). In this sample analysis, the Kaiser-Meyer-Olkin measure of sampling in this analysis is 0.348. Since the sampling size is 33, it is obvious that the sample size is inadequate but to some extent it is satisfactorily.

DISCUSSIONS

In the present study where the effects of professionals’ family and work life conflicts were examined, the means of professionals’ work-family conflict 4.11. It is understood that professionals experience severe work-family conflict. 17 items of scales can be used to measure work family conflict.

CONCLUSION

The prime interest of this researcher is to develop and validate of measuring instrument for work family conflict in Sri Lanka. A comprehensive literature review has been conducted to identify the dimensions of this construct and Time based, Strain based and Behaviou based dimensions were identified in work family conflict in both directions. Even though a number of work family conflict scales are developed in Western, it’s questionable whether those work-family conflict scales are fully valid in Sri Lankan settings as Sri Lanka is a collectivistic culture in nature. So construction and development of a new scale for
work-family conflict is an emerging need to Sri Lanka. Using the 18 items of work family conflict measures, 17 items were found satisfactory. The item of “I am normally put off things at work due to family commitments need more time” was deleted. From the exploratory analysis, no any new dimension of work-family conflict was identified. Reliability and validity were also assessed in a substantial manner. Since the sample size is only 33, sampling adequacy was not effective. Work family conflict measures for the sample is 4.11 and it indicates that the sample of professionals facing a severe work family conflict in Sri Lanka.

LIMITATIONS AND FUTURE RESEARCH

The limitations of the study are that all of the measures were self-reported that common method variance may have influence and the scale was validated only one sample. Additional validations of the scales across different occupations and across private organizations are needed to further establish the scales and provide generalizability with sufficient samples.

REFERENCES


Factors Affecting for Employee Turnover of Selected Commercial Private Bank in Capital City of Sri Lanka

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Kodikarage, N.N.S., University of Ruhuna, Sri Lanka

ABSTRACT

Employee turnover is one of the most promising problems for any organization. Employee turnover is a common issue, mainly in the human resource management field. Leaving of the job by the employees is technically defined as an individual’s own expected chance (subjective) that they are quitting the organization permanently at some spot in the near future (Vandenberg and Nelson, 1999). When considering the Sri Lankan banking sector, the banks have to bare unexpected cost for new recruitment, training and development, lower productivity due to unexpected turnover rate. Though the selected private bank in this study has planned about 3.5 annual turnover rates, the actual turnover rate of the bank is 4.5. The existing turnover gap results high cost to the bank for frequent recruitments and training sessions and loss of valuable man hours. Therefore, objectives of this study are to ascertain the factors affecting for employee turnover and to suggest organizational strategies to reduce employee turnover in context of private bank in Sri Lanka. The sample of the study was 100 bank employees and 50 employees are the resigned employees. The sample selection was done purposively and data collection was done by using semi structured questionnaires and other face to face interview techniques. Data analysis was done using descriptive and inferential statistical techniques. Sample test was used to test the hypothesis. This study has revealed that Employees with less family responsibilities, carrier goals oriented, job stressful and middle level income have high potential of leaving the job. Anyhow, employees with high family responsibilities try to retain at work in spite of their less satisfaction for their jobs. Bank does not provide sufficient training and welfare facilities to the bank employees to increase their job satisfaction. Therefore, Improvement of employee welfare facilities through social events, motivational programme, youth entertainment programs, credit facilities, Incentives found to be best strategies to reduce employee turnover of the bank.

Keywords: Employee, Banking sector, Turnover, Job satisfaction, Family Responsibility
INTRODUCTION

Banks are one of the most important financial sectors of any country despite of its economic scale. In this modern time, money and its necessity is very important. A modern bank provides valuable financial devices to the country. Efficient financial system of a country greatly supports economic development and societal welfare of the country. Hence, a modern bank plays a vital role in the socio economic development matters of the country. The Sri Lankan banking sector is concentrated and dominated by public-sector banks. Approximately, half of banking sector is comprised by public sector, including the three largest banks. Among those, six largest banks (including three private banks) have classified as “accounted for 64% of sector assets at end of the year 2010. (Thalgodapitiya and Bhoumik , 2012)

The banks promote saving habit among people attracting depositors by introducing attractive deposit schemes and provide rewards or return in the form of interest. Banks providing different kinds of deposit schemes to their customers. Sri Lankan banks benefit from a substantial share of customer deposit funding, reflecting their strong domestic franchises. Historically, deposits have funded over 70% of bank assets. Increased lending and competition have driven up funding costs with diminishing liquidity. Fitch believes that while banks should remain primarily deposit funded, the share of non-deposit funding could increase. The banks are important to formulation and promoting of industries. Capital is one of the most important parts of any business industry. It is the life blood of business. Banks are increase capital formation by collecting deposits from depositors and convert these deposits in to loan advances to industries. Since a bank promote industry and investment, there automatically generate employment opportunities. So, a bank enables an economy to generate employment opportunities.

Employee turnover

Employee turnover is a common issue, mainly in the human resource management field. Leaving of the job by the employees technically define as an individual’s own expected chance (subjective) that they are quitting the organization permanently at some spot in the near future (Vandenberg and Nelson ,1999). Most of the countries like Sri Lanka employee turnover is a major challenge for the human resource managers. Although there are many studies to investigate regarding employee turnover, employee turnover has not been addressed properly. The employee turnover can be categorized as controlled, uncontrolled and demographic. In addition, there are two main categories of turnover one is voluntary and the other one is involuntary turnover. However the organization has to bear the cost for although the employee turnover is voluntary or involuntary. (Pietersen and Oni , 2014).
There are many costs such as recruiting, training, hiring, retaining, loss of high performers and disruption of social and communication structures of organizations, loss of productivity during replacement search has to bear by the organization. There is a relationship of trust with employee turnover. The trust relationship as an important variable for employee turnover intention. Trust is defined as One party's willingness to be vulnerable to another party based on the assumption that the following party is competent, reliable and concerned (Mishra, 1996). When the misunderstandings of management are constant then distrust among employees would reduce the willingness of employment, increased turnover and intention to quit. Because of intention to leave, unpreventable or unavoidable turnover, desired turnover and undesirable turnover can be happened. The issues of family, personal illness or retirement can be subjected to the unpreventable turnover. Besides, the desired turnover is due to the inability of the employee himself. The Undesirable turnover consists of skilled and trained workers leaving due to organizational issue such as role conflict, poor support and lack of supervision. These issues affect the customer service, quality of products and service and organizational effectiveness. The high turnover rates do not always depend on the work place or the managers. In many incidences companies with the better image and famous brands of the industries have the target of recruitment. Companies always take better interest in rates of employee turnover because the replacement of employee which is a costly part of many business. When a company needs to replace a worker the company suffers the direct and indirect costs. The productivity of the organization can be reduced during the time of former workers leave the job and the new employee is fully trained. Furthermore for some companies which have less performance, it is difficult to retain clients or customers by the employees who were newly recruited.

The one of the major objective of this research paper is to identify about the factors which are affected to the employee turnover and how it can be reduced by increasing the job satisfaction. It can be able to predictable that when few employees leave the organization then it can be reasoned for high turnover rates, then it leads to less productivity and high organizational costs. Therefore, organizations must aim to given better working environment and culture for employees. So it can be subjected to reduce turnover rate. Because of that the company should care about all the variables that can be affected to intentionally or unintentionally for willingness of turnover in employees.
RESEARCH PROBLEM

Today’s competitive business world, it is considered to be an important task to manage employee turnover for any organization. Naturally people want diversities in his/her everyday life; seeks for new and challenging jobs and good working environment in job place. To provide these things to the employees in an economic way is very difficult and cumbersome. But it is also crucial for any organization to retain its talented employees. Every organization wished to have high productivity, fewer turnovers and to be profitable. Managing turnover successfully is a must to achieve the above goals.

There have been done few numbers of researches to identify and analyze of factors which are affected for employee turnover of Banking Sector in Sri Lanka. The major challenge that banks face is skilful employees leave the job and join with competitive another bank or organization. When considering a private bank in Sri Lanka, they plan 3.5 turnover rates annually. But it is observed 4.5 turnover rates. So there is a 1.0 gap between they planed turnover rate and actual turnover rate. Because of this unexpected turnover rate the organization has to bare unexpected costs like Administrative hiring costs ,lost productivity before a replacement can be placed in the job, lost productivity due to the time required for a new worker to get up to speed on the job, lost productivity associated with time that co-workers must spend away from their work to help a new worker, cost of training, cost associated with the period prior to voluntary termination when workers tend to be less productive, cost associated with communication of the proprietary secrets, public relations costs, increased unemployment insurance costs. Therefore, this research is done to identify the factors which are affecting for employee turnover and to suggest strategies to increase job satisfaction and reduce job turnover.

LITERATURE REVIVE

Employee Turnover
The employee turnover is simply defined as an employee’s determination for intention to leave the current doing job and look forward to find the other one. (Purani&Sahadev, 2007; Weisbeg, 1994). The employee turnover is currently understandable as an employee’s preference to quit his or her organization refers that an employee is unable to remain the organizational part (Lacity et al., 2008). According to Bodla & Hameed (2008), the employees’ turnover will have significant risk or cost losing social assets. "Employee turnover is a ratio comparison of the number of employees a company must replace in a given
time period to the average number of total employees (Agnes, 1999). A huge concern to most companies, employee turnover is a costly expense especially in lower paying job roles, for which the employee turnover rate is highest (Samuel, 2012). Turnover refers to the amount of movement of employees in and out of an organization, normally present in terms of the turnover rate (Chruden & Sherman, 1972). According to Mobley (1982), employee turnover as the discontinuance of membership in an organization by the person who received monetary compensation from the organization. According to the Tanke (2001), the employee turnover is the movement of employees out of the organization. The employees’ turnover means the rotation of workers around the labour market, between organizations, jobs and careers. An individual’s intention to leave its organizations has been given in many stress models (Ivancevich, Matteson, & Preston, 1982; Kemery, Mossholder, & Bedian, 1987). Specifically intention to leave takes perceptions of job alternatives and employee evaluation. (Allen et al, 2003; Mobley, et al, 1979). Past research had concluded that intention to leave is one of the biggest causes and an immediate symbol of employee’s turnover (Griffeth et al., 2000; Porter & Steers, 1973).

Factors affecting for employee turnover
There are many factors are affected to the employee turnover rate of many organizations. According to (Bean, 2009) company benefits, job performance, employee attendance and wages are significantly affected to employee turnover. Although most of the people think there is only one factor is behind their turnover choice, there are more factors available as driving force for that factor. (Jaffari, 2011). There is not available standard framework for understanding the employees turnover process as whole, but a wide range of factors have been found useful in interpreting employee turnover Kevin et al. (2004). Among those factors career growth (Hamel and Breen, 2007), job satisfaction (Palazzo and Kleiner 2002; Garcia and Kleiner 2001; Hannay and Northam 2000 and Stein, K. 1996), employee goal setting (Medlin and Green 2009), training and development (Walsh and Taylor 2007; Shaw et al., 1998; Huselid, 1995), work environment (Cardoso and Monfardini, 2008; Hansen, 2008 and Burke and Hsieh, 2006) are the most important factors that is affected for employee turnover process. Security of job, Working environment and salaries are the main causes of Turnover. Because of unhappiness from job place the employee turnover is occurred. In contrary employee also pushed to leave job due to the dissatisfaction in their present workplace. (Santript Shukla, Dr. Ambalika, 2013)

Relationships among Turnover and Productivity
The employee turnover has a deep relationship with the productivity. The employee turnover can be affected to reduce overall productivity of an organization and it can be created lots of other difficulties.
“Productivity is the measures of an organization to achieve its targeted production with the means of workforce, authority’s strategies, machineries, equipment and assets “ (Maertz C P and Campion M A, 1998). The management of the organization must have a plan to increase their productivity. There are various terms affect to productivity of the organization such as line balancing, scheduling, incentive scheme, etc. (Griffeth et al, 2000)

Small percentage of employee turnover can also be affected to considerable amount of production lost. That means the employee turnover directly affects the production and productivity. The main reason for that is replacement of an employee is costly and time consuming. There are many formalities have to maintain to replacement of a person during that time production is reduced in a greater extent. There are also other difficulties during the replacement of workers such as follows. The newly replaced worker may not be efficient like the previous one. The newer one takes time to be easy with the new system, with the co-worker, to be habituated with the new environment etc. During the time of replacement the co-worker faces problems due to the vacancy. After the replacement the co-worker have to spend time from their task to help the new worker. Some organizational authority point on the turnover tendency of the worker that affects their productivity. Suppose, a worker may get assurance from another after one month later, then the worker gives up concentration from working. At the time productivity of the organization falls down. Newly appointed employee may not be trained properly for the new position and needed time consuming training for settle down with the new job place. There may be cultural differences between new employees with the previous one which slows down his / her job performance. Demographic position also influences workers performance and characteristics

Theories Regarding Employee Turnover

There are many theories are available that can be explained the employee turnover. The theories that have been used during this research are mentioned below.

Theory Z:
The theory focused on increasing employee loyalty to the company by providing a job for life with a strong focus on the well-being of the employee, both on and off the job. (Ouchi, 1985) According to this theory Z, management tends to promote stable employment high productivity, and satisfaction and high employee morale. Theory Z highlights that workers have a high need to be supported by the company, and highly value a working environment in which such things as family, cultures and traditions, and social institutions are regarded as equally important as the work itself. This theory is appreciated in the
ground that managements must have a high degree of confidence in its workers in order for this type of participative management to work. The theory is relevant in studying employees’ turnover in banking industry

**ERG Theory:**

The ERG theory is based on three needs: existence, relatedness, and growth. (Alderfer, 1969). According to Alderfer, existence needs include things such as water, food and personal safety. Relatedness needs include social interaction and teamwork. And growth needs include advancement and challenging tasks. Unlike Maslow's hierarchy of needs, the ERG needs do not need to be met in order, and more than one need can be a motivating factor at a given time. The strength of ERG theory is its dynamic nature since it recognizes that people have different variables that can affect their needs on any given day or any stage of life. The ERG theory allows individuals to simultaneously satisfy any of the needs.

**Consequences of the Labor Turnover**

High labour turnover can impact negatively or positively on an organization’s capacity to meet its organizational objectives and needs. The effects of labour turnover are the driving forces that compel managers to look at this issue in depth. It is because of these effects that managers are starting to see staff turnover as a problem that needs attention. In addition to the problems inherent in obtaining and training employees when turnover is high, an organization is perceived to be in economic difficulty and there is likely to be difficulties in planning production schedules and fulfilling orders in time (Sigma, 2007).

The negative consequences of staff turnover relate to costs, poor performance and disruption in the psycho-social environment and a decline in morale (Sigma, 2007). The most frequently studied organizational consequence of turnover is monetary cost. It has become evident for most researchers that turnover is expensive, even though in reality it is only a few organizations that systematically evaluate the direct or indirect cost of turnover. Grobler et al (2006) state that staff turnover costs the South African industry several million rand a year. They mention the following examples of the cost of staff turnover: Increased recruitment, selection and placement costs, increased training and development costs, Lower productivity, more accidents, scraps page and quality problems, Disruption in programmes and projects as managers and administrators leave.

**Controlling turnover**

According to Heneman et al., 1987 Managerial activities necessary to control involuntary turnover are very different from activities required to control voluntary turnover. Moreover, activities differ depending
on the type of involuntary turnover. For example, if management find itself dismissing a large number of employees, it might look to several factors. If the termination is due to rule infractions, an examination of the policies that lead to termination might be in order. Perhaps the policies are unreasonably harsh, or perhaps supervisors are unduly zealous in applying the rules. Excessive involuntary termination because of performance inadequacies, alternatively should lead management to examine its selection or training procedures. Voluntary turnover present yet another set of issues for management to consider. As in the case of absenteeism, it is caused by many factors.

Organizations should have a human resource strategic plan in order for them to effectively select, retain, train and develop employees. To retain and maintain employees is not just about providing money and titles. It is also a matter of creating an environment or culture with which employees can identify (Bruce and Pepitone, 1999). The goal of truly successful managers is to get employees to work energetically, enthusiastically and to the best of their ability.

METHODOLOGY

Description on the Study Area
A commercial private bank located in Capital city of Sri Lanka was selected as the study area of the research. The bank consist of 226 branches including super and metro, covering whole the country and accommodate nearly 4000 employees. They also expanded their service in countries such as Dubai, Myanmar etc.

Population and Sampling
There were main two sample of the study. The sample 1 was selected employees who have been already resigned from the private bank. This sample is selected to identify factors which affect to the employee turnover. The sample consists with 50 resigned employees. Normally there are 45 to 65 employees leave the bank in every three months. Purposively and random sampling is used to separate the sample from the population. The sample 2 was selected employees who have been already working at the private bank. This sample is selected to identify factors which affect to the employee job satisfaction. The sample consists with 50 employees who have been working branches as well as departments.
Collection of Data
There were two types of data for study: primary and secondary data which is needed to complete the study. The primary data was collected by using two semi-structured questionnaire for two samples. A structured questionnaire was distributed among the employees within the both samples. This questionnaire was included questions such as structured questions, and scale based analysis questions. Further, exit interviews were conducted with the resigned employees. Additionally, Informal discussions had done with employees who related to both samples. Figure 01 show the conceptual framework which was adopted by this study.
According to the Theory Z (Ouchi, 1981) Employee wellbeing of inside & outside of the organization

Inside the job

Effective Training & development program
Suitable Employee Motivation procedure
Better Employee Welfare & Salary
Better Organizational Management Practices

Outside the job

Age
Gender
Marital Status
Number of dependents
Financial situation of the family
Age group

Relatedness

Relationship within the team
Communication within the team
Recognition within the team

Growth

Career Development Opportunities
Salary, allowances
Receive the promotions
Effectiveness of Performance Appraisal
Training and Development

According to the ERG Theory (Alderfer, 1972) Needs of Existence, Relatedness & Growth

Existence

Freedom to get water, food
Working Environment
Personal Safety

Employee Turnover

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RESULTS AND DISCUSSION

Factors affecting for employee Turnover

According to above figure, majority of the employees terminated from the bank because of low salary. This reason is mainly affected for Junior Executive I employees. Because most of them can be able to move to another job which has higher salary than bank, after they obtaining work experiences. Thus 29.90% of employees that means highest percentage of employees have terminated because of low salary. Secondly highest percentage of employees has terminated because they obtained better benefits. Thirdly most of the employees have resigned from the bank because of lack of promotions. To effect the promotion, particular employee should transfer another department or branch and also they have obtained enough mark to apply for the promotions. Another thing is Trainee I employees have to wait minimum five years to promote as Junior executive I, Junior Executive II employees have to wait minimum to years to promote as Junior Executive II and five years to promote as Executive I. Further there are very limited promotions vacancies are available for per year. Specially, many Junior Executive I employee are tend to terminate from the bank. 4% of employees have terminated because of family needs. Most of the
terminated female employees were resigned because of this reason. After the marriage, most of the female employees change their living place, some female employees happened to look after their children. These are the main family issues that were faced by the female employees.

Bean, (2009) have shown that company benefits, job performance, employee attendance and wages are significantly affected to employee turnover. Moreover, many literature has supported that career growth (Hamel and Breen, 2007), job satisfaction (Palazzo and Kleiner 2002; Garcia and Kleiner 2001; Hannay and Northam 2000 and Stein, K. 1996), employee goal setting (Medlin and Green 2009), training and development (Walsh and Taylor 2007; Shaw et al., 1998; Huselid, 1995), work environment (Cardoso and Monfardini, 2008; Hansen, 2008 and Burke and Hsieh, 2006) are the most important factors that is affected for employee turnover process. In contrary employee also pushed to leave job due to the dissatisfaction in their present workplace (Shukla and Ambalika, 2013)

**Influence of training & development to turnover**

The mean values of scale items used to identify the reasons which were negatively affected for training and development programs of the bank. According to the following table 01 five point scales was used to identify the “excellent “reasons as +2 and “very poor” reasons as -2.

**Table 01: Influence of training & development to turnover**

<table>
<thead>
<tr>
<th>No.</th>
<th>Scale Items</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hours of Trainings</td>
<td>0.46</td>
</tr>
<tr>
<td>2</td>
<td>Areas Covered</td>
<td>0.64</td>
</tr>
<tr>
<td>3</td>
<td>Acquisition Knowledge</td>
<td>0.68</td>
</tr>
<tr>
<td>4</td>
<td>Overall Effectiveness</td>
<td>0.68</td>
</tr>
<tr>
<td>5</td>
<td>Practical Application</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Source: Survey data

According to table, mean value of all scale items except “hours of training” were around point 0 which show “Average” rating level. Mean value of hours of training was 0.46, which is comparatively low. It discloses that the bank does not give adequate training hours under training and development programs.
Influence of employee motivation to turnover

The mean values of scale items used to identify the reasons which were negatively affected for Employee Motivation of the bank. According to the following table 02, five point scales was used to identify the “excellent” reasons as +2 and “very poor” reasons as -2.

Table 02: Influence of employee motivation to turnover

<table>
<thead>
<tr>
<th>No.</th>
<th>Scale Items</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feedback Receive on Performance</td>
<td>0.30</td>
</tr>
<tr>
<td>2</td>
<td>Effectiveness of The Supervision</td>
<td>0.48</td>
</tr>
<tr>
<td>3</td>
<td>Receiving Promotions</td>
<td>0.18</td>
</tr>
<tr>
<td>4</td>
<td>Effectiveness of Performance Appraisal</td>
<td>0.38</td>
</tr>
<tr>
<td>5</td>
<td>Criteria of Performance Appraisal</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Source: Survey data

Table 02 presents the mean value given for scale items measured the influence of employee motivation to turnover. Mean value of receiving promotions was 0.18, which is comparatively low. It discloses that the bank does not give adequate promotions under employee motivation programs. Feedback receives on performance and effectiveness of performance appraisal also show relatively low mean values. Overall process of the employee motivation is closer to “Average”. It discloses that whole process of employee motivation should be enhanced.

Influence of employee welfare & salary to turnover

The mean values of scale items used to identify the reasons which were negatively affected for Employee Welfare & Salary of the bank. According to the following table 03, five point scales was used to identify the “excellent” reasons as +2 and “very poor” reasons as -2.
Table 03: Influence of employee welfare & salary to turnover

<table>
<thead>
<tr>
<th>No.</th>
<th>Scale Items</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Salary / Allowances</td>
<td>0.28</td>
</tr>
<tr>
<td>2</td>
<td>Medical Claim / Insurance</td>
<td>0.71</td>
</tr>
<tr>
<td>3</td>
<td>Loan Facilities</td>
<td>0.84</td>
</tr>
<tr>
<td>4</td>
<td>Working Environment</td>
<td>0.96</td>
</tr>
<tr>
<td>5</td>
<td>Freedom to Get Water, Food</td>
<td>1.18</td>
</tr>
</tbody>
</table>

Source: Survey data

According to the table 03, mean value of all scale items except “salary/ allowances” were around point +1 which show “Good” rating level. Mean value of salary/ allowances was 0.28, which is comparatively low. It disclose that the salary which is given by the bank is not enough for fulfil the employees’ requirements. Employees are retained in the organization if they are paid well (Firth et al., 2004). The employees quit from organization if they cannot fulfil their requirements by using their salary Manu et al., (2004). Less payment for salary is also a good reason for lacking in performance of employees (Rampur, 2009).

Influence of socialization within the bank to turnover

The mean values of scale items used to identify the reasons which were negatively affected for Socialization within the Bank. According to the following table 04 five point scales was used to identify the “excellent “reasons as +2 and “very poor” reasons as -2.

Table 04: Influence of socialization within the bank to turnover.

<table>
<thead>
<tr>
<th>No.</th>
<th>Scale Items</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Relationship Within the Team</td>
<td>0.76</td>
</tr>
<tr>
<td>2</td>
<td>Communication Within The Team</td>
<td>0.86</td>
</tr>
<tr>
<td>3</td>
<td>Recognition Within The Team</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Source: Survey data
According to table 04 all mean values were towards “Good”. Whereas all mean value show the same value range between 0.76-0.86. Therefore it reveals that overall process of socialization is relatively good.

**Influence of organization management to turnover**

According to Heneman *et al.*, 1987 Managerial activities are necessary to control involuntary and voluntary turnover. If the termination is due to performance inadequacies, organizational management should decide training and development programme to the employees. The mean values of scale items used to identify the reasons which were negatively affected for organization Management of the bank. According to the following table 05 five point scales was used to identify the “excellent “reasons as +2 and “very poor” reasons as -2.

<table>
<thead>
<tr>
<th>No.</th>
<th>Scale Items</th>
<th>Mean Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Effectiveness of Grievances Handling</td>
<td>0.82</td>
</tr>
<tr>
<td>2</td>
<td>Organizational Policies</td>
<td>0.96</td>
</tr>
<tr>
<td>3</td>
<td>Provision of Resources</td>
<td>1.00</td>
</tr>
<tr>
<td>4</td>
<td>Career Development Opportunities</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Source: Survey data

According to table 4.6 all mean values were towards “Good”. Whereas all mean value show the same value range between 0.82-1.00. Therefore it reveals that overall process of organization management is relatively good. Many private banks in Sri Lanka are followed strategic management to reduce employee turnover.

**Hypotheses testing using t test for employee turnover**

For the analysis of Hypothesis given in the study one sample t test was used. The one sample t-test procedure tests weather the mean of a single variable differs from specified constant values. For the study, the assumption was taken as the if the mean value of each scale items used to analysis the impact by the employee turnover is less than 0 values has positive impact. Based on that assumptions following hypothesis were analyses using one sample t-test.

H1: There is a significant impact of training and development program of the bank on employee turnover.
In $H_1$ it is proposed that there is positive impact of training and development program of the bank on employee turnover and the associated null hypothesis ($H_0$) was “there is no impact of training and development program of the bank on employee turnover” and the hypothesis was testing using one sample t test.

$$H_0: X = 0$$

$$H_1: X \neq 1$$

**Table 06: Summary of hypothesis testing**

<table>
<thead>
<tr>
<th>Null Hypothesis</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no significant impact of training and development program of the bank on employee turnover</td>
<td>Rejected</td>
</tr>
<tr>
<td>there is no impact of employee motivation of the bank on employee turnover</td>
<td>Rejected</td>
</tr>
<tr>
<td>there is no impact of employee welfare and salary of the bank on employee turnover</td>
<td>Rejected</td>
</tr>
<tr>
<td>there is no impact of socialization within the bank on employee turnover</td>
<td>Rejected</td>
</tr>
<tr>
<td>there is no impact of organization management of the bank on employee turnover</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

Source: Survey data

According to table 06, all considered factors in this study have significantly impact on the employees’ job turnover. Many private banks of Sri Lanka give adequate training facilities for their employees to improve skills and capacities. Further, banks motivate employees by providing annual bonuses, welfare facilities, health insurance, low interest rate credits…, etc. Similarly, by organizing social events banks try to increase employees’ job satisfaction and thus reduce employees’ job turnover.

**DISCUSSION AND CONCLUSION**

There are quite a number of international research studies done to evaluate the employee turnover in the banking sector especially in countries like Pakistan, Bangladesh and Uganda. Although several research studies on Job satisfaction have been conducted in the Sri Lankan banking sector, local research studies on the employee turnover of banks are not found in the local literature base. In order to fill this gap, this research evaluates the concept of bank employee turnover in the Sri Lankan context.
It was concluded by this study that most of the employees were leaving the job at the bank for employment opportunities with better benefits and better salaries. It was also revealed that majority of turnover employees belong to the Junior Executive I salary grade.

According to the study employees tend to leave the job due to several major reasons such as expectations to achieve carrier development, lack of family responsibilities, average income levels and high work stress. However it was also found that although employees with higher family responsibilities have less job satisfaction, they show comparatively less turnover as they tend to retain the job.

Further the study results imply that low salaries and promotion barriers are the major causes for the reduction in job satisfaction of employees.

Most of the terminated employees are in Junior Executive I salary grade and in between age 25-34 of banking sector; to prevent the turnover it is better to introduce entertainment programs like talent shows. Through this it could be a reason for increase the job satisfaction and reduce the employee turnover.

REFERENCES


Impact of Business Ownership Change on Institutional Historical Knowledge due to Employee Turnover: A Literature Review

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ABSTRACT

Increasing number of business ownership changes and its impact on human capital has been a global concern over the years. There has been a rapid growth of business ownership changes in the recent past. Change of business ownership of organizations can be in the form of Business Acquisitions. Mergers and Acquisitions are the most common form of Business Acquisitions. Business Acquisitions have made a significant impact on Human Resources in both acquirer and acquired organizations. Human Resource is also an important component of business integration process. Human Assets cannot be purchased outright. Human Assets enjoy the right to leave the organization at their will. Desired results of post-acquisition hence can be hampered by the demotivated human resources. It is evident from literature that unless this sensitive area of human resources is not handled professionally, employees become reactive and that results in observable negative behaviour. The consequences can be damaging due to employee demotivation which can result in an increase in employee turnover after an ownership change. Sustaining the human capital is advantageous to any organization. Retention of employees can be important to the acquirer companies since it can lose the Institutional Historical Knowledge with the parting of employees. The Institutional Historical Knowledge comprises of the knowhow an employee gained over the years of service in that particular institution and it includes ‘tacit’ knowledge which is competitively advantageous to the institution. This moves away with the employees leaving the organization. The main objective/aim of this study is to identify the nature of relationship of Business Ownership Change, Employee Turnover and loss of Institutional Historical Knowledge – ‘the wisdom withdrawal’ through literature. Hence, this paper reviews the theoretical findings in literature from business acquisitions, employee turnover and its impact on loosing Institutional Historical Knowledge. Therefore, this study is totally a desk research based on Literature Review. The study reveals that there is a negative impact of business ownership changes on institutional historical knowledge due to employee turnover.

Keywords: Mergers, Acquisitions, Retention, Employee Turnover, Institutional Historical Knowledge
INTRODUCTION

Change of ownership of a business creates a change in the structure of ownership in an organization. The change of ownership can happen in many ways, leverage buyouts, management buyouts and mergers and acquisitions. In any form of such change former owners are more often replaced by a new set of investors. This buyout is undertaken for various reasons. Mergers and Acquisitions (M&As) has become a popular corporate restructuring method in developed and developing countries. In a business acquisition, one company/group of companies acquires the business of another company. It can be in the form of a merger. Merger is a combination of two companies in which only one corporation survives. And the merged corporation goes out of existence (Gaughan, 2011). Mergers can be two types. That is statutory and subsidiary. In a statutory merger where assets and liabilities of a company (merged) are acquired by the acquiring company. In a subsidiary merger target company becomes a subsidiary or part of the parent company. In contrast merger becomes a result of two equal size organizations respecting each other and forming a new entity, the change of investors can have positive and negative consequences on human resources. Impact of M&As can be disastrous to the continuity of employment. After M&As the organizations – the merged and the acquired more often than not strategically introduce downsizing. In any way downsizing leads to employees leaving the organization. The significant consequence of employees leaving voluntary or involuntary is the loss of organizational historical knowledge.

Employee turnover is the rate of which the employees leave the organization over a period. The retention is the ability of employers to keep the employees in employment over a period. Employee retention is the ability of employees to retain its employees over a longer period of time. Employee retention is reflected by the organizations ability to reduce the employee turnover. Retention also explains the sustaining of employees for a continuous period. Turnover of employees varies markedly among industries. It is established that employee turnover affects the profits of a company. It is advantageous to employees in certain instances, who sacrificed their potential to be life time employed, in more comfortable work environment with the same employer, is forced to take a risk to change employment. Certain employees prefer long term employment, it could be due to the benefits of the permanent nature of employment such as entitlement for housing loan facilities make them stick to one organization till their retirement and prevent them from leaving and live up to their potentials with another organization. An employee’s tenure with a firm tends to follow a familiar life cycle, from employment interviews to first job, promotion, transfer and perhaps retirement. Companies in general have taken significant steps to overcome this situation of high employee turnover. Various strategies have been introduced. With the introduction of
human resource management divisions, proper HR planning was undertaken. Staff retention has become a challenge to every organization which operates in dynamic labour markets. It is therefore an important organizational problem. More attention has been paid to areas where the impact of business acquisition is affecting the organizational performance.

Organizations accumulate knowledge over the years and it is deposited in organization human capital. It is this unique knowledge that gives the firm a competitive advantage. Knowledge that can be unique to the organization is extended in the organization human capital. Knowledge is codified in documentations such as manuals, circulars, etc. It is the explicit type of knowledge that is not codified. Implicit knowledge is embedded in the social fabric of the organization and is the organization’s ‘tacit’ knowledge. Tacit knowledge is developed and accumulated through the experience of individuals hence it cannot be translated without the consent of the possessor of such knowledge. Institutional knowledge moves away with employees leaving the organisations or relocating themselves in other areas of business. Change of CEO’s too contributes to the loss of institutional knowledge due to the change of agendas. Consequences of Mergers and Acquisitions can be reshuffling of job roles which may cause the loss of institutional knowledge to the organisation. In this era of millennial and with the dawn of 2018 and organization can consist of generations of individuals, the Baby Boomers, generation X, generation Y and Millennial. Last of the baby boomers are on the verge of retirement. Skills and knowledge of baby boomers will be difficult to organizations to replace (Ashworth, 2006). The utility industry is one that affected most due to retirement of baby boomers in the next 5-10 years (Juliano, 2004). Consistency of the last lot of generation X and the entire generation of the generation Y with continuity of employment will be a major concern for organizations. It is noted in this era of ‘skill mobility’, from one organization to another and one industry to another, it is difficult for organizations to capture the knowledge gained by individuals and transfer it to others. Organizations are without a program to capture and transfer the knowledge gained by leaving employees - The institutional historical knowledge.

This paper precedes as follows, problem statement, objectives of the study literature review, discussion and conclusion.

**PROBLEM STATEMENT**

Under the above circumstances, the address research problem in this paper, is there an impact of business ownership change on institutional historical knowledge due to employee turnover?
OBJECTIVES OF THE STUDY

The main objective of the study is to examine, the impact of Business Ownership Change on Institutional Historical Knowledge due to Employee Turnover through literature review.

METHODOLOGY

The methodology was a desk research reviewing the literature on Change of Business Ownership, Employee Turnover and Institutional Historical Knowledge. The published works in Journals and Text Books for the period 1982 to 2103 in different industries were reviewed related to Impact of Business Ownership on Institutional Historical Knowledge due to employee Turnover.

LITRATURE REVIEW

This section reviews the literature in following areas- Mergers and Acquisitions, Employee Turnover, Institutional Historical Knowledge and Organisational Memory, Mergers and Acquisition and its impact on loss of Knowledge, due to Employee Turnover.

Mergers and Acquisitions (M&As)

Mergers and Acquisitions are form of ownership change which makes fundamental changes in structure of ownership. This section reviews the literature on types of Mergers and Acquisitions, recent resurgence, the impact of M&As on employees.

Mergers and Acquisitions can be categorized into the following ways, Horizontal, Vertical or Conglomerate. In Horizontal Mergers the two organizations which compete in the same field of business form a combined organisation with a purpose of market expansion, where as a Vertical Merger is a combination of organizations that were in a buyer and seller relationship - for an example, a manufacturing company buying a distribution company.in a situation where a Conglomerate acquires a business - the Merger is not a combination of two companies which are in a competitive business nor have a buyer and seller relationship. The authority is vested with the buyer. (Schuler, Randall & Jackson, 2001) Mergers can be categorized as the combination of two social groups in to one and giving a new
shape to these pre-merger groups. (Knippenberg et al., 2002) These business acquisitions can be in the form of mergers and acquisitions. In acquisitions acquirer becomes dominant over acquirer firm whereas in mergers both companies are at equal platform. (Karim et al., 2011) Between 1965 and 1985, 62,646 mergers and acquisitions were recorded (Ellwood, 1987). Between 1980 and 1990 there have been approximately 23,000 Mergers and Acquisitions. And only in 2004 there have been 30,000 Mergers and Acquisitions had taken place (Cartwright & Cooper, 1990, Cartwright & Schoenber, 2006). Mergers and Acquisitions could be strategically oriented, that is – cost reduction (Jensen, 1993; Wright, Hoskisson, & Busenitz, 2001). Improving the organizational performance is the main objective of a business acquisition. It can happen through restructuring and reorientation of organizational resources and processes (Thompson & Wright 1995). The employees can be affected by this restructuring. The restructuring of ownership can affect the existing employee relations (Pendleton, Wilson & Wright, 1998). Employee relations vary with every organizational change. Certain features of employee relations can be affected by organizational changes. It is noted that many factors have been responsible for the failure of Mergers and Acquisitions activities, such as, changes in Business Environment, Process Integration, Regulatory Impacts, Customer Attitudes, Employees’ and Managerial issues. (Mittal & Jain, 2012) Effective HR Management is a key factor of Financial Performance in Mergers and Acquisitions (Qureshi et al., 2011). The human resources management is a critical factor in the success of Mergers and Acquisitions. (Vazirani, 2012) It is critically important to retain and motivate the talented employees for a successful integration in Mergers and Acquisitions. (Kay & Shelton, 2000). These business acquisitions can be in the form of mergers and acquisitions the companies armed with these strategic changes, to achieve a competitive advantage. But these changes have rarely achieved the objectives that it was intended to achieve. (Beer et al., 1990; Taylor-Bianco&Schernerhorn, 2006) A different opinion was expressed by (Sonenshein, 2010) Successful implementation of strategic change can re-invigorate a business also failure can lead to catastrophic consequences including decline of firms. . Many researches confirmed that there had not been any successful Bank Mergers with neglecting human factors. (Kahr, 2011; Schweiger & Ivancevich, 1985; Schweiger & Weber, 1989; Cartwright & Cooper, 1993; Buono & Bowditch, 2003)

Organizations adjust their process both internal and external to face these challenges, internal such as Human Resource Management Systems, Down Sizing, Job Enhancements and Enlargements, Upgrading Information Technology Systems. External Processes to be reconfigured by readjusting these process to face changes in business environment. (Freese & Schalk, 2002; Bellou, 2006; Tomprou et al., 2012;
Burke, 2013) Theses changes can affect Human Resources of any organization. Human Resources are sensitive resources in any organization. Any adverse result of change could have negative socio economic effect. Some merged companies down size by laying-off employees. (Brockner, 1988) These changes can have drastic consequences for employees who lose their jobs, and could result in negative impact on the remaining employees. (Latack & Dozier 1986; Sverke & Hellgren, 2001) If effect on employees can be positive; it can be a gain in Takeovers. It is noteworthy to understand what causes employees perceptions of anticipatory negligence of obligations, on the part of the employer. Organizational change can cause employees negative perceptions with regard to the non-fulfilment of obligatory requirements (Turnley & Feldman, 2000; Beaumont & Harris, 2002; Bartlett & Ghoshal, 2000, Freese et al., 2011). The changes of ownership will change employee roles. Employees will face conflicting situations which can result in employees in a dilemma. The roles that employees are supposed to play and tasks they are supposed to achieve can be a deciding factor, which influences the decision to leave the organization (Igbaria & Siegel, 1992). The employees become dissatisfied with new job roles and tasks that are to be performed after a business acquisition. This may result in less commitment to the job. Job satisfaction and organizational commitment are inter-related and causes the employee turnover (Price, 2001; Arkoubi, Bishop & Scott, 2007). When an employee is not satisfied with the job, employees like to withdraw from their work. Job satisfaction can be a deciding factor for job continuation or withdrawal. Employees who are satisfied with the job remains with the organization and those who are not satisfied leave the organization (Noe, Hollenbeck Gerhart & Wright, 2010). The acquisitions can be motivated by the potential to achieve efficiencies. Present day organizations face many challenges such as, increase in costs, globalisation of markets, and change of governmental policies, strategic partnerships entered by governments, increased competition, information and technology improvements, government regulations. (Freese & Schalk, 2002) In order to be competitive among these multiple changes organizations consider changing their strategies and structures.

**Employee Turnover**

Employee turnover has drawn attention of both academics and management, a considerable number of researches have been done on the antecedents and consequences of employee turnover. The following review identifies the causes of employee turnover and its impact on business

Employee turnover can be either voluntary or involuntary and the cost of it is unavoidable (Price, 2001). A contradictory opinion was expressed by (Taylor, 2005, p.14) that it is an avoidable cost HR managers in recent times view high turnover of certain type of employees, leaving the organization as an advantage to
the company. This is essentially not high flyers. HR retention policies are prepared to keep the high flyers from leaving. The employer’s career development responsibilities change as the employee moves through the scale. (Dessler, 2013, p369) High employee turnover creates flexibility in the employment market. Employers sometimes believe that the high employee turnover is inevitable. (Taylor, 2005, p15) It is therefore considered employee turnover as an additional cost to the organization. This additional cost includes cost of training and development given to the employee who left the organization, cost of hiring a new employee, cost of management time for administering the recruitment process (Taylor, 2005, p65), cost of training such hired employees and opportunity cost of hiring. Companies instead of incurring this cost are now determined to implement strategies to keep their employees happy within the organization. Special efforts are being made to prevent the high flyers from leaving High turnover is viewed as an evidence of a poorly managed company (Taylor, 2005, p14). Finding the best talent has always been critical for business organizations. HR divisions should have an excellent recruitment process to recruit such talents (Weiss, 2013, p65). Keeping the best talent within the organization is crucial to all employers. They adopt various methods to keep them within the organization. Decision to leave organization can be made at the spur of the moment, but as per (Taylor, 2005, p65) it accounts only for a minority of departures. It is a well thought out decision employees take to leave the organization. As for (Taylor, 2005, p65), the majority of voluntary turnover is based on decisions planned and worked out on a long drawn out process. The immediate ancestor of Human Resources Management (HRM) is the Personnel Management. (Tayeb, 2005, p5) Personal departments or the present day HR divisions are required to meet certain regulatory requirements for employee benefits. HRM as per Tayeb (2005, p5) “deals with personnel functions, but these are planned and implemented with regard to the overall strategies of the company and the ways in which human resources can contribute to those strategies.” IPM (Institute of Personal Management of Sri Lanka) definition of HRM “a strategic and integrated approach in acquisition, development and engagement of talents using relevant tools with proper policies, practices and processes in creating a conducive climate towards achieving excellence and social wellbeing” – IPM SL - 2014 (www.ipm.lk.org). As per Dave Ulrich human resource management is described as “HRM wants to add value contribute in meaningful ways to employees, the line managers inside the company and to customers, communities, partners and investors outside the company” (Ulrich, 2008, p1). Operational and policy issues were the primary work performed by Personnel Department (Ulrich, 2008) HR practices should be aligned with external expectations. New employees should be hired based on how well they demonstrate the skills and abilities the customer expects. (Ulrich, 2008, p213) HR department
like any business needs a clear strategy (Ulrich, 2008, p213). As per David Weiss “HR to be a driver of strategic business leadership, it must take on “outside-in” perspective rather than “inside-out” perspective. An “outside- in” perspective means that HR focuses on the business and the value that the business creates for its external customers and then used those insights to determine what HR should do to deliver business value. With an “inside-out” perspective HR looks at itself and decides what the business needs based upon its view of the right things to do.” (Weiss, 2013, p5)

There can be beneficiaries among the employees. Competent Managers can be the complements of Mergers and Acquisitions. (Brockner, 1988; Jovanovic & Rousseau, 2002) It was Shleifier and Summers’ idea that Mergers and Acquisitions constitute a transfer of wealth from workers to shareholders as acquisitions do not honour implicit contracts with employees concerning wages and benefits. Employees leave organizations due to poor job satisfaction and lack of organizational commitment. Fondness to work and the job is the job satisfaction and employees’ commitment to the organizational success is organizational commitment (Price, 2001).

As the employees who are not competent or not achieving the expected level by performance is more vulnerable to these changes. There can be downsizing as a strategic option. It can be described as a management objective to improve organizational performance and to gain a competitive advantage (Freeman & Cameron, 1993). Yet, downsizing can affect negatively on its performance as downsizing is more often a short sited activity (Cascio, 1993). It affects the organization performance negatively (Shaw et al., 2005). Downsizing is described as a planned elimination of employees excluding employee services which were discontinued for a valid reason, the voluntary resignation of employees and employees leaving after reaching the age of retirement (Cascio, 1993)

**Institutional Historical Knowledge**

Institutional Historical Knowledge has drawn academic attention. This section reviews the importance of employees’ accumulated knowledge and the consequences of knowledge loss. It is a societal threat that the next few decades will see an increasingly ageing workforce (Foster, 2005) also among the young employees (DeLong & Davenport, 2003). This could result in knowledge losses. It is the knowledge that is gained by ageing employees, and it could be invaluable, irreplaceable and specialised knowledge that the organizations lose (DeLong, 2004; Salopek, 2005; DeLong 2004; Doyle, 2004). Initially it was argued that this knowledge has the most valuable resource (Grant, 1996; Zack, 1999). It is the human capital that the employees accumulate which moves with employees when the employee leaves the organization. Contradictory arguments were put forward by (Starke et al., 2003) that employee turnover does not affect the performance of the organization. (Pickett, 2004) on the other hand
argues that the knowledge gained by employees will leave with them when employees leave. The knowledge has been passed from one generation to another, using different methods. Such as, face to face and hands on methods (Hansen et al., 1999). In organizations knowledge is combined and nested in the minds of people (Wah, 1999; Bonner, 2000; Lee, 2000). With the dawn of information age there had been an unprecedented demand for knowledge workers. The importance of giving prominence to the knowledge and recruiting people who could gain knowledge and apply efficiently are in demand and who has the competence to manage and use these human resources has an advantage as a manager. The leaders who could use imagination and intuitiveness and are inspirational who can manage and derive maximum benefits have the advantage in an organization (Goffee & Jones, 2000).

Knowledge severs as an important factor and it is competitively advantageous to the organization (Hitt et al., 2001). Since human capital is competitively advantageous to the organization it needs to understand the same, and win the war for talent (Gardner, 2005). Organizations have to use different strategies to attract the best talent. HRM practices are focused to recruit the best for high investment companies which give them a competitive advantage (Delery & Shaw, 2001). It is the knowledge that is included in the goods and services that people buy. It is therefore an important factor in a man’s economic life. Knowledge can be a main business influence (Quintas, 2002). Knowledge can be regarded as a valuable asset in making the organization competitively advantageous (Bender & Fish, 2000; Wong & Radcliffe, 2000). It is startling to note that 99% of people’s work in organization is based on knowledge (Wah, 1999). Knowledge increases the bottom line (Pascarella, 1997).

Organizational Memory
The review of literature identifies the different academic explanations and descriptions of Organisational memory.
Organisational memory can be described as the organisation’s historical knowledge that can be used to shape the subsequent decisions (Walsh & Ungson, 1991). Organisational memory is knowledge which is retained with individual employees, group of employees and organizations (Argote et al., 2003). Retained knowledge also can be explained as the information stored, the challenges and problems overcome and the responses made (Anderson & Sun, 2010). The retained knowledge which is critical is valuable to organizations. It does contribute to the organizational success (Nonaka, 1994). Employees leaving the organization result in a loss of organizational memory (Dougherty & Bowman, 1995). Organisations are
experiencing a crisis of knowledge retention (Stam, 2009). Contradicting views were also expressed; retained knowledge can also reduce flexibility to adjust to changing situations (Shin et al., 2001), increases inefficiencies within organizations (Levitt & March, 1988), prevent challenging the ‘status quo’s’ of organization (Argyris & Schon, 1978). Largely undocumented experience, insights, knowledge, and skills acquired over the years, passed on to the newcomers through personal contacts, meetings, training courses, and mentor-protégé relationships. It is not only the knowledge of their job and tasks, it is also whom they know and deal with (Delong, 2004). Organizational memory (unless pooled and recorded in a readily accessible form such as a database) is destroyed through excessive downsizing, frequent layoffs, unmanaged employee attrition, and/or disasters. Organisational Memory (OM) sometimes called Institutional or Corporate Memory is accumulated body of knowledge created in the course of an individual organisations existence.

Knowledge can be advantageous to an organization (Grant, 1996). Losing knowledge can give adverse results, mainly the loss of organizational memory (Shah, 2000). Reduction in organizational output is a result of knowledge loss (Droege & Hoobler, 2003). The tacit knowledge of an organization is difficult for another organization to copy (Barney, 1991). Tacit knowledge is intuitive and cannot be articulated (Hedlund, 1994) which remains with employees. Human Resources are valuable and scarce in supply thus they can hold knowledge that is tacit (Coff, 1997). The knowledge that is not spoken and hidden within the minds of employees is the tacit knowledge (McInerney, 2002). It involves employees’ experiences gained (Alavi & Leidner, 2001). Explicit knowledge is coded and remains with organizations (Nonaka, 1994). The knowledge that is unique to the organization when integrated can be advantageous to the organization (Grant, 1996; Leonard-Barton, 1992). It is observed that when the employees leave the organization lose employees’ tacit knowledge which can negatively affect the organization’s capability (Nelson & Winter, 1982). It can be in the form of knowledge acquired through relations with business partners (Stewart, 1998).

**Mergers and Acquisition and its impact on loss of Knowledge; due to Employee Turnover**

It is the feeling of alienation that employees of merged or acquired companies experience during the process of integration, they feel the loss of colleagues at work and the reduction of benefits offered by previous employer (Buono & Bowditch, 1989; Seo & Hill, 2005). When employees hear the news of a business ownership structure change, they become anxious. The mergers and acquisitions are such
anxiety provoking and adding stressful experience to employees. (Bouno & Nurick, 1992; Marks & Marvis, 1992). This may affect the commitment of employees’ it is said to be declining and their reactions becomes negative when the announcement of merger and acquisition is made (Klendauer & Deller, 2009; Marks & Mirvis, 1992; Meyer & Allen, 1997; Raukko, 2009; Seo & Hill, 2005) A dissatisfied employees may become less committed. There is a negative relationship between organisational commitment and the intention to leave and the employee turnover (Meyer & Allen, 1997). It can affect employment security, the employees become vulnerable to global competition and threats to the security of employment and knowledge and experience that lie in their brain can disappear with them before it transferred to the new employees (Delong, 2004). Employees who leave the organisation take with them the knowledge and experience gained during employment – ‘the Institutional Historical knowledge’. An employee leaves with expertise and experience gained over a period (Hira, 2011). Unless there is a mechanism to transfer such knowledge employee carry with them knowledge so gained. Key employees leave before transferring the knowledge it or expertise to new employees or colleagues can result delays, costly errors and inefficiency may happen, thus impacting organisational performance (Marks, 2006; Marks & Mirvis, 1992; Rafferty & Restubog, 2010; Terry et al., 2001).

DISCUSSION

The study aimed at reviewing existing Literature with regard to the impact of employee turnover on the loss of Institutional Historical Knowledge, the cause of volunteer employee turnover due to the change of ownership. Few waves of mergers and acquisitions had taken place during the recent past resulting changes in ownership structures. As per Ellwood (1987) there had been 62646 mergers and acquisitions taken place during 1965-1980. Whereas during 1980’s an approximately 23000 mergers and acquisitions and 30000 in 2004 took place (Cartwright and Cooper 1990, Cartwright and Schoenberg 2006). Jensen, (1993), Wright, Hoskisson, and Busenitz, (2001) discusses mergers and acquisitions as a strategic orientation for reduction of cost. Thompson and Wright (1995) are of the opinion that in order to improve the organisational performance, which is the main purpose of a mergers and acquisitions by restructuring and re-orientation of resources and processes. An important resource is the organisations Human Resources. It is the human resource factor that is critical to a successful merger and acquisition (Vazirani, 2012). Therefore as per Kay and Shelton, (2000) it is critically important to retain and motivate the talented employees for a successful integration in Mergers and Acquisitions. As per Kahr, (2011), Schweiger and Ivancevich, (1985), Schweiger and Weber(1989), Cartwright & Cooper(1993) Buono and
Bowditch (2003) there had not been any successful Bank Mergers with neglecting human factors. A serious consequence of an acquisition is the change of job roles of certain employees which cause them to leave the employer others will remain with the organisation. Igbaria and Siegel (1992) argues about the roles employees are supposed to play and tasks they are supposed to achieve which can influence the decision of employees to leave the organization. Downsizing employee carder is another strategy the organisations introduce after merger and acquisitions. This can affect performance negatively (Shaw et al., 2005). Casico (1993) opines that it is a short sited activity and it negatively affects performance. Carder reduction will result in employees loosing employment with employer and unhappy employees leave on their own account. These employees carry with them the knowledge they gained while being in employment with the organisation which can be unique to the organisation, which includes tacit knowledge which is advantageous to the organisation. Hitt et al. (2001) confirms that knowledge severs as an important factor and it is competitively advantageous to the organization. Knowledge is included in the goods and services organisation offer, therefore it can be considered as an important factor in a man’s economic life. Accumulated Knowledge of human resources is an asset to the organisation and it can be a main business influence as stated by Quintas (2002). Knowledge gives and edge to the organisation over others in completion Bender and Fish (2000), Wong and Radcliffe, (2000) confirms that knowledge can be regarded as a valuable asset in making the organization competitively advantageous. Organisations foundation is the organisational accumulated knowledge. This is confirmed by Wah (1999) in the statement that it is startling to note that 99% of people’s work in organization is based on knowledge. Knowledge gives the advantage and increase revenue. As per Pascarella, (1997) Knowledge increases the bottom line. Organisations over the years have accumulated knowledge and it is deposited in an employee which is identified as Organisational Memory. Walsh and Ungson (1991) describe it as the organisation’s historical knowledge that can be used to shape the subsequent decisions. Argote et al. (2003) identifies it as the knowledge which is retained with individual employees, group of employees and organizations. The knowledge that is all encompassing accumulated and retained while in employment with the particular organisation is authentic to organisations. Anderson and Sun (2010) explains retained knowledge as the information stored, the challenges and problems overcome and the responses made McInerney (2002) identifies knowledge that is not spoken and hidden within the minds of employees as tacit knowledge. Alavi and Leidner (2001) states that it involves employees’ experiences gained. It is this retained knowledge that is the organisational historical knowledge that employees carry with them when they leave the organisation. Organisations have so far not found a sound system to capture and transfer
this knowledge to another employee. Since there is no mechanism to identify the areas of these domains of knowledge, no proper attention has been paid yet to value the loss of institutional historical knowledge.

**CONCLUSION**

This article reviews literature relating to the impact of business ownership change on institutional historical knowledge due to employee turnover. Business Acquisitions which take place globally via Mergers and Acquisitions have a direct impact on continuity of employment. After acquisition the acquired company re-orient its processes and resources to improve performance, which can affect the human resources of the organisation. There can be carder adjustments which disturb the continuity of employment. This may be due to planned downsizing of employment capacity or voluntary resignations of employees. It is evident from the literature that mergers and acquisitions affect the employee performance negatively due to downsizing and change of job roles. These affected employees leave the employer and may join a competitor. They carry with them valuable experience and knowledge. Employees leave the organization with the knowledge acquired in employment. The most significant consequence is the loss of ‘Tacit Knowledge’ which is intuitive and difficult to replace. It can be concluded that there is a negative impact of Business Ownership Change on Institutional historical knowledge due to Employee Turnover. Organisations are yet to find mechanism to capture this Historical Knowledge. The reviewed literature identified many gaps in research. One such area is lack of methodology to identify the areas of institutional knowledge; it is recommended that further research could be carried out to identify the domains of historical knowledge

**REFERENCES**


Shaumya, K., Eastern University, Sri Lanka
Arulrajah, A.A., Eastern University, Sri Lanka

Abstract

Green banking (GB) is a new phenomenon in the financial world. It is the term used by banks to make them much more responsible to the environment. Banks believe that every small “green” step taken today would go a long way in building a greener future and that each one of them can work towards a better global environment. Despite its importance, banks employ several green human resource management (GHRM) and electronic human resource management (E-HRM) practices that reduce the negative environmental impact of banks. However, there are lacunas in empirical studies undertaken in Sri Lankan context regarding the exploration of impacts of GHRM and E-HRM on GB. This study was conducted in order to fulfill these empirical knowledge gaps. Hence, the objectives of this study are to explore the impacts of GHRM and E-HRM on GB from the perspective of human resource management. In order to achieve the objectives, primary data were collected from 150 employees of selected Commercial Banks in Batticaloa Region of Sri Lanka and the structured questionnaire was administered to collect the data. The data were analyzed by using univariate and bivariate analyses. The findings of the study revealed that GHRM and E-HRM have positive and significant impact on GB in overall. The current study is considered to be vital in understanding the empirical knowledge regarding the impacts of GHRM and E-HRM on GB.

Keywords: Green HRM, Electronic-HRM, Green Banking, Banks
INTRODUCTION

The industrial and natural disasters occurred in the last three decades were directly or indirectly linked with the uneven industrialization. This in turn has raised an important issue of environmental protection among environmentalists, government and organizations from all over the world. Today, the entire sectors in the world economy is facing a huge challenge to deal with the environmental problems and their related impacts in their day to day businesses. Due to that, business organizations have started modifying their activities and strategies so as to ensure protection to our natural resources and environment. In this context, the financial sector and especially the banks can play an important role in promoting environmental sustainability. So, banks have to adopt GB practices into their operations, buildings, investments and financing strategies. Thus, GB contributes in reducing carbon footprints by providing assistance to companies involved in renewable and clean energy technology (Bihari and Pradhan, 2011; Sahoo and Nayak, 2007).

As the banks are among one of the major sources of financing instrument for commercial projects, they can play a major role in promoting environmental sustainability by funding the socially and environmentally responsible investment projects. Banks generally adopt green activities for the environmental sustainability. Green approach is not only benefitting the environment but it is also beneficial to organizations in many ways. According to Biswas (2011), the concept of ‘GB’ will be beneficial to the environment, banking industries as well as economy and it will not ensure the greening of industries only but also facilitate the improvement of asset quality in the future. Along with environmental benefits, the ecological activities of the organizations have also resulted in operating profit (Naffizger et al., 2003; Segarra-Ona et al., 2011), cost savings (Ruth, 2009) and increased competitiveness (Bansal and Roth, 2000; Porter and Van der Linde, 1995). Banking sector plays an important role in the economic growth of a nation.

One of the major areas that has gained prominence as a target for environmental management in literature is human resource. Human resource is the key resource of any organization and can have a significant impact on how the organization operates. Thus, the support of human resource management practices is considered fundamental for adopting environmental management practices (Govindarajulu and Daily, 2004). Likewise, the desire to implement GB practices successfully in the banks is now highly focused on human resource. Hence, human resource management is a key element that pave the way to GB. In this new era, banks are making efforts to implement E-HRM as well as GHRM in order to improve the quality
of GB and to promote the environmental performance of banks. GHRM is one of the factors which determine the success of GB.

GHRM is termed as the integration of corporate environmental management into human resource management (Renwick et al., 2008). GHRM is the use of policies, practices, and systems in the organization that make green employees for the benefit of the individual, team, society, natural environment and the organization (Opatha and Arulrajah, 2014). Further, Phillips (2007) argued that employee participation in GHRM helps to prevent pollution from workplaces. These contributions towards environment may ensure the success of GB practices. Hence, GHRM plays a vital role in determining the success and failure of the GB concept.

E-HRM is a way to implement HR strategies, policies and practices in organizations through the use of Internet channels and take full advantages of them (Sanayei and Mirzaei, 2008). Banks employ several E-HRM functions that reduce the negative environmental impact of banks by reducing the paperwork, hours of processing to minutes and costs of HR transactions (Jones, 1998; Lengnick-Hall and Moritz, 2003). Hence, E-HRM practices adopted in the banks contribute to GB by reducing negative environmental impact and improving the positive environmental impact of banks.

Since banking sector is one of the major sources of financing to the many industries and businesses, it creates huge responsibility and accountability to the banks because, this may indirectly lead to environmental pollution if banks fail to exercise strong verification measures regarding the negative environmental impact of those industries and businesses prior to financing.

In Sri Lanka, banking sector has started to practice green banking concept recently. This sector consists of 25 licensed commercial banks (LCBs) and 7 licensed specialized banks (LSBs) in Sri Lanka (Central Bank of Sri Lanka, 2016). Out of these 25 licensed commercial banks 13 banks are domestic banks. Among these 13 domestic banks, most of the banks are private sector commercial banks. However, only few domestic banks (4-5) are formally initiated green banking concept in Sri Lanka. Among the private sector commercial banks, banks which are initiated green banking concept are leading private sector commercial banks in Sri Lanka. Today, many Sri Lankan banks are making efforts to ‘go green’ through offering various green products and services to their customers and taking initiatives in their day to day business operations for the environmental concern. In this context, it is very imperative to investigate the factors or relevant knowledgeable areas which have an impact on GB.
In recent years, E-HRM and GHRM have been gaining importance rapidly and both have taken advancement in banking sector. They are the newest topics of HRM with the aim of optimizing the procedures of the banks in order to achieve environmental performance. As the role of a bank reducing the carbon footprint in the society is extremely important (Malu et al., 2014), banking sector plays a crucial part in promoting sustainable development and green economy. Hence, it is evident that GHRM and E-HRM are gaining prominence to achieve and sustain goals of GB practices in today’s banking sector.

Many scholars have conducted research studies regarding E-HRM (Hooi, 2006; Pratheepan and Arulrajah, 2012; Voermans and Van Veldhoven, 2007; Yusliza and Ramayah, 2011; Sulochana and Sajeewanie, 2015), GHRM (Arulrajah and Opatha, 2016; Arulrajah et al., 2015; Opatha, 2013; Opatha and Arulrajah, 2014; Renwick et al., 2008) and GB practices (Bihari, 2011; Biswas, 2011; Ginovsky, 2009) separately. Moreover, it was difficult to find a piece of review or empirical research work which integrates GHRM, E-HRM and GB in the existing literature. Hence, this investigation may be a pioneering research work in this area of study. Thus, there are lacunas in literature review and empirical studies undertaken in Sri Lankan context regarding GB practices together with GHRM and E-HRM. In order to fulfill these gaps, this study was conducted theoretically and empirically in Sri Lankan banks. Hence, the objectives of this study are to explore the impacts of GHRM and E-HRM on GB from the perspective human resource management.

LITERATURE REVIEW

Green Banking

GB is comparatively new development in the financial world. The impact of banking services on the environment is huge because, banks consume natural resources which add to the pressure on the environment (Srivatsa, 2011). The activities of the banks are associated with environmental protection and sustainable development. Green bank is like a normal bank, which considers all the social and environmental or ecological factors with an aim to protect the environment and conserve natural resources (Indian Banks Association [IBA], 2014). A green bank is also called ethical bank, environmentally responsible bank, socially responsible bank or a sustainable bank and is expected to consider all the social and environmental issues (Habib, 2010; Goyal and Joshi, 2011). Moreover, the first green bank commenced its operations in Mt. Dora, Florida, United States in 2009. The bank is known to focus
entirely on environmentally friendly banking practices. The bank recruited the employees who have attained the leadership in energy and environmental design (LEED) accredited professional designation. “Green” in GB principally indicates banks’ environmental accountability and environmental performances in business operations (Bai, 2011). Green is becoming a symbol of eco consciousness in the world. Now banks believe that every small “green” step taken today would go a long way in building a greener future and that each one of them paves way towards better global environment. Now “go green” is a wide initiative that is moving towards banks, their processes and their customers. Therefore, the term “GB” generally refers to promoting social responsibility where banks consider before financing a project whether it is environment friendly and has any future environmental implications (Bihari, 2011). Moreover, GB is really a good way for people to get more awareness about global warming.

According to Shaumya and Arulrajah (2016a and 2016b), the ultimate objective of GB is to protect and safeguard the natural environment. Basically, it can take place in two ways. They are: (1) technological innovation in banking, for example, using online banking instead of traditional banking system, online bills payment system instead of manual payment system, and etc. (2) behavioral and management innovations in banking practices, for example, energy saving behavior of bank staff in their respective branches, waste reduction efforts of bank employees, environmental friendly initiatives of bank employees, providing loans to the environmental friendly project and etc.

Habib (2010) stated that the broad objective of the green banks is to use resources with responsibility, avoid waste and give priority to environment and society. It is regarded as sustainable banking, which has a role to safeguard the planet from environmental degradation, with the aim of ensuring economic growth which is sustainable. This concept of GB is mutually beneficial to the banks, industries and the economy. Further, Shaumya and Arulrajah (2017) argued that green banking practices have an impact on bank’s environmental performance. As such, higher the green banking practices the higher would be the bank’s environmental performance. Thus, not only GB ensures the greening of the industries but it can facilitate in improving the environmental performance.

Further, Shaumya and Arulrajah (2017) defined green banking as an environmental oriented banking practice that safeguards the environment from the negative impact to achieve environmental goals of the banks. In this perspective, banks implement several green banking practices such as environmental training, usage of energy efficient equipments, constructing green buildings, and etc. Therefore, through these practices banks can achieve their environmental goals.
Green HRM

GHRM gained its unique position in recent research since the awareness on environmental management and sustainable development has gradually arisen. The concept of GHRM was appeared in 1990s and globally accepted in 2000s (Lee, 2009). But the field of GHRM is still young (Renwick et al., 2013; Jackson et al., 2011). GHRM is the use of HRM policies, philosophies, and practices to promote sustainable use of resources and prevent harm arising from environmental concerns within business organizations (Zoogah, 2011). According to Mandip (2012), GHRM is the use of human resource management policies to promote the sustainable use of resources within business organizations and promote the cause of environmental sustainability. Hence, there is a growing need for the integration of environmental sustainability into human resource management HRM - GHRM (Nijhawan, 2014). It is also stated that this process of support from HR to EM objectives is called GHRM (Renwick et al., 2008). Green human resource practices can be implemented in an organization through green recruitment, training and development, performance management and appraisal, compensation, pay and reward, and employment relations (Rani and Mishra, 2014; Renwick et al., 2013). According to Jabbour et al. (2010), the “greening” of functional dimensions of human resource management such as job description and analysis, recruitment, selection, training, performance appraisal and rewards is defined as GHRM. There is a need to emphasize the benefits of these green human resource practices for organizations and for environment as well (Renwick et al., 2013). Opatha and Arulrajah (2014) defined GHRM as all the activities in connection with development, implementation and maintenance of a system that aims at making workforce of an organization green. It is an effort of HRM with the intention of transforming ordinary employees into green employees to achieve environmental goals of the organizations.

GHRM incorporate environment-friendly HR commencement and practices for sustainable use of resources that resulting in more efficiencies, less wastage, improved job related attitude, improved work/private life, lower costs, improved employee performance and retention which help organization to reduce employee carbon footprints by the mean of GHRM practices i.e. Flexible work scheduled, electronic filing, car-sharing, job-sharing, teleconferencing, virtual interviews, recycling, telecommuting, online training, energy efficient office space etc (Margaretha and Saragih, 2013). With the effective implementation of green policies, employees may be motivated and involve themselves in green practices which will ultimately lead towards the better organizational performance. Thus, it seems that a considerable number of organizations practice GHRM practices in the global context. Based on the above
literature, researchers came to know that GHRM is an emerging topic in the area of strategic human resource management.

**E-HRM**

The term of E-HRM was first started to be used in the late 1990’s when “e-commerce” was emerging in the business world (Olivas-Lujan et al., 2007; Lengnick-Hall and Moritz, 2003). Bondarouk and Ruel (2009) stated that E-HRM possesses three main goals such as reducing costs, improving HR services and improving strategic orientation. But Ruel et al. (2006) suggested the four E-HRM goals of cost reduction, improving HR services, improving strategic orientation and global orientation. It is seen that E-HRM is flexible in response to changes happening in the systems and laws of work, labour and assist for applying strategic plans. Therefore, the application of E-HRM in any organization including bank is inevitable.

The concept of E-HRM has been defined in several ways from the 1980’s, “specialized information system (IS) within the traditional functional areas of the organization, designed to support the planning, administration, decision making and control activities of HRM” (DeSanctis, 1986). E-HRM is an integrated system that covers a whole range of HR activities for the HR department. Usually, E-HRM contains some applications of labour force planning, supply and demand forecast, staffing information, applicant qualifications, information on training and development, salary forecast, pay increase, labour/employee relations, promotion related information and, so on (Bamel et al., 2014). Recent studies also confirmed that E-HRM improves the strategy formulation and decision making for HR activities. Therefore, it has been considered as a strategic partner of the firms (Thite and Kavanagh, 2009; Wiblen et al., 2010).

E-HRM is all about supporting HR functions and managing resources for the betterment of organization as a whole (Sareen and Subramanian, 2012). There are similar functional definitions of E-HRM including the composite of databases, computer applications and hardware and software used to collect, store, manage, deliver, present and manipulate data for HR which is defined as the administrative support of the HR function in organizations through the use of IT (Voermans and Van Veldhoven, 2007). According to Strohmeier (2007), E-HRM technology is a way of implementing HR strategies, policies and practices. Furthermore, the author concluded the definition of E-HRM as the process of innovation and continuous improvement in the management of HR caused by all these new phenomena and major changes. Of the various definitions available, according to Bondarouk and Ruel (2009), the most commonly used definition is an umbrella term covering all possible integration mechanisms and contents between HRM and IT, aiming at creating value within and across organizations for targeted employees and management.
Based on the above literature, the researchers defined E-HRM as *a practice that applies information technology to perform HRM functions effectively and efficiently*. The effectiveness of the HRM practices that contribute to speedy decision making, less cost, saving time, and etc. in an organization is solely the result of E-HRM.

**Green HRM and Green Banking**

Recently, banks are rapidly extending beyond their goal of maximizing shareholders’ wealth. They are increasingly expected to become green by having goals of environmental consciousness, social responsibility and good governance. In order to be green, they should ensure efficiency in using space, water, energy, paper, etc. in its branches. This can motivate the banks to be more conscious as they will highly contribute to enhance the environmental performance of the banks as well as pave the way to gain the green reputation, competitive advantage and financial benefits.

Fayyazia et al. (2015) said that there is a requirement for the amalgamation of environmental management in Human Resource Management because it is essentially or very important rather than just desirable. So to meet great environmental challenges, more concentration must be given for innovation as a way to develop and realize sustainable solutions (Machiba and Tomoo, 2010) and for these there is a need of green team who are responsible for generating new green innovation and practices. In this context, several authors argued that human resource management plays a vital role in determining the environmental performance of the organizations (Arulrajah et al., 2016; Daily and Huang 2001; Dias-Angelo et al., 2014; Jabbour and Santos, 2008a; Jabbour and Santos, 2008b; Ji et al., 2012; Opatha and Arulrajah, 2014; Renwick et al., 2013). Further, Arulrajah et al. (2016) argued that improving the green performance of employee is an important factor to enrich the environmental performance. Hence, in the banking context, it is important to attract, recruit, train, develop, motivate and retain the environmentally oriented employees to enhance the GB practices which in turn leads to improve the environmental performance of bank.

To become green employee, they should possess a sufficient amount of knowledge and skills in respect of greening and without this knowledge and skills (competencies) it is not possible for the employee to become a green employee (Bhattacharya and Sen, 2004; Busck, 2005; Callenbach et al., 1993; Collier and Esteban, 2007; Daily and Huang, 2001; Garavan et al., 2010; Gupta and Sharma, 1996; Madsen and Ulhoi, 1996; Ramus, 2002; Rothenberg, 2003; Sudin, 2011). These green employees are developed through GHRM practices. Human resource department plays very crucial role in translating green policy
into practice (Renwick et al., 2008) and the creation of sustainable culture within the company (Harmon et al., 2010), therefore such green practices help in fulfillment of green objectives throughout the HRM process from recruitment to exist (Dutta, 2012). In addition to that, employee should have the positive environmental attitudes and environmental friendly behaviours to participate in the environmental initiatives of the organization (Opatha and Arulrajah, 2014; Thevanes and Arulrajah, 2016a; Thevanes and Arulrajah, 2016b). And employees’ environmental behavior in the organization, which in turn, could be carried on to consumption pattern in their private life also (Muster and Schrader, 2011).

The focus on improvising GHRM in an organization will improve operational competency. Moreover, the ability-motivation-opportunity theory proposes that GHRM policies can enhance an organization’s human capital by increasing employee capabilities and performance which can be further interpreted to the firm’s performance outcomes, for instance increased productivity, reduction in the wastage and consequently earning more profits (Renwick et al., 2013). Hence, banks should improve the ability, motivation and provide the opportunities to the employees to improve their green performance. Further, Arulrajah and Opatha (2016) argued that, GHRM produces several employee related outcomes such as environment-friendly workforce, employee with environmental related knowledge, skills and attitudes or it may be financial gains such as cost saving or waste reductions. Ultimately, it may contribute to firm’s environmental performance. Hence, these outcomes are important for a bank to improve the GB performance.

GHRM produces several employee related outcomes such as environment-friendly work force, employees with environmental related knowledge, skills and attitudes or it may be financial gains such as cost saving or waste reductions (Arulrajah and Opatha, 2016). Ultimately, it may contribute to the firm’s environmental performance. Hence, these outcomes are important for a bank to improve the GB performance. According to Arulrajah, Opatha and Nawaratne (2016), employee green performance of a job deals with three type of performance dimensions such as efficient use of input resources effectively, innovative environmental initiatives of an employee, employee contribution to the corporate environmental management (CEM) initiatives. In this context, GHRM is a necessity to improve these three key dimensions of an employee green performance of the job. So, banks should practice GHRM to enhance the GB performance and employees’ green performance.

Shaumya and Arulrajah (2016b) have identified employee related aspect (environmental training and education, green performance evaluation and green reward system) as the dimension which contribute to
GB. These practices are really originated from GHRM. Based on this evidence, this study suggests that GHRM has a positive impact on GB.

Based on the above cited literature evidences, it can be possible to establish a positive relationship between GHRM and GB. GB concept is seriously followed up by the banks in order to reduce the negative environmental impact as well as enhance positive environmental impact. Hence, banks seriously give prominence to GHRM to promote the green employees to enhance their contribution and active participation in GB. According to the above literature, this review proposed its first hypothesis as:

**H1: GHRM has a positive and significant impact on GB.**

**E-HRM and Green Banking**

The problems related to the environment have become very critical and their dependence on natural resources for the growth and development underline the need of banks to implement GB practices. In this context, E-HRM is a rapidly following practices within the banks to manage human resources through electronic mode. At the same time, it also contributes to reduce the negative environmental impact from banking operations. Thus, both E-HRM and GB are related to each other.

E-HRM enable reduction in paper usage by issuing and encouraging e-statements which helps to change the culture of the organization from being a paper based culture to an electronic based culture in all work fields, providing a work environment based on information and telecommunication technology (Barker, 2002; Deshwal, 2015; Lengnick-Hall and Moritz, 2003; Olivas-Lujan et al., 2007; Patil, 2013; Srivastava, 2010). Paperless culture is one of the way to reduce the carbon footprint (Bahl, 2012) because less paperwork means less cutting of trees and it is partly connected with GB concept. Thus, GB avoids as much paper work as possible and rely on online/electronic transaction for processing. Hence, it is found that E-HRM has an impact on GB.

The E-HRM plays a vital role in human resources management (1) where procedures and processes can be less complicated (2) while ensuring accuracy (3) and timeliness of communication between both organizations and employees with unlimited distance of message transmission. This helps reduce work complexities (4) and stimulate the HRM function as effectively. These effectiveness and efficiency of HR function reduces the work burden and overtime hours. Reducing overtime leads to minimize the energy conservation. For instance, if overtime is reduced, banks can be closed early, it leads to switching off lights, air conditioner, computer, etc. early. In this way, reducing overtime saves the consumption of energy and generate lower carbon dioxide emissions. As GB is a pro-active way of energy conservation
and environment protection (Tara et al., 2015), it provides an evident to conclude that by saving energy, E-HRM has a positive impact on GB.

A new dimension of sustainability has emerged in the scope of HRM. The automation of HR systems simultaneously helps in reducing environmental waste (e.g., paper, staples, files) and social waste (e.g., process time for searching documents and decision making), and economical waste (e.g., cost related with preparing documents, labours’ salary due to extra time of working) of conducting HR’s task (Yusoff et al., 2015). The sustainability outcome brought an idea that E-HRM should be appreciated as one of the initiatives of GB as it promotes the sustainability of the nation (Bahl, 2012; Narang, 2015; Rajesh and Dileep, 2014). Thus, E-HRM has a positive impact on GB. Since, E-HRM is found to be in alliance with GB, researchers believe that E-HRM has a positive impact on GB. Hence, by using the findings of previous studies in connection with E-HRM and GB practices this review makes a positive association between E-HRM and GB. Based on the above cited literature evidences, this review proposed its second hypothesis as:

**H2: E-HRM has a positive and significant impact on GB.**

**CONCEPTUAL FRAMEWORK**

![Conceptual Framework Diagram](image-url)
METHOD

The objectives of this study are to explore the impact of GHRM and E-HRM on GB from the perspective of human resource management. The study was done in the natural environment where work was preceded normally. None of the variables were controlled or manipulated. Hence the study was a non-contrived study. This study depended on the primary data. The primary data were collected through self-administrated questionnaire. The structured questionnaire of this study consists of four parts. Part I: data on respondent profile. Part II: regarding GB. Part III: regarding GHRM, finally, in part IV: data on E-HRM. Five point Likert scale was assigned to measure the variables of the study and all are closed questions.

The target population size was around 185 which includes selected private and public commercial banks’ executive and non-executive level employees within the Batticaloa region. This study was carried out among the sample of 150 employees of selected ten Commercial Banks in Batticaloa Region of Sri Lanka. Out of ten, nine banks are private and one is public sector bank. Both executive level employees and non-executive level employees are involved in this survey. The sampling method was disproportionate stratified sampling, because to assure representation of employees belonging to different grades in the selected banks. The primary data collected from the respondents were analyzed using the computer based statistical data analysis package, SPSS (version 19.0) to measure the descriptive statistics and simple regression. The data analyses include univariate and bivariate analyses.

MEASURES

Green Banking

The scale used for measuring GB in this study is a 13-items scale adapted from an instrument developed by Shaumya and Arulrajah (2016b) designed to assess three dimensions of GB: daily operation related practice, customer related practice and bank’s policy related practice. The instrument had a good degree of reliability with a Cronbach’s alpha of 0.93. Their original scale consisted of 16 items with four dimensions. This study has excluded fourth dimension which is ‘employee related practice’ because it highly reflects key aspects of GHRM such as green training and education, green performance evaluation and green reward. Hence, this study has excluded the fourth dimension of the original scale.
Green HRM

GHRM measuring scale consists of three question items with a dimension of employee related green practices of banks which was developed by Shaumya and Arulrajah (2016b) in banking context. It includes environmental training and education, green performance evaluation and green reward management. The Cronbach’s alpha value is 0.74.

E-HRM

This study has used a sixteen items scale for measuring E-HRM practices such as recruitment and selection, employee data and pay management, performance management, training and development, communication, knowledge management and operational and other HRM activities which was developed by Pratheepan and Arulrajah (2012) in banking context. In the current study, the overall Cronbach’s alpha value for E-HRM is 0.91.

The Cronbach’s alpha value above 0.70 is considered as a good reliable instrument and high level of internal consistency of data and scale. Based on that, the overall result of GB, GHRM and E-HRM are 0.93, 0.74 and 0.91 respectively. Therefore, it is indicated that the measures which are used in this study are suitable instruments to measure study concepts.

Each item of these three instruments were rated using a five points Likert scale (1 = strongly disagree to 5 = strongly agree) to indicate how respondents agree or disagree regarding availability of GB, GHRM and E-HRM in their banks. The results of the reliability analysis are presented in Table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green HRM</td>
<td>0.746</td>
</tr>
<tr>
<td>E-HRM</td>
<td>0.913</td>
</tr>
<tr>
<td>Green Banking</td>
<td>0.930</td>
</tr>
</tbody>
</table>

Source: Survey data

Table 1: Reliability Analysis
RESULTS AND DISCUSSION

Sample Profile
The profile of sample consists of bank, job position, gender, age, educational qualification and working experience of 150 employees of selected Commercial Banks in Batticaloa Region of Sri Lanka. The frequencies and percentages are shown in Table 2.

<table>
<thead>
<tr>
<th>Table 2: Sample Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td><strong>Sample Profile</strong></td>
</tr>
<tr>
<td>Banks</td>
</tr>
<tr>
<td>Commercial Bank of Ceylon PLC</td>
</tr>
<tr>
<td>HNB PLC</td>
</tr>
<tr>
<td>Sampath Bank PLC</td>
</tr>
<tr>
<td>Seylan Bank PLC</td>
</tr>
<tr>
<td>People’s Bank</td>
</tr>
<tr>
<td>Pan Asia Banking Corporation PLC</td>
</tr>
<tr>
<td>NTB PLC</td>
</tr>
<tr>
<td>NDB PLC</td>
</tr>
<tr>
<td>DFCC Bank PLC</td>
</tr>
<tr>
<td>Union Bank PLC</td>
</tr>
<tr>
<td>Job position</td>
</tr>
<tr>
<td>Manager</td>
</tr>
<tr>
<td>Assistant Manager</td>
</tr>
<tr>
<td>Officer</td>
</tr>
<tr>
<td>Banking Assistant</td>
</tr>
<tr>
<td>Banking Trainee</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>18-28 years</td>
</tr>
<tr>
<td>29-38 years</td>
</tr>
<tr>
<td>39-48 years</td>
</tr>
<tr>
<td>Over 49 years</td>
</tr>
<tr>
<td>Educational qualification</td>
</tr>
<tr>
<td>Ordinary Level</td>
</tr>
<tr>
<td>Advance Level</td>
</tr>
<tr>
<td>Graduate</td>
</tr>
<tr>
<td>Postgraduate</td>
</tr>
<tr>
<td>Working experience</td>
</tr>
<tr>
<td>3 years and below</td>
</tr>
<tr>
<td>4-5 years</td>
</tr>
<tr>
<td>Above 5 years</td>
</tr>
</tbody>
</table>

Source: Survey data
Univariate Analysis
The results of Univariate analysis presented in Table 3. Mean for GB, GHRM, E-HRM are 4, 3.94, 4.06 respectively, standard deviation for GB, GHRM, E-HRM are 0.65, 0.76, 0.70 respectively.

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Banking</td>
<td>150</td>
<td>4.00</td>
<td>0.65</td>
</tr>
<tr>
<td>Green HRM</td>
<td>150</td>
<td>3.94</td>
<td>0.76</td>
</tr>
<tr>
<td>E-HRM</td>
<td>150</td>
<td>4.06</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Correlation Analysis
Variables are shown in Table 4. The result shows, the Coefficient of Correlation (r) between GHRM and GB is 0.843 and the Coefficient of Correlation (r) between E-HRM and GB is 0.747. Based on the decision rule, there is a strong positive correlation between them. The significance level is 0.000 which is below 0.05 (p < 0.05). Therefore, this study concludes that there is a positive and significant relationship between GHRM and GB as well as positive and significant relationship between E-HRM and GB. This means GHRM and E-HRM have positive association with GB of surveyed banks. This implies that banks which pay attention on GHRM and E-HRM will improve GB.

<table>
<thead>
<tr>
<th>variables</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green HRM</td>
<td>0.843**</td>
<td>.000</td>
</tr>
<tr>
<td>E-HRM</td>
<td>0.747**</td>
<td>.000</td>
</tr>
</tbody>
</table>

Simple Regression Analysis
This study applied the simple regression analysis to explore the impact of GHRM on GB. Tables 5 and 6 show the results.

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.843a</td>
<td>.710</td>
<td>.708</td>
<td>.35405</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), GHRM

Source: Survey data
The impact of GHRM on GB has been studied using simple regression analysis. The results revealed $R$ is 0.843, which represents positive correlation between GHRM and GB and $R^2$ at 0.710, which implies that 71% of variability in GB is accounted by the GHRM. In other words, 29% of variance of GB is affected by other variables (Table 5). The $t$-value (19.030, Sig. <0.001) further confirms that GHRM is associated with the improved GB and thus leads to the acceptance of the hypothesis-1, i.e. GHRM has a positive and significant impact on GB (Table 6).

The same analysis was applied to explore the impact of E-HRM on GB. Tables 7 and 8 show the results.

### Table 6: Coefficients of GHRM on GB

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.154</td>
<td>.152</td>
<td>7.572</td>
<td>.000</td>
</tr>
<tr>
<td>GHRM</td>
<td>.723</td>
<td>.038</td>
<td>.843</td>
<td>19.030</td>
</tr>
</tbody>
</table>

a. Dependent Variable: GB

Source: Survey data

### Table 7: Model Summary of Impact of E-HRM on GB

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.747</td>
<td>.558</td>
<td>.555</td>
<td>.43702</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), E-HRM

Source: Survey data

### Table 8: Coefficients of E-HRM on GB

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.201</td>
<td>.208</td>
<td>5.775</td>
<td>.000</td>
</tr>
<tr>
<td>GHRM</td>
<td>.690</td>
<td>.050</td>
<td>.747</td>
<td>13.668</td>
</tr>
</tbody>
</table>

a. Dependent Variable: GB

Source: Survey data
The impact of E-HRM on GB has been studied using simple regression analysis. The results revealed R is 0.747, which represents positive correlation between E-HRM and GB and R square at 0.558, which implies that 55.8% of variability in GB is accounted by the E-HRM. In other words, 44.2% of variance of GB is affected by other variables (Table 7). The t-value (13.668, Sig. <0.001) further confirms that E-HRM is associated with the improved GB and thus leads to the acceptance of the hypothesis-2, i.e. E-HRM has a positive and significant impact on GB (Table 8).

GB is attracting increased attention among stakeholders of the banks. Despite its importance to them, there are very few studies that consider a complete process of HRM in banks striving to achieve environmental sustainability. There is, thus, a growing need for the integration of environmental management into HRM. Hence, banks employ several E-HRM functions that reduce the negative environmental impact of banks. E-HRM functions mainly focus on paperless offices, digital banking and HRM systems to reduce the carbon footprint of the banks. For example, online recruitment, online training, e-learning, and etc. Likewise, GHRM involves environmentally friendly human resource policies and practices and protect the environment from any negative impacts. Banks can create environmental oriented employees through GHRM practices by developing environmental knowledge, skills, attitude and behaviour of employees to carry out environmental initiatives of the banks. Hence, the banking industry becomes environmental friendly and leads towards a green revolution, thus establishing GB practices

CONCLUSION

Green banks are at startup mode in Sri Lanka. They should expand the use of environmental information in their business operations, credit extension and investment decisions. The endeavor will help them proactively to improve their environmental performance. As environmental reputation is an important factor for economic success of the banks today, GB is becoming an urgent need for banks in order to eliminate or reduce environmental degradation. Thus, both researchers and practitioners have called for more research works. Although, many research works have been done on GB, however, it was difficult to find any literature reviews or empirical studies which exploring the impacts of GHRM and E-HRM on GB. Hence, this study was conducted in order to fulfill these literature and empirical knowledge gaps.

The present study has examined the impacts of GHRM and E-HRM on GB. So, the analysis has made use of descriptive statistics, correlation, and regression analyses. Based on hypothesis testing, this research
has confirmed GHRM has a positive and significant impact on GB and similarly E-HRM also has a positive and significant impact on GB. GHRM and E-HRM could be significantly explained by the variance of GB. Thus, GHRM and E-HRM have been considered as paths to materialize GB and both positively contributed to GB.

The study has implications for both academicians and practitioners. For the academics, this study contributes to understand the impacts of GHRM and E-HRM practices on GB. Findings of the study contribute to GB literature and also provides novel areas of research for researchers in GHRM, E-HRM and GB. For banks, this study is useful to become greener banks as well as to achieve environmental goals and it could help the managers in determining the role of each HR practice in implementing environmental management system in the banks. Hence, this study will benefit managers and employees to be more involved to perform and take up tasks and resolve environment related issues and will experience the various advantages in their work places. In the light of these implications, this study is considered to be important for the sustainability of banks.

LIMITATIONS

This study has a series of limitations. First, the current study is carried out based on the information collected only from the selected Commercial Banks in Batticaloa region of Sri Lanka. Second, data were collected at one point of time, applying a cross sectional design. Third, sample size (n =150) of the study is limited. Fourth, this study is mainly conducted based on the data collection through the questionnaire and antecedent variables are not taken into consideration. Finally, this study did not consider the impact of control variables (e.g. sample profiles or other variables) on green banking. Future researchers should focus on these limitations in enriching knowledge in these areas.

REFERENCES


Leadership Style of Chief Accounting Officer, Employee Resilience and Innovation on Performance of Organizations in the Public Sector: A Conceptual Framework

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ABSTRACT

Public sector organizations in Sri Lanka function on public funds which are provided by the annual budget allocations. It is assumed that they achieve expected results effectively and efficiently to meet the expectations of service recipients. In this context, secretaries to the ministries are constitutionally regarded as the chief accounting officers in the respective ministries. Hence, the secretary has to play the major role, be responsible for the performance of organizations and be accountable for public funds as well. Apart from official functions & large scope of other work as leading subordinates in an organization creating work place, resilience also comes within the purview of this official domain. This major role of the Chief Accounting Officer further inspires the subordinates to get an insight of the barriers and to face challenges. This leadership also stimulates subordinate efforts to become more innovative and creative, and thus it demands to pay greater attention on employee needs regarding guidance, enrichment, achievement and growth. Hence, this study investigates the effects of leadership style of chief accounting officers, employee resilience and innovation on performance of public sector organisations in Sri Lanka. Thus, whilst the transformational leadership style, performance of organizations, employee resilience and innovation are been investigated, a few of such studies are initiated with regard to interrelationships that exist among the above mentioned four aspects of conceptualization with reference to the public sector in Sri Lanka. Answer to key questions in this study is investigated through qualitative and quantitative research. In-depth investigation still to be conducted by interviewing senior public officials in respective ministries. In order to better understand the current situation, the history of performance data of particular organizations were gathered from the Auditor General’s Reports. Since qualitative research method is adopted with a multiple case study design, grounded theory analysis, would be used as the analysis tool, where data would be analyzed through cross – case synthesis. Since the quantitative research method is also adopted, the hypothesized relationships among variables of interest would be examined with statistical analyses based on data collected from 20 ministries and nine provincial councils.
Keywords: Leadership, Chief Accounting Officer, Employee resilience, Innovation, Performance of Organization

BACKGROUND

Governments have always wanted results from their spending and regulation (Curristine, 2005). In fact, some Governments are increasingly facing overall spending and despite these constraints more attention has been given to achieve better results from current funds. Concurrently, new public management approaches are applied to re-organize and to better motivate public servants to achieve results.

For instance, it identifies common core ideas: the search for greater productivity; more public reliance on private markets; a stronger orientation towards service; more decentralization from the national level to sub-national governments; increased capacity to devise and track public policy and tactics to enhance accountability of result-oriented projects.

Curristine, (2005) argued that in the traditional public sector bureaucracy, performance was driven by ensuring compliance with sets of rules and regulations controlling inputs, and adherence to public ethos. Author reiterates that this system generally worked well when governments had less complex and more standardized tasks to conduct when complying with the rules, they were considered more important than efficiency and effectiveness. Today, the public sector performance in the global context is becoming an important aspect of steady growth in both the developed and developing countries. Contemporary public sector organizations play more dynamic roles than the traditional liner-career in public sector organizations. Across the globe, the public sector organizations have commenced to adopt contemporary human resource management and career development practices and managers increasingly take responsibility to manage their own careers (Colley, et al., 2012). Thus, managers in the public sector organizations and the employees need to play their roles in a dynamic organizational environment with many challenges within and outside the organization. A fast pace of the work environment meeting with deadlines and chronic pressure on high performance exigencies exists concerning effective changes in employee resilience. The combination of continuing and changing work place is needed for high performance and a growing concern regarding the costs of stress urges many public organization leaders to focus their attention on the need for a resilient work force in the organization.

Meanwhile, in order to respond to the demand of service recipients under the conditions of limited resources, managers by dint of their roles in the public sector, are impelled to effect changes in an
innovative and proactive way to improve performance of the government (Fernando L., 2005). The author reiterates that the public sector needs to pursue efficiency and effectiveness in the public services while enhancing accountability to its citizens. In the effect of organisational environmental factors such as top management support and sufficient work discretion lead on innovation (Amabile, 1988; Hornsby, Kuratko, & Zahra, 2002; Morris, Kuratko, & Covin, 2008). While the concept of innovation can be applied at the organisational level, its foundation lies at the individual level of the employee (Kuratko, 2007). Research on individuals typically describes innovation as a multiple-stage process of generating new ideas, gaining support for them and applying them in the workplace (Scott & Bruce, 1994).

In this context, the Sri Lankan public sector is also not exempted from that need. Hence this need, particularly of the ministry secretary’s leadership as the chief accounting officer and the head of the administration is crucial in this regard.

Furthermore, Sri Lanka as an emerging nation in the Asian region, its public sector has to play a vital role in the development process. In order to cope with the situation, a number of reforms are being implemented. As a result, the number of employees in the public sector has been drastically increased during the past few decades. In addition, the public sector has been provided with infrastructure facilities and human resources by successive administration regimes from time to time to improve performance. Despite the reforms made in this sector to improve productivity, many of their efforts had failed and had been the cause for increase of employee frustration to a great extent. However, in the present context, employees in the public sector are vulnerable in the face of some of the reforms such as downsizing, outsourcing certain services, privatization as well as restructuring. Thus, it is more than ever before, that resilience is needed in all sectors, bearing in mind the achievement of organizational goals. Hence, inevitably in many sectors in the public service employees are also experiencing the thrust of on-going changes in the workplace such as being asked to take on new responsibilities, learn new skills, and do more with less. Regardless of the public sector employment safety, the employees are also dealing with uncertainty and the prevailing threat of layoffs. Thus, under these circumstances, only a highly resilient work force is enabled to cope well enough with high level of on-going disruptive changes. Hence, this study focuses on Leadership style of chief accounting officers, employee resilience, innovation and organizations’ performance in the public sector in Sri Lanka.
Literature Review

Leadership Theories
Moorhead and Griffin (2013) define leadership in terms of both the process and the property. As a process, leadership is the use of non-coercive influence to direct and coordinate the activities of group of members to meet a goal. As a property, leadership is the set of characteristics and attributes to those who are perceived to use such influence successfully. They state that influence as a common element of both perspectives. It is the ability to affect the perceptions, beliefs, attitudes, motivation and behavior of others (Moorhead & Griffin, 2013).

Early leadership research primarily attempted to identify important traits and behaviors of leaders (Mahoney, 1960). Trait theories assume that successful leaders are born and that they have certain innate qualities which distinguish them from non-leaders. They attempted to identify stable and enduring character traits that differentiated effective leaders from non-leaders. Nevertheless, the difficulty in categorizing and validating these characteristics has led to widespread criticism of this approach. In the late 1940s most researchers began to shift from the trait approach and started to look at leadership as a style and behavior. Style and behavior theorists switched the emphasis from the characteristics of the leader to the behavior and style the leader adopted (Likert, 1961). The behavioral approach to leadership attempted to identify behaviors that differentiated effective leaders from non-leaders. Further, the behavioral approach was intended to determine what behaviors are associated with effective leadership.

Michigan state and Ohio state studies, each identified two kinds of leader behavior: one focuses on job factors and the other on people factors. The leadership grid further redefined the Michigan State and Ohio state studies based on behavioral approach. Regarding the trait theories of leadership, it claimed that the major weakness was attributed to ignoring the important role that situational factor plays significantly in determining the effectiveness of leaders (Mullins, 1999). It has therefore shifted to situational and contingency theories of leadership. Newer situational theories of leadership attempted to identify the appropriate leadership styles on the basis of the situation.

Fiedler’s LPC (least preferred core-workers) theory states that leadership effectiveness depends on a match between the leader style and favorableness of the situation (Fiedler, 1967). Situation favorableness, in turn, is determined by task structure, leader-member relations, and leader position power. According to Robert House (1971, 1996) the path-goal theory focuses on appropriate leadership behavior for various situations. The path-goal theory pressurized on the nation directive, supportive, and participative aspects.
This is an achievement-oriented leader behavior which may be appropriate, depending on the personal characteristics of the subordinates and the characteristics of environment.

Unlike the LPC theory, this view presumes that leaders can alter their behavior to best fit the situation. Vroom’s decision tree approach suggests that appropriate decision-making style is based on situation characteristics (Vroom, 1974). This approach focuses on deciding how much of subordinate participating in the decision-making process. The situational and contingency perspective is such that leadership effectiveness depends on the leader’s diagnosis and understanding of the situational factors. Recent studies on leadership have shifted to Transactional and Transformational leadership with their subordinates (Bass and Avolio, 1993). If one goes through the literature of transformational leadership there are many interpretations. Basically, transformational leadership focuses on the basic distinction between leading for change and leading for stability.

Stogdil (1957) defined leadership as the individual behavior to guide a group to achieve the common target. Fry (2003) explains leadership as use of leading strategy to offer inspiring motive and to enhance the potential for growth and development. In this context, leadership has been connected with potential for growth and development.

Leadership in an organization is concerned with the exercise of power to some degree (Rosenfeld and Wilson, 1999). As Shackleton (1995) notes, leaders can influence the behavior of others directly or can do so through the context of a limited or extensive or group or the wider. However, leadership, power and position are not always equated with one another in any organization. Rosenfeld and Wilson (1999) reiterate that it would be folly for any manager to assume that possession of power and influence. Authors further state that sometimes, seniority and power do go hand in hand. More often such power is also to be found elsewhere in the organization and, sometimes, in the most unexpected places. However, the manager as leader with most explicit recognition understands that a part of management processes is concerned with exercising power and influence. Recent views of leadership have attempted to link the qualities of individual leaders with the ability of transforming or providing a vision for the organization. Many words have been used to describe this approach such as inspirational or transformational or whatever other words, the aspect of this perspective is on the link between the individual and the provision of a vision for the organization’s future. Bennis (1994) calls this visionary leadership. The idea implies that leaders develop a mental image of a possible future state of affairs for the organization. Leadership then becomes the process through which the vision is turned into action and realized.
Transformation is achieved since leadership provides the link between the present and the future. Inspiration is part of this process. Leaders who envision the future must inspire all other individuals in the organization a sense of purpose.

James MacGregor Burns (1978) first introduced the concept of transforming leadership in his descriptive research on political leaders, but this term is now used in organizational psychology as well. According to Burns, transforming leadership is a process in which "leaders and followers help each other to advance to a higher level of morale and motivation". Burns refers to the difficulty in differentiation between management and leadership and claimed that the differences are in characteristics in behaviors. Burns established two concepts: ‘transforming leadership’ and "transactional leadership". According to Burns, the transforming approach creates significant change in the life of people and organizations. It redesigns perceptions and values, and changes expectations and aspirations of employees. Unlike in the transactional approach, it is not based on a ‘give and take’ relationship, but on the leader's personality, traits and ability to make a change through example, articulation of an energizing vision and challenging goals. Transforming leaders are idealized in the sense that they are a moral exemplar of working towards the benefit of the team, organization and or community. Burns theorized that transforming and transactional leadership was mutually exclusive styles. Transactional leaders usually do not strive for cultural change in the organization but they work in the existing culture while transformational leaders can try to change organizational culture.

Transformational leadership as a leadership approaches that causes change in individuals and social systems. Author reiterates that its ideal form creates valuable and positive change in the followers with the end-goal of developing followers into leaders. Enacted in its authentic form, transformational leadership enhances the motivation, morale and performance of followers through a variety of mechanisms. These include connecting the follower's sense of identity and self to the mission and the collective identity of the organization; being a role model for followers that inspires them; challenging followers to take greater ownership for their work, and understanding the strengths and weaknesses of followers, so the leader can align followers with tasks that optimize their performance.

Bass (1985) extended the work of Burns (1978) by explaining the psychological mechanisms that underlie transforming and transactional leadership. Bass also used the term ‘transformational’ instead of ‘transforming’. Bass added to the initial concepts of Burns (1978) to help explain how transformational leadership could be measured, as well as how it impacts follower motivation and performance. Furthermore, Author explains that the extent, to which a leader is transformational, is measured first, in
terms of his influence on the followers. The followers of such a leader feel trust, admiration, loyalty and respect for the leader and because of the qualities of the transformational leader are willing to work harder than originally expected. These outcomes occur because the transformational leaders offer followers something more than just working for self-gain, they provide followers with an inspiring mission and vision and give them an identity. The leader transforms and motivates followers through his or her idealized influence (earlier referred to as charisma), intellectual stimulation and individual consideration. In addition, this leader encourages followers to suggest new and unique ways to challenge the ‘status quo’ and to alter the environment to support having been successful with the idealized or charismatic influence.

In addition, Yukl (1994) describes that some elements of transformational leadership such as developing a challenging and attractive vision, together with the employees, fixing the vision on a strategy for its achievement, developing the vision, specifying and translating it to actions, expressing confidence with it will be consideration, decisiveness and optimism about the vision and its implementation. Further, author insists that realize the vision through small planned steps and small successes in the path for its full implementation. Finally, in contrast, Bass suggested that leadership can simultaneously display both transformational and transactional leadership. Transformation leadership can be found at all levels of the organization, team, departments, divisions, and organizations as a whole. Such leadership exhibits the four elements, namely:

Individualized Consideration – the degree to which the leader attends to each follower's needs, acts as a mentor or coach to the follower and listens to the follower's concerns and needs. The leader gives empathy and support, keeps communication open and places challenges before the followers. This also encompasses the need for respect and celebrates the individual contribution that each follower can make to the team. The followers have a will and aspirations for self-development and have intrinsic motivation for their tasks.

Intellectual Stimulation – the degree to which the leader challenges assumptions, takes risks and solicits followers' ideas. Leaders with this style stimulate and encourage creativity in their followers. They nurture and develop people who think independently. For such a leader, learning is a value and unexpected situations are seen as opportunities to learn. The followers ask questions, think deeply about things and figure out better ways to execute their tasks.

Inspirational Motivation – the degree to which the leader articulates a vision that is appealing and inspiring to followers. Leaders with inspirational motivation challenge followers with high standards, communicate optimism about future goals, and provide meaning for the task at hand. Followers need to
have a strong sense of purpose if they are to be motivated to act. The visionary aspects of leadership are supported by communication skills that make the vision understandable, precise, powerful and engaging. The followers are willing to invest more effort in their tasks; they are encouraged and optimistic about the future and believe in their abilities.

Idealized Influence – Provides a role model for high ethical behavior, instill pride, gains respect and trust. As a development tool, transformational leadership has spread already in all sectors of societies, including governmental organizations. Leadership styles influence on employee resilience in an organization at all levels.

**Employee Resilience**

The word resilience originates from the Latin form of verb ‘resilire,’ or ‘to leap back,’ and is defined in the Oxford Dictionary of English as being ‘able to withstand or recover quickly from difficult conditions’ (Soanes & Stevenson, 2006). The term’s roots lie in science and mathematics; for example, in physics and resilience is considered to be the ‘ability of a strained body, by virtue of high yield strength and low elastic modulus, to recover its size and form following deformation’ (Geller et al., 2003). Lazarus (1993) cited the example of elasticity in metals, with a resilient metal bending and bouncing back (instead of breaking) when stressed. For example gold can be ductile (can be drawn into a long thread) or can be hammered or beaten into a thin sheet. Despite the construct being operationalized in a variety of ways, most definitions are based around two core concepts namely: adversity and positive adaptation.

Since the introduction of these concepts to resilience literature by Luthar and colleagues (Luthar, 2006; Luthar & Cicchetti, 2000; Luthar et al., 2000), they have attracted considerable attention and discussion among scholars (Masten, 2001; Rutter, 2006). Most researchers concur that, for resilience to be demonstrated, both adversity and positive adaptation must be evident. However, inconsistencies in the specific delineation of these concepts have led to confusion about their meaning, and to some researchers questioning the scientific value of resilience itself (Bodin & Winman, 2004). Luthar and Cicchetti (2000) stated that adversity typically encompasses negative life circumstances that are known to be statistically associated with adjustment difficulties. This approach employs a threshold-dependent definition of adversity which is closely aligned with the notion of risk, whereas other researchers have taken a less stringent approach, defining adversity as any hardship and suffering linked to difficulty, misfortune, or trauma (Jackson, Firtko, & Edenborough, 2007).

Bonanno and Mancini (2008) noted that most individuals experience at least one potentially traumatic
event (PTE) in their lifetime. The term ‘potentially’ is important because it draws attention to the differences in how people react to life events and whether trauma occurs as a result. Whereas others react positively to the most testing of experiences (Bonanno, 2004). It is the study of psychological resilience that seeks to understand why some individuals are able to withstand—or even thrive on—the pressure they experience in their lives. That means a paradigm shift from looking at risk factors that led to psychosocial problems to the identification of strengths of an individual (Richardson, 2002).

The positive adaptation in the face of ongoing daily stressors and highly taxing, yet still common, events (Sameroff & Rosenblum, 2006). Most recently, Davydov et al. (2010) speculated that resilience mechanisms may differ in relation to contextual severity, ranging from resilience against regular everyday hassles like work stress (i.e., mild adversity) to resilience against occasional extensive stress such as bereavement (i.e., strong adversity).

**Resilience of Employee**

Brown Kulig (1997) defined resilience as a fundamental human potential which is both enabled and constrained by the social contexts people construct and within which they carry out their daily lives. Further, resilience is responsive and theological orientations that are personal and collective as they act in such a way as to recover from what are defined as negative physical or social events. The aggregation of individual resilience as well as structural endurance can be seen within communities. Werner (1984 cited in Rhods, 1994) defined resilience as the ability to recover from or adjust easily to misfortune or sustained life stress. Resiliency has usually been conceptualized in opposition to vulnerability or on individual susceptibility to a negative outcome (Werner1984 cited in Rhoads, 1994). Characteristics of resiliency in individuals have included possessing an active approach to problem-solving, perceiving experiences constructively gaining others positive attention and having faith to maintain a positive outlook of life.

Richardson et al., (1990) defined resilience as a process of interaction between individual and environmental circumstances that promotes resiliency. Resiliency also has been seen as providing opportunities to change traumas into triumph. (Fine, 1991). It seems resilience is an opportunity to change negative effects into positive. Beardslee (1989), describes that self-understanding has also been intricately linked to the process of resiliency since it adds to the positive adaptation of the individuals.

Resilience refers to the capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development (Masten, 2014). Resilience is supported or thwarted by direct
effects of risks and resources, as well as by moderating processes of protection, vulnerability, and differential susceptibility. Resilience is dynamic and it emerges from many interactions within and between systems in a given cultural, developmental, and historical context that collectively influence the capacity of an individual system to adapt successfully to challenge. Although resilience research often has focused on the behavior of individuals, contemporary models of resilience encompass multiple levels of function and acknowledge the interdependence of interacting systems, ranging from molecular to societal levels of analysis across individuals, families, peer groups, schools, communities, governments, and cultures. Cultural influences on resilience are gaining traction amidst growing recognition that interventions should be tailored to unique strengths, vulnerabilities, and values of specific contexts, and also that different cultures may have traditions and practices that can inform resilience theory. Resilience remains an inspiring and informative framework for implementing positive psychology in practice.

Recent efforts to expand the study of resilience across levels of analysis have complementary implications for applying this knowledge to multilevel interventions. Likewise, multilevel applications of resilience theory hold considerable potential for testing core theories regarding developmental cascades underlying adaptive continuity and change.

**Employee Innovation**

The concept of individual innovation developed from the more general concept of organisational innovation. Zaltman, Duncan & Holbek (1973) define organisational innovation as any idea, practice, or material artefact perceived to be new by the relevant unit of adoption. Kanter (1983) saw innovation as the process of bringing any new problem-solving idea into use. Innovation is generation, acceptance, and implementation of new ideas, process, product or services. Combining key themes from several studies, McFadzean and colleagues (2005) defined organisational innovation as a process that provides added value and a degree of novelty to the organisation, its suppliers, and customers through the development of new procedures, solutions, products and services as well as new methods of commercialization.

Individual innovation has a significant role in the effectiveness of organisational innovation (Janssen, 2004; Kanter, 1988b; West & Farr, 1990), one that varies with the degree of innovation. In simple incremental organisational innovation, individuals primarily generate, adjust and apply new ideas (Axtell et al., 2000; West & Farr, 1990), although, depending on their position in an organisation, this may involve others. In complex and radical innovation, on the other hand, success depends on group and organisation-level innovation (Drazin, Glynn, & Kazanjian, 1999) as the sharing of ideas becomes more
important than individuals working alone, even though individuals still have an important role (Farr & Ford, 1990).

Studies following these definitions have taken several approaches to explaining individual’s roles in organisational innovation and the factors that improve it. King’s (1990) widely accepted model identifies trait and situational facilitators and inhibitors. Studies have identified a number of traits and individual or organisational facilitators underlying innovation, including high tolerance of ambiguity and the propensity to take risks (King, 1990), recognising problems and having the knowledge and skills to solve them (Axtell et al., 2000), discretion (Amabile, 1988), positive affect (Isen, 2002), leadership (Carmeli et al., 2006; de Jong & den Hartog, 2007; Mumford, 2000) and organisational structure (Kanter, 1988b). While these traits and facilitators help to understand individual innovation, this takes a process approach in describing individual actions in accomplishing innovation at work. This stage model is widely recognised as comprehensive perspective of the innovation process.

**The Stages of Innovative Behaviour**

The process of individual innovation can be divided into two main stages, initiation and implementation (Axtell et al., 2000), and most studies involve variations on these. West and Farr (1990) define innovative work behaviour as the intentional creation, introduction and application of new ideas within a work role, group or organisation, to benefit the role performance of the group or the organisation. This broad definition is used in the present study. West and Farr’s definition emphasises that while innovation is based on individual decisions and aspirations, in an organisation people have to synchronise these with the organisation’s goals. Studies of various types and sizes of organisation have adopted stage models (Carmeli et al., 2006; Janssen, 2000, 2004; Scott & Bruce, 1994). Scott and Bruce (1994) and Kanter (1988b) describe the process of individual innovation in three stages: idea generation, idea promotion and idea implementation, encompassing a broad set of behaviours relating to creating ideas, finding support and applying ideas.

In idea generation, thriving would involve learning new, more creative ways of working. In promotion and implementation stages, learning would involve gaining confidence in selling ideas for organisational advancement, gaining respect from coworkers or leaders and learning to face scepticism or resistance (Carmeli & Spreitzer, 2009).
While commitment to growth and the learning dimension of thriving or making progress are overlapping concepts, they are not the same. The sense of learning underlying thriving does not necessarily involve learning from adverse events through a commitment to persevering with difficulties because this will ultimately lead to growth. Commitment to growth is related to other concepts of learning in the innovation literature such as building expertise (Amabile, 1988), but goes beyond them in making self-improvement the outcome of learning rather than merely new organisation products or process, or specific work-related skills.

**Performance of Organizations**

Performance will always remain a contested, constantly evolving concept. Conceptual difficulties occur when defining performance because this frequently used concepts is hard to define, most of the times when defining an ambiguous character (Stefanescu et al., 2010).

Gergopoulos & Tannenbauns, (1957) defined performance as the extent to which organizations are viewed as a social system that fulfills their objectives. Performance evaluation during this time was focused on work, people and organizational structure. This definition focused on the objectives of the firms during 1950s. Late in the 60s and 70s, organizations had begun to explore new ways to evaluate their performance, and performance was defined as an organization’s ability to exploit its environment for accessing and using the limited resources (Yuchtman & Seashore, 1967). In this context, the organizational environment and its ability to exploit such environment for accessing and using the limited resources, has been considered.

Yuchtman & Seashore, (1967) cited in Gavrea et al., (2011) described the period 80s and 90s were marked by the realization that identification of organization objectives is more complex than initially thought. Managers have begun to understand that an organization is successful, if it accomplishes its goals (effectiveness) using a minimum of resources (efficiency). Authors reiterate the complexity of objectives and how it is to be achieved when compared to initial consideration.

**Public Sector Organization**

There are many definitions regarding the public sector organizations. For the purpose of this study, it is selected as the definition of Institute of Internal Auditors. As per Institute of Internal Auditors (2011), the public sector consists of governments and publicly controlled or publicly funded agencies enterprises and
other entities that deliver public programs, goods or services. Further, it states that the public sector consists of an expanding ring of organizations, with the core government at the center, followed by agencies and public enterprises. Dube and Danescu (2011) describe that some criteria to determine whether a particular organization is owned by the public sector or lies outside the ring. With reference to these criteria the organization is considered to have established under government policy and deliver programs, goods or services that can be defined as public good and all organizations’ funds are provided by government or determined by government policy that the organization is accountable to and reports directly to government including a government department or agency or a minister of government, government controls the majority of appointments; government is the major shareholder; employees in the organization are subject to adhere to the public service rules, and receive public service benefits, government controls directly or indirectly organizational policies, operations, administration, and service delivery and there is a legislative requirement for the organization to be audited by the government auditor or by a supreme audit organization. These criteria can be used to determine the mark or delineation of a boundary of a public sector organization and separate it from a private and non-government organization. Public sector organizations in Sri Lanka also possess these characteristics. Therefore, it can be considered that the organizations which possess the aforesaid characteristics as public sector organizations.

**Performance of Public Sector Organisations**

As per Tangen (2004), Performance encompasses both economics and operational perspectives. Waring and Morgan (2006) described that performance aspect ties directly the basic footprint of any government program and program elements. Authors further explained that the elements of every government program are the inputs used to support the program, the processes that carry out the program are the outputs and the outcomes produced by the process. However, public sector organizations explicitly state the expectations against the achievements as it is planned or budgeted. In view of that, representatives in parliaments and stakeholders expect that organizations are used as resources in accordance with certain values such as efficiency, efficiently and economy. In this regard, governments are expected to obtain and use inputs economically, conduct processes efficiently and produce effective outputs that result in effective achievement of intended outcomes. In addition, it includes compliance with laws and regulations; reliability, validity and availability of information, maintenance of underlying governmental values, such as ethics, integrity, and equity, and continuous improvement.
RESEARCH GAPS


The majority of the research has been focused on organizations’ performance in the public sector in developed countries, whereas only a limited knowledge is available about this phenomenon in Sri Lanka. Scholars opine that research on the organizations’ performance in the public sector in developing countries would be valuable to the field of research (Ambalangodage, Fie and Gunawardana, 2015; Fryer, Antony and Ogden, 2009, Metawie & Gilman, 2005). The majority of empirical studies on organizations’ performance are qualitative case studies, however, qualitative research needs to be complemented with quantitative studies to improve the understanding of this phenomenon and develop generalizable knowledge (Jacob and Ulag, 2008; Lay et al. 2010, Valamari, Neyer and Moslain, 2011). Existing quantitative studies in organizations’ performance of the public sector almost exclusively focus on the public sector in the United States, the United Kingdom, and Western Europe, Australia and New Zealand (Fryer et al., 2009; Metawie and Gilman, 2005). The current studies focusing on Sri Lanka would contribute knowledge enhancement in the field by addressing the above gap.

Gap 2: Scantiness of research in Sri Lanka on Leadership Style of Chief Accounting Officers and Organizational Performance in the Public Sector.

Relationship between leadership styles of chief accounting officers and organizational performance in the public sector is still limited and inconclusive in the extant literature where research is valuable to enhance knowledge. As per Buchanan et al., (2005), the relationship between leadership and organizational performance vary with different developing levels in different countries. The Sri Lankan public sector has duly played its role in the context of development from time to time in its history. No empirical evidence in Sri Lanka can be found to study relationship between leadership styles of chief accounting officers and organizations’ performance according the reviewed literature.

Gap 3: Scanty of empirical research to measure the relationship between transformational leadership style of chief accounting officer and innovation behavior of employees

Gunawardana and Cooray (2014), explained that leadership is a predominant contributor towards innovation and there is a positive relationship between transformational leadership and innovation in industrial sector in Sri Lanka. Further, authors insisted that there is lack of empirical researches available
in relation to leadership style and innovation in garment industry of Sri Lanka before their engagement. While literature also indicated that there is a scanty of research available in Sri Lanka in relation to leadership of chief accounting officer and innovation in the public sector. Given the lack of research in this regard is established the originality.

**Gap 4:** Scantiness of empirical studies to measure the effectiveness of employee resilience on organizational performance in the public sector in Sri Lanka.

There is an absence of empirical research on employee resilience and organizations’ performance in the public sector in Sri Lanka (Wijewardena and Samarathunge, 2013). Employee resilience and importance to improve organizations’ performance is discussed by many scholars (Wijewardane and Samarathunge, 2013). This is the first empirical study undertaken to investigate the effectiveness of employee resilience on organizational performance in the public sector Sri Lanka.

**Gap 5:** Scantiness of empirical studies on relationship on leadership style of chief accounting of employee resilience in the public sector in Sri Lanka.

Scholars explain the relation between leadership styles and employee resilience in organizations (Luthans, 2002; Wijewardane and Samarathunge, 2013). Authors explain why leadership affects employee resilience in organizations. Regarding conceptual relationship there is no empirical studies at all in the Sri Lankan context in the available literature to explain the relationship between employee resilience which is addressed by this research.

**Gap 6:** Absence of empirical research to study the association between leadership styles of chief accounting officers, employee resilience and innovation on performance of organization in the public sector organizations in Sri Lanka.

Literature has established a significant association between leadership styles, employee resilience and organizations’ performance. (Luthans, 2002; Wijewardane and Samarathunge, 2013). Also empirical studies have established the link between leadership styles, employee resilience and organizations’ performance (Nancy, 2012). This is the first study that attempts to investigate the association between leadership style of chief accounting officer, employee resilience and innovation on performance of organisations in the above mentioned gaps in the Sri Lankan public sector.
Gap 7: Scantiness of empirical evidence to measure the organizations’ performance in the public sector in Sri Lanka

There is a need of validated measuring instruments for measuring organizations’ performance in public sector organizations in the Sri Lankan context. Despite many efforts, which had attempted to establish measuring instruments to assess organizational performance in the public sector in Sri Lanka, it is still at an elementary stage as reflected in the lack of uniform planning and guidance and this study attempts to develop and validate measuring instruments for organizations' performance in the public sector in Sri Lanka.

Problem Statement

Previous studies have shown that there is a felt need of changes in the public sector which may be compatible with the present requirements to prevent unnecessary political interferences and among them, Wijewardane (2002), reports to the effect that before the introduction of the 1972 constitution, there was an independent Public Service Commission which was free, fair and unfettered by political influence or intervention. After the constitutional reforms in 1972 and 1978, the cabinet of ministers was vested with the responsibility with regard to appointments, transfers, dismissals, disciplinary control over the government officers. As per Wijewardena, (2002), this had the effect of politicized recruitments and selections, transfers, and promotions. Since 1972 and 1978 constitution, government organizations are being politicized resultant from those constitutional reforms. Hence, some of the changes have negatively contributed to place work freedom of the public sector, especially adversities which affected employee resilience in the public sector organizations. Today, under these circumstances the public sector employees face many challenges at the place work.

Accordingly, Fisk and Dionist (2010) asserted that interpretational conflict, resource shortages, enhanced responsibility and impending job loss or job insecurity as possible sources of workplace adversities. Sutcliffe and Vogus (2003) further indicated that internal adversities of rapid changes, lousy leadership, performance and production pressure and external adversities of increasing competition and demand from stakeholders as possible threats to employees. In addition, the job demand, lack of rewards, political influences are considered as work place adversities. Further, Luthans (2002) stated that the work-place adversities occur due to uncertainty, conflicts and failure and even positive change for progress and with increased responsibility, it could trigger exhaustion and stress. Siegrist (2002) argues that the lack of rewards to match the effort put into accomplishing a task causes stress in employees. Fernando L. (2005) pointed out that there is an inverse association of reward system in the public sector in Sri Lanka and...
argued that the existing reward systems discourage extra effort and the organizations do not have system-based achievements or performance. It implies that, even the rewarding system existing in the public sector does not encourage performance as intended. According to Fernando L. (2005), the respective managers in the public sector should have considerable managerial autonomy to motivate and give rewards to their staff in order to get their maximum compliance and cooperation. What is noteworthy is that the study further reveals that the existing administrative system does not empower and authorize Sri Lanka Administrative officers over their subordinates. Also employees are not satisfied with the autonomy and powers vested on the top management. However, it implies that this situation could lead to work place adversity. Nevertheless, it is important that outdated regulations and outmoded procedures that are in force in the public sector be necessarily revised to effect compatibility with new economic and social thinking and aspirations of the people. As per Fernando L. (2005), public sector employees still discharge their responsibilities in compliance despite those existing regulations and rules which remain not updated or not upgraded to cope with the current trend of winds of change in the society. Hence, it is imperative to deem that it is the most appropriate time for updating or revising those age-old regulations and rules in the public sector. However, outmoded cumbersome procedures are still in force in the public sector and they lead to unavoidable delays in some work processes. As example, in the Sri Lankan context, persisting land acquisition procedures under the state land ordinance. Consequently, due to such delays public complaints are orchestrated aloud and clearly against the inefficiency of the public sector. Thus, it implies that this situation too could affect work place adversity.

In this context, as resilience involves capacity to meet challenges head on, it is imperative to find ways to overcome them and sustain even better than before and function amidst such challenges. Avolio, and Luthans (2006), stated that resilient individuals do not regret the past or the present, and on the other hand demonstrate patterns of positive adaptation to negative events. Wijerathna and Samarthurunge (2013), further explained that work place resilience is both reactive and proactive. Resilient individuals react to threats set by understanding their destructive nature and rebound resulting in an equilibrium level of functioning. Proactive resilient individuals use such threats and setbacks as opportunities to grow beyond the equilibrium level (Youssef, and Luthans, 2007). Therefore, workplace resilience is much more needed in today’s organizations for employees who can thrive on chaos, proactively learn and grow through hardships and excel themselves, no matter how many or how intense the inevitable setbacks are (Luthans, Yousseff, and Avilio, 2007). Thus, employee resilience is significant in the public sector organization through proactive individuals.
Timothy et al. (2011), emphasized that the extent to which members of an organization contribute to harness resources of the organization equally depends on how well the leaders (Managers) of the organizations understand and adopt appropriate leadership style in performing their roles as managers and leaders. Throughout the last few decades in the Sri Lankan history, a number of reforms have been introduced for implementation in the public sector to address advancement of the government sector delivery processes in an efficient and effective manner. Despite the reforms in improving performances of organizations, public criticisms are orchestrated regarding their poor performance. Therefore, it is imperative that the senior managers in the public sector need to bring into focus their attention on performance of organizations. Hence, in order to respond to present demands of the public organizations, the role of the chief accounting officer (Secretary to the Ministry) is to effect changes in such ways as to improve the performance of organizations and the employee effectiveness as well. In this regard, resilience and innovation of the employee is an important aspect in the public sector organization. Hence in this context, Chief accounting officers in the public sector are key role players or the engine of growth in steering their respective organizations because previous studies have shown that leadership styles directly affect performance of organizations. Further, previous studies have shown that positive leadership behavior can boost employee positive emotions which ultimately render augmentation of employee resilience and innovation in the organization. Government institutions are expected to be effective and efficient in the delivery of services to people for their day to day needs. Therefore, the role of chief accounting officer as the chief administrator as well as the leader is crucial in an organization.

Thus, this study examines the effect of leadership style of the chief accounting officer, resilience of employees and innovation on performance of public sector organizations in Sri Lanka.

Accordingly, the Research question is defined as, to what extent does leadership style of Chief Accounting Officers, employee resilience and innovation affect performance of public sector organizations?

Significance of the Problem

It is claimed that Public sector organizations play significant roles in providing services to the nation. Sri Lanka as a welfare state provides public sector services at all levels of the country free of charge or at concessionary rates for the good of the general public. In order to deliver such services from the national level to the grassroots level with a view of fulfilling aspirations of the general public, numerous
organizations and a large number of public sector employees are involved. Similarly, the public sector has gradually expanded to the present state while equitably increasing the number of organizations and employees. As per the annual report of management service department cited by Ministry of Finance (2016) the annual increase in public sector employment during the past five years from 2011 to 2015 has increased from 1.2 million to 1.4 million and its service is rendered by all categories of the Central government, the Local government, the Provincial councils, the State Authorities, the State Corporations, and the Statutory boards, and at levels such as senior, tertiary, secondary and primary. According to the Report of Public Investment program 2017-2020 which was published in 2016, it states that there is a ratio of 65 public employees to 1000 people in the country. However, when it is compared with the total population of more than 20 million in the country, it amounts to 1.4 million employees serving in the public sector. Comparatively, this is a larger number than in some other countries in the South Asian region public sector employment (Ministry of Finance, 2016). Table 1.1 below shows the total population and public sector employment during the past five year period from 2011 to 2015. In 2011, the total population was 20.8 million and public sector employees were 1.2 whilst it amounted to 5.7 percent of the total population. In 2015, the total population was 20.9 million and the number of public sector employees amounts 1.4 million, which is 6.7 percent of the total population. In the Past five years from 2011 to 2015, employee ratio to the total population has increased by one percent in 2015 while the overall population growth increased by about 100000 people.

Table 1.1: Total Population and Public Sector Employees (million)

<table>
<thead>
<tr>
<th>Description</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>20.8</td>
<td>20.3</td>
<td>20.4</td>
<td>20.7</td>
<td>20.9</td>
</tr>
<tr>
<td>Public sector employee</td>
<td>1.2</td>
<td>1.2</td>
<td>1.3</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Percentage</td>
<td>5.7</td>
<td>5.9</td>
<td>6.3</td>
<td>6.2</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Source: Survey Data, 2016

Further, Table 1.2 below shows percentage distribution of public sector employment categories. Accordingly, the tertiary level category has increased to 2.1 percent during the past five year period, while the secondary level category has decreased by 2.5 percent during this particular period.
Table 1.2: Percentage of Public Sector Employment

<table>
<thead>
<tr>
<th>Category</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Level</td>
<td>4.3</td>
<td>4.3</td>
<td>4.5</td>
<td>4.2</td>
<td>4.3</td>
</tr>
<tr>
<td>Tertiary Level</td>
<td>24.7</td>
<td>23</td>
<td>27.3</td>
<td>27.2</td>
<td>26.8</td>
</tr>
<tr>
<td>Secondary Level</td>
<td>51.6</td>
<td>51.6</td>
<td>53.3</td>
<td>49.1</td>
<td>49.1</td>
</tr>
<tr>
<td>Primary Level</td>
<td>19.4</td>
<td>19.4</td>
<td>18.8</td>
<td>19.5</td>
<td>19.8</td>
</tr>
</tbody>
</table>

Source: Central Bank Report, 2015

In addition, as per the Central Bank Report (2015), the number of public sector employees has been increased. It was mainly due to provisions made to increase in provincial council employment number during the year. Also, this increase in the employment number has been created by Departments and Divisional Secretariats. As a result of the increase in employee number as well as their salary payment as per change of government policy, it has accounted for 26 per cent increase of government expenditure during the year 2015 which amounts to a drastic increase since the year 2010. In addition, the special allowance introduced to all public sector employees in 2011 also has caused further increase by 15 per cent of their salary while 50 per cent increase of staff was effected to staff grade officers. The Central Bank annual report (2015), shows that the expenditure of the public sector organizations changes annually in the ascending order of magnitude. This trend is depicted in Table1.3. The total expenditure of the Government has increased to SLRs. 3,202,201 million from Rs.1, 967,366 million during the particular period of five years from 2011 to 2015. As per the central bank report in 2015 Table 1.4 also shows the annual increase of public sector expenditure on salaries and other remunerations.

Table 1.3: Payments of the Government of Sri Lanka

<table>
<thead>
<tr>
<th>Item</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrent Expenditure</td>
<td>1,020,264</td>
<td>1,118,401</td>
<td>1,253,706</td>
<td>1,370,051</td>
<td>1,672,921</td>
</tr>
<tr>
<td>Capital Expenditure</td>
<td>946,247</td>
<td>1,073,928</td>
<td>1,158,302</td>
<td>1,231,864</td>
<td>1,530,359</td>
</tr>
<tr>
<td>Total</td>
<td>1,967,366</td>
<td>2,190,241</td>
<td>2,410,989</td>
<td>2,603,614</td>
<td>3,202,210</td>
</tr>
</tbody>
</table>

Source: Central Bank Report, 2015
Similarly, as shown in Table 1.4, according to the central bank report (2015), there is a significant annual increase of the Government expenditure on salaries and wages as well as goods and services.

Table 1.4: Public Sector Employee Salaries & Wages and other Goods & Services (SLRs. Million)

<table>
<thead>
<tr>
<th>Item</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries &amp; Wages</td>
<td>341,947</td>
<td>360,352</td>
<td>406,923</td>
<td>455,643</td>
<td>580,538</td>
</tr>
<tr>
<td>Other Goods &amp; Services</td>
<td>112,413</td>
<td>118,340</td>
<td>162,248</td>
<td>169,765</td>
<td>175,969</td>
</tr>
<tr>
<td>Total</td>
<td>454,360</td>
<td>478,693</td>
<td>569,170</td>
<td>625,418</td>
<td>756,507</td>
</tr>
</tbody>
</table>

Source: Central bank (2015)

However, when considering the Sri Lankan public sector employment, it has considerably increased in number, while concurrently increasing expenditure of the Government. Despite the fact that successive governments, irrespective of the political parties in power, it has caused an increase of employment number so as to fulfil promises. Consequently, with increased numbers of personnel, successive governments had attempted to improve productivity as well as the performance of organizations. In spite of the fact that large amounts of funds are mobilized out of local and foreign loans received, in order to settle loans with interest, the government is in need of more funds for development purposes. Many organizations have failed to achieve financial performance as they had envisaged during the recent years. Although it needed many changes in public sector organizations to adapt to those changes, it is clear that 33 ministries, out of 51 ministries, had met their annual expenditure targets as they planned for the year 2015 conforming to the financial standard, while the other 18 ministries continued in such a state as below the approved estimates for the year (Ministry of Finance, 2015), while incremental changes in national budget deficits occurred annually. As shown in Table 1.5, approved estimate of the government recurrent expenditure in the year 2015 was SLRs. 1.672,921 million, which was 5.8 percent less than the approved estimate, while the approved estimate of capital expenditure SLRs. 1,703,178 million and the actual expenditure was SLRs. 1,529,289 million which was 10.2 percent less than the approved estimate of the year 2015.
Table 1.5: Voted Expenditure of the Government of Sri Lanka (SLRs. Million)

<table>
<thead>
<tr>
<th>Vote</th>
<th>Approved Estimate</th>
<th>Actual estimate</th>
<th>% of under (-)</th>
<th>over (+) Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrent Expenditure</td>
<td>1,776,233</td>
<td>1,672,921</td>
<td>-5.8</td>
<td></td>
</tr>
<tr>
<td>Capital Expenditure</td>
<td>1,703,178</td>
<td>1,529,289</td>
<td>-10.2</td>
<td></td>
</tr>
</tbody>
</table>

Source: Central Bank, 2015

Since then, the public sector has expanded with an extensive range of new functions and responsibilities. However, criticism is leveled by stakeholders continually with regard to its performance. Alwis (2009), states that the public service has been subjected to criticisms of the general public, the private sector, international agencies, and politicians for lethargy, inefficiency, ineffectiveness, insensitivity to public needs and wants, corruptions, lack of initiatives and being reactive rather than being proactive and forward looking (Cited by Alwis, 2009, Administrative Reform commission, 1986/1988; COPE, 2007, Root et al., 2001, World Bank, 2003). Author further stresses that public sector has been confronted with many challenges and serious repercussions over time. Ambalangodage et al., (2015) insisted that all the public organisations including State Owned Enterprises are criticized for alleged absence of good governance practices, delays in submission of accounts, uneconomical transaction and mismanagement of funds, non-compliance with financial rules, non-adherence with the accepted tender procedure, political interference, delays of committee directives, poor service to customers and misuse of resources. Authors further argue that performance measuring systems is the organizations’ method of improving performance but Sri Lankan public sector organisations’ performance are not up to the expectation of the public.

It is even in 2016, the report of Public Investment Program 2017-2020 (2016) which was published by the Ministry of National Policies and Economic Affairs insisting on facing challenges and issues such as reaching full potential of the public service, slow application of modern technology in all public sector institutions, lack of continuous training opportunities for the public sector employees to address such issues as the present development challenges, inadequate and unequal resource distribution, under employment and over–deployment of human resources, outdated systems and procedures, poor client orientation in the service delivery to the public, anti-productive trade union activities which reduce efficiency in the public service. It further states that the public expects an efficient and quality service reflected from the window of the public service. In addition, this report emphasizes that restructuring
existing structure by including modern technology, introducing e-governance adopting simplified procedures and establishing user-friendly systems for removing the gridlocks and eliminating red tape and barriers to ensure delivery service in conformity to public expectations. Furthermore, they are planning to provide skill training, motivation and improving job satisfaction of the work-force. However, this envisaged program has a number of reform efforts that are still to be applied in improving public sector effectiveness and efficiency. Despite many reform efforts during the past years made, it is clear that the intended results have not been met, triggering a host of risks of challenges and causing unabated underemployment and over-deployment of human resources, to meet present development challenges, inadequate and unequal resource distribution, while the public expects quality and efficient public services.

In view of the contemporary status of the public sector in Sri Lanka, as Timothy et al. (2011) and scholars have stated that members of an organization as employees in public sector organizations allocate funds in order to harness the resources of the organization equally and it depends on how well the secretaries as administrative leaders (Managers) of the organizations understand and adopt appropriate leadership styles in performing their roles as managers and leaders of the public sector. In addition, how their individual leadership styles affect performance of organization and employee resilience and innovation vice versa. In addition, research on individuals typically describes innovation as a multiple-stage process of generating new ideas, gaining support for them and applying them in the workplace (Scott & Bruce, 1994).

Even though, previous studies have shown that leadership styles of managers affect performance of organizations and that employee resilience and innovation are associated with performance of organizations in the public sector in some countries. However, in Sri Lanka, this area is unheeded or unattended by researchers (Wijewardena & Samarathunga,(2013), Norman et al.,(2005), Wjewardene, Hartel and Samarathunga, (2010)) Therefore, there exists an empirical research gap in leadership styles of chief accounting officers, employee resilience and innovation together with performance of organizations in Sri Lanka. Further, there is a considerable lack of research on leadership style of Secretaries in the respective ministries on resilience of employee in their work place in the context of the Sri Lankan public sector. There exists another empirical research void in how employee resilience and innovation of public sector, and leadership styles of chief accounting officers affect public sector performance of organizations. In addition, although public sector performance of organizations is regarded as an important aspect, there is a felt-need of instruments for measuring performance of organizations in the public sector as a whole. Thus, the following questions are to be answered in this study.
RESEARCH QUESTIONS

1. What are the leadership styles of Chief Accounting Officer that prevail in the public sector organizations in Sri Lanka?

2. What are the most effective leadership styles of Chief Accounting Officer that enhance performance of organizations in the public sector?

3. Does employee resilience have a positive relationship with performance of organization in the public sector?

4. Does employee innovation have a positive relationship with performance of organization in the public sector?

5. Does leadership style have a positive relationship with employee innovation in the public sector organizations?

6. Does employee resilience have a positive relationship with employee innovation in the public sector organization?

7. Does employee innovation mediate the relationship between leadership style and performance of organizations in the public sector?

8. Does employee innovation mediate the relationship between employee resilience and performance of organizations in the public sector?

9. What are the validated instruments for measuring performance of public sector organizations in Sri Lanka?

In view of these issues, the following research objectives are to be accomplished in this study.

OBJECTIVES OF THE STUDY

Objectives of this study are namely:

1. To examine the existing leadership styles of Chief Accounting Officers in the public sector organizations in Sri Lanka.

2. To examine the most effective leadership style of Chief Accounting Officers that enhances performance of organizations in the public sector.

3. To examine the relationship between employee resilience and performance of organizations in the public sector.

4. To examine the relationship between leadership of chief accounting officers and employee innovation in the public sector organizations.
5. To examine the relationship between employee resilience and employee innovation the public sector organizations.

6. To examine whether employee innovation mediate the relationship between leadership of chief accounting officers and performance of organizations in the public sector.

7. To examine whether employee innovation mediate the relationship between employee resilience and performance of organizations in the public sector.

8. To develop and validate measurements for performance of organizations in the public sector in Sri Lanka.

**RESEARCH HYPOTHESES**

In order to study the above mentioned research objectives the under-mentioned research hypotheses are propounded.

H1: Greater level of leadership style of chief accounting officer leads to higher level of performance of organizations in the public sector.

H2: Greater level of employee resilience leads to higher level of performance of organizations in the public sector.

H3: Greater level of employee innovation leads to higher level of performance of organizations in the public sector.

H4: Greater level of leadership style of chief accounting officer leads to greater level of employee innovation.

H5: Greater level of employee resilience leads to greater level of performance of organizations in the public sector.

H6: Greater level of employee innovation leads to greater level of performance of organizations in the public sector.

H7: Employee innovation mediates the relationship between leadership styles of chief accounting officer and performance of organizations in the public sector.

H8: Employee innovation mediates the relationship between employee resilience and performance of organizations in the public sector.
THE ORIGINALITY OF THE STUDY

This research aims to address the existing research gaps explained above and contribute to the existing knowledge significantly with reference to empirical research gap as shown below from the research. As per Phillips and Pugh (2010) it is important to demonstrate the originality in any higher degree research. There are no previous studies regarding relationship between leadership style of chief accounting officer and performance of organizations in Sri Lanka. Further, there are no previous studies regarding relationship between employee resilience, innovation and performance of organizations in the public sector in Sri Lanka.

The relationship between leadership of chief accounting officer, employee resilience, and innovation on performance of organizations is currently limited to studies. This is the first research to empirically test the above mentioned relationship where this research adds valuable contribution to the existing knowledge. The validated measuring instruments to determine performance of organizations are timely requirement in the Sri Lankan Public sector. Thus, this study, it aims at developing validated performance measuring instruments for the public sector. Performance measuring instruments developed in this study will significantly contribute to the existing knowledge.

UNDERPINNING AREAS AND CONCEPTUAL FRAMEWORK

The study focuses on leadership styles of chief accounting officers, employee resilience, innovation and performance in the public sector organizations. Conceptualization of the study is based mainly on leadership theories, resilience theories, innovation theories, organizational theories, ethical theories, integrated social contact theory. In this study, it has considered mainly three perspectives, namely, performance of organizations perspective (organization theory, principal agent theory and legitimacy theory), leadership perspective (ethical theory, transformational leadership theory and integrated social theory) and employee resilience perspective (employee resilience theory), innovation and (Public Choice Theory) and it envisages to determine to what collective extent (magnitude) do these three perspectives affecting public policy process. These theories are selected because each tenders unique perspectives. They are also complementary to offer explanations in developing the relationship between leadership style, employee resilience, innovation and performance of organizations.
Transformational leadership theory is a prominent representative of new theories that have occupied center stage in leadership research in the last decades. Follower development and follower performance are the targeted outcomes of such leadership (Bass & Avolio, 1990). However, there has been no conceptual framework or systematic research for examining the input of transformational leadership on follower development. (House & Aditya, 1997, cited by Dvir et al., 2002) Yet a causal relationship between transformational leadership and follower performance has only rarely been demonstrated, because most prior studies have had static correlational or non-experimental designs (Kirk Patrick & Locke, 1996, cited by Dvir et al., 2002).

Transformational leaders exert additional influence by broadening and elevating followers’ goals and providing them with confidence to performance beyond expectations, specified in the implicit or empiricist exchange agreement (Dvir et al., 2002). Transformational leaders exhibit charismatic behaviors, arouse inspirational motivation, instill intertextual stimulation and deal with followers with individual consideration. These behaviors transform their followers helping them to reach their full potential and generate the highest level of performance (Eden et al., 2002).

A principal aspect of transformational leadership is its emphasis on follower development (Avolio & Gibbons, 1988). Transformational leaders evaluate the potential of all followers in terms of their ability to fulfill current commitments while also they envision expansion of their future responsibilities. Bass (1985, 1998) suggested that transformational leaders develop their followers by building capacity in them. Bass & Avolio (1990) stated that leaders enhance followers’ capacity to think or concentrate on their own develop new ideas and posit questions regarding outmoded operating rules. Avolio and Gibbons (1988) postulate that a major goal of transformational leaders is to develop follower self-management and self-development. Shamir (1991) similarly stressed the transformational effects of charismatic leaders on followers’ independence and independence approach as an outcome of transformational leadership which is also consistent with Kelly’s (1992) conceptualization of styles of followership. Shamir et al., (1993) and Avolio and Gibbons (1988) specified increased follower self-efficacy as a development effect of transformational leadership.

Berling, Weber and Kelloway (1996) stressed that there is a positive relationship between transformational leadership and performance and these relationships are stronger than the relationship between transactional leadership and performance (Lowe et al., 1996. Cited by Dvir et al., 2002). Waldman & Yammarino (1999) stressed that there exists a few attempts to understand indirect leadership
that have been limited to world class leaders or highly desirable Chief Executive Officers. It is assumed that transformational leadership at any level can feed in input both the direct and the indirect followers (Yammarino, 1994). However, there are differences between the processes that influence close and distant followers (Shamir, 1995).

Bass (1998) confirmed that there is a positive effect of transformational leadership. Dvir et al., (2002) concluded that transformational leadership, enhanced by training, can augment the development of human resources and their performance in a variety of organizational contexts.

Nguyen et al., (2016) concluded that empowering leadership proactive personality and optimism significantly relates to resilient behaviors. Authors further explained that individual resilience has largely been operationalized as a dispositional variable responsible for the psychological mechanisms that enable people to bounce back following crises or traumatic events.

Empowering leaders to develop subordinates’ self-management skills through delegation of authority, participative decision-making, ensuring meaningful works, conveying confidence in subordinates, capacity building is important to achieve results and personal support (Ahearne et al; 2005, cited by Nguyen et al., 2016).

It is apparent that a public sector organizations’ performance has become an increasingly important issue in many countries. Practically, the organisation may plan and implement any result-based activities to create value for money climate within the organisation. However, these efforts will gain substantial significant material, if the leadership is also committed to the result – oriented programmes and activities by closely monitoring its execution and compliance with what has been designed. Therefore, there is a need for better understanding of whether higher levels of leadership commitment on resilience of employee and innovation can contribute to good organisational performance and/or enhance a positive relationship between leadership style and organisational performance. As in such circumstances innovators may be reluctant to improve their knowledge and skills (Aiman-Smith & Green, 2002; Damanpour & Scheider, 2008), instead adhering to existing tasks to avoid confronting their limitations. They may also avoid the considerable challenge of engaging top management support for policies or necessary resources such as training, communities of practice or other supports for the innovation (Edmondson, 1999; Klein & Knight, 2005). Obtaining top management champions may require developing new skills for negotiating social and political systems. When an upper management support for an innovation is lacking co-workers and unit leaders may become sceptical and passive. Managers
may not present the innovation as paramount, normatively expected or valued (Choi & Chang, 2009; Klein & Knight, 2005), and may not offer incentives or sanctions relevant to the innovation (Greenhalgh, Robert, & Bate, 2008). Implementation invariably faces a challenge in the scarcity of resources (Govindrajan & Trimble, 2010), but finding them can be complicated. Current organisation operations may compete with an innovation for resources, creating conflict (Shalley, 2007), especially for complex innovation that requires more integrative communication capabilities (Tepic, Kemp, Omta, & Fortuin, 2013). As per Wijerathna and Samarathunge (2013), it is imperative that the public sector leadership studies must take their findings into consideration of leadership behavior within the public sphere too, as it has a significant impact on employee behavior and performance. Nevertheless, Lee and Chuang (2009), explained that the excellent leader not only inspires subordinate’s potential to enhance efficiency but also meets their requirements in the process of achieving organizational goals. Studies have suggested that effective leadership behaviours can facilitate the improvement of performance when organizations face these new challenges (McGrath and MacMillan, 2000; Pisano and Shuen, 1997). Auginis (2009) argues that definition of employee performance does not include results of an employee’s behavior but only the behavior itself. Author describes that performance is about behavior or what employees produce or the outcomes of their work. Also there are two additional characteristics of behavior that label performance (Auginis, 2009). One of the characteristics is evaluative and such behavior can be judged as negative, natural and positive which is associated with individuals and organizational effectiveness.

In other words, the value of these behaviors vary and is based on where they make contribution towards the accomplishment of individual, unit, and organizational goals. Nevertheless, performance is multidimensional. Thus, there are many different kinds of behavior that have the capacity to advance or hinder organizational goals. The essence of the theory centers on the assumption that setting individual difficult goals or challenging specific objectives, targets or set goals leads to significantly higher performance than easy goals, no goals or vague goals, such as urging people to do their best (Fernando L., 2004). In addition, the author describes performance of organizations as the outcomes of effectiveness and efficiency of functions of organizations. Thus, the following conceptual framework can be developed.
Conceptual framework is portrayed in figure 1.1 which is discussed in detail in this research.

**Figure 1.1: Conceptual Framework**

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**RESEARCH METHOD**

Ontological and epistemological assumptions are important research philosophies whereas ontology is concerned with the nature of reality and epistemology concerns with what constitutes acceptable knowledge in the field (Saunders et al., 2014). This research adopts the quantitative research strategy and employee deductive approach and qualitative research strategy and inductive approach. (Sekaran and Bougie, 2014, Saunders et al., 2014).

A cross sectional study design is used with the survey method where data would be collected from the secretaries in the ministries and chief secretaries in the provincial councils in Sri Lanka.

**TARGET POPULATION**

According to Saunders et al. (2014), target population is the full set of cases taken into consideration from the total population. Cooper et al. (2015) state that those people, events, or records that contain the desired information and can answer the measurement questions as the target population. Hence, in this study, secretaries to the Cabinet Ministries in the Central Government, the Chief Secretaries in the Provincial Council and employees are selected as the target population. Currently, there are 53 secretaries in the cabinet ministries in the central government and nine chief secretaries serve in the cabinet ministries and the provincial councils respectively. The secretary to the ministry and chief secretary of the
provincial council are the heads of the administration and the chief accounting office of the respective organization. They are responsible for organizational administration and managing complex tasks of delivering public service. As the secretary provides organizational leadership, he/she is accountable as the chief accounting officers to the organization, and this position is considered as head of administration of the ministry or the provincial council.

SPECIFIC ORGANIZATIONS

In order to study leadership styles of chief accounting officers (Secretaries) in the public sector, the cabinet ministries and the provincial councils of Sri Lanka are selected as those officials serve in ministries of the central government and provincial councils.

DATA ANALYSIS BOTH QUALITATIVE AND QUANTITATIVE

Quantitative data will be analyzed using SPSS 21 and Amos 21 software package. H1, H2 and H3 and would be analyzed through cross-case synthesis while grounded theory analysis would be used as the analysis tool. Except above mentioned hypotheses, others would be analyzed using multiple regression method. Structural Equation Modeling (SEM) would be conducted in this study.

LIMITATION OF THE STUDY

The scope of the study extends to Chief Accounting Officers (Secretaries) in the Cabinet Ministries and the Chief Secretaries in the Provincial Councils in Sri Lanka. Organizations are to be selected according to the performance levels which are appraised using state criteria from lower level to the higher levels. Hence, chief accounting officers and employees in the same organizations will be interviewed for this study. With regard to the public sector, Colombo is the selected venue where many of the ministries, departments and the western provincial council are located, excepting in other provincial councils of Sri Lanka.

Due to resource and time limitation and constraint, the study will only focus on a sample of 20 secretaries to the cabinet ministries, 9 chief secretaries of the provincial councils and 1200 employees from
respective organizations. The study will exclude the secretaries to state ministries and other secretaries in provincial ministries. Further, convenient time for interviews from the secretaries would also pose a limitation as these officers are busy with their own official matters. Hence, this method involves a considerable time.

EXPECTED BENEFIT OF THE STUDY

Academic Benefit
To date, there seems to be no systematic analytical framework to explain leadership style and employ resilience and innovation factors together affecting performance of organizations in public sector organizations as per published literature and besides, existing theory in this regard is fragmentary or scanty. Hence, this study attempts to identify constituents or aspects of leadership style and employee resilience, innovation and performance of organizations in the public sector by addressing the existing gap. Thus, this study would contribute to the existing theory of leadership style of chief accounting officers, employee resilience and innovation on performance of public sector organization in a broader perspective. Further, this study develops a comprehensive and theoretical model in order to determine factors of employee resilience, leadership styles, innovation and public sector performance in Sri Lanka. Hence, this study contributes to development of theory in the aforementioned areas.

Benefit of Management
The findings of this study will lead to design better pragmatic public management reforms, which would improve the performance of public sector organizations as well as the appropriate measurement instruments for measuring performance of organizations in the public sector in Sri Lanka.
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The Impact of Relational Contract Fulfillment on Organizational Commitment in Selected Banks in the Batticaloa District

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Thavakumar, D., Eastern University, Sri Lanka.

Abstract

The most important part of each organization is its human resource. The way employers behave and treat staff would affect their attitudes and working behaviors. When people have a positive attitude toward their job, their manager, department or organization they work in, they become much more committed to work efficiently. Relational Contract Fulfilment has been considered as one of the most important predictors of Organizational Commitment. In the Sri Lankan context, a few empirical studies have been conducted about the relationship between Relational Contract Fulfilment and Organizational Commitment of employees. Thus, there is a need to do more research in this field. Therefore, this research has tried to identify the impact of Relational Contract Fulfilment on Organizational Commitment in selected banks in the Batticaloa district. This research is limited to the main branches of 12 Licensed Commercial Banks (LCBs) in the Batticaloa district. A total of 197 questionnaires were distributed among the employees in the banking sector in the Batticaloa district. Only 150 questionnaires were returned and used for further analysis. The data were analysed using descriptive analyses, Pearson correlation and regression analyses with the support of Statistical Package for Social Science (SPSS 19.0). The results show that, the level of Relational Contract Fulfilment and Organizational Commitment is high and there is a strong positive relationship between Relational Contract Fulfilment and Organizational Commitment in the selected banks in the Batticaloa district. Lastly, the regression analysis indicates that 27.5% of the total variance of Organizational Commitment is explained by Relational Contract Fulfilment in the selected banks in the Batticaloa district. Therefore, in order to increase organizational commitment among employees, every organization must ensure the fulfilment of relational contract.

Keywords: Affective Commitment, Continuance Commitment, Normative Commitment, Relational Contract Fulfillment
INTRODUCTION

In general, employment contracts aim to connect the employee with the employer or organization with regard to future contributions and inducements of the parties involved in the contract. These contributions and inducements are partly put on paper in the written formal contract of employment, but the most part are unwritten and implicitly held (Sonnenberg, 2006). The differences between legal and psychological contracts is that legal contracts are specified, explicitly defined in contrast to psychological contract which are unwritten and perceptual in nature (Spindler, 1994).

Relational contract fulfilment is one types of psychological contract fulfilment. It refers to the extent to which employees perceive that their organization has fulfilled its obligations concerning resources that are aimed to developing the employee and to build up a strong relationship (Bal et al., 2010). These resources include participation in decision making, support for development and socio emotional concern of the organization for the employee (Bal et al., 2010). Organizational commitment reflects the psychological status between employees and organizations. Organizational commitment implies employee determination of whether to stay or not stay in the organization (Meyer & Allen, 1991). Organizational commitment is directly related to employees’ performance, organization’s profitability and competitive position in the market. Therefore, organizational commitment is treated as an issue of great importance. The strength of the commitment is dependent on various factors. In this study, the researcher is tried to identify the impact of relational contract fulfillment on organizational commitment in selected banks in Batticaloa district.

Problem Statement

There is a lack of relational contract researches referring to employer fulfilment of psychological contract to the employee (Grimmer & Oddy, 2007). The examination of the relationship between relational contract fulfilment and organizational commitment within different context is valuable in order to understand the influence of context on these relationships (Kraft, 2008). A few studies had been conducted on the types of relational contract fulfilment and the relationship with the three component of organizational commitment, although the three components of organizational commitment results are often inconsistent (Anderson, 2014). Due to the significant cultural and organizational differences between Sri Lanka and developed countries in the West, the relational contract theory proposed in the Western world may be not suitable in Sri Lanka. Many current studies of relational contract fulfillment
have considered entire employees in researches, but lack concrete discussions of employees with different
sector (Zhao et al., 2007).

In Sri Lankan context, few empirical studies have been concerned with the relationship between relational
contract fulfillment and organizational commitment of employees in selected banks. Thus, bankers must
study about the organizational commitment with the fulfillment of relational contract. Therefore,
researcher examines this problem in this study and attempt to fill this knowledge gap and provide facts on
the current state of employment relationship. Therefore, the researcher is tried to examine the impact of
relational contract fulfillment on organizational commitment in selected banks in Batticaloa district.
Therefore, the research question of this study is:

“How does Relational Contract Fulfilment Impact on Organizational Commitment in Selected Banks in
BatticaloaDistrict?”

LITERATURE REVIEW

Relational Contract

Relational contract reflects employees’ affective involvement and belief in organizations because
organizations are not only providing necessary material reward in return to employees but also provide
guarantees for employees’ work safety, skill training and career development (Rousseau, 1995). The
characteristics of relational contract are as follows:

Stability: Employee is obligated to remain with the firm and to do what is required to keep job. Employer
has committed to offering stable wages and long-term employment (Rousseau & Wade-Benzoni, 1994;
Rousseau, 1995).

Loyalty: Employee obligated to support the firm, manifest loyalty and commitment to the organization’s
needs and interests. Be a good organizational citizen employer has committed to supporting the well-
being and interests of employees and their families (Rousseau & Wade-Benzoni, 1994; Rousseau, 1995).

Organizational Commitment

Ellenbecker & Cushman (2012) stated that organizational commitment as a personal attachment and the
desire to stay with a company for various reasons. The individual, who is committed to an organization
has a strong identification and involvement with the particular organization and have a strong desire to remain a member of the organization (Ogba, 2006). Types of organizational commitment are as follows:

**Affective Commitment**

Affective commitment is defined as an affective or emotional attachment to the organization. So individual identifies with, is involved in, and enjoys membership in, the organization (Allen & Meyer, 1990). Affective commitment is based on how much individual ‘want’ to remain in the organization. Employees with affective commitment continue service with organization because they want to do so (Dixit & Bhati, 2012).

An individual who is affectively committed or emotionally attached to the organization, believe in the goal and values of the organization, works hard for the organization and intend to stay with the organization (Mowday, Porter, & Steers, 1982). Through the affective commitment the employee become as an active member in the organization (Salazar-Fierro & Bayardo, 2015).

**Continuance Commitment**

The continuance commitment was more appropriately defined by Kanter (1968), “continuance commitment as that which occurs when there is a profit associated with continued participation and a cost associated with leaving (Kanter, 1968)”. When employees enter into the organization, they bound to maintain a link with the organization or committed to remain with the organization because lack of alternative opportunity or awareness of the costs associated with leaving the organization. The cost associated with leaving includes attractive benefits, the threat of wasting time, effort spends acquiring, disrupt personal relationship (Dixit & Bhati, 2012). This was more appropriately defined by Allen & Meyer (1990). Researcher proposed that continuance commitment develops on the basis of two factors. As, number of investment (side – bets) individuals make in their current organization and perceived lack of alternatives.

**Normative Commitment**

Normative commitment is the moral duty of the employee to remain in the organization. It can increase through beliefs that the employees have that employers provide more than they can give (Meyer & Allen, 1991).
The normative aspect develops as individuals’ perception of their moral obligation to remain with a specific organization, irrespective of how much status improvement or fulfillment the organization gives the individual over the years. Normative commitment or obligation is seen as a result of the receipt of benefits (which encourages a feeling that one should reciprocate) and/or acceptance of the terms of a psychological contract (Dixit & Bhati, 2012).

CONCEPTUAL FRAMEWORK

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational contract fulfillment</td>
<td>Organizational Commitment</td>
</tr>
<tr>
<td></td>
<td>Affective commitment</td>
</tr>
<tr>
<td></td>
<td>Continuance commitment</td>
</tr>
</tbody>
</table>

(Source: Zhou et al., 2014)

Hypothesis Development

Relational Contract Fulfillment and Affective commitment

The affective commitment (AC) highlights the emotional nature that characterizes a linkage between a person and an organization (Maia & Bastos, 2015). Employees with a high level of affective commitment are more motivated and have a strong desire for contribution and performance to the organization. So employees are emotionally committed, willing to invest time and energy to achieve the organizational goals (Salazar-Fierro & Bayardo, 2015). According to McDonald & Makin (2000), affective commitment is most related to the relational elements of the psychological contract. This means that if organizations want their employees to be committed in to the organization, they need to engender a relational psychological contract fulfillment with their employees. More recent research from Alcover, Martinez-
Inigo, & Chambel, (2012) found that there is a positive relationship between relational contract fulfillment and affective commitment.

On the basis of this literature support, researcher proposes the following hypothesis:

**H1**: There is a positive and significant impact of relational contract fulfillment on affective commitment.

**Relational Contract Fulfillment and Continuance Commitment**

Continuance commitment is the degree to which an individual experience a sense of being locked in place because of the high cost of leaving (Klein, Becker, & Meyer, 2012).

Previous literature has established the relationship between relational contract fulfillment and continuance commitment (Zhou et al., 2014).

The satisfaction of relational contract involves providing long-term favorable work guarantee and advanced career development to workers in order to cultivate their positive feelings towards the organization. Consequently this plays a significant positive effect on continuance commitment to employees (Zhou et al., 2014).

On the basis of this literature support, researcher proposes the following hypothesis:

**H2**: There is a positive and significant impact of relational contract fulfillment on continuance commitment.

**Relational Contract Fulfillment and Normative commitment**

The normative component is viewed as the commitment of employees consider morally right to stay in the organization regardless of how much status enhancement or satisfaction the organization gives him or her over the years (Meyer & Allen, 1991). Previous literature has established the relationship between relational contracts fulfillment and normative commitment (Zhou et al., 2014).

Relation contract fulfillment refers to the extent to which employees perceive that their organization has fulfilled its obligations concerning resources that are aimed to developing the employee and to build up a strong relationship (Deepthi & Baral, 2013). These resources include participation in decision making and support for development. The satisfaction of relational contract involves providing long term favorable work guarantee and advanced career development to workers in order to cultivate their positive feelings
towards the organization. This is done to improve obligation of the employee to stay in the organization, which then plays a significant effect on normative of organizational commitment (Zhou et al., 2014).

On the basis of this literature support, researcher proposes the following hypothesis:

**H3:** There is positive and significant impact of relational contract fulfillment on normative commitment.

**METHODOLOGY**

According to the Central Bank of Sri Lanka (2014), the Sri Lankan banking sector comprises of 2 major categories, namely Licensed Commercial Banks (LCBs) and Licensed Specialized Banks (LSBs). **As at December 2014**, there were 25 LCBs and 9 LSBs in Sri Lanka (Central Bank of Sri Lanka, 2014).

In those 25 LCBs, there were 12 LCBs in Batticaloa district. This research is limited to the 12 Licensed Commercial Banks (LCBs) in Batticaloa district. As there were limitations in time and resources it is limited to main branches in Batticaloa district. The total population of this study was 197 of employees of selected banks in Batticaloa district. In this study, the researcher considers population as a sample, because number of respondents in the population is very small (174) and it is practically possible to collect data from every element of the population. This study totally depends on primary data. The final questionnaire includes utilized scale is Likert's five-degree range. The questionnaires are issued to 197 employees who are working in the selected 12 Licensed Commercial Banks main branches in Batticaloa district. However, out of total 197 questionnaires, 76% questionnaires were received (150 respondents) for analysis.

<table>
<thead>
<tr>
<th>Licensed Commercial Banks</th>
<th>Population (Issued Questionnaires)</th>
<th>Received Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Amana Bank</td>
<td>10</td>
<td>08</td>
</tr>
<tr>
<td>02 BOC</td>
<td>28</td>
<td>19</td>
</tr>
<tr>
<td>03 Commercial Bank</td>
<td>25</td>
<td>19</td>
</tr>
</tbody>
</table>

**Table 1: Sampling Framework**
Survey Instrument

Relational contract fulfillment was measured by using the form which are developed by Rousseau (2008) and organizational commitment were measured by using the form which are developed by Bayer & Sham (2009); Meyer & Allen (1991).

Table 2: Decision Criteria of Cronbach’s Alpha Co-efficient

<table>
<thead>
<tr>
<th>CAC</th>
<th>Decision Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.5</td>
<td>Unacceptable Reliability</td>
</tr>
<tr>
<td>0.5 ≤ CAC &lt; 0.6</td>
<td>Poor Reliability</td>
</tr>
<tr>
<td>0.6 ≤ CAC &lt; 0.7</td>
<td>Questionable Reliability</td>
</tr>
<tr>
<td>0.7 ≤ CAC &lt; 0.8</td>
<td>Acceptable Reliability</td>
</tr>
<tr>
<td>0.8 ≤ CAC &lt; 0.9</td>
<td>Good Reliability</td>
</tr>
<tr>
<td>0.9 ≤ CAC</td>
<td>Excellent Reliability</td>
</tr>
</tbody>
</table>

(Source: George & Mallery, 2003)

<table>
<thead>
<tr>
<th>Bank</th>
<th>DFCC Bank</th>
<th>HNB</th>
<th>NDB</th>
<th>NTB</th>
<th>Pan Asia Bank</th>
<th>Peoples Bank</th>
<th>Sampath Bank</th>
<th>Seylan Bank</th>
<th>Union Bank</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>DFCC Bank</td>
<td>18</td>
<td>13</td>
<td>06</td>
<td>NDB</td>
<td>12</td>
<td>07</td>
<td>Pan Asia Bank</td>
<td>08</td>
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<tr>
<td>05</td>
<td>HNB</td>
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<td>13</td>
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<td>NTB</td>
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<td>07</td>
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<tr>
<td>06</td>
<td>NDB</td>
<td>12</td>
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<td>Pan Asia Bank</td>
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<td>Peoples Bank</td>
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<tr>
<td>07</td>
<td>NTB</td>
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<td>22</td>
<td>07</td>
<td>Sampath Bank</td>
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<td>07</td>
</tr>
<tr>
<td>08</td>
<td>Pan Asia Bank</td>
<td>10</td>
<td>07</td>
<td>10</td>
<td>Sampath Bank</td>
<td>10</td>
<td>07</td>
<td>Seylan Bank</td>
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<td>14</td>
</tr>
<tr>
<td>09</td>
<td>Peoples Bank</td>
<td>22</td>
<td>20</td>
<td>11</td>
<td>Seylan Bank</td>
<td>18</td>
<td>14</td>
<td>Union Bank</td>
<td>09</td>
<td>04</td>
</tr>
<tr>
<td>10</td>
<td>Sampath Bank</td>
<td>10</td>
<td>07</td>
<td>12</td>
<td>Union Bank</td>
<td>09</td>
<td>04</td>
<td>TOTAL</td>
<td>197</td>
<td>150</td>
</tr>
</tbody>
</table>

(Source: Survey Data)
Table 3: Decision Criteria for Univariate Analysis

<table>
<thead>
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<th>Decision Criteria</th>
<th>Decision Attribute</th>
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<tbody>
<tr>
<td>1 &lt; X &lt; 2.5</td>
<td>Low Level</td>
</tr>
<tr>
<td>2.5 &lt; X &lt; 3.5</td>
<td>Moderate Level</td>
</tr>
<tr>
<td>3.5 &lt; X &lt; 5</td>
<td>High Level</td>
</tr>
</tbody>
</table>

(Source: Survey Data)

DATA PRESENTATION AND ANALYSES

Sample Characteristics

The total 150 questionnaire were received for analysis. From that gender wise, 69% were male and 31% were female participated in this study. In terms of age, the highest proportion of respondents fell into those who are in 25-30 years old. They accounted for 36% of the total number of respondents. In terms of sector, the highest proportion of respondents fell into those who are in private sector. They accounted for 73.3% of the total number of respondents. In terms of educational qualification, the highest proportions of respondents have Advanced level qualification. They accounted for 39.3% of the total number of respondents. In terms of designation, the highest proportions of respondents are Banking Assistance. They accounted for 33.3% of the total number of respondents. In terms of Experience, the highest proportions of respondents have less than 3 years experienced. They accounted for 39.3% of the total number of respondents.

Reliability Analysis

Table 4: Reliability Analysis of Relational Contract Fulfilment and Organizational Commitment

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. of Statement</th>
<th>Cronbach ‘s Alpha value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational contract fulfilment</td>
<td>7</td>
<td>0.919</td>
</tr>
<tr>
<td>Organizational Commitment</td>
<td>17</td>
<td>0.935</td>
</tr>
</tbody>
</table>

(Source: Survey Data)

All attributes of the relational contract fulfilment and organizational commitment were tested for reliability analysis. A Cronbach’s Alpha coefficient of 0.7 and higher is adequate and signifies high reliability (Jermier & Berkes, 1979; Sekaran, 2003).
Univariate Analysis

Univariate Analysis of Relational Contract Fulfillment and its Dimension

Table 5: Univariate Analysis of Relational Contract Fulfilment and its Dimension

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean</th>
<th>Std deviation</th>
<th>Decision Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Welfare</td>
<td>3.5</td>
<td>0.9</td>
<td>High level</td>
</tr>
<tr>
<td>Involvement for decision making</td>
<td>3.5</td>
<td>1.04</td>
<td>High level</td>
</tr>
<tr>
<td>Long term wellbeing</td>
<td>3.5</td>
<td>0.98</td>
<td>High level</td>
</tr>
<tr>
<td>Secure Employment</td>
<td>3.7</td>
<td>0.98</td>
<td>High level</td>
</tr>
<tr>
<td>Stable Benefits</td>
<td>3.7</td>
<td>0.94</td>
<td>High level</td>
</tr>
<tr>
<td>Stable employment</td>
<td>3.7</td>
<td>0.99</td>
<td>High level</td>
</tr>
<tr>
<td>Stable benefits for families</td>
<td>3.6</td>
<td>1.00</td>
<td>High level</td>
</tr>
<tr>
<td><strong>Relational Contract Fulfilment</strong></td>
<td><strong>3.6</strong></td>
<td><strong>0.83</strong></td>
<td><strong>High level</strong></td>
</tr>
</tbody>
</table>

(Source: Survey data)

The above Table shows clear picture about the level of relational contract fulfillment and its dimension of selected banks in Batticaloa district. The mean value of the relational contract fulfillment is 3.6 with the deviation of 0.83. According to this it revealed that there is a high level of relational contract fulfillment (High level= 3.5< X) in selected banks in Batticaloa district. Further, all dimensions of relational contract fulfillment are high level in selected banks in Batticaloa district.

Univariate Analysis of Organizational Commitment and its Dimension

Table 6: Univariate Analysis of Organizational Commitment and its Dimension

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean</th>
<th>Std deviation</th>
<th>Decision Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective commitment</td>
<td>4.18</td>
<td>0.61</td>
<td>High level</td>
</tr>
<tr>
<td>Continuance commitment</td>
<td>4.01</td>
<td>0.56</td>
<td>High level</td>
</tr>
</tbody>
</table>
The above Table shows that, the organizational commitment in terms of affective commitment, continuance commitment and normative commitment are high level in selected banks in Batticaloa district. Finally, overall organizational commitment mean value is 4.03 with standard deviation 0.53 which shows that there is high level of organizational commitment among employees in selected banks in Batticaloa district.

**Bivariate Analysis**

**Table 7: Correlation of Coefficient between Relational Contract Fulfillment and Organizational Commitment**

<table>
<thead>
<tr>
<th></th>
<th>Relational Contract Fulfillment</th>
<th>** Correlation is significant at the 0.01 level (2-tailed) **</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective Commitment</td>
<td>Pearson Correlation: 0.398**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significance Level: 0.000</td>
<td></td>
</tr>
<tr>
<td>Continuance Commitment</td>
<td>Pearson Correlation: 0.464**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significance Level: 0.000</td>
<td></td>
</tr>
<tr>
<td>Normative Commitment</td>
<td>Pearson Correlation: 0.527**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significance Level: 0.000</td>
<td></td>
</tr>
<tr>
<td>Organizational Commitment</td>
<td>Pearson Correlation: 0.525**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significance Level: 0.000</td>
<td></td>
</tr>
</tbody>
</table>

(Source: Survey Data)

The correlation coefficient (r) value between Relational Contract Fulfillment and Organizational Commitment is 0.525 at 0.05 significant level (P<0.05). Therefore, the correlation coefficient (r) value is fall on first attribute (0.5< r <1= Strong Positive Relationship) of the decision rule. This provides a strong positive relationship between the relational contract fulfillment and organizational commitment in selected banks in Batticaloa District.
Regression Analysis

The result of regression analysis between the relational contract fulfillment and organizational commitment are shown in Table 8 in order to identify the impact of relational contract fulfillment on organizational commitment in selected banks in Batticaloa district.

Table 8: Regressions Analysis between Relational Contract Fulfilment and Organizational Commitment

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R Square:</td>
<td>0.275</td>
<td></td>
</tr>
<tr>
<td>F Statistic:</td>
<td>56.251</td>
<td></td>
</tr>
<tr>
<td>Adjusted R Square:</td>
<td>0.271</td>
<td></td>
</tr>
<tr>
<td>Sig.</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

(Source: Survey Data)

The "R Square" statistic indicates that the independent variables in the regression model account for 27.5 percent of the total variation in organizational commitment. In other words, 27.5% of the variation in the organizational commitment is explained by relational contract fulfillment.

The "Adjusted R Square" 27.1% indicates that it is an adjustment of the R-squared that penalizes the addition of extraneous predictors to the model. The Adjusted R\(^2\) statistic is typically smaller than the R\(^2\) statistic because it downward adjusts the R\(^2\) statistic when additional variables of limited significance are added to a model. It is a common practice to say that one regression model "fits" the data better than another regression model if its adjusted R\(^2\) statistic is higher. The Sig. for the model is 0.000 which is significant at 0.01 level is shown in Table 8. Accordingly, the model is good fit for the data.

Table 9: Multiple Regression Model

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Constant</td>
<td>2.788</td>
<td>0.169</td>
</tr>
<tr>
<td>Relational contract fulfilment</td>
<td>0.344</td>
<td>0.046</td>
</tr>
</tbody>
</table>

(Source: Survey Data)
The unstandardized constant statistic is 2.788 units. It shows that the model would predict if all of the independent variables were zero.

The b coefficient for relational contract fulfilment is 0.344. This means that on average, if go up 1 point on the relational contract fulfilment scale then organizational commitment will increase by 0.344 units.

According to the p-values, relational contract fulfilment is significant at 0.01. This means there will be a positive impact of relational contract fulfilment on organizational commitment in the selected banks in Batticaloa district.

Based on above Table 5.6, the equation for the regression line is:

\[ Y = 2.788 + 0.344X_1 \]

Where,

\[ X_1 = \text{Relational Contract Fulfillment} \]

According to the regression analysis relational contract fulfillment positively and significantly impact on the organizational commitment in selected banks in Batticaloa district.

**TEST OF HYPOTHESES**

The hypotheses of this study are as follow:

**H1**: There is a positive and significant impact of relational contract fulfillment on affective commitment.

**H2**: There is a positive and significant impact of relational contract fulfillment on continuance commitment

**H3**: There is a positive and significant impact of relational contract fulfillment on normative commitment

**Hypothesis Testing for Relational Contract Fulfilments and Affective Commitment**

**H1**: There is a positive and significant impact of relational contract fulfillment on affective commitment

| Table 10 Summarized Regression Analyses of Relational Contract Fulfillment and Affective Commitment |
|---|---|---|---|---|---|---|
| R | \( R^2 \) | Adjusted | F | Sig. | F | Standardized | Sig |

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E-Mail: icbm@sjp.ac.lk  |  WEB: icbm.sjp.ac.lk
Based on the Table 10 for the linear regression (f (1, 148) = 27810, p<0.01), the beta value is 0.398 at the 0.01 significant level. Thus, it can be revealed that the independent variable of relational contract fulfillment is significantly influence on dependent variable of affective commitment. Because, P value was less than the level of significance (P < 0.01).

According to the Table 10 the coefficient of correlation (r) value is 0.398 at the 0.01 significant levels. The coefficient of correlation (r) value is fall on second attribute of the decision rules. It provide there is a moderate positive relationship between the relational contract fulfillment and affective commitment (0.3 < r < 0.49= moderate positive relationship).

Therefore, there is enough evidence (0.01 significant levels) to say that there is a moderate positive relationship between the relational contract fulfillment and affective commitment.

Thus, accept the H1 and conclude that relational contract fulfillment is positively and significantly related to affective commitment in the selected banks in Batticaloa District.

**Hypothesis Testing for Relational Contract Fulfillment and Continuance Commitment**

**H2**: There is a positive and significant impact of relational contract fulfillment on continuance commitment

**Table 11: Summarized Regressions of Relational Contract Fulfillment and Continuance Commitment**

<table>
<thead>
<tr>
<th>R</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>F change</th>
<th>Sig.</th>
<th>F change</th>
<th>Standardized coefficient Beta</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.464</td>
<td>0.215</td>
<td>0.210</td>
<td>40.642</td>
<td>0.000</td>
<td>0.464</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>
Predictor: (Constant), Relational contract fulfillment (Source: Survey Data)

Based on the Table 11 for the linear regression ($f(1, 148) = 40.642, p<0.01$), the beta value is 0.464 at the 0.01 significant level. Therefore it can be revealed that the independent variable of relational contract fulfillment is significantly and positively influence on dependent variable of continuance commitment. Because, P value is less than significant level ($P<0.01$).

According to the Table 11 the coefficient of correlation ($r$) value is 0.464 at the 0.01 significant levels. The coefficient of correlation ($r$) value fall on second attribute of the decision rules. It provides there is a moderate positive relationship between the relational contract fulfillment and continuance commitment ($0.3 < r < 0.49 = Moderate positive relationship$).

Therefore, there is enough evidence (0.01 significant levels) to say that there is a moderate positive impact of relational contract fulfillment on continuance commitment.

Thus, accept the H2 and conclude that relational contract fulfillment is positively and significantly related to continuance commitment in the selected banks in Batticaloa District.

**Hypothesis Testing for Relational Contract Fulfillment and Normative Commitment**

**Table 12: Summarized Regressions of Relational Contract Fulfillment and Normative Commitment**

<table>
<thead>
<tr>
<th>R</th>
<th>R2</th>
<th>Adjusted R2</th>
<th>F change</th>
<th>Sig. F change</th>
<th>Standardized coefficient</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>.527a</td>
<td>0.278</td>
<td>0.273</td>
<td>56.956</td>
<td>0.000</td>
<td>0.527</td>
<td>0.000</td>
</tr>
<tr>
<td>Predictor: (Constant), Relational contract fulfillment</td>
<td>(Source: Survey Data)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**H3:** There is a positive and significant impact of relational contract fulfillment on normative commitment

Based on the Table 12 for the linear regression ($f(1, 148) = 56.956, p<0.01$), beta value is 0.527 at the 0.01 significant level. So it can revealed that the independent variable of relational contract fulfillment is
significantly and positively influence on dependent variable of normative commitment. Since P value is less than significant level.

According to the Table 12, the coefficient of correlation (r) value is 0.527 at the 0.01 significant levels. The coefficient of correlation (r) value is fall on first attribute of the decision rules. It provide there is a strong positive relationship between the relational contract fulfillment and normative commitment (0.5 < r < 1.0 = Strong positive relationship). Therefore, there is enough evidence (0.01 significant levels) to say that there is a strong positive relationship between the relational contract fulfillment and normative commitment. Thus, accept the H3 and conclude that relational contract fulfillment is positively and significantly related to normative commitment in the selected banks in Batticaloa District.

CONCLUSION AND RECOMMENDATION

Conclusion

The descriptive and correlations studies were helpful to find out the level of Relational Contract Fulfillment and Organizational Commitment and relationship between two variables. The finding of this study clearly shows that, level of relational contract fulfillment is in high level and organizational commitment is in high level and 27.1% of the variance of organizational commitment is explained by relational contract fulfillment in selected banks in Batticaloa district. Therefore, it can be revealed that there is a positive and significant impact of Relational Contract Fulfillment on Organizational Commitment in selected banks in Batticaloa district.

Limitation

The study surveyed belonged to Batticaloa District, therefore it might not be representative of the employee characteristics across the country. Similarly, the study results may not be generalized to other sectors. Further this study only taken the small time period to collect the data in selected banks in Batticaloa District. Therefore, the relational contract fulfillment and organizational commitment are not a standard one it may change time to time and this study only followed quantitative research and number of question and statement are limited.

Recommendation

The relational contract fulfilment is an important to all the organizations for achieves their targets. Nowadays, these kinds of research needs in the developed and developing countries like Sri Lanka.
Relational contract fulfillment directly influence on employees performance in organization. On the other hand, further studies with relationship between relational contract fulfillment and employees performance by different organization variables are required in this field especially in Sri Lanka whether it’s manufacturing industry or service industry.

**Direction for Future Research**

This present study examines the impact of Relational Contract Fulfillment on Organizational Commitment in selected banks in Batticaloa district. The direction of this study is if any study consider more dimensions and analysis methods the finding will be more worthwhile, this study only taken the small time period to collect the data in selected banks in Batticaloa district. Hence, if anyone can take the long period of collect the data it may become an effective one, this study only followed quantitative research but in future if anyone can apply the mixed method, this study only covered 12 Licensed Commercial Banks in Batticaloa district. Therefore in future scope will be expanding beyond the research area it will be effective and useful. The future research should examine relational contract fulfilment with different job outcomes such as job performance, counterproductive work behaviors, job security and job involvement.

**References**


The Impact of Sports Leadership on Performance of Production Executives at Manufacturing Teams at ABC Intimates Group

Dassanayake, I.A.S., Hela Clothing Pvt Ltd, Sri Lanka

Abstract

The Sri Lankan apparel industry enjoyed an exponential growth since the early eighties, and now is seen to be losing its edge in the market due to many reasons. The industry has to tackle challenges that involve counteracting high rate of labor turnover, maintaining a high degree of efficiency, high degree of skill, motivation and effective change leadership. Also, the self-leadership of the individual and the mental agility needs assessment and understanding how it affects the performance of their teams and their self is important. Therefore, the effectiveness of leadership in handling such demanding situations would be directly relevant to the ability of the company to maintain its competitive advantage. Therefore, the research intends to address the problem of identifying the impact of sports leadership on performance of production executives at manufacturing teams at ABC intimates group. A quantitative research methodology has been adapted to gather Primary data via a survey in the form of a questionnaire which consists of questions which will have an impact on the dependent and the independent variable. Sources for secondary data collection are internet, reports and articles related to the research topic, literature articles and books.

Many research materials are available on leadership styles, traits and theories. However, very little empirical research data is available with direct relevance to the subject. Therefore, the research would be limited to primary data obtained through field surveys carried out within a selected research population within the ABC-A Division. Findings demonstrate no significant relationship of Situational Leadership (Mental Capacity) towards the dependent variable, Performance Agility. The second and third independent variables, Decision making & Problem solving and Team work exhibit a Positive relationship towards Performance Agility. The research aims to achieve a comprehensive analysis of how sports leadership grooms and contributes to the development of different leadership skills in the employees who manage and drive production at ABC Intimates. The basis for the research is a turbulent period in the manufacturing facility, where employees faced several challenges and performance was dropped, employee turnover was increased. The findings of this research will enable to train and uplift the leadership skills of all production supervising teams at ABC Intimates.

Keywords: Sri Lanka, Sports Leadership, Performance Agility, Mental Capacity, Decision Making, Team Work
INTRODUCTION

Leadership can be defined as “The behavioral process of influencing groups and individuals towards achieving a set of goals”. This definition is very useful as this contains many scopes of leadership. In sports and exercise, these dimensions will include decision making, motivation of the participants, feedback, directing the group or the team confidently towards a set of goals and objectives and it will include establishing interpersonal relationships (Weinberg, 2007).

The concepts which are applicable to the workplace are similar to those found in sports. Managers and coaches try to motivate their “team members or players” to reach their full potential. Currently sports are played in a very competitive environment from high school stadiums to professional arenas. The measure of success in the sporting events will be measured through the win loss rate and the players as well as the coaches feel pressure to succeed. When the whole team understands the direction they should pursue and if the direction and the strategy is clearly explained or given, then it’s much easier to gain success.

The key factor for a manager is to adjust, switch or flex their style of leadership according to the changing environment. This is basically referred to as “Situational leadership”. It is very important to understand that this theory or the approach has worked quite well in the past and it may be ineffective in the future to come.

In the verge of seeking competitiveness and prospering in the global economy, organizations focus on the leadership of the employees. It is receiving a great deal of attention in the current economic setting which has a major impact on the performance. This has been a significant area organizations have been looking in for personal growth of the employees. The business environment is seeing more change than ever before. From technical upgrades, to restructuring, to process revamps and changing business strategies, the adoptability of the middle management to gear up and run their teams is becoming an all-time difficult task at hand.

People handling and situational leadership are two very important managerial roles, especially in change management.
It is of paramount importance for the ABC-Division A to maintain its competitive advantage as a leading apparel manufacturer in the region. The industry is faced with many challenges at present which includes controlling the high rate of labor turnover, maintaining a high degree of efficiency, motivation and constant upgrade and maintenance of skill levels within the organization. All the above factors are directly influenced and impacted by the nature of leadership prevalent within the industry. As a manufacturing facility of ABC Intimates – ABC-A Division is located in a spacious venue in a rural village in Sri Lanka. ABC-A has contributed immensely to the upbringing of sports personnel within the community. Currently, there are over 140 players of several disciplines such as boxing, fencing, athletics, shooting, archery, field events, chess and table tennis.

The objective of this research is to identify that impact of sports leadership exposure on the performance of production executives. Also, further elaborate the effectiveness of having a sports leadership background as the strategic environment prevalent in the industry needs leaders who could adopt constant change management techniques to address business goals. Reduced lead time call for situational leadership and transformational leadership to maintain efficiency, motivation and reduce labor turn over.

Research Questions

I. Impact of sports leadership in developing performance agility and mental capacity affecting the Productivity of ABC-A

II. Impact of sports leadership in making right, timely and objective oriented decisions affecting the Productivity of ABC-A

III. Impact of sports leadership in enhancing teamwork affecting the productivity of ABC-A

Purpose of The Study

To investigate and understand the degree of impact of sports leadership exposure on leadership competencies at ABC-A.
Objectives of The Study

I. To investigate & understand the Impact of sports leadership in developing performance agility and mental capacity affecting the Productivity of ABC - A.

II. To investigate & understand the Impact of sports leadership in making right, timely and objective oriented decisions affecting the Productivity of ABC - A.

III. To investigate & understand the Impact of sports leadership in enhancing teamwork affecting the productivity of ABC - A.

LITERATURE REVIEW

Apparel Industry and The Importance of Leadership

Effectiveness of leadership is an important factor in maintaining the competitive advantage of a company in the present market environment of the apparel industry. The Sri Lankan apparel industry enjoyed an exponential growth since the early eighties, and now is seen to be losing its edge in the market due to many reasons. The industry has to tackle challenges that involve counteracting high rate of labor turnover, maintaining a high degree of efficiency, high degree of skill, motivation and effective change leadership. Therefore, the effectiveness of leadership in handling such demanding situations would be directly relevant to the ability of the company to maintain its competitive advantage.

ABC intimates is one of the leading apparel manufacturers in Sri Lanka which has grown its strategy of business not depending on the quota system by catering for a niche market while developing on the core competencies of the business. The company owns a very high skilled workforce, knowledgeable management, technically sounded capability as the core competencies consequently imposing a high level of product differentiation in order to maintain the competitive advantage. As per the dictation of the external environment it explains that the company couldn’t rely on trade concessions in order to remain competitive in the current market. It is clearly explained in Amaleen (2004) that the apparel supplier market has changed in to a consumer’s market and demands more value for money with the current
economic down turn. The sustainability of the apparel industry therefore has become challenging by demanding organizations to prove their worthiness through innovation, minimum lead time (quick response), design capabilities & with the flexibility to secure new orders (Weerarathne, 2004) (Christopher at el., 2003).

Leadership in Business and Leadership in Sports

Leadership definitions and models date back centuries. Leadership was defined by Barrow in 1997 as “the behavioral process of influencing individuals and groups towards set goals. This definition emphasizes on the leadership vision on goals and objectives and the important interaction required between the leader and the group members for effective group performance. It is this relationship that stems firm the communication and understanding between the two parties.

For production executives who function as middle management, this relationship between them and the production team members is thus very important to be maintained to bring out productivity. When team leaders are unable to communicate effectively with their players this unintentionally aggravates problems due to a lack of understanding from their perspective. Perceptions and interpretation of information conveyed by the manager may have its origins in the formative stage of an individual’s development (Seligman, 1991).

In the work carried out by Chelladurai from 1978-1993, specific approaches that depicted and described the unique demands of sporting leadership were defined, through a multidimensional model of leadership. This provided a conceptual framework that concluded the dynamic and situational competencies of sports leadership is directly determined by the relationship and interaction between the leader and its group. Team performance and satisfaction of the team members were deemed to occur in the presence of congruence between the leader’s actual behavior displayed by their organizing and team handling skills as opposed to the expected and preferred leadership behavior in terms of support.

The findings suggest that there is evidence of similarity between leadership styles in sports and business. The literature supports the application of leadership in sports, as team leaders what
competencies should be present and how it affects the team performance. However, the literature failed to provide the different leadership competencies and their direct impact on the business setting.

**Leadership Competencies Within Scope**

Situational Leadership

The theory of situational leadership is mainly based on the means by which leaders respond to work & lead their respective groups. The Situational Leadership theory recommends that the readiness of the groups and the environment will determine the functioning of the leaders (Hersey & Blanchard, 1969). Leaders can strengthen the range of their leadership skills by understanding the relationship between the environment and the motivation and willingness of the followers. This will give the leaders a chance to enhance their personal experience, confidence & their leadership styles. It is (Situational Leadership) an Adaptive style of leadership. The strategy of situational leadership encourages the leaders to take stock of their team members within the variables which is in their workplace and to choose the best suitable leadership style which will help them achieve their goals & circumstances (Blanchard et al., 1985).

The relationship between coaches and players and the situational adoption of coaches to bring out the performance of teams in turbulent times has been investigated by many (Kellet, 1999; Loughead et al., 2005). The speculations of the different leadership styles dictate that the coaches and team captains encompass a characteristics and traits of a true leader from people management to target achievement.

In a quantitative study carried out in the USA; focused towards identifying leadership styles of personnel involved as sports leaders, various philosophies of management and theories of leadership were evaluated against the results. Hersey-Blanchard situational leadership model had been used to match with the maturity level of juniors to implement change successfully (Hersey, 2009).
Decision Making and Problem Solving

Understanding the basis of decision making is important in order to understand how it can be improved. The effect of good decisions brings positive results, and bad decisions in turn makes business face losses and negative impacts. Making good decisions in difficult situations is no small feat because these types of decisions involve change, uncertainty, anxiety, stress, and sometimes the unfavorable reactions of others.

One important framework that was identified regarding decision making process is the Cynefine framework. This framework enables leaders to identify the current operative context and use it to make the most appropriate decisions. Each area requires different actions. An ordered universe is assumed through simple and complicated situations, the relationship between the cause and effect is perceptible and the correct answers could be determined based on the facts. There is no immediate relationship between cause & effect and the complex and chaotic contexts are unordered. The approach is determined based on emerging patterns. The fact-based management is mentioned as ordered world and the pattern based management represents unordered world. It’s difficult to identify the nature of the fifth context disorder. To break out from the realm is to break down the situation in to components and assign each one of those components to the other four realms. Then the leaders will have the chance of intervening in contextually appropriate ways and then they can make decisions (Snowden & Boone, 2007).

*Figure 1: Cynefine Framework*
Most recent work by Kaya in 2014 has added a tremendous value to this field in relation to decision making in sports. In any kind of sport, decision making is the most important element. In the national level & international level, individual and team sports will have to reconsider all success factors to succeed in winning any game. At the top-level, athletes and coaches persistently keep on making good decisions in situations that are temporally highly constrained. There are some general identified characteristics of the decision-making agents in sports such as athletes, referees and coaches although there is not a specific systematic way of making decisions.

People Management

Due to flatter organizational structures, the aspect of People management is, now the line manager’s responsibility rather than a corporate human resource responsibility. People management for the line managers is important as they are currently spending more time on people management rather than the past. The changes in the environment, growth of the service, the need for flexibility and the knowledge regarding work means that the organizations need to increase efforts to develop their people (skills) to get optimal...
performances and to manage people more wisely. This will enable the organization to achieve organizational success and people management will be given greater emphasis.

A leader should be able to create team work among the organizations, clients and athletes. Sports managers must be leaders, motivators, and organizers. Building relationships, empowering team members, creating a common vision, and having fun are all important aspects that nurture teamwork.

Impact of Sports Leadership

Rather than individual awards, sports personalities have developed the ability to set boundaries & conditions that influences team mates to align with the behaviors and specific actions to achieve goals as a team (Calhoun, 2007; Chelladurai, 1980). Therefore, The empowerment of team mates and the alignment of actions and behaviors a team goal and objectives to succeed in their individual position within their sports team is expected by a sport leader (Arthur Banning et al., 2009). Sport personal are also rewarded for their hard work and success by individual awards and recognition in the media, so they learn to link sport success with an effort-to-reward perspective. Similarly, Transactional leadership had been designed to reward the effort of employees, whilst building trust and improving performance of employees in the work environment (Bass & Avolio, 2004).

Youth sports experiences can promote transformational leadership behaviors and it can build the leadership skills, buildup of character and promote lifelong learning and these skills can be used to manage crisis situations. (Arthur-Banning et al., 2009). Sports encourages people to use different leadership styles to bind up environment which enables the personalities to lead and mange team members constantly change throughout the different stages of competitive events (White et al., 2004). Furthermore, it is understood that youth sports can promote styles of leadership which deals with change management strategies by understanding team member strengths and weaknesses accordingly preparing them to deal in a better manner with changes in the future (Sugarman, 2000).
Increasing competition within the global apparel manufacturing industry and rising manufacturing costs compel the manufacturers to improve performance in order sustain themselves within the industry (Bonvillian, 2004). The option available to the manufacturers is to effect a true transformation within their own environments (Dani et al., 2006). The biggest challenge in this regard is to respond to new opportunities and new demands whilst maintaining current organizational values and practices that are congruent with stakeholder expectations.

The Sri Lankan apparel industry is on a similar plain faced with a situational challenge of maintaining the competitive advantage through successful change management against changes in the present business environment. The methods adopted need to be executed by leaders at various levels thus creating a need to elaborate a methodology towards identifying the most suited type of resources with desired leadership qualities.

Hence, utilizing the literature review it could be fathomed that the effect of leadership practices and styles form the organizational climate that determines the final output of individuals and the organization.

**Emperical Studies on Sports Leadership**

Marian M. Extejt and Jonathan E. Smith conducted a research on “Leadership Development through Sports Team Participation” and 141 students participated in the research and completed a one day’s assessment and 52% of the participants were male and the average age was 26.9 years which were enrolled to an MBA program at North Central United states private university.

The campus recruiters mainly looked in to highly recruit college athletes who has great experience of sports leadership helps to increase their leadership, motivation & team work skills to perform well in the specific job roles. An executive recruiter of CFOs declared that they look for “persons who have been in sports at a high level” (Today’s Finance Leaders, 2002). The research findings were that the recruiters and other personnel are making decisions against past behavior in sports was at a high level as an indicator of leadership skills (Marian & Jonathan, 2009).
Another case study was conducted on the “Impact of Leadership Style on Organizational Performance: A Case Study of Nigerian Banks” by Department of Management and Accounting (Ladoke Akintola University of Technology, Oyo State – Nigeria) twenty banks in Nigeria was randomly selected for the study and a structured questionnaire was used to gather data from 60 executives.

The study explored the effectiveness of different leadership styles on organizational performance in Nigerian banks. The findings or the results exposed that there is a strong positive relationship between the two factors of leadership & organizational performance. The conclusion of this study explains that there will be both positive & negative effects on organizational performance (Ojokuku et al., 2012).

A study was conducted on “Missing Links in understanding the relationship between Leadership & Organizational performance” the researchers and practitioners dedicated their substantial attention to identify the leadership effect on the organizational performance according to the research. The research was conducted by Fenwick Feng Jing and Gayle C. Avery identified nine indicators which distinguished the leadership paradigms. The nine factors are decision making, power distance between leader and the staff, the key players of the organization, diversity in the organization and the situation of control in the organization, range of staff’s power, source of staff commitment & staff’s responsibility (Jing & Gayle 2008).

Another survey was conducted in for selected small-scale enterprises in Nigeria on the “Effects of Leadership style on organizational performance. The survey primary data had been gathered through a structured questionnaire. A sample size of 15 participants were identified from 3 small scale enterprises. The analysis indicated that transformational leadership style utilizes positive but minor effect on followers and performance. The research found out that transactional leadership is more appropriate in persuading performance in the small-scale enterprises than transformational leadership style. Thus, the study recommends that small-scale enterprises should adopt transactional leadership style but strategies to transit to
transformational leadership style as their enterprises develop, grow and mature (Obiwuru et al., 2011).

“The impact of Youth sports on Leadership styles in the Hospitality Industry” was studied by James Arthur Williams of Iowa State University. The study findings explain that the youth sports has an impact on leadership styles (Williams, 2012).

RESEARCH METHODOLOGY

Conceptual Design

The conceptual frame work is the basement of the research design which is developed by the researcher. The hypothesis is also developed through the base of the conceptual framework with the possible relationship between the dependent variable & the independent variables.
This study is designed to identify the impact of sports leadership on performance of production executives at manufacturing teams at ABC-A Division.

ABC-A has a team of 2070 machine operators who carry out sewing operations, and a team of 405 supporting services, such as raw material receiving, fabric inspection teams, cutting, fabric molding, quality assurance teams and maintenance teams. There is a team of 40 production executives and 4 production managers who oversee production at all levels in ABC-A Division, ensuring the required efficiency is achieved and the required quality standards are met in the final output.

Source: Author developed
The target population (N=44) will be the 40 production executives & the 4 production managers.

According to the sample calculation 44 Production executives & managers will be chosen as the sample size out of the entire 40 Production executives & 4 production managers who are working for ABC-A division. (S=44)

Primary data was gathered through the questionnaire survey which includes questions which will have an impact on the dependent and the independent variable.

A proven Questionnaire with twenty questions consisting of different leadership competencies was given to 44 production executives & managers to examine how the above-mentioned leadership competencies effect their performance through the use of a Likert scale ranging from 1-5.

Table 1: Descriptive Statistics (Variables Combined)

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Agility</td>
<td>3.1409</td>
<td>.64783</td>
<td>44</td>
</tr>
<tr>
<td>Mental Capacity</td>
<td>2.9273</td>
<td>.44844</td>
<td>44</td>
</tr>
<tr>
<td>Decision Making</td>
<td>3.2045</td>
<td>.69348</td>
<td>44</td>
</tr>
<tr>
<td>Team Work</td>
<td>3.1409</td>
<td>.63477</td>
<td>44</td>
</tr>
</tbody>
</table>

Source: Survey Data

The above table shows the summary of mean values and the deviation values from the means values of all the independent variables and the dependent variable.
## Table 2: Correlation Analysis (Variables Combined)

<table>
<thead>
<tr>
<th></th>
<th>Performance Agility</th>
<th>Mental Capacity</th>
<th>Decision Making</th>
<th>Team Work</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Agility</strong></td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.119</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mental Capacity</strong></td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.440</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Decision Making</strong></td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.742**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Team Work</strong></td>
<td>Pearson Correlation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.618**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Correlation is significant at the 0.01 level (2-tailed).** Source: Survey Data

The above table displays the summary of correlation values and the P values of all the independent variables and the dependent variable. **Linier Regression Summary**

### Table 3: Variable Analysis (Variables Combined)

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Team Work, Mental Capacity, Decision Making*</td>
<td>.</td>
<td>Enter</td>
</tr>
</tbody>
</table>

*Predictors: All requested variables entered.

b. Dependent Variable: Performance Agility

### Table 4: Model Summary (Variables Combined)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.745*</td>
<td>0.555</td>
<td>0.521</td>
<td>0.44828</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Team Work, Mental Capacity, Decision Making
The above chart mentions the R square value as (0.555) which means that 55% of the dependent variable is explained through the independent variables combined.

**Table 5: ANOVA (Variables Combined)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>10.008</td>
<td>3</td>
<td>3.336</td>
<td>16.600</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>8.038</td>
<td>40</td>
<td>.201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18.046</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Team Work, Mental Capacity, Decision Making
b. Dependent Variable: Performance Agility

As per the above ANOVA analysis there is 55% of all the independent variables combined can be explained and 45% cannot be explained.

**Table 6: Coefficient Analysis (Variables Combined) Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>(Constant)</td>
<td>.820</td>
<td>.561</td>
</tr>
<tr>
<td>Mental Capacity</td>
<td>.004</td>
<td>.158</td>
</tr>
<tr>
<td>-----------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Decision Making</td>
<td>.617</td>
<td>.163</td>
</tr>
<tr>
<td>Team Work</td>
<td>.106</td>
<td>.175</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Performance Agility

*Source: Survey Data*

**Table 7: Hypothesis Analysis**

<table>
<thead>
<tr>
<th>No.</th>
<th>Hypothesis</th>
<th>Correlation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td>Exposure to sports leadership does not impact situation handling skills of production executives</td>
<td>r=0.119 p&lt;0.1</td>
<td>Supported</td>
</tr>
<tr>
<td>H1o</td>
<td>Exposure to sports leadership does have an impact situation handling skills of production executives</td>
<td>r=0.119 p&lt;0.1</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2a</td>
<td>Exposure to sports leadership does not impact decision making skills of production executives</td>
<td>r=0.742 p&lt;0.01</td>
<td>Not supported</td>
</tr>
<tr>
<td>H2o</td>
<td>Exposure to sports leadership does have an impact decision making skills of production executives</td>
<td>r=0.742 p&lt;0.01</td>
<td>Supported</td>
</tr>
<tr>
<td>H3a</td>
<td>Exposure to sports leadership does not impact people handling skills of production executives</td>
<td>r=0.618 p&lt;0.01</td>
<td>Not supported</td>
</tr>
<tr>
<td>H3o</td>
<td>Exposure to sports leadership does have an impact people handling skills of production executives</td>
<td>r=0.618 p&lt;0.01</td>
<td>Supported</td>
</tr>
</tbody>
</table>

*Source: Survey Data*
When analyzing the hypothesis, the correlation matrix assists to interpret the level of relationship within the independent and dependent variables, as the correlation value of Mental Capacity is 0.119 which shows a positive weak relationship between the two variables and also due to the significance value of 0.440 and higher than 0.05 confirms that there is no relationship between the variables, therefore the null hypothesis H1a –“Exposure to sports leadership does not impact situation handling skills of production executives” is accepted and the H1o-“Exposure to sports leadership does have an impact situation handling skills of production executive” hypothesis is rejected.

However when analyzing the second independent variable, which is Decision Making the correlation value is, 0.742 which shows a positive strong relationship between the two variables and as the significance value is 0.000 indicates that there is a positive relationship between the two variables and that the H2o – “Exposure to sports leadership does have an impact decision making skills of production executives” hypothesis is accepted and the H2a - “Exposure to sports leadership does not impact decision making skills of production executives” null hypothesis is rejected.

Finally analyzing the third independent variable which is Teamwork, the correlation value is 0.618 shows a positive strong relationship between the two variables as the significance value is 0.000 indicates that there is a positive relationship between the two variables and that the H3o - “Exposure to sports leadership does have an impact people handling skills of production executives” hypothesis is accepted and the H3a -“Exposure to sports leadership does not impact people handling skills of production executives” null hypothesis is rejected.

CONCLUSION AND DISCUSSION

The study findings have given many insights of the effectiveness of Sports leadership for a production executive in the apparel industry. The research follows a top - down approach with the perusal of relevant literature, which includes theories, models and other material from...
similar research. A framework was identified thereafter and defined to be implemented. The sample population was identified and selected to be within an applicable ratio to be of corresponding relevance for future implementation. The data collection and observation was followed by data analysis, recommendation and conclusion. Hence the research could be defined as an effort through a deductive approach.

The research methodology included a twin approach system with primary and secondary data collection. The primary data collection was carried out by way of a questionnaire interview carried out on a selected sample population within the ABC factory. The sample population consisted of Production `executives and Production Managers. Although the Mental capacity was chosen as an independent variable for this study it doesn’t show any significance in this study and a reason could be drawn that as the executives who have done sports and the executives who have not done sports might have the same mental capacities.

CONCLUSION OF THE STUDY

This study was conducted within an organization which is in the apparel sector requiring so many factors which can be affected by doing a sport which will have an impact on the performance agility of a production executive and the production managers. After conducting the survey within the organization, gathering and analyzing the data the following is interpreted.

The mean value for the Mental capacity is (2.9) shows somewhat a moderate rating towards the questions tested in the questionnaire and the deviation value from the mean is 0.448 which also can be interpreted as scattered rating, when considering the mean value of Decision making (3.2) it can be identified the rating is positive and the deviation from the mean is 0.693 which is a higher than the deviation of mental capacity, the final independent variable is Teamwork and the mean value is (3.1) which also shows a positive rating and the deviation from the mean is 0.634 which can be identified as somewhat scattered. The Dependent variable, which is the Performance Agility, has a mean value of (3.1) which shows somewhat a positive rating
towards the tested questions and a deviation from the mean value is 0.647 where it can be interpreted as a slight scattered rating.

Regression analysis helps analyze the contribution from the tested independent variables to the dependent variable. Mental Capacity shows an R value of 0.14 which means that 1% of the Mental Capacity is contributing towards performance agility and from the ANOVA regression it confirms that 1% is explained and a majority of 99% is not explained. Decision Making has an R-value of 0.550, which indicates that only 55% of the Decision Making contributes to performance and it is confirmed by the ANOVA regression value, which only 55% is explained and the 45% is not explained. The final independent variable, which is Teamwork R value of 0.382, signifies that there is a 38% contribution towards the Performance and the ANOVA regression shows that 38% of the variable is explained and 62% is not explained. When analyzing the R-value of 0.555 all independent variables combined together means that there is a 55% contribution towards the Performance Agility and 45% is contributed from variables that are not analyzed in this study, also the ANOVA regression analysis shows that 55% of the variables combined is explained and 45% is not explained.

RECOMMENDATIONS

The results of this research can be constructively used for several purposes, which leads to the below recommendations;

It is recommended to use as a criteria for selection during interviews as this will help assess how the individual will fit into the culture at ABC-A - Any attitude conditions, trainability, contribution to teamwork and personality are evaluated. Analytical ability, Team work & decision-making skills and the potential of the individual which are the results of this research will enable to identify leadership competencies that individuals possess that will be instrumental at the production.
It is recommended to use as criteria for training and development to groom production executives. Once the leadership competencies that can be improved and enhanced are identified, the training and development team can use them to plan and conduct different out bound training programs and sporting exercises to build on their existing leadership skills.

It is recommended to use as criteria for motivational and employee wellbeing process in the production executive’s ABC-A has a very warm and open culture, which is sustained via the engagement of its workforce through several programs. The results of this research can allow for suggestions of including sporting events to engage the workforce.

Areas for Further research

Through the research we were able to identify the relationship between;

- Performance Agility & Mental Capacity
- Performance Agility & Decision Making
- Performance Agility & Team Work

It explained how a Sports personality & a non-sports personality would respond on the above-mentioned variables. Furthermore, there are certain areas, which were not touched throughout this research. For further research, there will be avenues to identify more relationships for Sports leadership and Performance. The areas will be;

- To compare and identify the different leadership styles of sports related and non-sport related leaders
- To explore and determine the factors of sports leadership that promotes good teamwork as a tool for production executive development.
- How to incorporate sports leadership to the current leadership.
- It is recommended to revisit the independent variable mental capacity in a different research to see the significance of it towards the performance with the exposure of sports leadership in a different approach. The different approach will focus more on the relationship of their academic & professional qualifications towards performance.
- To compare & identify the relevance between sports leadership and stress management which will have an impact on performance.
REFERENCES


Thevanes, N., Eastern University, Sri Lanka
Arulrajah, A.A., Eastern University, Sri Lanka

Abstract

The objective of this review is to identify and explore the sustainable human resource management practices of organizations based on existing literature and reflections. If a human resource management (HRM) practice (or bundle of HRM practices) has power to produce economic, social and environmental performance simultaneously that HRM practice can be recognized as a sustainable HRM practice. Based on this unique criterion by using archival and reflections methods, this review has identified ten sustainable HRM practices which have power to produce economic, social and environmental performance concurrently.

Keywords: Human Resource Management, Sustainable, Practice, Social, Economic, Environmental, Performance
INTRODUCTION

In much recent years, sustainability has become one of the primary objectives of organizations in order to become the agents of sustainable development, which is understood as the type of development which meets the needs of current generations without hindering future generations to meet their economic, social and environmental requirements (Jabbour and Santos, 2008a). In this respect, the emphasis on sustainability in human resource management (HRM) context has expanded in both research and practice (Clarke, 2011; Jabbour and Santos, 2008a, Kramar, 2014, Senthilnathan and Arulrajah, 2014; App and Buttgen, 2016; Freitas et al., 2011). In addition to that, Jabbour and Santos (2008a) indicated that human resource management plays a central role in achieving organizational sustainability by contributing to enhance the economic (innovation management), social (diversity management) and environmental (continuous improvement of environmental management) performance which are known as the three pillars of organizational sustainability.

Further, Senthilnathan and Arulrajah (2014) argued that organizations need to equally balancing the set of HRM practices to support social, economic and environmental management to ensure the organizational sustainability. In this context, recently, a new approach has been evolved in HRM, labelled as sustainable HRM that seeks to link HRM and sustainability (Kramar, 2014). Moreover, Freitas et al. (2011) revealed that sustainable human resource management is contributing to achieve organizational sustainability through the development of human resources policies, strategies and practices that support the economic, social and environmental dimensions. Therefore, organizations must pay a special attention on developing and implementing sustainable HRM practices to enhance the organizational sustainability. Thus, identifying and exploring the sustainable HRM practices will have the useful implications for academics and practitioners in this field. The literature on sustainable HRM has developed during the past decade and has become popular in recent years, number of scholars contributed to the understanding of sustainable HRM (Rehu et al., 2006; Ehnert, 2009; Freitas et al., 2011; Ehnert and Harry, 2012; Kramar, 2014, Ehnert et al., 2014; Ehnert et al., 2016; Jarlstrom et al., 2015; App and Buttgen, 2016). However, existing sustainable HRM literature fails to explore the
HRM practices which equally contribute to enhance the economic, social and environmental performance of organizations. Further, Freitas et al., (2011) also stated that sustainable HRM is a very new topic for HR and studies to assess and show best practices to more sustainable organizations based on HRM are requested. Jarlstrom et al. (2015) indicated that there is a need for more research on sustainable HRM and business ethics. A study conducted by Ehnert et al. (2016) revealed that organizations and scholars are more interested in sustainable HRM, further research works are needed to understand and shape this concept. According to Opatha (2016), “a careful examination of the barriers to sustainability and sustainability issues and practices reveals that HRM plays and will have to play a critical role in making an organization sustainable”. Due to these reasons, this paper has its focus on exploring the sustainable HRM practices from the light of existing literature and empirical research done by the scholars in this field. Hence the objective of review is to identify and explore sustainable HRM practices of organizations based on the existing literature and reflections.

First this review provides the meaning and interpretation of sustainable HRM. According to Ehnert (2009, p. 74), “sustainable HRM is the pattern of planned or emerging human resource strategies and practices intended to enable an organizational goal achievement while simultaneously reproducing the HR base over a long-lasting calendar time and controlling for self-induced side and feedback effects on the HR systems on the HR base and thus on the company itself”. Wagner (2013, p. 443) defines a “….sustainability-oriented human resource management as a management of human resources that meets the current needs of a firm and society at large without compromising their ability to meet any future needs”.

In 2016, Ehnert et al. (2016, p. 90) defined sustainable HRM as “… the adaption of HRM strategies and practices that enables the achievement of financial, social and ecological goals, with an impact inside and outside of the organization and over a long-term time horizon while controlling for unintended side effects and negative feedback”.

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These definitions do not have significant differences or contradictions with each other. Hence, in the light of these three definitions, this review also constitutes its own definition for Sustainable HRM to this review purpose as follows:

Sustainable Human Resource Management is the efficient, effective, and innovative applications of human resources and its practices in order to achieve economic (profit), social and environmental goals of an organization in ethical ways and means without compromising the ability of future generations to meet their own needs.

Rest of the article structured as follows, Next section provides method of review and third section deals with literature review on sustainable HRM practices. Next, this paper provides a brief discussion and final section presents the conclusion.

METHODOLOGY

In order to achieve the review objectives, a systematic review of literature was conducted by using the archival method as recommended by Tranfield and others (2003). This review process includes classifying the literature from the sources such as journal articles, edited works, and other research papers relating to the review topic, analyzing, reflecting and reporting the findings of the review. This review considers the research works on and related with ‘sustainable HRM’ appeared in the literature. This review has used the archival method for data collection, because it enabled the researchers to structure research and builds a reliable knowledge base on existing literatures on and related with sustainable HRM and also applied reflections. The development of this review paper followed the steps presented in Figure 1.
LITERATURE REVIEW: SUSTAINABLE HRM PRACTICES

1. Recruitment and Selection: “Recruiting and Selecting appropriate people who are closest to the workplace or organization”

In the current competitive business world for successful growth and sustainability, organizations need employees who are trustworthy, highly qualified, dedicated and mostly sincere. Hence, it is essential that right people be employed for the right job in order to achieve organizational objectives (Argue, 2015). So, recruitment and selection policies and practices play a pivotal role in the business world. In this context, organizations must implement and maintain recruitment practices which comprise the sustainable elements to ensure the organizations’ economic, social and environmental performance.

Organizations look into many aspects other than profitability when recruiting and selecting employees. By minimizing the unnecessary recruitment expenditure, organizations must recruit and select appropriate people who are closest to the workplace or organization. This kind of HRM practices comprises sustainability elements and paves the way for increase profitability and help to realize the sustainable goals of the organizations. Additionally, employees’ welfare must be taken into consideration during recruitment and selection. Organizations should give more preference to the eligible candidates who are closest to the workplace or organization.
location when reciting and selecting. This practice may lead to less accommodation and transport expenses for organizations as well as employees. Consequently, organizations as well as employees can reduce unnecessary accommodations and transport expenses. Further, an employee can work around the clock to improve the productivity. Most of the employees who work in the out stations usually feel homesick and don’t show any interest in their works.

Recruiting and selecting appropriate people who are closest to the workplace or organization can be considered as a sustainable HRM practice. This type of recruitment and selection practices prevents absenteeism, turnover and keep the cost down and the result is increase in the profitability. In overall, this trend is beneficial to the organization’s financial or economic prosperity.

Beyond, economic aspects, these types of recruitment and selection practices of the organizations include social responsibility and contribute to social performance of organizations. Through these recruitment and selection practices, organizations can offer job opportunities to the communities in which they operate or the area who may be negatively affected by the activities of the organizations. Offering jobs to the underprivileged people in the area where organization is located can be considered as a socially responsible commitment of the organizations, as eradicating poverty in the surrounding area of the organization. Hence, through these HRM practices organizations’ economic and social responsibility status and performance will improve. The community people who living nearby the organizations feel satisfaction towards the organizations activities and operations.

Today, organizations give prominence to save our planet from pollution (Arulrajah et al., 2016). If an organization select people from far away from its location or workplace and providing facilities such as transportation and accommodation to those employees lead to increase the carbon footprint and resource consumption namely water, electricity, etc. which are harmful to the environment. Instead of that, recruiting and selecting appropriate people who are closest to the workplace or organization can help to improve the organizational ability to promote the positive environmental impact as well as mitigate negative environmental impact through
eliminating the transportation and accommodation facilities to the employees. On the other hand it may be easy to retain appropriate workforce or people for long time in the organizations. Accordingly, these recruitment and selection practices provide benefits to the organizations, community as well as environment.

2. Diversity Management: HR Diversity Management Practices

Several researchers argued that leveraging diversity within the organization has a positive impact on organizational performance (Shen et al., 2009; Jayne and Dipboye, 2004; Robertson and Park, 2007; Richard et al., 2004; Richard, 2000; Kochan et al., 2003). Hence, organizations seriously follow up the diversity management practices to create and sustain the diverse workforce in order to improve the organizational sustainability. Because, diversity management considered as one of the effective HRM practices to enhance the organizational sustainability by equally contributing to improve the economic, social and environmental performance of organization. Diversity management refers to the voluntary organizational actions that are designed to create greater inclusion of employees from various backgrounds into the formal and informal organizational structure through deliberate policies and programmes (Mor Barak, 2005, p.208). Shen et al. (2009) have identified recruitment and selection, training and development, performance appraisal and pay as the key HR diversity management practices, as the step to enrich the diversity workforce within the organizations.

In this context, some of the researchers argued that diversity management contributes to improve the economic performance of the organization (Robertson and Park, 2007; McCuiston et al., 2004; Erhardt et al., 2003). Through the diversity management it is possible to enhance the diverse workforce which is necessary to unleash the greater innovation and creativity (D”Netto et al., 2014) to enhance the economic performance of organizations. Moreover, organizations can attract and retain the best employees from the labour market by following up the effective diversity management within the organization (Shen et al., 2009; Jayne and Dipboye, 2004). Hence, diversity management can be an effective tool to the organizations to win the talent war. Increasing diverse workforce through diversity management highly contributes to increase the
diverse customer base which leads to improve the profit orientation of organization by increasing the market share of the organization (Jayne and Dipboye, 2004). Several studies suggested that effective diversity management can provide the positive effects to the organization such as the competitive advantage, improving corporate image, rising the organizational efficiency and effectiveness, increase the quality of organizational life, reducing turnover and absenteeism, improve decision making, greater marketing capability and increases organizational flexibility (Fleury, 1999; Cox and Blake, 1991; Richard, 2000; Kandola, 1995; Cassell, 1996; Jayne and Dipboye, 2004; McLeod et al., 1996; Waight and Madera, 2011; Shen et al., 2009) which are considered as the signals to enhance the economic performance of organization. In addition to that, effective diversity management of the organization contributed economic performance of organization by eliminating the charges against the discrimination. Therefore, diversity management is considered as the powerful driver to enrich the economic performance of organization.

Jabbour and Santos (2008a) argued that social performance is linked with diversity management of organizations. Effective diversity management of organization signaled to attract and retain diverse workforce within the organization without facing the guilty by banning the discrimination based on employee’s gender, racial, ethnicity, social status, cultural differences and many more. Diversity management of organization helps to compliance with equal employment opportunity (EEO) and affirmative action (AA) legislation. Equal employment opportunity ensures that employment decisions (e.g., hiring, promotion, pay) are made without regard to legally protected attributes such as an employee’s race, color, religion, sex, or national origin. Affirmative action programs, in turn seek to remedy past discrimination by taking proactive steps based on race or gender and to prevent current or future discrimination (Jayne and Dipboye, 2004). Further, improving work force diversity within the organization is considered as the right and ethical function as corporate citizens (Jayne and Dipboye, 2004) to create and sustain social cohesion and social justice. Hence, diversity management not only contributes to compliance with the legal requirement but also contributes to improve the ethical orientation of organization. For instance, if an employee works in an organization which is successfully managing the workforce diversity, he/she will be created as a person, who can raise...
his/her voice against the discrimination and inequality in the society. Thus, diversity management of organization can be an effective solution to solve the social injustice, social segregation and social conflict. Diversity management of organization adds more value to the organization and paves the way to gain a good image in the community as well as industry associations. Formulation and implementation of HR diversity management practices such as recruitment and selection, training and development, performance appraisal, and pay tend to provide the equal opportunities to the employees to enter into the organization and develop their career by eradicate discrimination and inequalities in terms of gender, race, disability, sexual orientation and other attributes. Hence, diversity management is considered as the key contributor to determine the social performance of organization.

Diversity management practices can also pave the way to the organizations to enrich their environmental performance. Several researchers stated that using the teamwork and cross functional teams are salient for successful environmental management (Daily et al., 2007; Arulrajah et al., 2015; Daily and Huang, 2001; Jabbour and Santos, 2008b). Further, researchers argued that success of teamwork highly depend on the diversity among the team members (Milliken and Martins, 1996). Hence, diversity management is an immense element to improve the environmental performance. Ramus (2002) stated that employee’s environmental innovations and creativity are important to provide the innovative solutions to the organization’s environmental problems as well as eliminate the negative environmental impact. In this context, many scholars argued that organizations can create diverse workforce through the effective diversity management who can foster greater innovation and creativity (Watson et al., 1993; Erhardt et al., 2003; Shen et al., 2009; Jayne and Dipboye, 2004) which in turns enhances the solutions for the environmental problems of the organization. Eco-innovation is possible through effective HR diversity management through HRM. In addition to that, effective diversity management leads to greater knowledge base, utilizing the knowledge and skills of a diverse workforce to achieve the goals and objectives of organization (Watson et al., 1993). Hence, it is also possible to align the environmental knowledge and skills of diverse workforce through the diversity management to ensure the environmental performance of organization. Based on the
above argument, diversity management practices play a pivotal role in improving the environmental performance of organization.

3. Teamwork and Cross-Functional Teams

Nowadays, many organizations paying a great attention on team work rather than on individual work. Because, teams are better at dealing with changing environments and complex tasks than individuals (Decuyper et al., 2010). According to Jabbour and Santos (2008b), team work means a small group of people with complementary knowledge whose aim is to attain shared goals and objectives which guarantee the integration of this group. An organization can be considered as the collection of people. They have to work as a team to achieve their common goals and purposes (Thevanes & Arulrajah, 2016a). So, it is possible to improve the organization’s economic, social and financial performance by practicing the team work and cross-functional teams.

According to Jabbour and Santos (2008a), performance in innovation is an important aspect for an organization to enhance the economic performance. In order to achieve the economic performance through innovation, organizations are using teamwork and cross-functional teams as the HRM practices. In an organizational context, employees from diverse functional areas such as production, marketing, HR, etc. are necessary to work as a team to achieve the economic goals of the organization. Hence, cross-functional teams consist of individuals from various functional areas in the firm that work together to obtain a specific goal (Webber, 2002). Ichniowski et al. (1997) argued that team work supports the performance in innovation to achieve higher productivity which in turn leads to improve the financial performance of organization. Further, cross-functional teams pave the way to integrate the diverse knowledge, skills and attitude of individuals which are highly useful to bring the innovation and creativity within the organization to enhance the financial performance of organization.

Compared with more traditional forms of organizations, cross-functional teams are associated with more creative solutions, better quality decisions, increased organizational effectiveness, and lower labour turnover rate (Wagner, 1994; Dean et al., 1999; Fried et al., 2000). In this sense,
teamwork and cross-functional teams have become an increasingly popular mechanism to ensure the success of new product development (Bunduchi, 2009; Seithi et al., 2011). Further, new product development is noted as the critical factor to determining the profit orientation of organization as well as gaining the competitive advantage. Successful new product development teams have provided huge benefits to the organization such as accelerated the product development cycle, reduced development costs, increased the quality of new products, increased the product success in the market, more frequent introduction of new products, and higher customer satisfaction (Edmondson and Nembhard, 2009). Further, teamwork and cross-functional teams also contribute to improve the employee commitment and engagement in the work which in turn leads to reduce the absenteeism and employee turnover. Hence, teamwork and cross-functional teams are becoming more and more relevant to improve financial performance of the organization.

Further, teamwork and cross-functional teams are the highly fruitful practices to improve the social performance of organization. According to Jabbour and Santos (2008a), social performance of organization closely linked to diversity management of the organization. Teamwork practice highly supports to improve the diversity management within the organization by eliminating the discrimination and inequality which are widely exist in organization. Researchers argued that team work success depend on diversity among the team members (Knippenberg et al., 2004; Horwitz, 2005). Because, diverse workforce comprises a multitude of beliefs, understandings, values, ways of viewing the world and unique information (Shen et al., 2009) which are important to determine the success of the team. Therefore, organizations may implement the teamwork practices for managing the workforce diversity successfully to enhance the social performance. Team working culture itself creates internal social understanding, mutual respect among the organizational members. Organizations need to create and sustain the diverse teams in order to achieve the greater innovation and creativity. Hence, this type of diverse teams leads to improve the social performance through the effective diversity management within the organizations. Cross-functional teams are composed of individuals from different disciplines who have varied backgrounds and interpretive schemes for analyzing problems (Dougherty, 1992). This type of team creation always provide the equal opportunities to the individuals by
eliminating the gender, racial, ethnicity, religion and other discriminations. Further, team work highly contributes to improve the interpersonal interactions among the members to achieve the shared goals of the team which lead to generate the high quality relationship and encourage the cooperation among the organizational members (Daspit et al., 2013). Ultimately, this trend contributes to enhance the social performance of organization.

Several studies suggested that teamwork and cross-functional team practices are positively influencing on the environmental performance of organization by supporting the effective environmental management (Jabour et al., 2008; Daily and Huang, 2001; Jabbour and Santos, 2008a; Renwick et al., 2013; Arulrajah et al., 2015). Jabbour and Santos (2008b) identified teamwork as the best practice of human resource management which supported environmental management more. In addition to that, Daily and Huang (2001) stated that cross functional teams are needed for achieving the environmental improvement across departments. They also indicated that, teamwork should be an essential part of implementation and checking and corrective action stages of environmental management system (EMS). Organizations are employing cross-functional teams in order to deal with and solve environmental problems and to present environmental improvements (Jabbour et al., 2008). Renwick et al. (2013) also identified green team as the green HRM practice to provides the green opportunities to the employees to improve their green performance. Teamwork is an effective practice to improve the commitment and participation of individual employee in the environmental initiatives of the organization. EMS teamwork provides an opportunity for individuals to come together to find solutions for complex problems (Daily et al., 2007). Organizations set several environmental goals such as reduction of carbon footprint, reduction of water consumption and zero waste to landfill and work towards achieving those goals. Hence, teamwork and cross-functional teams are highly recommended HRM practices for achieving these environmental goals. Therefore, most of the famous companies such as Kodak company, Xerox, Apple computer many more adopt teamwork to improve the environmental management system of the organizations to enhance the environmental performance of organization (Strachan, 1996). Thus, teamwork and cross-
functional teams are considered as the critical and essential components to enrich the environmental performance of organizations.

4. Economic, Social and Environmental Performance Focused Training

Training is at the heart of modern management practice in any organization (Purcell, 2000). According to Armstrong (2001), training is a systematic development of the knowledge, skills and attitude required by individual to perform adequately a given task or job. Thus, training is considered as the goal oriented HRM practice. When managers determine that a change in the organization is necessary, training activities are often among the first area for human resource management involvement (Jackson et al., 2011). Further, Opatha (2009) stated that, training is a formal process of changing employee behavior and motivation in the way that will enhance employee job performance and then organizational overall performance. Hence, providing training to the employees is paramount importance to achieve the economic, social and environmental goals to ensure the organizational sustainability.

Several researchers argued that training plays a vital role in determining the financial performance of organization (Aragon-Sanchez et al., 2003; Kalleberg and Moody, 1994; D’Arcimoles, 1997; Richard and Johnson, 2001). In an organizational context, training is a main HRM activity in order to have highly effective, efficient and productive employees by developing the employees’ competencies as well as positive work attitude and behavior. Further, training contributes to increase employees’ motivation and commitment, involvement to perform their tasks (Birdi et al., 2008; Bartlett, 2001). Hence, organizations are paying a great attention regarding investment in training to improve the financial performance of organization. Several researchers argued that, investing on training provide the positive business results to the organization such as productivity increase, sales increase, cost reduction, quality improvement, increase market share and growth of sales, gain competitive advantage, decrease in absenteeism rates and labour turnover (Schuler and MacMillan, 1984; Arthur, 1994; Sanchez-Aragon et al., 2003; Murray and Raffaele, 1984; Ichniowski et al., 1997, Barrett and O’Connell, 2001; Bartlett,
These factors are noted as the series of the factors which are necessary to improve the economic performance of organization.

Beyond the economic performance, training also effectively contributes to improve the social performance of organization. Organizations use the diversity training to improve workplace diversity which in turn leads to social performance of organization. Nowadays, organizations provide diversity training to the employees to ensure the workforce diversity to enhance the social performance of organization. Waight and Madera (2011) also suggested that diversity training is the first step in creating a positive culture for diversity in an organization. According to Pendry et al. (2007), diversity training is a distinct set of programs aimed at facilitating positive intergroup interactions, reducing prejudice and discrimination, and enhancing the skills, knowledge, and motivation of people to interact with diverse persons. The purpose of diversity training is to inform participants about the positive effects of diversity, to positively change attitudes, and to help participants know how to deal with diversity issues at their work (Kulik and Roberson, 2008; Weaver et al., 2003). Further, King et al. (2010) indicated that diversity training has the potential to make a huge, positive impact because the idea behind it is to address prejudice, stereotyping, and other biases. In overall, diversity training is a core aspect of diversity management, which deals with topics of prejudice, discrimination, and biases that occur at the workplace to ensure the social performance of organization. Moreover, organizations provide ergonomic training to solve the ergonomic issues of the employees. This type of training really fruitful to organization to improve the social performance by ensures the health and safety of employees. Hence, our review suggests that while training can indeed be impactful in organization’s social performance.

Recently, organizations are investing on environmental related training to improve the environmental performance of organization (Perron et al., 2006; Thevanes and Arulrajah, 2016b; Jabbour, 2015; Teixeira et al., 2012). Environmental training refers to the systematic process to improve the environmental knowledge, skills and attitudes of employee in order to achieve the environmental goals of the organization (Thevanes and Arulrajah, 2016b). Employees should have the appropriate environmental knowledge, skills and attitude to involve in environmental
friendly business practices of organization. Cohen-Rosenthal (2000) stated that the organization’s employees should be aware of the environmental protection to promote the environmental performance of organization. According to Renwick et al. (2013), environmental training improves the environmental awareness of employee. In addition Cook and Seith (1992) argued that environmental training motivates employees to participate in the environmental initiatives of the organization. Environmental training programmes address the environmental impacts and issues of organization as well as to convey the environmental responsibilities to the employees. Therefore, organizations provide the environmental training to improve the employees’ environmental competencies as well as positive environmental attitudes and environmental friendly behaviors among employees towards environmental protection and management. Providing training to increase recycling, reducing water wastage, reducing energy conservation, reducing greenhouse emissions, and many more (Ahmad, 2015) are very useful to reduce the negative environmental impacts of organization. Hence, training also plays a major role in determining the environmental performance.

Similarly, organizations can provide social performance focused training to their employees. This sort of training may encourage social commitment and contribution of employees as well as managers. This trend ultimately creates social performance of organizations.

5. Economic, Social and Environmental Performance Focused Performance Evaluation

Nowadays, many organizations are working towards sustainability. Due to that organizations have to prove their performance in economic, social and environmental aspects. In this context, employee performance evaluation system of the organizations also has to encourage and measure three types of performance such as economic, social and environmental performance. By focusing three types of performance at all levels, performance evaluation practices can contribute to sustainable HRM.

6. Economic, Social and Environmental Performance Focused Reward Management
Today, successful organizations satisfy three types of performance criteria. They are economic, social and environmental aspects. This trend necessitates to modify the reward system of the organization in order to promote three types of performance through appropriate reward system. Because of that organizations have to reward economic, social and environmental performance of their employees. In this context, reward management system of the organizations can encourage and reward three types of performance such as economic, social and environmental performance at all levels. By rewarding three types of performance at all levels, reward management practices can contribute to sustainable HRM.


Nowadays it seems that a considerable number of organizations practice green human resource management (green HRM) practices in the global context (Arulrajah et al., 2015). They also pointed out that ultimate aim of green HRM practices is to improve the organization’s sustainable environmental performance. In this context, some researchers argued that green HRM not only contributes to environmental performance but also financial as well as social performance (Renwick et al., 2013, Kramar, 2014). Hence, green HRM can be identified as one of the sustainable HRM practices to improve the organizational sustainability.

Several green HRM scholars stated that green HRM practices directly contributed to improve the environmental performance of organization (Ahmad, 2015; Renwick et al., 2013; Renwick et al., 2008; Arulrajah et al., 2015, Opatha and Arulrajah, 2014; Jabbour and Santos, 2008b). In an organizational context, employees are viewed as the significant actors in determining the environmental orientation of organization (Jabbour et al., 2010a; Jabbour et al., 2010b; Kim et al., 2016; Ji et al., 2012; Opatha and Arulrajah, 2014; Thevanes and Arulrajah 2016a; Thevanes and Arulrajah, 2016b). According to Arulrajah et al. (2016), each and every individual employee green performance is important to enhance the organization’s environmental performance. In this context, green HRM aims to transforming normal employees in to green employees to achieve the environmental goals of the organization (Arulrajah et al., 2015). Further, green HRM is a crucial factor to attract, create, promote, retain and sustain the environmentally oriented
employees within the organization for the purpose of successful environmental management. Through the implementation of green HRM practices, organization can improve their green abilities of employees, provide the green opportunities to the employees and motivate the employees to actively participate in the green initiatives of the organization (Renwick et al., 2013). Moreover, several researchers argued that organization can apply variety of green HRM practices such as green recruitment and selection, environmental training, green rewards, green performance evaluation and many more to improve the employee’s environmental competencies as well as environmental attitude and behavior in order to improve the active participation in the environmental initiatives of organization (Ahmad, 2015; Renwick et al., 2013, 2008; Arulrajah et al., 2015). Hence, Green HRM practices are fruitful for the organization to enhance the environmental performance.

On other hand, Renwick et al., (2013) argued that green HRM not only contributes to environmental performance but also the financial performance of organization. In this context, Ambec and Lanoie (2008) have stated that improving organization’s environmental performance leads to better economic performance by providing the opportunities to increase the revenues (better access to certain markets, differentiating products, selling pollution control technologies) and reduce the costs (risk management and relationship with external stakeholders, reduce cost of material, energy and services, reduce cost of capital, reduce cost of labour). In this context, O’ Donohue and Torugsa (2015) indicated that, green HRM positively moderates the association between proactive environmental management and financial performance. Improve resource efficient and reduce resource consumption, cleaner production and waste management are not merely environmental initiatives, but simply good business decisions to improve the financial performance of organization. Green HRM highly contributes to improve the employees’ active and conscious participation in the environmental management initiatives which are simultaneously aimed at improving the environmental as well as financial performance. In addition to that, Ramus (2002) argued that environmental innovation and creativity play a vital role in the environmental performance of organization by providing the solutions to the environmental problems. Environmental innovation incorporates technological improvements that save energy, prevent pollution, or enable waste recycling and can include green product
design and corporate environmental management. In this vein, green innovation has been recognized as one of the key factors affecting financial growth of organization (Aguilera-Caracuel and Ortiz-de-Mandojana, 2013). This type of innovation also contributes to business sustainability because it potentially has a positive effect on a firm’s financial, social, and environmental outcomes. In this sense, Renwick et al. (2013) argued that green HRM practices highly fruitful in improving the environmental innovation and creativity of employee. Further, green HRM practices also contribute to reduce the legal and environmental fines which arise due to the poor environmental management of the organization. Based on the argument, it can be concluded that green HRM practices contribute to achieve the economic performance of organization.

Further, several researchers indicated that green HRM considered as the key contributor achieve the social performance (Kramar, 2014; Jabbour and Santos, 2008a; Ahmad, 2015; Yusoff et al., 2015). In recent days, organizations are paying increasing attention to the environmental responsibility in their corporate social responsibility programmes to ensure the social performance (Backhaus et al., 2002). Because, environmental problems such as climate change, global warming, ozone depletion, air, water and land pollution turned the spotlight on the organizations to focus on environmental protection and management. And organizations are facing social and political pressures to improve the environmental orientation of their organizations (Ji et al., 2012). Hence, without concerning the environment, achieve the superior social performance of organization become unrealistic. Moreover, Mass (2016) argued that environmental performance of organization pave the way to improve the social performance of organization. The rising demand for corporate social responsibility (CSR) leads to the application of management tools of green human resource management (Cheema and Javed, 2017). In other words, organizations may prove their environmental concern by adopting the green HRM practices such as green recruitment and selection, green training, green health safety and etc. Hence, green HRM termed as a one of the crucial social responsible action of organization which not only benefited to the organization but also to the society.
Moreover, Greenwood (2002) stated that organizations have to ensure the safety in the workplace in order to avoid accidents and respect to health to improve the social performance of organization. In this sense, green health and safety management practice play a key role in ensuring the green workplace to all which is fruitful in improving the health and safety through reducing employee stress and occupational disease caused by hazardous work environment. Further, Renwick et al. (2013) stated that green HRM has a potential to contribute positively to employee’s well-being. In addition, Muster and Schrader (2011) argued that green HRM leads to improve the green work life balance of employees. Green work life balance is stated as the reconciliation of working life and private life with regards to environmental values, attitudes and behavior. Further, research suggested that engaging and empowering the workforce in environmental issues, helping people to reflect on their practice both at work and home (Haddock-Miller et al., 2016) which is helpful to ensure the overall sustainability of the planet by reducing the air, water and ground pollution as well as environmental degradation. Therefore, improving the green work-life balance through the green HRM highly contribute to improve the employee contributions on the successful environmental management of organization as well as creating a good citizen to giving a significant contribution to the environmental sustainability (Opatha, 2013). In overall, this trend improves the social performance of organization.


Electronic human resource management (e-HRM) is a technology that provides the HR functions with the opportunities to create new areas to contribute to organizational success (Ramayah, 2011). According to Yusoff et al. (2015), e-HRM comprising the ability to contributes to the organizational sustainability as it reduces environmental, social and economics’ negative consequences.

In this context, several researchers stated that general purpose of e-HRM is to reduce the costs of organization along with improving HR services and enhancing the strategic orientation (Bondarouk and Ruel, 2009; Ruel et al., 2007; Buckley et al., 2004). Further, Rule et al. (2004) stated that e-HRM has the potential to improve the efficiency of HR activities by reducing costs
and increasing the speed of process. In this respect, organizations accelerate the application of e-HRM practices such as e-recruitment and selection, e-training and development, e-performance management, e-communication, e-knowledge management and e-compensation which helps to achieve operational efficiency in organizations in terms of cost, time, quality, speed and etc (Pratheepan and Arulrajah, 2012; Oswal and Narayanappa, 2007; Ensher et al., 2002; Khashman and Al-Ryalat, 2015). Through the e-recruitment and selection process, it is possible to select the unique talent among the across world applicants who can contribute to enhance the organizational performance by applying lower selection process, cost and time. Further, recently, organizations are appreciating the e-training and development, e-communication practices instead of traditional training and communication methods which result in reducing the transport, accommodation and other administrative costs. In general, HRM practices such as performance management and employee data and pay management are noted as time consuming HR functions which also required the higher number of HR staff. Hence, conducting these HR functions through the web technology may lead to a lower number of HR staff as technology can perform the tasks quickly and accurately (Parry, 2001) which in turn leads mitigate the costs linked with these functions. Thus, organizations may also reduce the overtime cost by speeding up the HR services (Oswal and Narayanappa, 2007; Yusoff et al., 2015). Indeed, usage of e-HRM practices offer huge opportunities to the organizations to improve their economic well-being by improving the efficiency and effectiveness of HRM as well as reducing the cost associated with HRM.

The e-HRM also focuses on the environment, social side, not only profit. E-HRM has the ability to contribute to environmental performance by reducing the paper usage, improving energy conservation. E-HRM helps to change the culture of the organization from being a paper based culture to an electronic based culture (Yusoff et al., 2015; Pratheepan and Arulrajah, 2012; Ruel et al., 2007). Paperless culture is one of the ways to reduce the carbon footprint (Bahl, 2012) and it is closely connected with the environmental sustainability of the organization. On the other hand, implementing the certain e-HRM practices such as e-recruitment and selection, e-communication and e-training and development contribute to reduce the carbon footprint by reducing the travelling of employees. Because, travelling burns fossil fuel which is harmful to the environment (Smith and Perks, 2010). Moreover, it is possible to simplify and speedup the
HRM practices while conducting through electronic (Ruel et al., 2007). It reduces the work burden and overtime hours (Yusoff et al., 2015). Overtime hours of employees not only increase the employee cost but also increase energy conservation by using the lights, computer and air conditions in the workplace. Therefore, e-HRM contributes environmental performance by reducing the overtime of HR staff. In addition, through the e-HRM practices, organization may attract and retain the environmental oriented employees who can contribute to the environmental performance of organization. In this way, e-HRM has an impact on environmental performance of organization.

Beyond, improving the environmental performance, e-HRM also considered as the powerful driver to achieve the social performance of organization. Especially, e-training and e-communication has the social aspects in order to improve the social performance of organization. Nowadays, organizations seriously focus on improving the work-life balance of employees, as a step to enrich the social performance (Arulrajah and Senthilnathan, 2014). In this scenario, e-training and e-communication can be considered as the crucial elements of e-HRM which highly contributes to improve the work-life balance of employees. In general, firms have their head offices in the capital of the country, have their branches in several parts of the country. If the employees of the branch want to go to the head office for the meeting or training, it will consume more time for employees. It leads to create the work-life conflict among employees. But, through the e-training and e-communication method they can get their training and communicate with the head office without travelling to the head office. Hence, it is possible to improve the work-life balance of employees through the e-training and e-communication. Further, e-HRM practices also contribute to maintaining the health and safety to enhance the social performance of organization. According to Ensher et al. (2002), job stress effect the health and well-being of the employee. Through implementation of e-HRM practices, it is possible to reduce the job stress by reducing the work burden of employee. This will result in improving the employees’ health and well-being which helps in achieving the social performance. Further, e-HRM contributes to social performance by enhancing the environmental sustainability. Thus, e-HRM can be considered as one of the most powerful driving force towards enhancing organizational sustainability.

Currently, organizations are increasingly becoming aware of the need to have HRM policies and practices that lead to sustainable workforce and practice the work-life balance concept and appreciate its significance as a mechanism to improve employee productivity, satisfaction and retention (Parakandi and Behery, 2016).

In general, work-life balance promoting HRM practices such as telecommuting, job sharing, flextime, etc. lead to economics, social and environmental performance of the organizations. These HRM practices are likely to be especially important for diverse workforce of dual-earner couples, single parents, and employees looking for a sick or ageing relative. For example, telecommuting practice may lead to reduce carbon footprint of the organizations, flextime contributes to sustain creative and innovative employees which may leads to sustain economic performance of the organization. At the same time, flextime practice can also enhance the employee welfare and social needs of employees. Hence, work-life balance promoting HRM practices ultimately contribute to economic, social and environmental performance of the organizations. Moreover, organizations take necessary steps to up-lift the work-life balance of employees in order to improve social performance of organizations (Senthilnathan and Arulrajah, 2014). In this sense, for the employees who work in the home town, the work-life conflict is much less than the others whose work site is far away from home. An employee has the privilege of spending more time with his family and easily fulfills his/her family commitments. So the employees become a vibrant team of happy and committed individuals driving the organizations towards sustainable growth.

10. Innovation focused HRM Practices

Innovation focused HRM practices are important for three types of organizational performance such economic, social and environmental performance. Laursen and Foss (2003) indicate that
inadequate literature of investigation on the relationship between new HRM practices and innovation performance of organizations. In general, innovation performance may be related with organizations’ economic, social and environmental performance. Spanish organizations based survey of Jimenez and Valle (2008) revealed that HRM practices (flexible job design and empowerment, team working, long-term and skill oriented staffing, extensive-and long-term oriented training, broad career opportunities, behaviour-based appraisal and organic compensation system) enhances organisational innovation.

Ortiz et al. (2009) examine the relationship between the HRM policies and practices from the perspective of total quality management and performance in innovation. Carda et al. (2014) reveals that there is a positive relationship between HRM practices and innovation in both the processes and the products. Particularly, certain HRM practices such as autonomy, participation, training, career plans and organized recruitment processes are strongly linked to creativity and innovation.

HR diversity management can create and maintain sustainable competitive advantage for organisations (D’Netto et al., 2014). This is possible through effective practices and policies in HRM functions. The diversity increases creativity and innovation of the organisations. Hence innovation oriented HRM practices can contribute not only to economic performance, but also to social and environmental performance of the organizations. The successful performance in managing innovation is influenced by the ability of an organisation to manage the diversity of its HR (Jabbour and Santos, 2008a). At the same time, effective HR diversity management through HRM may lead to social and environmental performance as well.

DISCUSSION

Sustainable HRM practice(s) mean(s) HRM practices which have power to contribute economic, social and environmental performance of an organization simultaneously. A particular HRM practice or bundle of practices must have capacity to promote or produce three types of performance concurrently. This is the unique feature of a sustainable HRM practice or bundle of practices. According to this unique feature of a sustainable HRM practice, this review has
identified and explored ten HRM practices as sustainable HRM practices. In this review process, in addition to the available literature support, the reviewers have given some generally acceptable logical justification to validate or prove why these ten HRM practices can be considered as sustainable HRM practices.

This review highlighted sustainability nature of selected HRM practices. The following Table 1 shows sustainability embeddedness of selected HRM practices.

Table 1: Sustainability Embeddedness of Selected HRM Practices

<table>
<thead>
<tr>
<th>Sustainable HRM Practices</th>
<th>Economic Aspect</th>
<th>Social Aspect</th>
<th>Environmental Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recruiting and Selecting appropriate people who are closest to the workplace or organization and applying sustainability criteria in recruitment and selection</td>
<td>Reducing organization’s operational expenditure (e.g. transportation, accommodation etc.).</td>
<td>Reducing cost of recruitment and selection. Addressing local community/society employments needs.</td>
<td>Reducing poverty.</td>
</tr>
<tr>
<td></td>
<td>Improving social image of the organization.</td>
<td>Solving work-life balancing issues. Reducing carbon footprint</td>
<td>Saving energy.</td>
</tr>
<tr>
<td>2. HR Diversity Management Practices.</td>
<td>Increasing organization customer base or diverse markets.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Improving quality of management decisions.

Providing innovative ideas and superior solutions.

Rising organizational efficiency, effectiveness and profitability.

Utilizing skills and potential of all employees.

Providing a source for competitive advantage.

Improving social participation.

Eliminating discrimination and improving inclusion.

Enhancing equity, justice, autonomy and respect.

Enhancing information sharing.

Enhancing corporative behaviour.

Providing equal employment opportunities.

Improving corporate image.

Supporting eco-innovation.


Increasing synergy and performance

Supporting corporate social responsibility initiatives.

Improving mutual understanding, respect, and cooperation. Supporting corporate environmental management initiatives

4. Economic, Social and Environmental Performance Focused Training.
Improving business performance (attitudes, abilities, skills, knowledge etc. needed to perform jobs/tasks). Improving social competencies (social attitudes, abilities, skills, knowledge etc.). Improving green competencies (green attitudes, abilities, skills, knowledge etc.)


Improving job performance or performance of core tasks. Improving employees’ social contribution and voluntarism. Encouraging green performance of job.


Improving job performance or performance of core tasks. Improving employees’ social contribution and voluntarism. Improving distributive justice in the workplace.

Encouraging green performance of job.


Reducing cost or cost savings.

Reducing wastage.


Improving health and safety of employees. Contributing environmental performance of individuals and groups.


Reducing operational cost.

Improving productivity and efficiency. Workplace collaboration and corporation.
Reducing workforce mobility and movements.

Reducing social wastage (e.g.: waiting time, search time etc.). Reducing paper works.

Reducing carbon footprint.


Reducing operational cost.

Reducing absenteeism and turnover. Improving employees and their family welfare. Reducing carbon footprint (e.g.: Telework).

10. Innovation focused HRM Practices.

Improving financial performance through product development and process improvements.

Reducing cost and wastages

Improving efficiency or productivity etc. Solving social issues and limitations.

Contributing to social development/reducing poverty directly or indirectly Supporting eco-innovation, material, energy and water savings, etc.

Based on Table 1, this review provides evidences to accept the above identified ten HRM practices have capacity to serve sustainable HRM practices. As far as this review is concerned, for each and every identified HRM practices, it has provided the justifications based on economic, social and environmental performance criteria or dimensions. Hence, these identified HRM practices can be considered as sustainable HRM practices. Materialization of sustainable HRM is possible through sustainable HRM practices, therefore, this review has fulfilled certain
literature gap in sustainable HRM arena. Organizations are facing difficulties in creating and sustaining competitive advantage for a longer period of time. In this context, sustainable HRM practices really contribute to create and sustain competitive advantage for a longer period of time.

CONCLUSION

Within the scope of this review, it has been identified and explored ten HRM practices as sustainable HRM practices. The identification and exploration are based on literature support as well as reviewers reflections. To identify a particular HRM practice as a sustainable HRM practice, it must contribute to economic, social and environmental performance of an organization simultaneously. Theoretically, a particular HRM practice must produce results in three dimensions of sustainable development. In practice, sometimes organizations may not realize the power of identified and reflected sustainable HRM practices in promoting sustainable performance of the organizations.

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Interface for

Marketing, Real Estate and Business Management
**360° Servitization as a Strategy for Business Growth**

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**Abstract**

Servitization is a business model innovation where companies extend their product offers through related services. A 360° Servitization is where the manufacturing company uses base, intermediary and advance service portfolio together with their product portfolio to co-create a unique value proposition to each customer. This research aims to understand how an organization ventures to grow the business through 360° Servitization. Underpinning the resource advantage theory, a single-case study was conducted in order to achieve the aim of the paper. Data were collected from semi-structured interviews, company reports and the website. The Participatory approach with the company CEO strengthened the research findings. Deductive content analysis (Elo and Kyngäs, 2008) was conducted and findings were reported. This study identifies the importance of a unique product service bundle for each existing customer and potential customer to co-create value to enhance business growth. Research further identifies the importance of all service types such as base services, intermediary services and advance services when creating a unique product service bundle. The Product-service-customer matrix developed in this study is an import tool for business to business manufacturing organizations in the 21st century to co-create value with the customer. This matrix is a useful tool for managers in business to business manufacturing companies to amplify business growth opportunities. Due to limitations inherent in the qualitative case study approach, it is not possible to generalize the findings beyond the case company. Moreover, researches in different manufacturing companies are required to improve the generalizability.

**Keywords:** Servitization, Strategy, Business Growth, Business Model, Product-Service, Case Study.
INTRODUCTION

Over the last decade, there has been a significant advancement in manufacturing strategy. Manufacturing is entering a new era whereby it will impact on the pattern of production standards globally. Among prominent swings such as re-shoring, use of ‘internet of things’, robotization, sustainable manufacturing, servitization of manufacturing has been identified as one of the major strategy to stay competitive in current decade (Brennan et al., 2015). The importance of a more in-depth understanding of markets, value chain and value creation and customer needs have given prominence to servitization of manufacturing (Cohen et al., 2006; Brennan et al., 2015). Servitization explained the systematic trend in service additions by manufacturing companies to stay competitive and improve the business performance (Vandermerwe and Rada, 1988). According to Kowalkowski et al. (2012) refer such a concept as manufacturer service infusion as well as claims of Raddats and Kowalkowski (2014) as manufacturer service strategy and Davies (2004) claims as integrated solutions, pointed such that all these widely refer to the same transformation by manufacturing firms.

Manufacturers are rapidly moving from a product dominant view towards a service-oriented view of manufacturing (Martin and Horne, 1992; Mont, 2002; Brax 2005; Neely 2008; Cohen et al., 2006; Kohtamaki et al., 2015). European Union countries highly depend on services to the gross value added and employment (Bikfalvi et al., 2012). There is a similar pattern in Asia as well as in Sri Lanka (Asian Development Bank, 2014; Central Bank of Sri Lanka, 2014). There is a global trend in manufacturing companies in America, Europe, and Asia to incorporate service elements in their product offerings (Cohen et al., 2006; Visnjic et al., 2012). The Aberdeen Group, GM, IBM, Rolls-Royce Aerospace, BP, Shell Laugh, Boeing, Xerox are some good examples which show success through servitization (Wise and Baumgartner, 1999; Cohen et al., 2006; Neely, 2008).

Many Authors have studied the servitization impact on the profitability of the organization (Neely, 2008; Neely et al., 2011; Visnjic et al., 2012; Kastalli and Van Looy, 2013; Li et al.,
Relatively low number of publications have focused on business growth potential through a focus on servitization. Several authors have highlighted the importance of servitization for business growth (Wise and Baumgartner, 1999; Jacob and Ulaga, 2008) and identified a positive association between servitization and business growth (Kohtamäki et al., 2013). Extant literature has not researched in detail on how to generate business growth through a servitization strategy. This paper desires to address this research gap and focuses on the following question.

RQ1) How can servitization enhance business growth?

Servitized organization offering goes beyond traditional manufacturing companies to enhance the value of offering to the customer. Scholars have identified different types of service categories that manufacturers are offering. The base services, intermediate services and advanced services have become a common typology to refer to types of services offered by manufacturers (Baines and Lightfoot, 2013). The literature is silent about the contribution of these types of services in order to grow the business.

RQ2) What type of services offered by manufactures affect the business growth?

The objective of this research is to develop a framework which can be utilized to enhance the business growth of manufacturing organizations in concurrence with the 21st century challenges. This research underpins the resource advantage theory which relies on the comparative advantage of resources to enhance the business performance (Hunt and Morgan, 1997; Hunt, 1997; Hunt, 2012). Servitized offering in this study is considered as a competitive resource bundle of product and services offered by the organization which creates a differentiated value to the customer.

LITERATURE REVIEW
Literature review in this study focuses several sections. It starts with the introduction to the Resource Advantage theory and then it logically explains other related aspects such as servitization and business performance, business growth, types of services and servitization practices in Chemical Industry.

Resource Advantage theory explains the importance of market segments, heterogeneous firm resources, comparative advantages/disadvantages in resources, and marketplace positions of competitive advantage/disadvantage for superior/inferior financial performance. When organizations have a comparative advantage in resources, they will achieve marketplace positions of competitive advantage. Marketplace positions of competitive advantage then result in superior performance (Hunt, 1997). Further it emphasizes the importance of organizational effort to transform basic resources into core competencies, which become the foundation of superior competitive positions in specific market segments to achieve higher performance. This study focuses on explaining $360^\circ$ servitization as an organization effort to combine product and services uniquely to specific customer segments for higher business growth.

**Servitization and Business Performance**

There are plenty studies that have focused on servitization and related topics. Servitization is a business model innovation where companies extend their product offers through related services. Business performance related studies in servitization can be broadly divided into two areas. Studies which examine competitive advantage, differentiation through servitization and studies which focus on profitability, business growth, firm value through servitization (Maheepala et al., 2015; Maheepala et al., 2016a).

Services addition in manufacturing to differentiate the product offer is important caused by declining product margins due to the fact that achieving product differentiation is frequently in a stage of maturity (Gebauer, 2008). Servitized manufacturers have the ability to offer customized unique solutions to their customers with the combinations of product and services (Hobday, 2005). In the forthcoming years the market leaders will be those who offer integrated solutions to
their customers (Hobday, 2005). A global trend prevails where manufacturers around the world seek competitive advantage through service infusion approaches that are based on diverse service strategies and offerings (Raddats and Kowalkowski, 2014). It is supported by the extant literature to the effect that servitized manufacturers have competitive advantage over traditional manufacturers and are often more sustainable in maintaining that (Oliva and Kallenberg, 2003). Literature further suggests that services together with products lead to a different competitive positioning (Gebauer, 2008). In some industries, servitization is used as a differentiation tool, to extend their product’s life cycle (Vandermerwe and Rada, 1988). The literature supports the statement that the most promising internal growth strategy for manufacturing in the 21st century can be by adopting Servitization (Brennan et al., 2015).

Servitization and Profitability has been a major research area in the recent past. Scholars opine that manufacturer’s services are more profitable than product sales. They elucidated that manufacturers should develop profitable service business to minimize the risk of eroding margins from product sales (Wise and Baumgartner, 1999). Nevertheless, Neely (2008) found that the servitized firms generate lower profit than pure manufacturing firms. Later, Neely et al. (2011) explained if the firm that had servitized had no significant relationship to profitability. Visnjic et al. (2012) explicated that service breadth negatively affect profitability while service depth has a positive impact on the profitability. Kastalli and Van Looy (2013) reported an overall positive effect of servitization on profitability. Furthermore, they summarized that low levels of servicing result in a steep increase in profitability while the increasing of service activities results in a temporary decrease in profitability but it re-emerges once positive relationship, economies of scale and learning effects are achieved. Apart from a few initial studies, the majority of findings are positive towards the relationship between the servitization and profitability (Kohtamäki et al., 2013; Li et al., 2015).

**Servitization and Business Growth**

Business growth opportunities become motivating factors for a manufacturing firm to add services (Visnjic et al., 2012). Manufacturing companies add services to achieve financial growth (Brax, 2005; Gebauer et al., 2012). The higher growth rate of the service sector
comparative to that of the manufacturing sector creates an opportunity for the larger market size for manufacturers who provide solutions (Wise and Baumgartner, 1999). Also, providing industrial services offers more stable revenue than products due to lack of sensitivity to an external economic crisis than a product only would do (Oliva and Kallenberg, 2003; Kohtamäki et al., 2013). In recent years, industrial manufacturers around the world have deployed growing efforts in developing services in addition to their traditional core product business in order to secure long-term growth (Jacob and Ulaga, 2008). Companies move to the service dominance that have an opportunity to continuously grow due to the broader opportunities they can have access to compared to that of a pure manufacturer. Kohtamäki et al. (2013) found a positive non-linear correlation of the service offer and the sales growth. They asserted the importance of industrial service offering in order to co-create customer experiences. Survey study of Kohtamäki et al. (2013) which measures the impact of service offer on business growth has been the only one in the reviewed literature which focuses on manufacturer service offering and business growth. Additional studies are needed to understand how service offerings in manufacturing companies would lead to business growth. Therefore, this research aims to bridge the above mentioned gap in the existing literature.

Types of Services Offered by Manufacturers
Manufacturer’s service offerings were identified even before the concept of Servitization. Hill (1977) identified distinctions between services affecting goods and services affecting persons and subdivided these into permanent and temporary services. Common type of services found in the literature are research and development services, product maintenance services, installation services, training services, procurement services, warehousing and transportation services, consultancy services, retailing services, financial services (Maheepala et al., 2015). Several authors have categorized the services offered differently. Manufacturer built-operate owner services. As well as operating the product for customers are such examples. As claimed by Baines and Lightfoot (2013), base services, intermediary service and advanced services have been the widely accepted terminology to broadly categorize the different types of services. The Figure 1 elucidates the terminology and examples from the original authors.
<table>
<thead>
<tr>
<th>Type</th>
<th>Defined by</th>
<th>Organizational stretch</th>
<th>Examples of services offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base services</td>
<td>An outcome focused on product provision</td>
<td>Based on an execution of production competence (i.e. we know how to build it)</td>
<td>Product/equipment provision, spare part provision, warranty</td>
</tr>
<tr>
<td>Intermediate</td>
<td>An outcome focused on maintenance of product</td>
<td>Based on exploitation of production competences to also maintain the condition of products (i.e. because we know how to build it we know how to repair it)</td>
<td>Scheduled maintenance, technical help-desk, repair, overhaul, delivery to site, operator training, condition monitoring, in-field service</td>
</tr>
<tr>
<td></td>
<td>condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced services</td>
<td>An outcome focused on capability delivered</td>
<td>Based on translation of production competences to also manage the products performance (i.e. because we know how to build it we know how to keep it operational)</td>
<td>Customer support agreement, risk and reward sharing contract, revenue through-use contact</td>
</tr>
<tr>
<td></td>
<td>through performance of the product</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 1: Types of services offered by a manufacturer
Source: Baines and Lightfoot, 2013, p.5*

In addition, Banies et al. (2013) clarified characteristics of the service offerings and revenue payment models of base, intermediate and advanced services which is depicted in Figure 2.

<table>
<thead>
<tr>
<th>Type</th>
<th>Principle on which cluster is defined</th>
<th>Range of service activities</th>
<th>Relative characteristics of cluster</th>
<th>Revenue payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base services</td>
<td>Focus on product provision</td>
<td>Narrow: activities centered on and around production competences</td>
<td>Low: easily delivered for an enterprise with manufacturing competences</td>
<td>Point: largely on completion of contract</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Focus on condition maintenance</td>
<td>Broadening: based on the exploitation of production competences to assure state and condition of equipment</td>
<td>Medium: increased expose to the consequences of equipment faults</td>
<td>Periodic: some upfront and/or on completion. Maybe with interim payments</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Linear: pay-through-use with period adjustments in rate</td>
</tr>
<tr>
<td>Advanced services</td>
<td>Focus on outcome assurance</td>
<td>Extended: stretching the manufacturing enterprise to take on activities that are usually internal to the customer</td>
<td>High: financial penalties incurred almost immediately if equipment fails to perform as specified</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 2: clarified characteristics of the service offerings
Source: Baines et al., 2013, p.638*
It is important to understand the rationale behind the categorization, where the base services are narrow activities which focus on product provision, whereas intermediate services focus on stretched services based on existing production competences/ customer maintenance services. Stretched activities that are usually internal to the customer. Provision of base services, intermediate services and advanced services determine the Servitization extent of the organization (Maheepala et al., 2017). It is essential to understand what type of services are contributing to grow the business which is not addressed in existing literature.

Servitization in the Chemical Industry

The chemical industry is an important sector in global manufacturing. Other manufacturing sectors use products made by the chemical industry and it has strong B2B focus (Buschak and Lay, 2014). As per the study, 52 percent of global requirements of chemical products are manufactured in Asia whereas Europe manufactures 23 percent. Traditionally, chemical suppliers have focused on efficient manufacturing, economy of scales and continuous product development and earn money by selling higher volumes of chemicals. Inefficient use by customers will increase the sales of chemicals. As reported by Stoughton and Votta (2003), this trend was challenged and chemical management services were introduced due to environmental pressure and competitive reasons. Offering product service combinations provide opportunity to improve profits, contribute to environment and people (Maheepala et al., 2017b). This research focuses on an innovative textile chemical company in Switzerland, HeiQ Materials AG, which has significantly grown over the last 5 years to become a medium-sized player in the textile chemical industry.

RESEARCH METHODOLOGY

This research adopts post positivism philosophy and deductive approach and employ case study strategy (Saunders et al., 2011). A single case study approach has been employed in order to
achieve the objectives of the study. Case studies are suitable to study complex phenomena which involve multiple variables (Yin, 2009). A case study strategy is well suited instrumentally to understand research problems which have not been intensely investigated previously (Eisenhardt 1989; Yin, 2009). The data is collected using semi-structured interviews from the team of five members in HeiQ management team including president of global brand force and director of Sales. In addition, the company reports and company website were utilized for triangulation in order to enhance the validity of the conclusions. Deductive content analysis is employed in order to analyse the data and it is appropriate when the aim is to test a previous theory in a different context (Elo and Kyngäs, 2008). This study underpins the resource advantage theory and the researchers believe on higher organizational growth with specific product service bundles as a theoretical context. The focus of the current research is to develop a model which can explain how this growth can be obtained. Since the structure of the analysis is operationalized on the basis of previous knowledge, where in a deductive content analysis is well-suited to be employed in this study.

Deductive content analysis was employed following the method explained by Elo and Kyngäs (2008). Key themes were first identified based on the literature. Data was then collected using interviews, company reports and website and were coded. Categorization matrices were developed based on the key themes identified in the literature known as customer segment, product offering, service offering and the type of services. Finally, developed data as the findings of the study which is displayed in the Table 2.

**CASE STUDY**

In a case study design, special sampling techniques are not required to apply (Yin, 2009). Due to the limited number of cases which can practically be studied, it is reasonable to select cases from extreme situations (Eisenhardt, 1989). HeiQ Materials AG (HeiQ), a global textile chemical manufacturing company which has grown 30 percent compound annual growth rate (CAGR) in sales each year over the last five years has been selected for this case study. The company headquarter is based in Switzerland and it operates globally through distribution partners. The
HeiQ has evolved with 360° service offering to their customers and was identified as one of the 30 fastest growing companies in Switzerland in 2016. HeiQ is using product innovation, differentiation at point of sales and service offering to create value and overcome the cost based competition. This case study focuses on the product service offering instead of pure product offering in order to determine how that can contribute to business growth.

HeiQ was founded in 2005 as a spin-off of Swiss Federal Institute of Technology Zurich (ETH) and has grown strongly in last decade. HeiQ expanded its manufacturing foot print to Australia in 2014 through a joint venture with Cytomatrix. An acquisition in the US added two manufacturing locations in North Carolina and Georgia. HeiQ has a subsidiary in Hong Kong to cater to the demand in East Asia. HeiQ has significantly grown over the period with organic growth, acquisitions, joint ventures and partnerships over the last 5 years and has become the market challenger in the European textile finishing chemical industry. Figure 3 shows the current global foot-print of HeiQ.

![HeiQ Global Network](source: www. HeiQ.com)

HeiQ has earned the reputation in the market as a reliable and innovative manufacturing company that provides high quality technologies to leading brands around the world. HeiQ develops and manufactures innovative products and provides integrated support throughout the
textile value chain. HeiQ’s services include R&D services, testing services, regulatory compliance services, consumer-focused innovation marketing support to the brands and other customized services to their customers. The company philosophy is to be close to the customer through customized product service bundle to each customer. The company has been recognized as one of the top 10 McKinsey ETH Venture start-ups in Switzerland over the past two decades (HeiQ, 2017). This research attempts to understand how the 360° service offering contributes to its business growth. Initial categorization matrix was developed based on product offering, service offering and market segment of HeiQ. It is developed into Table 2 in order to identify the uniqueness of combinations of each offering.

Table 1 shows the product/technology offering of HeiQ, manifesting that the company has an advanced product portfolio where company believes in boundless academic research network and internal development specialists to invent disruptive new technologies that meet consumer needs and outperform the market as delineated in HeiQ (2017). The company infuses the product/technology with several services to make them more valuable to the customer. Company from a particular point of view regards this activity as 360° service offering.

Table 1 – Product/Technology offering of HeiQ

<table>
<thead>
<tr>
<th>Product/Technology Portfolio</th>
<th>Function of the Technology/ Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>HeiQ Smart Temp</td>
<td>Adaptive cooling and thermoregulation</td>
</tr>
<tr>
<td>HeiQ Eco Dry</td>
<td>Durable water repellency</td>
</tr>
<tr>
<td>HeiQ Fresh Tech</td>
<td>Long lasting odor control</td>
</tr>
<tr>
<td>HeiQ Glide</td>
<td>Friction reduction of the material</td>
</tr>
<tr>
<td>HeiQ Sun Block</td>
<td>UV protection</td>
</tr>
<tr>
<td>HeiQ Real Silk</td>
<td>Provide silk + silky touch to the material</td>
</tr>
<tr>
<td>HeiQ Bug Guard</td>
<td>Durable mosquito and insect protection</td>
</tr>
<tr>
<td>HeiQ Dye Fast</td>
<td>Reduce cycle time in polyester dyeing</td>
</tr>
<tr>
<td>HeiQ Cool Bleach</td>
<td>Advanced bleaching technology for cotton</td>
</tr>
</tbody>
</table>

Source: www.HeiQ.com

360° service offering of the HeiQ is depicted in Figure 4. The researcher analyses how the company creates a unique product service bundles in order to effect a seamless flow in the
growth of the business while retaining the existing and new customers without losing them to the competitors.

The company service portfolio features a combination of base services (technical support, trouble shooting, legal compliance services), intermediary services (customer training, mill recommendations, environmental health safety (EHS) and sustainability support) and advanced services which are usually internal to customer (testing customers product, marketing support, ingredient branding, finance services).

Table 2 summarizes the findings of the case study which explains the specific product service bundles created by the organization uniquely to each customer. The company directly deals with brands, instead of textile mills, The Brand has the highest decision-making power in apparel value-chain. HeiQ works closely with brands in order to differentiate the product from their competitors, sell more products at a higher margin and create a win-win proposition for the brand. Company’s great promise for their client reflects from the statement of their mentor “Engaging with you along the entire value chain, we are the ideal partner to help you innovate, differentiate your products and capture the added value at the point of sale” (HeiQ, 2017). In addition, the company works with textile manufacturers who are their immediate customer and
the apparel manufacturers who are their intermediate customers. Each customer was identified and uniquely served in specific product service bundles to achieve retention and internal account growth.

Table 2 – Unique product service offering of HeiQ

<table>
<thead>
<tr>
<th>Customer</th>
<th>Product Offering</th>
<th>Service Offering</th>
<th>Type of services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand 1</td>
<td>Advanced Cooling, thermoregulation technology</td>
<td>Research and Development, Product testing, testing services, marketing support</td>
<td>Intermediary and advanced services</td>
</tr>
<tr>
<td>Brand 2</td>
<td>Long-lasting odor control technology</td>
<td>Technical support, EHS &amp; Sustainability Services, Ingredient Branding</td>
<td>Base, intermediary and advanced services</td>
</tr>
<tr>
<td>Brand 3</td>
<td>Dynamic cooling technology and moisture control technology</td>
<td>Technical Support, Mill Recommendations, Rapid Supply through Distribution Network, Ingredient Branding, Testing Services, Marketing Support</td>
<td>Base, intermediary and advanced services</td>
</tr>
<tr>
<td>Brand 4</td>
<td>Odor Control and Dynamic cooling technology</td>
<td>Ingredient Branding, Testing Services, Product development services</td>
<td>Intermediary and advanced services</td>
</tr>
<tr>
<td>Brand 5</td>
<td>Durable water repellence</td>
<td>Research and Development, Product testing</td>
<td>Intermediary services</td>
</tr>
<tr>
<td>Textile Manufacturer 1</td>
<td>Advanced Cooling, thermoregulation technology</td>
<td>Technical support, Trouble shooting, Training, Rapid Supply through Distribution Network</td>
<td>Base and intermediary services</td>
</tr>
<tr>
<td>Textile Manufacturer 2</td>
<td>Reduce cycle time in polyester dyeing</td>
<td>Technical support, Trouble shooting, Training</td>
<td>Base and intermediary services</td>
</tr>
<tr>
<td>Apparel Manufacturer 1</td>
<td>Provide silk + silky touch to the material</td>
<td>Research and Development, Product testing, product validation, compliance</td>
<td>Base and intermediary services</td>
</tr>
<tr>
<td>Apparel Manufacturer 2</td>
<td>Advanced Cooling, thermoregulation technology</td>
<td>Training, product testing</td>
<td>Intermediary services</td>
</tr>
</tbody>
</table>

On delineated in Table 2, the company creates value to the customer through the combination of products and services. They use base, intermediary, and advanced services together with portfolio of products/technologies in order to create unique resource bundle to enhance business
performance. HeiQ global structure as depicted in Figure 3 enables them to serve each customer together with their global distribution partners. The company has been providing a combination of base services, intermediate services and advanced services according the need of the customer. Even though these concepts were discussed conceptually in servitization literature, there was an empirical gap which is bridged in this study. The case study contributes to the knowledge in servitization and business strategy and empirically provide managerial insights to grow the businesses in the current decade of the 21st century. The details are discussed in the next section and avenues for further research are explained in the conclusion section.

DISCUSSION
In contrast to traditional textile chemical manufacturer, it is clear that HeiQ has evolved with service based business model to its clients together with strong product/technology offering to create value. HeiQ co-create value together with their clients through their business offerings. As per their chief scientific officer HeiQ “help our brand partners exceed the expectations of their customers” (HeiQ, 2017). As per HeiQ tag line “consumer buy innovation stories, HeiQ creates it together with you” (HeiQ, 2017) is the message from the company to its retail clients. The company had strong product portfolio and 360° service offering to their customers and uniquely combined the offering to the existing customers and new customers to co-create value.

According to the resource advantage theory depicted in Figure 5, when organizations have a comparative advantage in resources, they will achieve marketplace positions of competitive advantage. Marketplace positions of competitive advantage then results in superior financial performance (Hunt and Morgan, 1997). Servitization is a conscious and explicit strategy with services becoming a main differentiating factor in a totally integrated products and service offering of manufacturing companies (Baines et al., 2009). Adding service components to physical products leads to strategic benefits due to the decreased imitability. This is because value adding industrial services can enable manufacturing companies to achieve product differentiation by customizing product-service offers to their customer’s specific needs (Parida et al., 2014). It is clearly a strategy in HeiQ to build a unique product service combination to each of their main customers to grow the business in the long term. Hence, this model is not possible,
if the company is product focused. Therefore, pure manufacturers in the chemical industry cannot compete with such offering and reduce the competition in the market place. As an example, marketing support and ingredient branding services of HeiQ needs to leverage on the added value from HeiQ chemicals in the final products and therefore provide with tools to draw a line between commodity applications and HeiQ functionalized high-tech product at the market place and encourage the customers to use HeiQ chemicals in their products (HeiQ, 2017). As per their marketing partner testimonials, In two years the technology has generated new additional sales for the categories of 198 Million USD (HeiQ, 2017). Thus it is evident that value co-creation between the servitized manufacturer and the customer has resulted in a significant business growth which is not possible for pure manufacturers.

Retaining the existing customers, growing the sales with existing customers and attracting new customers are important to continuously grow the business. Carefully on boarding customers and co-creating value with the customer is important for business growth in the 21st century. Recently, HeiQ has added several leading brands in their client portfolio. As per the Vice President of HeiQ brand force “At HeiQ, we carefully choose our brand partners before initiating a cooperative research project to ensure that the joint effort is going to create the highest value possible for both parties” (HeiQ, 2017). Business growth of HeiQ is derived from how the company co-creates value with their customer through a combination of product service

Figure 5: A schematic of R-A theory
Source: Hunt and Morgan (1997, p.78)
offering. As per HeiQ marketing support and ingredient branding services document, the objective of the service offering to customers are concentrating on business growth. As per the document “our goal is to help you to differentiate from your competitors, help you to sell at a higher margin, help you to sell more” (HeiQ, 2017). Martin and Horne (1992) explained that major strategic hurdles faced by the firms which shift from product-based to product-service based are re thinking the customer as co-producer and management of new service development process. HeiQ have clearly overcome these challenges at the inception where product development and service development processes mutually strengthen the company offerings to uniquely serve the customers. Thus, HeiQ proposes a comprehensive portfolio of ingredient branded marketing tools supporting clients the most effectively and tailored to their needs (HeiQ, 2017).

As per the findings in Table 2, it is evident that advanced services are mainly used by brands. In fact, all three types of services are used by brands. Their immediate customers that are textile manufacturers have used base and intermediary services. It is not possible to identify which type of services are driving the growth mainly due to the fact that the customers are using a mix of base, intermediary and advanced services. Due to this reason it is important to understand the importance of all the three type of services to co-create value.

Based on the findings in Table 2, this research derives a product service customer matrix as shown in Figure 6. This matrix becomes more useful for business to business manufacturing companies in the current decade to identify the current offerings and plan future offerings than traditional product market matrices. This matrix helps to map the existing and potential customers and identify the value that can be co-created for future business growth. The research further highlights the importance of base, intermediary and advance services to augment the growth of the business.

It is evident that unique product service combinations HeiQ is offering to their main customers have become core competencies of the organization. These combinations consists of advanced
product/ technologies with services such as ingredient branding are core competencies that generate comparative advantage in each customer segment. Superior business growth is achieved as a result of comparative advantage of the market position.

**CONCLUSION**

A 360° Servitization where the manufacturing company uses base, intermediary and advance service portfolio together with their product portfolio to co-create a unique value proposition to each customer. Based on a single case study this study identifies how a business to business manufacturing company like HeiQ grows the business with their unique product service offering to the customer. Based on resource advantage theory this research contributes to the knowledge in servitization and business growth which is not expounded in extant literature. Further, this research identifies the importance of all service types such as base services, intermediary services and advance services when creating a unique product service bundle to grow the
business with existing and potential customers. This research develops a matrix which is ideal for business to business manufacturing organizations in the 21st century to co-create value with the customer and improve business performance. This matrix can be used by managers in business to business manufacturing companies to map the existing customers and potential customers and identify growth potential in their business. Due to the qualitative case study approach, there is a limitation in generalizing the finding of this case study beyond the case company. Hence, further research in different manufacturing companies are suggested to improve the generalizability.

REFERENCES


Effective Facilities Management Adaptation to the Technological Innovations in Commercial Buildings: The Sri Lankan Perspective

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Madhusanka, N., University of Moratuwa, Sri Lanka

ABSTRACT

Facilities Management (FM) is a multi-disciplinary profession which ensures the functionality of different facilities by incorporating people, place, process and technology. Technological innovations have contributed significantly for the development of FM profession since the birth of it in 1980. Such technological innovations facilitate the Facilities Managers to perform their job efficiently and effectively. However, keeping up with the latest technology is difficult, due to the huge number of advances in every year. Therefore, adaptation to the technological innovations is most significant for the Facilities Managers. Comparatively in the local context, lack of adaptation could be identified and lack of research also has driven to concern on adaptation of technological innovations in Sri Lankan context. Therefore, the research is aimed to develop strategies for effective FM adaptation to the technological innovations in commercial buildings in Sri Lanka.

Initially, a comprehensive literature review was carried out with the purpose of getting familiarise with the subject matter. In order to validate and further the literature findings, three expert interviews were carried out with experienced industry practitioners. This research problem was approached through case studies of four organisations representing commercial sector in Sri Lanka. Semi-structured interviews were carried out as the data collection method and the collected data were subjected to cross case analysis to investigate barriers affecting on effective FM adaptation for the technological innovations in commercial buildings in Sri Lanka. Mainly seven barriers namely; less management commitment, poor identification of the necessity of adaptation to the new technology, non-availability of strategic innovation plan, high cost, employee resistance to change, less reliability and lack of local government regulation were identified from the study. Finally, strategies were developed based on empirical research findings
for effective FM adaptation for the technological innovations in commercial buildings in Sri Lanka.

**Key words: Commercial Buildings; Facilities Management, Technological Innovations**

**INTRODUCTION**

FM is a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology (International Facility Management Association [IFMA], 2016). Accordingly, the role of Facilities Manager is much broader and not limited to final outcomes or physical work places, it is more about the integration of people, process and innovative technology to the achievement of organizational goals (Alexander, 2013; IFMA, 2016).

This multidisciplinary profession has been enhanced with the time by affecting varies factors where innovative technology is one of the major factors which enhance the profession and it is a great advance to the Facility Mangers to effectively perform the job. However, technologies have been updating rapidly. In this context, Facility Mangers are required to adapt to the modern innovative technologies in order to get the maximum benefit out of this so that they can add more value by enhancing performance, providing better services for tenants, decreasing cost and increasing staff productivity (Baharum and Pitt, 2009; Pollitt, 2011). As a result of the increased rate of change in technologies related to buildings, the future of commercial buildings not totally predictable (Douglas, 1996; Building Technology, State and Community Programs, 2001). Therefore, adaptation for the technological innovations is most significant for the Facilities Managers, especially in commercial sector. However, keeping up with the latest technology is difficult, due to the huge number of advances in every year. Since, FM has an ability to keep up organizational effectiveness through the management of services, the services improvement and mainly the innovation that can be bought by improving the management of the services, looking for avenues to integrate the two aspects; FM and technological innovations is a timely requirement (Noor and Pitt, 2009; Pollitt, 2011).
However, there are limited literature materials which focused on service innovation particularly in the context of FM and its service delivery (Noor and Pitt, 2009). Also, empirical study on effective FM adaptation to the technological innovations in Sri Lanka is still lacking since the profession is still new to the Sri Lankan context. Therefore, this research is aimed to develop strategies for effective Facilities Management adaptation to the technological innovations in commercial buildings in Sri Lanka. In achieving the aim, the following specific objectives of the study were formulated;

a) to identify emerging innovative technologies that support in adding value to the Facilities Management context,
b) to identify the importance of Facilities Management adaptation to the technological innovations,
c) to discuss the barriers affecting the Facilities Management adaptation for the technological innovations,
d) to discuss the possible strategies to overcome barriers affecting the Facilities Management adaptation for the technological innovations

LITERATURE REVIEW

This section explores the relevant literature in the research arena focusing mainly on three areas; introduction to FM, emerging innovative technologies that support in adding value to the FM context and importance of FM adaptation to the technological innovations.

Introduction to Facilities Management

Every organisation relies on a mix of functions and services to provide the support essential to its core business operations. Ensuring that this support is available in the right form, at the right quality and for the right cost is the task of FM (Helsinki University of Technology, 2005). It emerged over the past decade in response to turbulent change in the business environment. The modern form of FM can be seen as a combination of different disciplines of management. Earlier (Levainen 2001, cited in Landholm 2005), it has been identified as a one sector of real estate management among Asset Management and Property Management. Now it is referred to the
management of all non-core activities of the organisation (Alexander, 1996; Atkin and Brooks, 2002).

Over the years, researchers and practitioners alike have provided many definitions that specify the objectives and scope of FM. However, the definitions have prevented a common platform that is so crucial for a cohesive theoretical development in FM. Therefore, those definitions for FM are far from facility in providing directions on the objectives and scope of FM. For example, early definition provided by Becker (1990) suggests that FM is only concerned with the hardware such as buildings, furniture and equipment. Later definitions, however, include software such as people, process, environment, health and safety in the responsibilities of FM (e.g. Alexander 1996; Then 1999). Further, researchers have taken the definition by expanding the scope of FM to cover the entire property life cycle of designing, building, financing and operating (Tay and Ooi, 2001).

FM is described by Barrett (1995) as an integrated approach to operating, maintaining, improving and adapting the buildings and infrastructure of an organisation in order to create an environment that strongly supports the primary objectives of that organisation. According to the IFMA (2006), FM is a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology whereas similar definition given by British Institute of Facilities Management (BIFM, 2006), which specified FM as a integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities.

However, regardless their contradictions and limitations, most definitions imply that FM is about managing non-core activities/supporting services of an organisation in order to create an environment that strongly supports the primary objectives or core business of the organisation. Thus, FM can be attributed as the management of all non-core activities of an organisation. However, the scope of FM is still evolving throughout the time while concept develops. Scope of FM can be identified through the definitions specified by many authors (Atkin and Brooks, 2008; Alexander, 1994; Royal Institute Chartered Surveyors (RICS), 2005). Atkin and Brooks (2008) specify that FM can cover a wide range of services in addition to building management, domestic
services such as cleaning and security and utilities supplies. Those services include real estate management, financial management, change management, human resources management, health and safety and contract management. Alexander (1996) has also denoted the functions and the strategic role of the organisation referred to within FM as managing customers, managing service and managing assets. According to the RICS definition for scope of FM includes thirteen activities such as business management, real estate management, security, support services management, project management, financial works, health and safety aspects of the organisation, procurement activities, operations, understanding business organisation, managing services, managing people and workplace related activities. Accordingly, use of modern technology provides great advance to the Facility Managers to effectively perform such majority of tasks.

Innovative Trends in FM Sector

The building related technologies such as Computer Aided Facilities Management (CAFM), Intelligent Building Management System (IBMS) and Building Information Modelling (BIM) are emerged as most innovative trends in FM Sector and the same are widely used in all round the world in different scale. Considering the CAFM, it is a powerful tool for managing and organizing activities within the facilities assets (Elmualim et al., 2009). As stated by cafmexplorer (2014), CAFM tells how the software technologies are being used to plan, handle and maintain the performance of the organisation within the physical space and the employees involved. CAFM database has integrated sub functions such as Help Desk, Planned Maintenance, Work Planner, Asset Tracker, Room Booker, Stock Control, Property Management, Space Management, Cost Control, Document Control, Reporting and CAFM web and CAFM Engineer (cafmexplorer.com, 2014).

Building Management System (BMS) is a one of the innovative technologies which has been applied by building professionals to achieve their sustainable building solutions in modern years. It is a system that designed and installed to organize, coordinate, monitor and optimize sub systems of building such as Heating, Ventilation and Air-Conditioning (HVAC) system, fire protection and detection system, security system, lighting, elevators and others (Hodges, 2005; Kumara et al., 2016). According to Clark and Mehta (1997), centralized building integrating
through a BMS facilitates a more intelligent way for the FM. It mainly assists in monitoring energy use, building condition, utility demand, utility load profiles, climate data, trends, equipment status, maintenance schedule generation and equipment operation logs which are considered as BMS features. According to Buckman et al (2014) systems which can be integrated to the IBMS includes Illumination control, HVAC, Security Automation, Fire alarm system, PA system, Lift and elevators, Closed-Circuit Television (CCTV), Electric power control, Security and observation, Access control, Portable water system and other engineering systems. Modern days, IBMS technology has advanced technologies and user friendly than before where IBMS can connect to internet and any authorized persons can enter and control system in anywhere in the world through internet. Further it has enhanced to get status and monitoring, controlling through the smart phone by using software applications (Wang and Xie, 2002).

BIM is a software based technology, it has advanced to construct the building digitally as an accurate virtual model and this can be used to planning, designing, construction, and operation stages throughout the life time of the facility (Barlishand Sullivan, 2012). BIM technology unable to apply for existing buildings as it should implement from initial design stage of the facility (Estman et al., 2008). According to Bernstein and Pittman (2005), developing of the speed of BIM indicates that it will be quickly become an important part of the facilities management portfolio of aids Furthermore, as stated by Ilter and Ergen (2015), good management of building’s life-cycle and requirements of space management will be facilitated through BIM, which will include project delivery, space management, visualization, security and emergency management and collection, analysis and display of data.

**Importance of FM Adaptation to the Technological Innovations**

Ultimate goal of the organization is to increase the profit of shareholders; therefore investing for the new technologies is not wasting money as it helps to enhance the performance of the organization to gain more in future (Tolman et al., 2009). The similar findings were reported in the study by Baharum and Pitt (2009) where they stated that new technology is a turning point where it facilitates to gain more for the organization by achieving goals. Facility Manager has to
survive with the competitive environment and it is also required to immediate respond to different requirements stand in good condition for future. Adaptability to new innovations facilitates the Facility Manager in achieving the same while increasing competitive environment (Alexander, 2013). The author further mentioned that technological innovations conduce to maintain smooth operation by giving solutions to real problems of building operation. According to the studies by Tolman et al. (2009) and by Sillanpaa and Junnonen (2012), Facility Managers take benefits by concerning about latest technologies in the buildings, such as energy conservation, minimise breakdown errors, reduce the maintenance cost, increase the productivity and maintain good customer satisfaction level (Baharum and Pitt, 2009; Pollitt, 2011). Overall, in analysing the benefits discussed in this section, it can be argued that adapting to new technologies facilitates the Facility Manager to provide more efficient FM service with enhanced accuracy of information, less human errors, reduced asset downtime and breakdowns, lower operational costs and maintenance costs, extended asset life time, better controlling of building environment and finally supporting to enhance the productivity of the organisation. The next section discusses the research methods adopted in this study.

RESEARCH METHODOLOGY

The study was based on the qualitative research approach. Initially, a comprehensive literature survey was carried out by referring books, journals and articles to identify the key areas of emerging innovative technologies that support in adding value to the Facilities Management profession. In order to validate and further the literature findings with regard to the Sri Lankan context, three expert interviews were carried out with experienced industry practitioners (refer Table 01).

Table 21: Expert interviewees' profile

<table>
<thead>
<tr>
<th>Details</th>
<th>Interviewee EI1</th>
<th>Interviewee EI2</th>
<th>Interviewee EI3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profession</td>
<td>Facilities Management</td>
<td>Facilities Management</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Organization</td>
<td>Building Automation Company</td>
<td>Building Automation Company</td>
<td>Commercial Building</td>
</tr>
</tbody>
</table>

Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Colombo, Sri Lanka
E-Mail: icbm@sjp.ac.lk | WEB: icbm.sjp.ac.lk
Under qualitative research approach, four cases were selected for this study. Since the scope of this study is limited to Commercial sector, FM practicing high rise (which has 13 floors or more than 13 floors with ground floor as per the Urban Development Authority, 2008) buildings using for commercial purposes were selected as the unit of analysis of the study. Accordingly, four cases were selected in carrying out the research (refer Table 2). Semi-structured interviews were conducted (refer Table 2) within the selected cases by considering individuals as a unit of data collection. Data collection was done personally on each respondent who has worked in management level and supervisory level in FM department or a FM related department. Those semi-structured interviews enabled sufficient flexibility to approach different respondents, covering the same areas of data collection while enabling to adapt the questions necessary, clarify doubts and ensure that the response is properly understood by repeating and rephrasing the questions. Ultimately, interview transcripts were developed to generate a sensible adaptation of interviewing data. Since the research contained four case studies, of qualitative research, cross-case analysis was used as it is the most preferable method of analysing multiple cases (Yin, 2009). The QSR.NVivo version 11.0 produced by QSR (Qualitative Solutions and Research Private Limited); computer software was used on this purpose.

Table 22: Introduction to the selected cases and interviewees' profile

<table>
<thead>
<tr>
<th>Description</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
<th>Case D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of business</td>
<td>Property development</td>
<td>Commercial</td>
<td>Commercial</td>
<td>Commercial</td>
</tr>
<tr>
<td>Age of the building (years)</td>
<td>20</td>
<td>32</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Number of floors</td>
<td>39</td>
<td>24</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Nature of FM service delivery</td>
<td>All the hard FM and soft FM services are carried out by the in-house FM department</td>
<td>All the hard and soft FM services done by the in-house Engineering</td>
<td>All the maintenance and FM related works are done by the in-house Engineering</td>
<td>All the maintenance and FM related works are done by the in-house Engineering</td>
</tr>
<tr>
<td>Location</td>
<td>Department</td>
<td>Department</td>
<td>Department</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Colombo</td>
<td>Colombo</td>
<td>Colombo</td>
<td>Colombo</td>
<td></td>
</tr>
</tbody>
</table>

### Interviewees’ profile

<table>
<thead>
<tr>
<th>Designation and Interviewee code</th>
<th>Facility Manager (A1)</th>
<th>Maintenance Engineer (B1)</th>
<th>Facility Manager (C1)</th>
<th>Maintenance Manager (D1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewee code</td>
<td>Supervisor (A2)</td>
<td>Supervisor (B2)</td>
<td>Supervisor (C2)</td>
<td>Supervisor (C2)</td>
</tr>
<tr>
<td>No of years’ experience in the industry</td>
<td>A1 - +20</td>
<td>B1 - 17</td>
<td>C1 - 12</td>
<td>D1 - 11</td>
</tr>
<tr>
<td></td>
<td>A2 - 18</td>
<td>B2 - 15</td>
<td>C2 - 10</td>
<td>D2 - 9</td>
</tr>
</tbody>
</table>
RESEARCH FINDINGS AND DISCUSSION

The findings from four case studies were discussed under several sub-headings. Those heading includes; software based innovative technologies use in Sri Lankan commercial sector, barriers affecting FM adaptation for the technological innovations and strategies to overcome barriers affecting to FM adaptation for the technological innovations.

Software Based Innovative Technologies in Sri Lankan Commercial Sector

Software based innovative technologies available were mainly identified from literature review and preliminary interviews to achieve the first objective of the study. Major three technologies identified from literature were IBMS, CAFM and BIM. The literature findings were updated with the experts’ opinions gathered through preliminary survey. In addition, through the preliminary interviews, Smart Workplace Solution was identified as one of the latest technologies. As per the experts, Smart Workplace Solution Platform is one of the latest technological innovations but it is not much popular in Sri Lanka yet. It is a concept which is popular among most of the top rated building developers in the world as most advanced system to add value with easy operation through integrating all the systems in building. As per experts, IBMS and CAFM systems can be integrated to this Smart Workplace Platform.

Table 3 exhibits the availability of identified innovative technologies (i.e. IBMS, CAFM, BIM and Smart Workplace Solution) in each case.
Table 23: Availability of technologies in each case

<table>
<thead>
<tr>
<th>No</th>
<th>system</th>
<th>Integrated sub systems</th>
<th>Availability of systems in each case</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>01</td>
<td>Intelligent Building Management System (IBMS)</td>
<td>Illumination (lighting) Control</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heating, Ventilation and Air-Conditioning (HVAC)</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Security Automation</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fire Alarm System</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PA system</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lifts, Elevators etc.</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Closed-Circuit Television (CCTV)</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electric Power Control</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access Control</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Portable Water System</td>
<td>√</td>
</tr>
<tr>
<td>02</td>
<td>Computer Aided Facilities Management system (CAFM)</td>
<td>Help Desk</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Planned Maintenance System</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work Planner</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asset Tracker</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stock control</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Space management</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost Control</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Document Control</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reporting</td>
<td>X</td>
</tr>
<tr>
<td>03</td>
<td>Building Information Modelling (BIM)</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>04</td>
<td>Smart Workplace Solution Platform</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

The empirical research findings revealed that IBMS system is very common to the Sri Lankan context and out of the selected cases for the study, the system is implemented in three cases. It was further found that subsystems such as Illumination (lighting) Control, HVAC, Fire Alarm System, Lifts, Elevators, Electric Power Control and Portable Water System are the most common systems which are integrated with IBMS in Sri Lanka. As per the literature findings there were more subsystems i.e. Security Automation, PA system, CCTV and Access Control etc which can be integrated with IBMS. However, in Sri Lanka it is limited to a few subsystems due to many reasons (refer next section on Barriers affecting FM adaptation for the technological innovations) as per the experts. For an example, case study findings of Case A revealed that
CCTV and Access Control system were planned to integrate with the IBMS at the initial construction. However, they decided to function the systems separately due to the huge cost incurred in the integration of same with IBMS and the expertise knowledge required.

CAFM, BIM and Smart workplace solution platform have not been used in any of the facilities which were selected for the study. Though these systems are very popular among the world, Sri Lankan commercial buildings are far more behind in terms of adaptation of these modern technologies to organisations due to several barriers. Next section discuss about the barriers impacting for FM to such technological innovations.

**Barriers affecting the effective FM adaptation to the technological innovations in Sri Lankan Commercial Sector**

Based on the different opinions shared by interviewees, twelve main barriers were identified with regard to FM adaptation to the technological innovations (refer Figure 1).

![Figure 6: Coding structure for barriers affecting FM adaptation for the technological innovations](image)

**Less Management Commitment**: All the interviewees affirmed less commitment of top management as one of the leading barriers which negatively impacts on effective FM adaptation to the technological innovations in Sri Lanka. This is mainly due to the huge cost incurred in implementation process of such modern technologies and integration with subsystems of the building as per the experts’ opinion. This fact was further confirmed by the case study findings where interview A1 mentioned that “our top management always look for the monetary savings ...
through adapting new technology without considering other benefits and payback period is also very high. Therefore, it is normally difficult to get approval on this perspective”. Empirical research findings further revealed that lack of budgetary allocation, lack of support to implement policies on this regard and lack of awareness with regard to importance of adaption to such technologies are the other facts associated with the less top management commitment.

However, during the preliminary study, it was identified that not only the top management but also some of the FM professionals even reluctant to adapt with modern technology. Negative attitudes regarding changes to be done, fear of taking such risk, lack of awareness regarding the latest technology, less experience and skills are the general drawbacks of the managers on this regard according to the experts.

**Poor identification of the necessity of adaptation to the new technology:** As per the experts, though implementation of such technologies brings value to their business, many organisations in commercial sector of Sri Lanka have not realised its importance. Thus, they have not seen the need of adaptation to the new technology as an organisational requirement yet. This is another barrier highlighted by many interviewees where D1 stated that “performance evaluation of existing systems is not being practiced generally in many organisations because it is not critically important for each asset and it generates excessive work load. But if we do so, we may able to see the importance of adaptation to the latest technology rather than continuing with old system in terms of everything i.e. cost saving, manpower saving, enhancing functionality of the building etc. As a result, most of the buildings’ owners expect conventional systems to conduct the operation in Sri Lankan context. Similarly, building users and customers do not expect the advanced facilities. This fact was validated by preliminary findings. For an example, during the preliminary interviews, EI1 stated that “customers only expect the general comfortable level of the working environment. They do not concern about the use of modern technology or the quality of the services such as air conditioning level and luminance level. Therefore, existing systems are sufficient to provide service”. Therefore, it can be argued that both lack of user expectation and building owners less attention on this regard finally leads to abandon the need of adapting to advanced innovations.
Non-availability of strategic innovation plan: Having a strategic innovation plan at organisation level is very important as it facilitates the organisation to upgrade and adapt with latest technologies very easily as per the experts. During the preliminary interviews, EI1 denoted that “FM department should develop a long-term plan to facilitate the adaptation of new technologies which consists of predictions for clear plan, cost benefits evaluations, possible risk analysis, change management techniques to new adaptation and the methods of financing with other necessary information”. However, research findings revealed that none of the organisations selected for this study having such plan and the situation is same for many of the organisations in Sri Lanka. As mentioned by interviewees B1, C1 and D1, they do not have a practice of forecasting future innovations in the world and allocating budget accordingly. As a result, adapting to the latest technologies is something found to be cost cutting when the expenses run over budget.

High cost: This was another critical barrier as per the opinions of interviewees who represent managerial level in selected cases. In case A, interviewee A1 stated that “initial cost incurred in implementation process is very high and it represents considerable percentage out of the annual budget where we as the FM department in the company faces difficulties in getting approval for the proposals”. Not only the initial cost but also it includes high cost for repair and maintenance of devices when considering long term existence of the system.

Employee resistance to change: Empirical research findings revealed that majority of technicians are generally resisting to change where interviewee C1 mentioned that “technicians have the fear of adapting to new technologies as they believe that it could be a reason for them to loss their job”. Further, interviewee B1 stated that “lack of knowledge and awareness regarding new technology is the reason to resist”. However, some of the interviewees do not perceive it as a considerable barrier where they disclosed that the situation can be managed through training and awareness programmes, if the possibility is there to adapt with technologies.

Less Reliability: Less reliability was a barrier according to the opinion of the interviewees. During the preliminary interviews, EI3 stated that predictions and assumptions are used to prepare evaluations before adapting to new systems and also there is a possibility to vary that
evaluation results after the adaptation. This was further confirmed by case study research findings where interviewee D1 stated that “lot of sensors were failed after the one year warranty period of our IBMS system and we faced difficulties in finding spare parts of the same”. Similar incident was reported in Case A where interviewee A2 highlighted that “lack of availability of the spare parts creates difficulties during renovations. Once, our IBMS system failed due to a breakdown of a particular hardware component. When we were searching for the particular component to purchase, it was not available in the market and it had stopped even the production of that component. As a result, we had to bear one million rupees to repair that component from foreign manufacturing company without even a warranty period”.

**Lack of local government regulation:** As another barrier, lack of local government regulations was mentioned by all the management level interviewees where D1 mentioned that “if there are such regulations, all the developers have to adapt latest technologies to comply with those regulations”.

Having identifying the barriers affecting to the FM adaptation for the technological innovations in Sri Lankan commercial building sector, it is necessary to develop strategies to mitigate the same in order to achieve the aim of the research. Accordingly, next section discusses about the strategies developed for facilitating FM adaptation to the technological innovations in Sri Lankan commercial buildings.

**Strategies to Overcome Barriers Affecting to Facilities Management Adaptation to the technological innovations**

There were several attributes highlighted through the literature synthesis and the case study findings, which provided a basis for strategies development to overcome the issues discussed in the previous section on ‘Barriers affecting to the effective FM adaptation for the technological innovations in Sri Lankan Commercial Sector’. All the interviewees affirmed that the need of enforcement of legally bound regulations in Sri Lanka with regard to buildings. For an example, interviewee A1 stated that “benchmarking of the energy rate for different facilities, requirement of obtaining of green certification and regulations to follow the International Standards etc
needs to be introduced as legal requirements”. As a result, all the building developers have to follow such regulations in order to comply with the Law. Building owners and management of the organisation have to search for possible avenues in meeting those targets. Accordingly, adapting to the latest technologies might be helpful on this perspective as it facilitates Facility Manager to provide more efficient FM service with the accuracy of information, less human errors, reduced asset downtime and breakdowns, lower operation and maintenance cost, extended asset life time, better controlling of building environment and finally supports to enhance productivity of the organisation.

According to the viewpoints of Experts EI2 and EI3, enhancing of FM knowledge among FM professionals is identified as another strategy which significantly impacts on effective FM adaptation to the technological innovations. This fact was affirmed by interviewees A1 and A3 as well where A3 mentioned that “Knowledge of a Facility Manager basically depends on theoretical background of the academics and exposure to different industrial experiences”. Therefore, in depth knowledge regarding the latest technologies may be limited and it can vary from one Facility Manager to another. The research findings gathered through expert interviews revealed that different advanced technologies are widely used in international context than the local context and consequently the experiences and the awareness on advanced technologies are not exposed within the local industrial context. In order to bridge this knowledge gap, FM professionals need to update with the different advanced technologies used in the global context. Similarly each professional needs to be aware of managing of technology. Further, as mentioned by A1, D1 and EI2, it is a good strategy for a Facility Manager to have a connection and active involvement with the FM professional bodies to stay stable in the profession where EI2 pointed out that “it is also has become a responsibility of FM professional bodies to make more attention on this regard in arranging Continuous Professional Development (CPD) programmes as it helps to create a robust platform among the local FM community to share knowledge on same”.

As discussed in previous section on ‘Barriers affecting to the effective FM adaptation for the technological innovations in Sri Lankan Commercial Sector’, no performance appraisal methods are being carried out in the organisational level to evaluate the performance of existing systems
in the building. As a result, it hinders the identification of the need of adapting the technological innovations. Accordingly, use of asset management plan and applying of techniques such as whole life costing, performance evaluation and conditional assessments are suggested by all the interviews on this perspective as it would help the FM and other related professionals in identifying and transferring to new technology from existing technologies.

As per the research findings, top management believes that adapting to the technological innovation as an extra cost to the organisation without considering its inherent benefits. Even though the top management consider only about the monetary saving, there are plenty of benefits other than the monetary savings which can be gained through adaptation to the latest technology. Therefore, preparation of proper analysis by incorporating all aspects i.e. cost and benefits with proper assumptions would be a good attempt to boost top management commitment on this regard.

Developing of a strategic innovation plan including performance level of each asset of the facility, suitable new innovations with predictions, clear plan including cost benefits evaluations, possible risk analysis, change management techniques and the methods of financing with other necessary information etc. facilitates the organisation to upgrade and adapt with latest technologies very easily as mentioned by EI1. He further suggested that in developing the innovation plan, contribution from top management, other managerial levels, supervisory and technician level employees is highly essential as a technology management team. This fact was confirmed by interviewees A1, B1, C1 and D1 as well where A1 mentioned that “having a forecasted plan like this is helpful to change negative attitudes of the top management, through revealing facts clearly to decision making”.

Empirical research findings further revealed that in majority employees resist in adapting with latest technology. As per the interviewees, this has taken place due to the lack of understanding of them towards the technology. The most important way of addressing this issue is to provide necessary training and development to the employees on modern technologies, its benefits, operation and maintenance of such technologies etc. For an example, interviewee A1 stated that “....conducting of awareness programs on this perspective let the employees to change their
negative attitudes towards technology and let them to identify that adapting to the technology as an effective way of making their job easier”. Further, implementation, operation and maintenance of modern technology require expertise. Therefore, it is important to select employees who have expertise on this regard when recruitments are taken place.

Compared to other countries in the world, the attention is less for the research to concern the suitability of the innovative technologies in local context. Therefore, such responsible parties such as universities, institutions and related professional bodies need to pay attention on concerning suitability of the particular technological innovation. Empirical research findings also further revealed that organisations have not been much into research and development on new innovations in the field of FM. Hence, it needs to assign responsibilities with imposed duties to an entitled person or sub department for the research and development from the FM department in the organisation. As mentioned by interviewees EI3, A1 and C1, Facility Manager has a wide scope to cover, so there are overloaded works and work stress. As the wide scope of work, the attention for the research and development will be at a minimum level. Therefore, assigning a responsible party for research and development will be beneficial for adapting to technological innovations.

CONCLUSIONS

The study emphasised on the importance of technology for the FM with the development of the profession. FM has the ability to enhance the effectiveness and efficiency of the facility through the management of building operations by adapting to new technological innovations. However, FM adaptation to the technological innovations in commercial buildings in Sri Lanka is still lacking due to several barriers. Consequently, this research provided a broader understanding on such barriers to develop strategies to facilitate the effective FM adaptation to the technological innovations through mitigating identified barriers. The identified barriers includes less management commitment, poor identification of the necessity of adaptation to the new technology, non-availability of strategic innovation plan, high cost, employee resistance to change, less reliability and lack of local government regulation. Finally strategies were proposed
to facilitate the effective FM adaptation to the technological innovations through mitigating identified barriers.

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Exploring the Market Potentials of Organic Food Industry
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Abstract

In paying attention to the present Sri Lankan food market, there is an increasing trend towards the organic foods due to the health perspectives and the sustainable food concept, creating a strong potential for the development of local organic food market (Mahaliyanaarachchi, 2003). However, it seems that current market is not able to cater to the particular demand. Therefore the objectives of the study were to identify the factors that affect in making the market potentials of organic foods and make recommendations for the development of this local market. The selected location was Hadabima sales outlet at Gannoruwa which has a reputation for safe foods. Thirty suppliers and one hundred of customers who were selected by the random sampling technique, were surveyed by using pre-tested structured questionnaires. Data were analyzed descriptively and by using correlation coefficient values. Results revealed that only 65% of customers have bought organic foods. Awareness, past purchase experience and scientific evidence were the prime factors that affect the purchasing decision and vegetables were the mostly demanded organic food item. Interestingly, over 90% of customers were willing to buy organic food at even higher prices and all the customers were willing to replace conventional foods with organic foods. Prime reasons for non-purchasing of organic foods were less availability and less trust about the originality of the items. Farmer’s willingness to shift into the organic food productions was at a very high level as 94% and the higher prices and the higher demand were emphasized as the popular benefits of organic farming among them. Therefore, the study concludes that the customers make higher demands and expect a better and well developed organic food market. Moreover, Sri Lankan organic food market has a good back up by the potential organic food production sector consisting of the farmers who have a favourable attitudes towards organic productions. Therefore, the study recommends that market development can be done through increasing the availability, increasing the notability through media, increasing the convenience to buy and using certification methods along with the policies and programs for encouraging the
farming and production sector.

**Keywords:** Organic Foods, Sri Lanka, Market, Consumer

**INTRODUCTION**

**Background**

World Context

The world has come to an era of sustainable development and all the countries are making their high concentration on achieving the seventeen goals that come under the sustainable development. In the matter of achieving Responsible production and consumption and Good health and well-being, as main goals, sustainable foods have become a very popular topic. It’s emerging by the name of “organic foods” throughout the world very rapidly. This situation has allowed organic food markets to rise as a special market segment in the food market as a favorite market of both customers and producers. It has come to a point where the global retail sales of organic food and drink reach 80 US$ billion in 2014.

Sri Lankan Context

When considering Sri Lankan context, organic foods are nothing else, but what our ancient generations got into consumption. But the recent arise of the organic food market in Sri Lanka was happened in last decades, as a result of increased demand for organic foods by the customers who were trying to avoid and pull through the widespread incidents of ailments such as cancers, kidney diseases. For years, the export Development Board has promoted organic products from Sri Lanka and assisted exporters with seeking new market for organic products. Now other government agencies are also promoting organic agriculture production. In 2015, the organic sector was benefited by the new government policy to ban the use of glyph-sate and the implementation of government fertilizer subsidy as cash payments to farmers, including for organic fertilizers.

Domestic Market
The domestic market for organic food is expanding from urban communities to rural areas where organic production has taken root as local communities take up consumption of organic food. The contribution factors for domestic market development have been the availability of local certification, providing market assurance and developing consumer confidence. The Lanka Organic agriculture Movement (LOAM) the national organic association is involved in the development of assurance systems for the domestic market. (Sri Lanka Export Board, 2016)

LITERATURE REVIEW

Today with the widespread of cancers, skin diseases, kidney diseases and other chronic diseases people are moving rapidly towards to the organic food concept for healthier and safety foods making higher demand for organic productions. 11 percent of buyers purposefully look for organic vegetables while 89 percent of customers are insensitive to the concept of organic and conventional product differentiation due to the lack of the knowledge. (Mahaliyanaarachchi, 2003)

Vegetables and fruits are a highly demanded agricultural commodity in Sri Lanka. A vast percentage of customers are buying vegetables for consumption on a regular basis According to studies, 89% of customers are not satisfied about the quality of vegetables that they consume. A major quality concern in this segment of customers is the presence of synthetic agrochemical residues on the vegetables. Results show that 11% of buyers purposefully look for organic vegetables. Furthermore the study revealed that the reasons for 95% of non-consumers are related to operational aspects of marketing of organic vegetables and only 5% do not consume due to attitudinal reasons such as cleanliness. (Rosairo, 2006)

Export markets for organic vegetables are very lucrative. Also, organic vegetables have a large potential in developed countries. However, lack of certification of high standards has been a major barrier for many stakeholders to enter into export markets. Proper certification is very expensive in Sri Lanka. Therefore, government intervention to provide necessary international standards for local stakeholders is necessary to capture a sizeable slice of export markets. This
has the capacity of expanding organic vegetable exports thereby enabling the country to earn foreign exchange through this product. Investigations revealed that customers are fed-up of selecting vegetables. Organic producers and marketing agencies can exploit this situation by offering a basket of an assortment of organic vegetables with a packet of Kurakkan or Rice flour (preferably of organic nature) etc., targeted at health conscious customers. Low farm income is a problem faced by many small scale organic growers at present. Umbrella organizations play an important role in establishing marketing opportunities to benefit these growers whilst earning a benefit for themselves. One possible way to improve farm income is to semi process or process to add value. Offering an “organic vegetable salad” is a convenient package for the housewife in the city. Processed organic vegetables such as sauces and chutneys are products of definite demand. Number of large organizations such as international airlines is rapidly moving into serving of organic food and beverages on board. These organizations wish to minimize their costs hence are not prepared to deal with individual small scale farmers who handle small quantities. However, there is a big opportunity for farmers coming together as farmer companies or farmers cooperatives to tap these marketing opportunities. (H.S.R Rosairo, 2006)

Sri Lanka is having great opportunities and strength when considering the organic food industry. Those strength are indigenous knowledge/ management practices of our farmers to contribute to the sustainable agriculture, compliance with the green concept with a minimal impact to the environment, diverse climatic conditions within the country that enabling to cultivate arrange of organic products from tropical to temperate, reputation built up as a supplier of quality products, available supply of local resources to enhance production, flexible operation (out-grower schemes, short-term employment labor), skilled labor, compliance with the International Standards While opportunities are increasing global demand, expanding new markets, value added organic products for export. (Sri Lanka Export Board, 2016)

**Research Problem**

Although, it has identified that a positive trend towards the development of Sri Lankan organic food market is there, the factors that affect in particular development is not clear. Furthermore, ways and means that can be extremely helpful in the development of local organic food market
have not identified yet in complete manner.

**Objectives**

Main objectives of the study were to identify the factors that affect in making the market potentials of the Sri Lankan organic food market from both customer and farmer sides and to make the suggestions for the improvements of the Sri Lankan organic food market.

**Research Questions**

The study will find the answers for below questions;

1. How is the consumer awareness and perception regarding the local organic food market?
2. What are the influencing factors for consumers to buy organic foods?
3. What are the most convenience and favorable markets for consumers to buy organic foods?
4. What is the customer expectation from the local organic food market?
5. What is the price that consumers are willing to pay for the organic foods?
6. What are the foods items that consumers expect to buy as organic?
7. How is the consumer willingness to replace their food by organic foods?
8. Do farmers like to shift for the organic food productions?
9. What are the prime benefits that are expected by the farmers through organic productions?
10. Is there a potential for developing the local organic food market by the side production sector?

**Significance of the Study**

Organic foods have become a very well demanding item in the food market with the concern for better health and healthy foods and now, it also become a national need for achieving the sustainable goals. Even though the world has gone far away in the matter, Sri Lanka is not still having a strong organic food market. However it is becoming fast trend now a day with the health concerns and it allowed organic food market to develop moreover. Identifying the factors affect in market potentials of organic foods and making recommendation for development will be beneficial for develop the particular market in Sri Lankan context which can adequately fulfill
the customer demand for organic foods and also the producers of the organic foods by giving them a good market opportunities and prices. Moreover, it is going to assist to encourage sustainable food productions and consumptions while helping in good health and chemical free environments at the national level.

METHODOLOGY

Location

The location for doing the study was Hadabima Sales Outlet located at Gannoruwa facing Colombo-Kandy main road. The place is famous for the safety foods with their long term reputation as an institution and the trust of the people with their theme “wasa wisa nethi”. So people are coming there with the intention of buying safety foods. Food Supply is done by the Hadabima farming communities from Matale, Kandy, Nuwara Eliya, Kegalle, Kurunegala and Badulla districts which are guided and supported by the authority. They are guiding by the authority for less use of chemicals fertilizers and pesticides to produce safe production that match with their concept best in fresh. Customers are coming there not only from the nearby areas but from far away and different areas that travel through the Kandy-Colombo road due to the location of the outlet and the reputation it has. Therefore, this outlet was a great place for the study by making it fairer because the customers and suppliers represent different areas of the country without limiting to the Kandy district.

Research Instrument

The instrument for measure above variables was the pre tested structured questionnaires. Two separated questionnaires were made for customers and suppliers in Sinhala language. Questionnaires were consisting of questions that needed to be asked to measure each and every variable related to the objectives of the study. Questionnaire for customer had twenty five questions that can be answered in a very little time because most of the questions were to tick the preferred answer while questionnaire for the suppliers had twenty one questions including six structured questions to be answered in detail. Pre testing was done using fifteen customers and
five producers to check the suitability, compatibility and the accuracy of the questionnaires. After the confirmation through pre-tests both questionnaires were used as the research instrument for the study.

**Population, Sample and sampling Techniques**

Populations were the customers who are coming to the Hadabima sales outlet to buy food products and suppliers who bring their food products to the sales center for selling. Sample size was hundred for the customers and thirteen for the suppliers. All the registered suppliers who provide considerable food product amounts for the outlet were interviewed by the survey. Simple random sampling method was used to select the customer sample. Random sampling was applied for the time not the people. One month was divided into thirty days and there is clearly identified five different sales times for a day at the outlet as 7 am – 9 am, 9 am – 11.30 am, 11.30 am – 2pm, 2pm-4pm and 4pm – 6.30 pm which can see different sales patterns and groups of customers. Hence a day was divided into these five time shares and it gave overall one hundred and fifty timeshares. Then randomization was applied for these 150 time slots and survey was conducted according to that.

**Data Collection**

A survey was done by using two questionnaires to collect needed data. Customers at sales outlet are asked to fill the questionnaire by themselves using few minutes during buying foods because it was difficult to describe all the questions and answers due to the higher number of multiple choice questions and large sample size. Customers who had difficulties on filling the questionnaire by their own were helped to fill it by asking questions and mentioning the answers. Suppliers were interviewed with an open discussion and they were asked to answer the questions mentioned by the researcher. They also had the chance to speak out their own suggestions and ideas about the organic food industry and many of them were voluntarily did that.

**Data Analysis**
Mainly data were analyzed by using descriptive methods by using bar charts and pie charts. For further explanations correlation coefficient values and P values were calculated by using SPSS software.

RESULT & DISCUSSION

Familiarity about organics
According to the survey all the customers have heard about the concept “organic foods”. There were no one who didn’t heard about this out of one hundreds customers. Even though they all have heard about the organic foods 12% of customers didn’t have used organic foods at all. Less than 20% of customers were using organic foods regularly. Majority of customers used only sometimes but not frequently. But the survey deceted that 65% of customers have bought organic foods from the market and others didn’t. So it said that out of 89% of customers who have used organic foods, 24% of them have either cultivated organic or got from someother where but not purchased at the market. Therfore majority of customers are familiar with the organic foods and it has good potential to make wide market without any doubt because, there are plenty of customers to buy.

Customer preference for buying organic and factors affecting to the purchasing decision
Customers were asked to express how much they like to use organic foods and over 75% of them were very like to that and all others also like to shift for it (Fig.1).

Then the customers were surveyed to identify the factors and their significant levels that affects in the purchasing decision process of the buying organic food items. Price, awareness, advertisements, product verities, past purchase experience, social factors and scientific evidenced were took into the account when finding this Past purchase experience, awareness and scientific evidences were seems to be extremely important for many customers. Overall the awareness was the most significant factor that affects in the purchasing an organic food item followed by scientific evidence and then by past purchase experiences. Product varieties, advertisements and price were the next important factors that affect in this in a significant level. Social influences were the least affected factor in the process of purchasing decision making about an organic food according to these customers. This emphasizes a difference, because when buying food items
there is no doubt people are very conscious about the prices and product varieties. But in the case of organic foods it has altered, because awareness has become the basal factor defeating all other common important factors. Therefore when marketing an organic food item producers, sellers and also the marketing strategy developers have to consider to present scientific evidences that prove the originality and certification of the organic food with the item and though awareness have become more important here, conducting awareness making campaigns, programs or any other strategies will be very helpful in making the organic food market more popular and strong among the food market customers. According to the study, the prices of the item also have got a significant place. Therefore, the price determinants have to be done in a very careful manner.

![Figure 7: Significant levels of the factors that affect in purchasing decision of the organic food](image)

Preferred markets for buying organic foods by customers

It is needed to find out that the places / markets which customers are most preferred to buy these organic products. Over half of the customers expressed that they like to buy from open air market (Fig.2). Next majority told that the preferred place is the farm gate because of the freshness and low price. Comparatively, less no of customers were interested in buying at groceries and supermarkets. Therefore reinforce and start more open air organic food markets.
within the country will be very advantageous in the matter and there is new idea that comes through the result. That is making more farm-gate markets for organic foods, which will be new, interesting and development oriented action in the sector. It will attract more customers for the organic foods due to the high freshness and comparatively low farm gate prices.

**Figure 8: Preferred markets for buying organic foods by customers**

Factors considered at buying an organic food item

The customers were asked about the factors that they are considering when buying an organic food items (Fig.3) Over 50% of them answered that the main thing is the health and nutrition over all the other things such as price, convenience, packaging, taste and appearance. They have paid very less attention on those factors with compare to the need of health and nutrition. Therefore, presenting the nutrias status and the health benefits of the organics in the package or as a poster or other advertisement at the market will be very useful to attract the customers for buying organic over conventional foods. According to the study Convenience also makes considerable push for buying. Therefore making organic food markets at convenience distance covering all the country will encourage customers to buy organic foods regularly.
Communication media that take the concept to the people
When considering about the media that take the concept of organic foods to the customers, TV and radio were the most contributed communication channels followed by printed media such as magazines, newspapers and booklets. Those have made comparatively greater contribution in taking the message of organic foods to the customers though; internet is a famous media in these days. There was less number of customers who got the message from the web. Therefore the sector can effectively use the web for taking message into the society about organic foods. It will be very fast and popular way for promote the organic food markets if it is use strategically. This is something very important, because most of the web users are young people. Therefore making organic as a new trend in future and ensure the existence of it will be confirmed if young generation started to consume the organic. Furthermore it will also ensure the development and existence of the organic markets for years ahead.
People were asked whether they have ever bought organic foods products and if yes what they are and if not what the reasons were for that. Among the one hundreds of customers 65% of them had have bought organic foods and 35% had never have bought or they don’t sure the items were organic or not. People have bought more fruits and vegetables rather than other food items it is almost more than 75% and it is followed by cereals. But the cereal amount is comparatively very low with the amount of fruits and vegetables. There were very less amount of other food products including dairy and meat.

Since vegetable is one of mostly consumed food item in Sri Lanka and most of those are growing with higher amounts of chemicals and fertilizers, there is a definite market for organic vegetables and fruits also. This advantage can be optimally used when, developing Sri Lankan organic food
market by prioritizing the vegetable on it. Most of customers have less interest on conventional vegetables at market due to the health perspectives. Therefore it makes a good flat form to develop and widen the organic vegetable and fruit markets which can fulfill the customer expectations and demand on healthy foods. It will be surely attract the customers for organic food market from all the economical levels. Therefore the important of making broad attention on organic vegetables is emphasis here when setting up the programs or policies in the country

**Reasons for non-purchasing of organic foods**

When asking the reasons from them to not buying organic the prior reason was the less availability of the organic food products. Other major reason was there are no proven scientific evidences with the food products to confirm that they are truly organic (Fig.6). High prices and also the less awareness about the important of organic foods were also mattered at to some point.

![Figure 12: Reasons for non-purchasing of organic foods](image)

Vast majority of food customers consume organic occasionally. But the survey shows that all those people have said that they are either very likely or likely to buy organic foods for the consumption. Therefore, it exists the question if it is why all they don’t use the organic. They give the reasons as those are not readily available in the market to buy as other conventional foods. The number of farmers growing organic vegetables is low and the quantities coming to the market are not adequate at all to meet the demand. Furthermore, all the customers who don’t have an outlet will buy organic vegetables to satisfy their whole vegetable needs if a suitable outlet is available within a convenient distance Even if the availability is there, they don’t have any loyal evidence to verify that those are really organic. Sometimes the very high prices matters
to reject the purchasing and sometimes their awareness is not enough about the important of organic foods over non organic, to buy paying a higher prices. So those are limitations that have to find solutions to develop the Sri Lankan organic food market through increasing the buying of organic foods. The previous studies about the same matter also have found the same results. Organic farmers are not known to a quarter of the customers. Therefore, they can’t trust the organic production systems. Also, customers cannot identify organic vegetables as there is no visible difference between organic vegetables and conventional vegetables. Therefore, they don’t like to be misled and cheated. There is no reputed body in Sri Lanka to issue quality certification of organic vegetables. This market segment is particularly looking either for an international certification or a government certification body such as the Department of Agriculture. They will unconditionally buy the organic vegetables if such a certification is available on the package. Twelve percent of the customers say that the price of organic vegetables is high and are of the opinion that conventional vegetables have been consumed so far and no significant negative impact on health is seen, despite awareness by media. Reasons for 95% of non-consumers of organic vegetables are related to operational aspects of marketing and only 5% do not consume due to attitudinal reasons such as cleanliness. (Rosairo, 2006)

Price vs. Preference buying organic foods

When finding demand criteria it was important to look out about the prices that customers expect to pay for the organic. Majority of customers liked to buy organic foods at any price while near fifty percent of others liked to buy at higher prices than conventional foods. Overall over seventy five percent of customers had willingness to buy organic foods at higher prices (Fig.7). There were no customers who were expecting to buy organic foods at lower prices than non-organic foods.
Therefore the potential is clear-sighted here by these results. Because, it clearly presents the demand of customers for the organic foods. Market has a very positive potential to enlarge and widen with this demand, even for higher prices. This is a golden message to the sector that let it know, it has a great chance on widen among the overall food market. So following methods to get more supplies on the markets, enlarge and spreading the market, come with different and more organic food products and increasing the number of organic food market can be used to develop the sector without any doubt.

Willingness to replace conventional foods by organic foods

They also expressed their idea about how much of conventional or non-organic foods are going to be replaced by organic, if they are available. Fifty percent of customers have told that they are willing to replace it totally. Except four customers all other have expressed that they are ready to replace conventional foods by organic foods over fifty percent. Everyone liked to substitute organic foods at least in small amounts. There was no one who didn’t like replace non-organic by the organic foods.
Here the results directly represent how Sri Lanka organic food market should be. When taking as an overall, nearly 100% of people are expecting to replace their conventional foods by the organic. This is the demand that island organic food market have to cater. The potential for development can clearly identified by this result. Therefore the market have to ready to cater this demand and for that, it has to develop and manage the supplies, market chains, storages, selling and pricing strategies value additions and all the other matters come along with the development. Considering all the factors that affects by the side of the customers for the development of Sri Lankan Organic food market, it can clearly identified that the customers have made a very strong and wide stage to perform for the organic food market by making very good demand, awareness, interest and preference for buying. Therefore the rationality is, use all those factors as the blessings and find the better ways to fulfill those in the meaning of the development of the organic food market.

**Farmers willingness to shift for organic farming**

Farmer’s willingness to shift for the organic farming was asked in the survey and vast majority (94%) said that they are willing to shift. This result reveals a very fortunate message because for development of a market, adequate supply is a must. There is no point to open and facilitate more and more organic food markets, if there are no adequate productions to sell. Farmer’s willingness on shifting to the organic food production from the conventional farming methods encourages the organic food market development and emphasis the support which they can give for the market reinforcement. Here, another fact is, more the farmers shift into the organic farming, more the emerging of new small organic food markets. Hence, at least few of them will start to sell their products to the customers as sellers.
Benefits of organic farming and the levels of significance

All of them who said that they like and don’t like, had reasons and different significance levels for that reasons for their answer. Although organic farming is not widely practicing within the country, we can’t assume that the producers and the farmers are blind about this field, because they have considerable knowledge and attention on the matter.

Farmers who were willing to shift stated that higher demand high prices are the extremely important influences for that. Better market opportunities and sales also have mentioned as the comparatively important reason. Less competition in the market for organically grown foods took into their attention but not as a very important such as demand and price. Very few of them had no idea about the demand and the competition.

![Figure 15: Levels of significance of different factors as benefits of organic farming](image)

Farmers willingness to shift for organic simply means they are seeing some advantages in the organic farming that make their agriculture better even though they are not very well aware about the concept. Otherwise as the farmers they will never interested to shift. They have given many answers when they were questioned about the merits and demerits of the organic farming at the farmer point of view. Results shows that they are well known about the higher demand in the market for organic foods and the higher prices they can obtained for those. Many of them believe that it is a good way to reduce the higher cost which they pay for chemical fertilizers. Most of the advantages that they are considering have economical background and there were very few farmers who have understood the ecological benefits of this as long lasting cultivations and healthy plants without poisons. However the farmers are in a good level awareness about the
benefits of the organic farming and simply they know organic farming will be work on their lives much better. Therefore having this kind of production sector is very good background to develop the particular markets because there is good push on it. The thing is production sector also have to encourage and facilitate for more productions and quality production which will be very essential in making a strong market of organic foods. The questionnaire had questions about the external influences, forces or stimulations that farmers have to do organic farming. Majority of them had influences by a third party except the customers. Sixty nine percent of suppliers said yes to the question and other thirty one said no. According to them 93% of influence has made from the government institutes as department of agriculture and 7% said that they have influenced by not only the government but also by the other private agricultural institutes and some organizations. When finding how the influence was done by those institutes all were knowledge dissemination programs about the organic farming. So the problem is if they have both preference and encouragements for shifting, why they are still in the conventional agricultural practices. The results answered this question by showing the reasons as low input availability, labor intensity, more time consuming etc. behind that. Although they have the awareness it is just a general enlightenment not a comprehensive one, which is not strong enough to drive them to shift for organic very confidently. Because the limitations are practically known by them as farmers but the benefits are not still experienced by them. So their trust about those benefits and the compensations to avoid limitations is not solid enough to bear such risk to leave their current practices and move to the organic food production. Therefore it needs special encouragements as better prices, incentives, special opportunities and effective guidance procedure for making strong enough and quality organic production sector which is can be cater for the demand of a developed, well organized and widen organic food market.

CONCLUSION & RECOMMENDATIONS

Conclusion
In paying attention to the present Sri Lankan agricultural food market, there is an increasing trend towards the organic. But the development of the organic food market is not seems to be fine. Customers are having very good idea towards the organic foods while making higher
demand and they are expecting for a better and well developed market which can cater to their organic food needs. This can be effectively use as a advantage in the development by increasing the availability, increasing the notability through media, increasing the convenience to buy, making the trust of people and using the certification methods.

Sri Lanka organic food market is having good back up by the potential organic food production sector which is highly important in the development. The farmers also have favorable attitudes towards the organic productions and therefore they can be encouraged and utilized well for the making of strong, widen and prominent organic food market in Sri Lanka.

Therefore, Sri Lanka is having good potential in the both of the customer and farmer sides, for developing a best organic food market and need to take some actions on both sides as stimulations.

**Recommendations**

- Regional wise specific unique markets for organic foods that make the people in the particular region familiar with organic foods.
- Set up more outlets for organic foods to make it readily available item
- Make a strong market chain for every producer and for every outlet.
- Develop the consumer awareness
  - Take the concept to the people very accurately through awareness programs, advertisements, promotion campaigns and school and university curriculums by explaining the benefits very strongly.
- Use the technology and new media strategies for making organic foods popular among people
- Incentives and credit facilities for organic farmers.
- Increase the availability of inputs need in organic farming (fertilizer, organic pesticides, seeds, instructions)
- Farmer awareness programs to develop exact theoretical knowledge about organic farming and popup the benefits of doing organic farming over conventional farming.
- Doing studies and researches on the organic food market development which is very importantly mattered in the development
Policy Implications suggesting through the study

- Make separate institute for organic food industry which is responsible for the all the marketing sector.
- Set up certification and standardization process through an independent institute or an authority.
- Develop experiment institution for organic farming.
- Appoint board of experts in to regulate the industry and make decisions for development.
- Give a license to the organic farmers after a training and supervision by an authorized institute.

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The Journal of Agricultural Sciences, 2006, vol.2, no.3

Interface for Technology and Operations Management

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Abstract

Today businesses are dealing in a competitive global structure and thus, forces them to be more focused on their strategies followed in supply chain management in order to be more competitive and successful. The globalization has allowed businesses to function as a one unit, while the process of final output occurs through a chain of activities in different countries across the world. In order to manage this chain of activities, agile supply chain mechanisms are widely practiced throughout the world and proper supplier selection plays a key role in the successful management of agile supply chains and on meeting customer demands. Based on the literature reviews of supplier evaluation mechanisms, it is supposed to identify the models that have been practiced for supplier evaluation in current scenario and the application of such models in FMCG industry. This study presents the findings of a comprehensive and systematic review of literature and subsequently presents a conceptual framework for supplier evaluation and the main criteria used in the process of evaluating a supplier. The article will provide an insight to current state of knowledge available in the respective area and will set up the path for future research.

Keywords: Agile Supply Chains, FMCG, Supplier Selection
Introduction

Supply chain management (SCM) helps firms in integrating their business by collaborating with other value chain partners to meet the unpredictable demand of the end user (Agarwal, et al., 2006). A key feature of present day business is the idea that it is supply chains that compete, not companies (Christopher, 1992). The success of a supply chain hinges on the satisfaction of the end consumers. Hence the organizations must be able to gratify their customers by responding hastily to their prerequisites. Moreover, becoming more responsive to the needs of the market is not just about the speed, it also requires a high level of manoeuvrability that today has come to be termed “agility” (Christopher, 2000). Agility helps the organizations to sustain in the market as well as their buyers to achieve more effective of leverage of value.

Today, FMCG industry is a main money-spinning industry where key to success of the industry is product innovation. Hence it is crucial to ascertain the market requirements. The main focus of any FMCG organization is to introduce new innovative products to the market in order to survive and earn high profit margins. Agility is a major concept employed by the FMCG sector to gain competitive advantage and to improve the level of satisfaction of their consumers. In agile supply chains of FMCG organizations suppliers play a colossal role. Suppliers have a direct ascendancy on the end product and the customer response. The trend towards closer relationships between vendors and purchasers based on collaboration and co-operation increases the role and contribution of suppliers in the operations of the purchaser (Heide & John, 1990). Hence selection of most apposite suppliers and building a strategic liaison with them is imperative to gain competitive advantage in the industry. So, they tend to diverge from the traditional supplier-buyer relationship to longer-term collaborative relationship to achieve higher value proposition. The importance of supplier selection is emphasized as, the modern business environments are typically seen as becoming inherently more unstable due to fast-changing market conditions, customer demands, actions of competitors, and so many other reasons (Hakansson & Snehota, 2006).
Espousal of agile supply chains increase the regularity of selection of suppliers as the FMCG organizations have to adapt to the constantly changing market requirements. Hence the supplier selection process should be unblemished and expeditious. So, the supplier selection process is very complex and challengeable. Owing to the rapidly changing market demand selection is complicated by the fact that different potential suppliers may have different performance characteristics for different attributes (Xia & Wu, 2007). The increasing globalization of world trade and Internet-facilitated communications provides purchasers with increased opportunities for sourcing goods in foreign countries and this global sourcing method increases the number of potential suppliers considerably when compared to restricting the choice to domestic suppliers (Luo, et al., 2009). Hence the supplier selection criteria and the method should be steadfast and precise in order to select the preeminent suppliers.

With the advancement of the technology there are various approaches and models developed to enhance the reliability of the supplier selection process. There are many studies carried on this milieu. This study meticulously and systematically analyzes the published literature with the objective of identifying the knowledge gaps in supplier selection and evaluation process in an agile FMCG organization. These findings would be of immense importance for Sri Lanka as a developing country to conduct its journey towards the economic achievements based on the manufacturing.

The remnants of the paper are structured as follows: the methodology of this study, the results of the systematic literature review, cessation of the paper by giving conclusions and offering some perceptions on future research.

**Methodology**

The approach adopted to speculate the state of knowledge in the assorted area is the content analysis; which is based upon an explicit sequence of steps with which to systematically organize elements of text so as to enable an investigator to meaningfully interpret and make inferences about the patterns in the content of the overall body (Bowen & Bowen, 2008). The primus step of the analysis was to search for articles related to the study. There were number of studies that
have been conducted in this entourage by considering various aspects of agile supply chains of FMCG industry and the suppliers. This search resulted in altogether thirty-three articles. These articles were further screened based on the title and the abstract in the next phase and selected twenty-one articles. Full text of each of these articles was reviewed and eliminated the articles which are not pertinent to the scope of the study. Thus, in total fourteen articles were included in the study. The selection process is shown in the Figure 1. All the articles that were reviewed are listed on this paper under the list of references. It is believed that the papers selected and reviewed were a considerable representation of the exhaustive body of the research work being accomplished in this area of study.

A comprehensive literature review was done with the intention of eliciting the effect of supplier performance on agile supply chains of Sri Lankan apparel industry and revealing the research gap in the area. Only contemporary articles which were published within the years of 1990 and 2017 were chosen for the review with the intention of enhancing the germaneness to the current context.

The content of the articles was categorized under the factors on which the researches were carried on and profound content analysis has been conducted.

Figure 1: Literature screening process
Main results of the reviewed studies

All the articles taken into consideration in the analysis are briefed in the summary table; Table-1.

A case study has been conducted with Integrated Circuit (IC) packaging company (Kang & Lee, 2010) in order to develop a new model for supplier evaluation. IC manufacturing is the main product in Semi-conductor industry and the process of IC manufacturing requires complex and careful set of steps that guarantee the quality of the end product. Current trend in the business is to outsource parts of the manufacturing process and thus requires careful evaluation of the outsourcer in both quantitative and qualitative aspects. Thus, in this case study Data Envelopment Analysis (DEA) which analyzes suppliers in quantitative aspect and Analytic Hierarchy Process (AHP) that provide qualitative analysis of suppliers is jointly used, proposing the DEA/AHP combined model for supplier evaluation. The combined methodology can also be redefined to suit the requirements of other industries.

A study by (Abdollahi, et al., 2014) investigated a new mechanism for supplier evaluation based on lean and agile criteria by the combination of several existing supplier evaluation mechanisms. Lean and agility based evaluation mechanisms requires “point-in-time” data thus enabling the evaluation suppliers at a given point of time. Lean based supplier selection is concerned with waste reduction in the process and hence three criteria are selected here to evaluate lean suppliers: quality, cost and delivery. On the other hand, in agile based supplier selection priority is given for flexibility in adapting to new responses in the environment. Here four interaction criteria are taken into consideration to assess the supplier’s capability to manage customer demands: Human interaction, Technological interaction, Managerial system interaction and Cultural interaction. In the analysis, they have used three different Multi-Criteria Decision Making (MCDM) methods in a combined manner in order to measure the relative efficiency of multiple suppliers. Analytical Network Process (ANP), DEA and Decision-Making Trial and Evaluation Laboratory (DEMATEL) are the 3 MCDM methods used in the respective order to determine the supplier performance. This helps in identifying strategically important suppliers for the organization and to provide benchmarks for improving the performance of poorly performing suppliers.
The case study conducted by (Yadav & Sharma, 2015) focuses on the supplier selection in relation to automobile industry in India. Automobile industry normally spends around 60 percent of its sales on the purchase of raw materials and hence proper supplier selection plays a key role in the success of the organization (Krajewski & Ritzman, 1996) and also this industry deals with heterogeneous supplier environments where large numbers of suppliers are available to supply the materials. They have used here Fuzzy Extended Analytical Hierarchy Process (FEAHP/FAHP) instead of the more commonly used Analytical Hierarchy Process (AHP) to overcome the problems that arise due to inconsistencies of the market that exists within India. Here they have selected six criteria: quality, cost, delivery, service, long-term relationship and flexibility to evaluate the suppliers. The study was successfully concluded and fully acceptable for Indian Automobile industry but it has some drawbacks such as data collection as it is done only in one country and in only one industry. Thus, further research is needed to extend the findings to different industries or to same industry in different countries. Also in order to evaluate suppliers in Green supply chains it is needed to incorporate environmental criteria also for the evaluation process.

Currently organizations are looking for more sustainable relationships with their selected pool of suppliers in order to ensure product quality, delivery quality, cost efficiency and in overall context to achieve more turnovers. Based on the reviewed (Girubha, et al., 2016), have identified two aspects, identifying the supplier selecting criteria and ranking of suppliers against the selected criteria to address this problem. Reviewed literature also provided 22 criteria that can be classified under four groups as environmental, economic, social and business. For the analysis, they have used two hybrid MCDM methods, ISM-ANP-Elimination and Et Choice Translating Reality (Elimination and Choice Expressing Reality - ELECTRE II) and ISM-ANP-Vlse Kriterijumska Optimizacija Kompromisno Resenje (VIKOR) to ensure the accuracy of the outcomes. VIKOR method can provide more than one solution in some cases and in cases where the best supplier is not available VILOR can be used to identify the best alternate supplier.

Current trends in the industries such as moving from having a large supplier base to a smaller supplier base, increase in outsourcing of organizational functions and moving towards strong bonds between supplier and purchaser thus increasing the contribution of the supplier in
purchaser’s operations, has been able to emphasize the importance of proper supplier selection for an organization. In nowadays customer demands, prevailing market conditions and responses from competitors are rapidly changing and in order to suit these conditions most of the organizations have implemented Agile Supply Chains (ASC). In ASC’s supplier selection has to be done more frequently in order to suit the changing demands of the customers. In the initial stages of supplier selection, large number of potential suppliers has to be analyzed thus resulting in information processing difficulties. In the research paper published by (Luo, et al., 2009), they have focused on developing a supplier evaluation model that will overcome the above-mentioned difficulty in information processing difficulties during the early stages of supplier selection process. This model has used the concept of radial basis function artificial neural network (RBF-ANN) which is a well-established model based on the concepts of management science that enables analysis of suppliers against both qualitative and quantitative criteria and it also eliminate the need for complex calculations to be performed by the researches. Comparative to other technologies RBF-ANN has a more time consuming and complex data preparation stage and can be considered as a major disadvantage of the model. This supplier evaluation model is still a novel approach and thus requires further researches to confirm its application in real organizational context.

With the globalization of the world many firms moved from domestic sourcing to international sourcing strategies due to many reasons such as ability to access skilled and cheap workforces or resources. Although international sourcing has its many advantages, it can be considered as a complex procedure which involves many challenges due to policies employed by both the countries involved in the transaction. The study by (Min, 1994) has analyzed the international supplier selection process using the analytical approach called Multiple Attribute Utility Theory (MAUT). This approach is capable of handling both qualitative and quantitative attributes and contradictory attributes that are characteristic in global supplier selection arena. This enables decision makers to do trade-offs between various challenging factors such as between cost and delivery time etc. This approach also enables handling “what-if” analysis making it more suitable for Agile Supply Chains as well as for global sourcing where demands and trends constantly
change. Another main advantage of MAUT is its ability to handle more alternatives thus making it more applicable in real world scenarios.

The authors of this study (Liu, et al., 2000) have used Data Envelopment Analysis (DEA) which is used for analyzing multi-criterion systems in order to evaluate the supplier selection process in a manufacturing firm. As results of the analysis, suggestions such as the provision of development targets for inefficient suppliers and shifting away from least efficient suppliers were recommended. This model can be adjusted to suit various industry types and purchasing strategies followed by organizations.

A formal literature review about prevailing supplier evaluation methods were carried out by (Ho, 2008). Over the years, the industry has moved away from traditional single criteria: lowest cost based supplier evaluation approach to multi-criteria based supplier evaluation methods that analyze the suppliers both quantitatively and qualitatively. Through the literature review it was identified DEA as the most accepted evaluating model while AHP-GP is identified as the most commonly used approach. Although the currently available approaches are capable of supplier evaluation against qualitative and quantitative multiple criteria, it is needed to emphasize more on the organizational strategies and objectives of both the organization and stakeholders when deciding on the evaluation criteria. Disregard given to these factors may result in the selection of suppliers that do not meet the company expectations. So here they have proposed a model that combines AHP and Quality Function Deployment (QFD) approaches for future developments.

A study by (Koprulu & Albayrakoglu, 2007) discuss the importance of supplier selection and its effect on the company supply chain. Apparel industry has moved into building strong supply chains in order to deliver the best product to customers thus targeting the position of being the market leader. In this paper, they have identified the key success factors required by the apparel industry and thus have developed a model based on AHP which can be assisted to develop a Supplier Relationship Management (SRM) strategy.

In order to cut down the manufacturing costs, most of the US textile/apparel companies has moved out for global sourcing to countries that offer cheap labor and has attractive tax policies. In order to develop strategic plans for the development of the organization, they first have to
figure out the sourcing partner that will assist their process positively. Here they have used a combination of AHP and MAUT methods with the adjustment for analyzing “what-if” scenarios. They have analyzed supplier performance against five criteria/clusters as delivery, flexibility, cost, quality and reliability. Advantages of this method can be concluded as: its hierarchical structure that covers major issues/concerns of the industry, flexibility of the approach that allows changing according to different business situations and simplicity of the approach that eliminate the need of complex calculations. This research emphasizes on the usage of a decision matrix for supplier evaluation and points out the issues of using price as the only decision criteria for supplier selection. Also, suggestions were given for using factors like effects of the global relationships between countries, political conditions of different countries etc. for the decision matrix in future researches related to global sourcing. (Teng & Jaramillo, 2005).

A study by (Su & Gargeya, 2016) conducted the research on supplier evaluation process in small and medium-sized enterprises (SMEs) in regard to US textile and apparel industry. Successful incorporation of supply chain management techniques will help SMEs in reaching for the success very efficiently. When considering the supplier evaluation process in SMEs it is revealed from the survey results that they also emphasize on delivery, quality, price and quick response same as in the large firms and less importance is placed on certifications, trade regulations and suppliers’ profitability. Also, this survey results showed that there is a strong relationship between some of the supplier evaluation criterion and the firm performance while some criterion does not have any relationship.

Raw material and component cost accounts for the biggest portion of the costs in many industries. In order to get the correct value for this huge cost incurred company should be able to recruit the best available raw material or components into the company process which in turn means the recruiting of the best supplier. This research has been conducted for Eastern Condiments, the market leader in the FMCG segment of spices to evaluate its potential supplier base using AHP as the analysis tool. In AHP model decision making is done by analyzing the hierarchical relationships between the selected evaluation criteria and this tool also allows supplier selection by adjusting the weightage given to each criterion on the procurement
requirement of the firm. This research showcases the ability to place optimum order quantities on
the selected suppliers to maximize the Total Value of Purchasing (TVP). As the outcome of the
research, 5 bidders who have applied for the tender opened by the company were analyzed and
their respective “Total Percentage of Importance” was calculated. (John, et al., 2014)

In a subsequent study by (Egeröd & Nordling, 2010) at a Swedish FMCG to develop a
strategic supplier evaluation model that incorporated environmental aspects also into its process
in order to align with the company objective environmental-friendly manufacturing. The model
they have used in the process is AHP and suggested data collection methods were supplier visits,
interviews, information extracted from current system, information extracted from certifications
etc. The model proposed can be used only for evaluating the strategic suppliers of the company.
As a result, the analysis it was identified that the company now has a large base of strategic
suppliers which should be analyzed further to identify the correct set of strategic suppliers.

A research was conducted by (Matawale, et al., 2016) to find the different agility related
criteria/attributes of the suppliers that should be taken into consideration when selecting apposite
suppliers in agile supply chains. In this research paper, possible applications of the fuzzy multi-
level multi-criteria decision making (FMLMCDM) approach proposed by Chu and Velásquez
(2009) and Chu and Varma (2012) has been examined and compared to that of Fuzzy-techniques
for order preference by similarity to ideal solution (TOPSIS) and Fuzzy-MOORA in relation to
the supplier selection in agile supply chains. Comparative analysis has also been made in view of
working principles of FMLMCDM, Fuzzy-TOPSIS and Fuzzy-MOORA.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Objective/s</th>
<th>Design Method/s</th>
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<tbody>
<tr>
<td>(Kang &amp; Lee, 2010)</td>
<td>Developing a fresh mechanism to evaluate supplier performance.</td>
<td>Case Study</td>
</tr>
<tr>
<td>(Abdollahi, et al., 2014)</td>
<td>Mechanism to filter in the most appropriate supplier based on leanness and agility.</td>
<td>A Case study, Development of a model</td>
</tr>
<tr>
<td>(Yadav &amp; Sharma, 2015)</td>
<td>Developing multi-criteria based supplier selection model for an automobile company in India.</td>
<td>A Case study, Development of a model</td>
</tr>
<tr>
<td>(Girubha, et al., 2016)</td>
<td>Investigate the usage of a model that combines ISM and MCDM techniques in selection of sustainable supplier.</td>
<td>Research paper</td>
</tr>
<tr>
<td>(Luo, et al., 2009)</td>
<td>Development of a model, to overcome the problems of information processing of a large number of suppliers during the initial stages of the supplier selection process.</td>
<td>Article</td>
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<tr>
<td>(Min, 1994)</td>
<td>Propose a mechanism for international supplier selection under dynamic conditions.</td>
<td>Article</td>
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<tr>
<td>(Liu, et al., 2000)</td>
<td>Proposing and demonstrating the use of DEA model for supplier selection and for evaluating supplier performance.</td>
<td>A Case study, Proposing of a model</td>
</tr>
<tr>
<td>(Ho, 2008)</td>
<td>Investigate the most frequently used supplier evaluating approaches, major criterion used for supplier analysis.</td>
<td>Literature Review</td>
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<tr>
<td>(Koprulu &amp; Albayrakoglu, 2007)</td>
<td>Development of a Supplier Relationship Management (SRM) strategy based on the outcomes of the supplier evaluation model used and identifying the priority factors and weights to be used for supplier selection problem.</td>
<td>Research Paper</td>
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<tr>
<td>(Teng &amp; Jaramillo, 2005)</td>
<td>Development of a supplier evaluation model with the aim of assisting the US textile/apparel industry.</td>
<td>A Case study, Development of a model</td>
</tr>
<tr>
<td>(Su &amp; Gargeya, 2016)</td>
<td>Examining the supplier selection approaches in small and medium sized</td>
<td>Empirical survey based</td>
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</table>
firms in Apparel industry.


- **Egeröd & Nordling, (2010)**: Developing a supplier evaluation model with consideration to environmental aspects and to provide supplier development strategies for the firm. Thesis paper

- **Matawale, et al., (2016)**: To discuss about the different agility-related criteria/attributes need to be taken under consideration while selecting an appropriate supplier in an agile supply chain. Research paper

**Table 1 - Findings of reviewed studies - Findings**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Key Findings</th>
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<tbody>
<tr>
<td>(Kang &amp; Lee, 2010)</td>
<td>Analytic Hierarchy Process (AHP) provides qualitative analysis for supplier evaluation while Data Envelopment Analysis (DEA) provides quantitative analysis of suppliers. These two can be combined to get both subjective and objective analysis of supplier.</td>
</tr>
<tr>
<td>(Abdollahi, et al., 2014)</td>
<td>Multiple supplier evaluation using a combination of MCDM methods: ANP, DEA and DEMATEL with focus to lean and agile frameworks.</td>
</tr>
<tr>
<td>(Yadav &amp; Sharma, 2015)</td>
<td>FEAHP is needed instead of commonly used AHP to suit the inconsistent nature of Indian market. In order to use the model for analysis of Green supply chains environmental criteria has to be also combined into supplier evaluation criteria.</td>
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<tr>
<td>Author(s)</td>
<td>Methodology/Model</td>
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<tr>
<td>Girubha, et al., 2016</td>
<td>ISM-ANP-ELECTRE and ISM-ANP-VIKOR</td>
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<td>Luo, et al., 2009</td>
<td>RBF-ANN</td>
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<td>Min, 1994</td>
<td>Multiple Attribute Utility Theory (MAUT) model</td>
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<td>Liu, et al., 2000</td>
<td>DEA</td>
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<td>Ho, 2008</td>
<td>AHP – GP</td>
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<td>Koprulu &amp; Albayrakoglu, 2007</td>
<td>AHP</td>
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<tr>
<td>Teng &amp; Jaramillo, 2005</td>
<td>AHP and MAUT methods</td>
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<td>Source</td>
<td>Description</td>
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<tr>
<td>Su &amp; Gargeya, 2016</td>
<td>Criteria used by SME for supplier evaluation are quality, supplier responsiveness and other strategic considerations that affect the customer satisfaction. Some criterion used for supplier evaluation has a strong relationship with the firms’ performance.</td>
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<tr>
<td>John, et al., 2014</td>
<td>Optimum order quantities can be placed on the selected suppliers in order to maximize the Total Value of Purchasing (TVP). AHP model helps in the reduction of the time taken in the supplier selection process.</td>
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<tr>
<td>Egeröd &amp; Nordling, 2010</td>
<td>A model was developed based on AHP to evaluate the strategic suppliers.</td>
</tr>
<tr>
<td>Matawale, et al., 2016</td>
<td>Comparative analysis has been made in view of working principles of FMLMCDM, Fuzzy-TOPSIS and Fuzzy-MOORA.</td>
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Discussion

The classification of factors studied in the selected articles is discussed in the subsequent sections.

Considerable internal factors in supplier selection

*Table 24- Considerable internal factors*

<table>
<thead>
<tr>
<th>Study</th>
<th>Cost</th>
<th>Quality</th>
<th>Delivery time</th>
<th>Flexibility</th>
<th>Technology</th>
<th>Long term relationship</th>
<th>Financial stability</th>
<th>Innovations</th>
<th>Prior performance</th>
<th>Communication channel</th>
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<tr>
<td>(Kang &amp; Lee, 2010)</td>
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<td>(Teng &amp; Jaramillo, 2005)</td>
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<td>(Su &amp; Gargeya, 2016)</td>
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As depicted from Table 2, most of the focused studies consider the cost, delivery time, quality, flexibility, technological capabilities, ability to maintain a long-term relationship, economic stability of the supplier, innovativeness of the supplier, past performance records of the supplier and ability to communicate with supplier as the key gauges for the supplier evaluation and the selection process.

Cost was the first metric for selecting suitable supplier problems from the past until now. Purchasing department can play a key role in cost reduction, and supplier selection is one of the most important functions of purchasing management. Cost is highly tangible for purchasing department of company; thus, it can be an appropriate measure for evaluating the suppliers. (Abdollahi, et al., 2014)

Companies in today’s highly competitive marketplace are forced to deliver goods or services with prominent privilege to make the consumers satisfied. (Abdollahi, et al., 2014) In the process of satisfying the consumers a factor that plays a major role is the ‘Quality’ of the product. Irrespective of the product type or the industry type customers always relate poor quality issue with the company instead with the suppliers and thus ‘Quality’ has earned a prominent place in the supplier selection process. Hence careful evaluation of the raw materials of the eligible suppliers should be done before taking the final decision about the company’s pool of suppliers and this decision should be cross checked with the cost efficiency of the particular supplier. In the FMCG industry where the competition between competitors is intense quality of the product plays a major role in the maintenance of the brand equity and hence requires the accurate delivery of the brand promise to customers. In order to do deliver the brand promise, raw materials used in the manufacturing process plays a vital role and hence suppliers should be selected such that they are able to maintain the initially promised quality of the raw materials throughout the process and they should be able to cater to high demand while maintaining the quality.

On time delivery is the ability to meet production schedules. It is the percentage of actual output quantity that is finished earlier than or equal to the scheduled completion time for a period, to the scheduled output in that period of time. This information is provided by the production department of the final test company. (Kang & Lee, 2010). On time delivery of the raw materials is of immense importance to an agile organization in order to respond
quickly to the market demand. Today FMCGs are forced to compete in a highly competitive market where a small delay in delivery of the right product with the right quality to the right place has the ability to completely change the prevailing market. This competition has increased with the current Modern Trade chains where the FMCGs are forced to depend on and thus in order to cater to the demands of these markets, on time delivery of the raw materials is required. In the reviewed literature for supplier analysis we can clearly see that many models have used the ‘on time delivery’ factor thus highlighting the importance of it.

Flexibility is defined as the ability of a system to adapt to external changes, while maintaining satisfactory system performance. There are four types of flexibility in this context: volume flexibility (the ability to respond to change in demand); mix flexibility (the ability to change the variety of products produced); delivery flexibility (the ability to respond quickly to tight delivery requests); and new product flexibility (the ability to introduce and produce new products or modify the existing one). (Yadav & Sharma, 2015). The success of the FMCG organizations solely depends on the product innovations and the sensitivity to the market demand. Whenever a competitor comes up with a product upgrade the traits of the existing market changes rapidly and hence in order to adapt to these changes and retain the market share the supplier base of the company should be highly flexible to cater to the changing demands. This factor was also thoroughly analyzed in the models discussed in the literature reviews and in the current competitive and rapidly changing market it should be given a prominent place among the supplier selection criteria used.

When the organizations introduce new products to the market, in order to meet the demand from the purchasing organization, supplier should be able to adapt to new technologies. When the demands of the buyer changes, supplier should be able to upgrade his technologies in order to meet the demands of the buyer. Suppliers should be technology followers as it is very important to use newest technologies to improve the efficiency and the productivity of the processes.

Buyer and supplier constraints state the various long-term contracts, mutual support, non-adversarial negotiations, and information and risk sharing for mutual benefits. (Girubha, et al., 2016). The purchasing organization should be able to build a strong reliable mutual relationship with the supplier organization. They should have a good mutual understanding
that will pave the way to a healthy supplier-buyer relationship. In the aspect of FMCGs, the companies possess the ability to convince suppliers the importance of the business and thus will push towards getting into long term relationships that will benefit both the parties. Also in order to retain the effective pool of suppliers the company needs to highlight the importance of the suppliers for the company. Financial capability of the supplier plays a major influence in long term business. The shaky financial situation does not encourage the long-term business. (Girubha, et al., 2016). Suppliers should be financially stable in order to embrace the new technologies and invest in the R&D activities as well. When selecting the supplier base for the company, has to make sure that the eligible suppliers possess a stable cash flow to the business. This plays a major role when considering the highly competitive FMCG industry. The company has to make sure that the selected suppliers will not run out of business or gets bankrupt in a situation where the company is in critical need of the suppliers.

In the reviewed literature, some of the analysis models have given a consideration about the supplier’s financial stability while some has not used it in the evaluation process but in the current competitive world in order to be successful, a company needs a stable supplier base which will not be possible without the suppliers having a financial stability of their own. Innovation and R&D are very important factors that should be considered when choosing suppliers for agile organizations. In the FMCG industry with the changing market trends the company might need to go for frequent product upgrading and thus require suppliers that are able to cater to these changes in a flexible manner while maintaining the quality and other factors. This in turn speaks about the ability of the supplier to develop themselves with innovative features and R&D. So when selecting suppliers a concern must be given for the scope of the R&D activities of the suppliers and their adaptability and focus on innovations.

In the reviewed literature only one article (Koprulu & Albayrakoglu, 2007) has taken ‘Innovations’ as a criterion in analyzing the suppliers. In the current competitive business world in order to select the best supplier for a good competition, the use of ‘Innovation’ factor in supplier analysis should be suggested.

The supplier is often treated as an intangible asset of an organization. Good buyer-supplier relationship enhances mutual trust and results in long-term and sustained partnerships (Yadav & Sharma, 2015). The buyer can get an idea about the supplier by observing the past performance records of the supplier as well as through the reputation of the supplier.
Suppliers with a good reputation and an image are often reliable. Performance history describes the feeling of the business with the particular supplier in the past (Girubha, et al., 2016) In FMCG industry market needs and market shares changes briskly. Hence the organization should have a sturdy supplier base so as to face the market challenges. Selecting suppliers with a history is the most reliable and trustworthy option for these organizations. Sometimes there can be newly emerged suppliers who could be reliable, trustworthy and should have the potential to provide a better service. Cooperates must open up opportunities for such suppliers as well and should develop them. When selecting experienced and highly performing suppliers, there are some concerns as well. The supplier becomes more powerful than the buyer organization as they are the most demanded suppliers in the particular industry. FMCG industry is a fast growing and rapidly changing industry where there is high competition among the rivalries. When the suppliers are more powerful in FMCG industry, it is very injurious for the buyer organization as they have to depend on the suppliers when attending the market requirements. In such situations, FMCG organizations may not be able to supply for the market demand due to the price factor or the quantity factor of the raw materials. In such cases, there is a high probability for the purchaser organization to lose its market share in the particular product category. Although the performance history of the supplier is important in supplier selection, FMCG organizations should consider about the possible negative impacts as well.

Building an effective communication channel between the supplier and the buyer is very important for the agile FMCG organizations. They should be able to be in touch with the suppliers. There should be an effective flow of information between the supplier and the buyer. It is important for the supplier to know the customers demand in an early stage. For the customer, it is important to know what delivery service the supplier can offer. The customer could for example demand information regarding the supplier’s amount in stock, the supplier’s ability to deliver or the availability to monitor an order in process (Egeröd & Nordling, 2010). FMCG industry is a fast growing, rapidly changing industry with an immense competition. Hence effective flow of information from the market to the producers and from producers to the suppliers is very important. Everyone consume fast moving consumer goods and the needs of the consumers are always changing and many new needs are emerging. So, to meet this demand there should be error free efficient and effective
information transfer between all the engaged clusters, from supplier to the consumer. Buyers may want to receive constant updates of inventory levels, production plans, and status of orders. On the other hand, suppliers may want to have access to the buyer’s forecasting data in order to prepare for potential purchasing orders (Teng & Jaramillo, 2005). Communication openness, honest and frequent communication are strongly related to overall customer service levels and/or overall customer satisfaction (Su & Gargeya, 2016). Therefore, ability to build an effective communication channel is very important in supplier selection of FMCG industry.

Cost, quality and delivery time are the most attention gained criteria. All most all reviewed articles have used cost as a criterion in supplier selection. 84.61% (11 articles) have used quality as one of the selection criteria. 92.3% (12 articles) of the reviewed articles have used delivery time as key criteria in supplier evaluation and selection process. These factors are imperative and these are the frequently used internal aspects in the supplier selection process. These criteria may assist the purchasing organization to select the best suppliers with whom they can have a profitable transaction and a healthy supplier-buyer relationship.

**Considerable external factors in supplier selection**

*Table 25-Considerable External factors*

<table>
<thead>
<tr>
<th>Study</th>
<th>Political stability</th>
<th>Economy of the country</th>
<th>Trade relationships</th>
<th>Environmental concerns</th>
<th>Tariffs and customs duties</th>
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Table 3 depicts the external factors used for supplier selection in the reviewed literature. It is clear that most of the reviewed studies have used limited number of external factors as selection criteria. External factors are the factors related to the supplier environment. External factors are significant in supplier selection as a fraction of the success of any organization depends on its external environment. These dynamics are very important when selecting transnational suppliers.

Fast moving consumer goods have a vast diversity and require raw materials from all over the world. Hence, political stability of the supplier’s country as well as the buyer’s country is very important when selecting suppliers. There can be currency inconvertibility and trade restrictions or economic sanctions due to the political conditions prevailing in the country. Countries like South Korea, Iran and Venezuela are under economic sanctions and it is a risk for the buyer to select suppliers from such countries. Risks including the risk of political instability and currency inconvertibility can result in high hidden costs for international sourcing; hence they should be factored into the international supplier selection decision (Min, 1994).

Buyers should consider about the factors such as unstable foreign exchange rates, labor disputes, local price control, and so forth when selecting suppliers. Shortages of hard currency in Russia for example can limit cash transactions, thereby prohibiting import from Russia (Min, 1994). If the country’s economic condition is not so rigid, the supplier may face various slags as well. Labor disputes and local price controls may hinder the supplier operations and it will delay the supply of raw materials to the buyer at right time. Complications in transactions may also leads to the delay in production operations. Delaying the production operations of a FMCG organization gives rise to huge losses in profits and market share due to the inability to satisfy the market requirements. So, the economic condition of the country is an imperative factor in supplier selection process. Trade relationship of the buyer's country with the supplier country also affects the supplier selection. It takes into account government regulations for a certain type of products in both sides of the supply chain (Teng & Jaramillo, 2005). Some countries impose low tax rates when importing goods from some countries depending on the trade relationships. America, Mexico and Canada are in a trade agreement called North America Free Trade Agreement (NAFTA) which enables them to have tariff free trade transactions. Main intention of all
business organizations including the FMCG organizations is maximizing the profit margins. Hence sourcing raw materials from the suppliers of the countries having trade relationships with the buyer’s country is cost-effective. Doing business in an environmental friendly manner is a modern trend in the businesses. Green image criterion evaluates the management vision towards improving the green reputation and green competency. When selecting suppliers, buyers pay attention to various initiatives towards mitigating the pollution through green management, green marketing, green production and green innovation (Girubha, et al., 2016). Going green is a market strategy and it helps to attract more consumers towards any brand. Hence selecting suppliers based on the green concept may help to build a brand image for the products of FMCG organizations as the market sizes of such organizations are massive, diversified and most of the consumers are attracted towards the eco-friendly products. A foreign government wants to attract buyers from other countries to boost its economy, whereas the importing country would like to impose high tariffs to protect its domestic industry. (Min, 1994) Hence, it is very important to consider about tariffs and customs duties when choosing suppliers as they may add additional cost to the buyer and those transactions are rarely profitable for the buyers. FMCG organizations are profit based organizations and in order to improve their profit margins, they need to be cost sensitive. These organizations should be smart enough to select reliable, trustworthy and capable suppliers who can supply quality raw materials at right time with a minimum outlay. Therefore, tariffs and customs duties are the most importantly considerable factors in supplier selection of FMCG organizations.
Approaches used by the researchers for supplier selection

Table 26: Approaches used in the studied articles in supplier selection

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<tr>
<th>Study</th>
<th>DEA</th>
<th>AHP</th>
<th>ANP</th>
<th>DEMATEL</th>
<th>FEAH</th>
<th>ELECTRE II</th>
<th>VIKOR</th>
<th>RBF-ANN</th>
<th>MAUT</th>
<th>QFD</th>
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According to the Table 4, most frequently used approach is AHP (Analytic Hierarchy Process). 38.46% of the totally reviewed articles have used AHP approach. There are various integrated approaches used for the supplier selection. AHP approaches integrated along with other approaches are commonly used for the evaluation of the suppliers. The wide applicability is due to its simplicity, ease of use, and great flexibility (Ho, 2008). 15.38% of the reviewed articles have used integrated AHP approach. AHP was introduced by Saaty in 1980. The application of AHP to a complex problem involves six essential steps (Zahedi, 1986; Lee, et al., 2006).

1. Define the unstructured problem and state clearly the objectives and outcomes.
2. Decompose the complex problem into a hierarchical structure with decision elements (criteria and alternatives).
3. Employ pairwise comparisons among decision elements and form comparison matrices.
4. Use the eigenvalue method to estimate the relative weights of the decision elements.
5. Check the consistency property of matrices to ensure the judgments of decision makers are consistent.
6. Aggregate the relative weights of decision elements to obtain an overall rating for the decision alternatives.

DEA is the approach that is most commonly integrated with the AHP. Using DEA, quantitative factors can be evaluated objectively, and productivity (output/input) can be measured effectively. Qualitative factors cannot be evaluated in a DEA. AHP measures qualitative factors subjectively with experts’ opinions, and the importance of each factor can be adjusted through arithmetic average, geometric average or the Delphi method. However, AHP does not provide a good solution for productivity measurement (Kang & Lee, 2010). Hence DEA/AHP integrated approach is one of the best approaches to evaluate the suppliers. 15.38% of reviewed articles have used DEA/AHP approach.

Conclusion and Future work

Table 5 - Conceptual Hierarchy of supplier selection
Cost, Quality, Delivery time, Flexibility, Technology, Innovations etc. | Political stability, Economy of the country, Trade relationships, Environmental concerns, Tariffs and customs duties etc. | Low pollutants, Low Co2 emission, Low environmental harmful waste

Internal factors | External factors | Green Concerns

| Information Technology mechanism for supplier screening |

| Effective supplier for Agile FMCG supply chain is selected |

At the moment, most of the FMCG organizations are leaning towards the agile supply chains. Suppliers play a key role in agile supply chains. Hence most of the researchers are interested in this area of research. Based on the review and the analysis, some suggestions for future research are proffered. Although a significant number of researches were carried on the topic, still there are some knowledge gaps which require further investigations.

When considering the selected literature, it could be seen that most of the supplier selection criteria used to develop the models are mainly focused on cost, quality and delivery time and more weight is given on these factors. Innovativeness and adoptability to the market requirements, which are key characteristics of suppliers of agile FMCG supply chains, have not been a main focal point.

Both external and internal factors have an enormous contribution towards the supplier selection process. In the proposed criteria for supplier evaluation, only the internal factors are considered. External environmental factors such as political influence, trade relationship with the country, taxes, ethical and environmental factors which are considered in FMCG supplier selection are not given advertency in the selected studies.
With the rapid advancement of the information technology, new avenues for the supplier selection and evaluation process can be identified and developed. Further studies should be carried on in order to identify the capable new technologies and to develop models using that technological knowledge.

Modern supply chains are frequently changing and novel concepts are introduced to supply chains constantly. Literature availability on the supplier selection and evaluation process pertinent to these new emerging FMCG supply chain trends such as green and lean-agile supply chains are limited. Hence researchers should concentrate on trends such as green supplier selection and selecting suppliers for lean-agile supply chains.

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Dias, M., University of Kelaniya, Sri Lanka
Bopage, G., University of Kelaniya, Sri Lanka
Bandara, O., University of Kelaniya, Sri Lanka
Rupasinghe, T.D., University of Kelaniya, Sri Lanka

Abstract

With the advancement of technology, Augmented Reality and Virtual Reality have flourished up to a state where the applications can be utilized in wide variety of industries. Apparel sector is a major income generating sector and a source for employment for many South Asian countries including Sri Lanka. This study is concerned with the application of Augmented Virtuality (AV) in the layout planning aspects within the apparel sector of Sri Lanka. The layout planning is a strategic issue and has a significant impact on the efficiency of the manufacturing system of any industry. Therefore, AV can be proposed as a viable solution for optimal product layout planning which will increase efficiency, reduce the non-productive time, and further reduce wastage to improve the overall quality. This scrutiny was conducted using multiple studies published in the area of production layout planning, AV, and apparel industry by way of a systematic review of literature review.

Keywords: Augmented Virtuality, Layout Planning, Optimal Product Layout Planning

Introduction

The most decision makers face a common problem in any industrial setup, it is the finalization of its layout, deciding the location of the machines with respect to all products’ sequences. (Islam et al., 2014). A facility layout is an arrangement of everything needed for production of goods or delivery of services. The layout design problem is a strategic issue and has a significant impact on the efficiency of a manufacturing system. Much of the existing layout design literature that uses a surrogate function for flow distance or for
simplified objectives may be entrapped into local optimum; and subsequently lead to a poor layout design. (Islam et al., 2014)

In garment sewing, the components are assembled through a subassembly process in order to form the finished product. Therefore, the production process includes a set of workstations, at each of which a specific task is carried out in a restricted sequence, with hundreds of employees and thousands of bundles of sub-assemblies producing different styles simultaneously. Apparel manufacturing comprises a variety of product categories, materials and styling, and such complexities of manipulating flexible materials and dealing with constantly changing styles limits the degree of automation for the production system (Kalaoglu, 2009). The ever-changing and competitive market structure and the need to adjust and generate low-cost, high-quality products in mass customized form made industrialists and researchers turn to novel manufacturing methods in place of traditional methods. The changes took place immediately following the industrial revolution in the middle of the eighteenth century, where people started using machinery for production. What was considered advanced decades ago is now traditional, and what is advanced today will be considered mainstream in the future. Advanced Manufacturing is not a static entity; rather, it is a moving frontier (Dissanayake and Farris, 2014).

Advanced technological boosts, Virtual Reality and Augmented Reality have become commonly uttered words today. Virtual is defined to be being in essence or effect but not in fact. Reality is defined to be something that constitutes a real or actual thing as distinguished from something that is merely apparent. On the other hand, AR is based on techniques developed in Virtual Reality and interacts not only with a virtual world but has a degree of interdependence with the real world (Londhe, 2017). This technology enhances a user’s perception of and interaction with the real world. The challenge in the manufacturing field is to design and implement integrated manufacturing systems that could enhance manufacturing processes, as well as product and process development, leading to shorter lead-time, reduced cost and improved quality (Londhe, 2017). Numerous number of researches have been conducted to address the above-mentioned situation, therefore the objective of this systematic review is to comprehensively and systematically analyse researches that have been published in the above context in order to identify knowledge gaps which will be vital for the enhancement of planning and functional context of apparel sector.
The remainder of this paper is organized as follows: the applied methodology for this study, an overview of research approaches used in the examined articles, the results of the systematic literature review, closure of the paper by offering conclusions and an attempt to provide some perspectives on future research.

Methodology

This systematic review was based on the content analysis as the approach to gather the state of knowledge in the selected areas of Augmented Virtuality, Facility Layout Planning and Apparel Sector. The initial step of this analysis was searching of the articles relevant to the study.Thirty articles were selected at the initial step. These articles were chosen based on its title and abstract and for further screening twenty-six articles were selected. Each paper was scrutinized in deep to eliminate the irrelevant articles to the study. The dissimilarities caused in comparing the articles were discussed by the researchers and finally twenty-three articles were selected for the analysis. Figure 1 below shows the selection procedure of the articles based on relevancy. The references section of this paper clearly stated the articles reviewed in this analysis. Even though each article was scrutinized in deep, the researchers believed that this analysis would deliver actual gap of the knowledge areas uncovered by the previous researches related to this study without an exhaustion.

A comprehensive literature review was done related to the study area with the aim of emphasizing the gap of knowledge uncovered. In this analysis the selected articles belong to the period of 2000 to 2016 considering the knowledge updates and relevancy. The papers cited was retrieved from publications related to supply chain, operations management, apparel, augmented reality, virtual reality and production planning.
Figure 1: Screening process of the systematic literature review
Main results of the reviewed studies

All the articles taken into consideration in the analysis are briefed in the summary table shown in the Table-1.

An analysis of augmented reality based models has been done under the title “Augmented Reality” with the objective of identifying application of AR in different industries together with practical implications of each application. The manufacturing industry has been considered as one among the industries that has the capability to apply AR. Furthermore, it identifies and points out the issues of the above-mentioned application. Research on the manufacturing applications of AR is a strong and growing area. The challenge in the manufacturing field is to design and implement integrated AR manufacturing systems that could enhance manufacturing processes, as well as product and process development, leading to shorter lead-time, reduced cost and improved quality. The ultimate goal is to create a system that is as good as the real world, if not better and more efficient (Chauhan and Londhe, 2017).

A literature review was conducted with the idea of exploring non-traditional assembly lines which have the potential to be used in manufacturing industry in the future. It was a systematic review of literature. Manufacturing assembly systems are subjected to many technological transformations because of the volatile demand pattern tied to the products being manufactured. New technologies and manufacturing environments such as cloud manufacturing, ubiquitous design and manufacturing, and augmented reality have emerged following virtual manufacturing and some are partially practiced in industry. Many researchers are contributing to the furtherance of the field mainly due to the multi-faceted benefits foreseen (Dissanayake and Farris, 2014).

The paper titled “Case-Based Exploration of the Augmented Prototyping Dialogue to Support Design” by Verlinden et al. (2004) is an integration of a methodology with a case study, conducted in order to identify key issues and guidelines of the multimodal design interface for Augmented Prototyping systems. This paper concerns about augmented prototype manufacturing and for that two scenarios from night club and a kitchen were considered. Four general types of support by augmented prototyping were identified: 1) component layout, 2) material and colour selection, 3) interaction prototyping, and 4) engineering
simulation. These types have the potential to appear as ingredients in future augmented prototyping systems.

Bradley et al., 2007 have invented a methodology to track and generate realistic augmentation on flexible cloths. The study presents a method to perform real-time 2D augmented reality on a non-rigid object, such as cloth which has the ability to sparsely track the cloth using a new circular marker system and apply correct illumination and shadows. The system can generate realistic augmentations on the flexible cloth while undergoing rippling and wrinkling, even in difficult illumination conditions.

Development of a model followed by a case study has been conducted under the title “Simulation of Production Line Balancing in Apparel Manufacturing”. A sweatshirt manufacturing procedure was taken into consideration in this study. In garment sewing, the components are assembled through a subassembly process in order to form the finished product. Therefore, the production process includes a set of workstations, at each of which a specific task is carried out in a restricted sequence, with hundreds of employees and thousands of bundles of sub-assemblies producing different styles simultaneously. In assembly line balancing, the allocation of jobs to machines is based on the objective of minimising the workflow among the operators, reducing the throughput time as well as the work in progress and thus increases productivity (Kursun and Kalaoglu, 2009).

The study titled “A Tabu Search for Multi-Objective Single Row Facility Layout Problem” was conducted with the integration of a methodology based on an algorithm. Based on the study it was experimentally found out that the methodology has the capability to address timely requirements in apparel industry addressing product layout planning as follows. The proposed algorithm yields the best linear sequence of machines which minimizes the total flow distance in units, total number of machines, total investment cost of machines and total material handling cost due to the following reasons (Lenin et al., 2014).
### Table 1 - Findings of reviewed studies

<table>
<thead>
<tr>
<th>Reference</th>
<th>Design Method/s</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Chauhan and Londhe, 2017)</td>
<td>Survey and Analysis of models</td>
<td>Application of augmented reality in wide variety of industries considering practical implications of each application.</td>
</tr>
<tr>
<td>(Dissanayake and Farris, 2014)</td>
<td>Literature Review</td>
<td>Assembly line has been integrated with new technologies of cloud manufacturing, ubiquitous design and manufacturing, augmented reality and virtual reality.</td>
</tr>
<tr>
<td>(Verlinden et al., 2004)</td>
<td>A Case study Development of a model</td>
<td>The potential Augmented Prototyping has on industrial design and its uncovered issues.</td>
</tr>
<tr>
<td>(Bradley, 2007)</td>
<td>Development of a Model</td>
<td>Methodology to track and generate realistic augmentation on flexible cloths and finding limitations of the system.</td>
</tr>
<tr>
<td>(Kursun and Kalaoglu, 2009)</td>
<td>A Case study, Development of a model</td>
<td>A solution to address bottleneck situations in apparel manufacturing process by real time designing of product layout.</td>
</tr>
<tr>
<td>(Lenin et al.,2014)</td>
<td>Development of an Algorithm</td>
<td>A developed algorithm and methodology, an approach to determine the best linear sequence of machines that minimizes the total flow distance in units, total investment cost of machines, total material handling cost and total number of machine types arranged in the final linear sequence were identified.</td>
</tr>
<tr>
<td>(Kentli et al,2013)</td>
<td>A Case study, Development of a methodology</td>
<td>A solution to the scheduling problems by optimization of throughput of apparel manufacturing and setup time between production lines.</td>
</tr>
<tr>
<td>(Wang et al, 2012)</td>
<td>Review</td>
<td>Understand the tools used to prototype an augmented reality environment and provide a state-of-the-art review of the current achievements in augmented reality built environment.</td>
</tr>
<tr>
<td>Source</td>
<td>Type</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>(Slovic et al., 2015)</td>
<td>Case Study,</td>
<td>Suggestions to implement continuous process improvement and make significant productivity improvements in the apparel industry.</td>
</tr>
<tr>
<td></td>
<td>Development of a</td>
<td></td>
</tr>
<tr>
<td>model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Mohibullah, 2016)</td>
<td>Case Study</td>
<td>Proposes a guideline for the Apparel Industry to improve the performance of the sewing line to finishing section.</td>
</tr>
<tr>
<td>(Friedrich, 2010)</td>
<td>Survey</td>
<td>Presents the results that have been achieved after the implementation of an augmented reality system for mobile use in industrial applications.</td>
</tr>
<tr>
<td>(Phan and Choo, 2010)</td>
<td>Development of a</td>
<td>An application of an augmented reality system for designing/educating/presenting interior design projects using overlaid virtual furniture in a</td>
</tr>
<tr>
<td>framework</td>
<td></td>
<td>physical environment based on a regular PC home system</td>
</tr>
<tr>
<td>(Islam et al., 2016)</td>
<td>Case study</td>
<td>How a good layout can be designed and productivity can be increased by appropriate assembly line balancing.</td>
</tr>
<tr>
<td>(Kalkofen et al., 2009)</td>
<td>Development of a</td>
<td>A framework for computing high-quality AR visualizations using multilevel FpC visualization</td>
</tr>
<tr>
<td>framework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Elia et al., 2016 et 2016)</td>
<td>Case Study,</td>
<td>A multi criteria model to support quantitatively production managers and researchers in evaluating the performance of different augmented reality devices.</td>
</tr>
<tr>
<td>Development of a</td>
<td></td>
<td>model</td>
</tr>
<tr>
<td>(Buttner et al., 2017)</td>
<td>Survey,</td>
<td>Tool that facilitates initial research activities as well as the identification of research opportunities.</td>
</tr>
<tr>
<td>Development of framework</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Ong et al, 2007)</td>
<td>Development of a</td>
<td>An AR-aided assembly design and planning system</td>
</tr>
<tr>
<td>model</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Gheisari et al., 2017)</td>
<td>Online survey</td>
<td>Understand the current status of BIM and mobile computing application in facility management along with the benefits and challenges of implementing these technologies in an augmented reality environment.</td>
</tr>
</tbody>
</table>
A case study based methodology development was conducted by Kentli, 2013 titled "Minimizing machine changeover time in Product line in an apparel industry" with the objective of exploring a solution to the machine scheduling in machine changeover of apparel industry. The assembly process of each garment consists of multiple operations. During production, it must be processed in several machines sequenced as an assembly line. After production of a product type is finished, the production line must be reorganized for producing the next type of product. Setup cost for a production line is linearly proportional with the number of machines moved while it is being built. During the reorganization of a production line, moving a machine requires a certain amount of time and movements of machines cannot be processed at parallel. The required number of machines of each machine type for a product is known beforehand. If production of next product type requires more number of machines of any type than current production setup, then the necessary amount of required type of machines can be brought from the depot within the same amount of time. The number of machines for each machine type is available as much as needed in the depot. The problem under consideration is to find a sequence that minimizes the total completion time subject to machine changeovers (Kentli et al., 2013). The above-mentioned research problem has been successfully addressed by the proposed methodology of the study.

A state of art review to identifies the current gap of knowledge available in the built environment applications for which AR systems are now being developed and tested. Wang et al. (2012) revealed the concept and theory, implementation (available tools to prototype augmented reality environment), evaluation (effectiveness and usability) and industrial adoption of AR in built environment. The published studies, for the most part, still consist of lab-based controlled studies without industrial practitioner-based control groups, geared toward feasibility or proof of concept testing. However, this type of design is appropriate for testing a new technology in the early stages of its application. An AR system, no matter how sophisticated it is itself, might fail if it is not appropriately adopted for practice by considering the user requirements behind.

A model specifically developed for the apparel industry based on a case study of an apparel company which operates in Serbia is introduced by Slovic et al. (2015). The workplace
layout, material handling system, and workplace organization were major factors when considering the productivity of an apparel company. The two-phased PDCA model for continuous process improvement will provide better approach to improve productivity though companies that are constantly looking to improve productivity, through many different methods such as innovations, waste reduction, and labour cutbacks or simply speeding up production. The introduced model is based on the “learning by doing” principle and consists of 4 phases: analysis and design of a new setup, improvement through line optimization, new setup checks, and production line management.

To sustain in the current global competition inside the apparel sector, industries try to reduce production time, wastages and overall production costs by implementing new techniques and tools. Apparel industry is particularly dependent on sewing and finishing section. As Mohibullah, 2016 suggests, analysing different techniques of sewing and finishing layout may result in reducing the amount of defects, manpower, material handling, saving times and improving the productivity and profits of the companies. Even though this guideline offers much benefits it still has some constraints of implementing such as additional time, space and need of extra money.

ARVIKA is a worldwide AR project which directly relates to the areas of research and development of AR with the provision of information and the new forms of human interaction with the environment by Friedrich, 2010. The application of augmented reality in ARVIKA implies the real world view of a skilled worker, technician or design engineer to the end user. ARVIKA develops this technology or applications that can be used in the fields of design, production, and service in the automotive and aerospace industries, for power and processing plants and for machine tools and production machinery. This technology offers special dimensions for mid-sized businesses that can leverage an improved diagnostic and maintenance competence to increase their flexibility and efficiency, thereby strengthening their global competitive position (Friedrich, 2010).

With the dramatic improvement of the digital technology in the new millennium, mixing virtual information techniques with architectural projects provides a concession in order to survive in the competition. Thus, the new technology of Augmented Reality offers many advantages for digital architectural design and construction fields as Phan and Choo (2010)
proposes a new method for applying AR technology to interior design work, where a user can view virtual furniture and communicate with 3D virtual furniture data using a dynamic and flexible user interface. The introduced system facilitates to experience furniture using a Tangible Augmented Reality in real time, change the colour, style, or covering of furniture in a real environment and allows complex and varied designs to be explored and visualized in an easy manner.

Worksite planning of construction resources includes the design of construction worksite as well as the optimization of resource logistics as by Wang, 2006. Current construction worksite layout planning is highly depends on 2D paper drawings as worksite planners sketch the future worksite layout which implies to their real environment on paper. This traditional approach is considered as ineffective and consists of errors as the experience and good training are a must to design effective construction layout. With the implementation of the new AR planner tool, construction worksite planners’ duty becomes easy and quick and unskilled novice could easily capture the entire intelligent system.

The emergence of high-performance 3D graphics accelerators has simplified the inclusion of Magic Lenses into 3D virtual environments (VEs). Augmented Reality (AR) user interfaces are a specific type of 3D virtual environment that overlays virtual graphics on real objects in real-time as by Looser et al. (2007) exploring a new variation of the Tangible AR Magic Lens concept with experimenting flexible and resizable lens shapes.

The layout design problem is one of the main strategic issues and it has a significant impact on the efficiency of a manufacturing system. Islam et al., 2014 actually tried to show that how an optimized layout can be used to increase efficiency and reduce the non-productive time. It also shows how the same process with the same manpower can direct more efficient productivity by an appropriate layout.

Kalkofen et al., 2009 present interactive conceptions that support the comprehension of the relationships between simulated and real-world objects for Augmented Reality (AR) applications. To enrich the clarity of such relationships, it further discusses visualization techniques and their appropriateness for AR.
The purpose of using AR devices in manufacturing field mainly focus on improving the performance. Elia et al., 2016 propose a multi criteria model to support production managers and researchers to evaluate the performance of different AR devices. It mainly uses a case study to explain the proposed model.

Buttner et al. (2017) provide a systematic review of research done in the area of using new AR and VR concepts for facilitating industrial applications. By presenting the proposed interactive, community-driven tool for the visualization of the design space, they target on generating an effective discussion in the community that further discusses the future improvement of supportive environments in manufacturing in the context of I4.0.

Manual assembly design and planning is complex and time-consuming, as it deals with technical, economic and human factors. It involves of two main concerns: assembly Product Design and Planning (PDP) and assembly Workplace Design and Planning (WDP). The basic objectives of PDP are to make assembly less costly, easier, more reliable and faster through Design for Assembly (DFA) techniques and assembly sequence analysis. The main WDP issues include: workplace design and workplace layout. An upgraded workplace design allows the operators to work correctly, thus minimizing risky influences, and preventing potential body injuries. Both PDP and WDP issues can affect assembly efficiency and operator comfort during the assembly operations. Ong et al.(2007) Present a methodology that integrates the assembly Product Design and Planning (PDP) activities with the Workplace Design and Planning (WDP) activities to improve the efficiency and quality of assembly design and planning at the early design stage.

Gheisari et al. (2017) conducted a research based on an idea that having a classy and comprehensive BIM model, which embeds the required evidence as well as the 3D geometry of all the objects in the facility, could be used as a database that can be combined with AR. Such approach would provide an intelligent atmosphere for facility managers where they could have access to their required information easier and faster.
Discussion

The categorization of factors studied in the selected articles is discussed in the following sections.

*Table 2 - Impact of Augmented Virtuality on Apparel Manufacturing*

<table>
<thead>
<tr>
<th>Study</th>
<th>Competitive Advantage for the User Organization</th>
<th>Issues and difficulties in practical application</th>
<th>Relevance for Apparel Manufacturing</th>
<th>Technology Used</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Buttner et al.,2017)</td>
<td>*</td>
<td></td>
<td></td>
<td>Augmented Reality</td>
<td>Tool that facilitate initial research activities as well as the identification of research opportunities.</td>
</tr>
<tr>
<td>(Dissanayake and Farris 2014)</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>Virtual Reality</td>
<td>Technology transformations are encouraged by manufacturing assembly systems due to volatile demand patterns.</td>
</tr>
<tr>
<td>(Gheisari et al. 2017)</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>Other</td>
<td>Understand the current status of BIM and mobile computing application in facility management along with the benefits and challenges of implementing these technologies in an augmented reality environment.</td>
</tr>
</tbody>
</table>
Under this category, studies focused on impact of Augmented Virtuality on Apparel Manufacturing. These impacts can be a competitive advantage for the apparel manufacturing organisations while sometimes having implications in the practical context.

Some of the studies have identified how technology can be integrated in order to predict solution alternatives for issues related to apparel manufacturing.

Methods for simulating and evaluating perceived quality in early phases of the product development process, as early simulation and evaluation of perceived quality can minimize the number of corrections in late phases, increase quality and save both time and money (Dissanayake and Farris, 2014). Furthermore, the study concludes the practical applicability of AR as well as VR technologies as a mean of achieving the objective.

The progress in research on AR and VR concepts and technologies promise to offer significant benefits in terms of assisting the human user in managing the complexity of I4.0 scenarios. (Buttner et al., 2017). The goal of this paper is to provide an overview of research done in the area of using new AR and VR concepts for facilitating and supporting industrial applications and use-cases. By presenting the proposed interactive, community-driven tool for the visualization of the design space it aims on creating an active community that further discusses the future development of assistive environments in manufacturing in the context of I4.0.

As already mentioned, the topic of using AR and VR applications for the support of processes in industrial manufacturing has been the focus of multiple decades of research. Therefore, it is not surprising that a number of overview works have been published.

Building Information Modelling (BIM) is the process of developing and using 3D representations of building objects together with their related properties and relationship with other objects in the building. Having a sophisticated and comprehensive BIM model, which embeds the required information as well as the 3D geometry of all the objects in the facility, could be used as a database that can be integrated with an AR approach to provide an ambient intelligent environment for facility managers. (Gheisari, 2013). This study explore how BIM can be beneficial to facility management practitioners, how its integration with MAR and
making the data accessible through handheld mobile devices can enhance current facility management
**IMPACT OF EFFECTIVE FACILITY LAYOUT PLANNING ON APPAREL INDUSTRY**

**Table 3 - Impact of effective facility layout planning on apparel industry**

<table>
<thead>
<tr>
<th>Study</th>
<th>Affected Area</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Productivity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>* (Lenin et al., 2014)</td>
<td>*</td>
<td>The invented algorithm based methodology has the capability to propose best machine layout design which will minimizes the total flow distance in units, total investment cost of machines in final linear sequence of machines, total material handling cost, and total number of machine types arranged in sequence.</td>
</tr>
<tr>
<td>* (Kentli et al., 2013)</td>
<td>*</td>
<td>Optimization of setup time between production lines during machine changeover by inventing a heuristic. Uncertainty in scheduling times and production lines have not been taken into account here.</td>
</tr>
<tr>
<td>* (Slovic et al., 2015)</td>
<td>*</td>
<td>Addresses the implementation of a lean and continuous improvement practice through a model developed for the apparel industry, and effects of the developed model on productivity.</td>
</tr>
<tr>
<td>* (Mohibullah, 2016)</td>
<td>*</td>
<td>Provide a guideline to reduce amount of defects, material handling efficiency, saving manpower, saving times, improve productivity and cost reduction and increase profit regarding the sewing and finishing layouts of apparel industry</td>
</tr>
<tr>
<td>* (Islam et al., 2016)</td>
<td>*</td>
<td>Explore the use of appropriate line balancing to facilitate a good layout design.</td>
</tr>
</tbody>
</table>
For any company to consider an optimized layout planning system with state of the art technology, it needs to identify the return on such investment. It can be a cost reduction approach, a productivity increase, waste minimization etc.

Factors identified through analysis of papers related to facility layout planning of apparel sector are summarised in the above table.

In the study conducted (Lenin et al. 2014), it was found out that the proposed algorithm for optimization of facility layout yields the best linear sequence of machines which minimizes the total flow distance in units, total number of machines, total investment cost of machines and total material handling cost. Therefore, the outcome of how layout optimization that positively affects the organisation can be practically implemented with the use of a technology that has simulation capability.

Scheduling multi-machine multi-product assembly systems is necessary for the apparel industry due to rapid market changes. A company produces a number of different types of products. During production, it must be processed in several machines sequenced as an assembly line. After production of a product type is finished, the production line must be reorganized for producing the next type of product. (Kentli et al.2013). So the approach taken by the study is to optimize the layout with related to the above mentioned consideration and a successful initiative was made in providing viable solution for the issue.

Slovic et al. (2015) suggests a two-phase continuous process improvement model to up wise productivity in an apparel industry by addressing the implementation of lean and continuous improvement practices. Through this model, the researchers analysed the workplace layout, material handling and workplace arrangement (ergonomic). The developed model is based on the “learning by doing” principle. The first phase of the model includes four steps: analysis and design of a new setup, improvement through line optimization, new setup checks, and production line management. Though this model, the workplace layout was analysed in order to optimise the production layout and these techniques can be implemented to improve facility layout planning as well.

Mohibullah (2016) provides a guideline to reduce amount of defects, material handling efficiency, saving manpower, saving times, improve productivity and cost reduction and
increase profit regarding the sewing and finishing layouts of apparel industry. When planning the facility layout of an apparel company, this guideline could be considered to up wise the efficiency of a layout while maintaining a minimum number of moves within the layout.

Clothing manufacturing consists of a variety of product categories, materials and styling. Dealing with constantly changing styles and consumer demands is so difficult. Furthermore, to adapt automation for the clothing system is also so hard because beside the complex structure, it is labour intensive as well. Overall, the important criteria in garment production is whether assembly work will be finished on time for delivery, how machines and employees are being utilized, whether any station in the assembly line is lagging behind the schedule and how the assembly line is doing overall. (Islam et al. 2016). This paper suggests how a good layout can be designed and productivity can be increased by appropriate assembly line balancing

Analysis of the models and the frameworks

Verlinden et al. (2004) proposes an augmented prototyping platform which is named the WARP: Workbench for Augmented Rapid Prototyping. The WARP architecture considers the “prototyping pipeline”, i.e. the production flow of the prototype. It encompasses software and hardware. It covers both a generation phase and a simulation phase. The first takes care of conversions and manufacturing of physical components. The simulation phase employs these elements to create the actual augmented prototype and provides a number of interactive facilities. This methodology provides the facility to gain augmented prototyping that supports presentation and exploration at relatively low cost. Hence, this can be used as a cost-effective strategy by a company interested in integrating Augmented Reality to the business procedures.

Bradley et al. (2007) presents a Methodology to perform 2D real time augmented reality on non-rigid objects like clothes. The methodology provides capability to generate realistic augmentations on the flexible cloth while undergoing rippling and wrinkling, even in difficult illumination conditions. Therefore, the above detailed invention will be beneficial for apparel industry to track the cloth going through production procedure with high end technology.
In order to minimise the labour-intensity, the line was balanced using a simulation technique, Kursun and Kalaoglu (2009) proposed a methodology. It determines the bottlenecks in the process and provides scenarios which can provide decision alternatives to manufacturers. This methodology can be successfully integrated by apparel manufacturers to determine bottlenecks of the manufacturing process thereby increasing the productivity of production line.

Lenin et al. (2014) has proposed a meta-heuristic for layout planning in linear sequence machines which has the capability to determines the best linear sequence of machines that minimizes the total flow distance in units, total investment cost of machines in final linear sequence of machines, total material handling cost, and total number of machine types arranged in the final linear sequence. If this methodology is integrated with augmented reality it will undoubtedly be of immense value to the apparel industry.

Development of a heuristic to minimize the total setup time subject to machine changeovers was done by Kentli et al. (2013). This method offers a solution heuristic in order to optimize the production throughput. This study provides the logic that is getting orders of models, optimizing their production lines and predefining which products will go which production line before production begins.

Mohibullah (2016) suggests a guideline to reduce amount of defects, material handling, manpower, saving times, improve productivity and cost reduction by improving the performance of the sewing line to finishing section in an apparel industry. Garments industry consists of three main sectors named Cutting, Sewing and Finishing. A well balanced combination between those sectors can produce more effective production. In this guideline, Mohibullah studies how tight working space and bottleneck problem can appear due to sudden receive of wash garments, production status due to queue in iron, wastages, defects, transportation delays and inventory which affects the productivity and performance of a Garment.

Slovic et al. (2015) suggests a two-phased PDCA model for continuous process improvement in apparel industry. This two-phase Plan-Do-Check-Act (PDCA) procedure for continuous process improvement in the apparel industry was designed, verified by analysing a company in Serbia. Effects after implementing the model were measured through productivity. This
model consists of four main steps; analysis and design of a new setup, improvement through line optimization, new setup checks, and production line management.

Elia et al.(2016) develop a model to evaluate different AR systems. Augmented Reality systems in last few years show great potentialities in the manufacturing context: recent pilot projects were developed for supporting quicker product and process design, as well as for control and maintenance activities. The high technological complexity together with the wide variety of AR devices requires a high technological skill; on the other hand, evaluating their actual impacts on the manufacturing process is still an open question. Several pilot projects focused on demonstrating the applicability of AR systems in different manufacturing processes such as product design, production planning and control, plant and product maintenance etc. These studies mainly focused on evaluating technical performance of such AR systems for supporting critical manufacturing process: on the other hand, less research effort could be outlined in proposing models to evaluate most fitting AR device and/or systems before starting its technological design. Even if the technological development of an AR system is based on suite common features, the evaluation of most effective AR supporting a specific manufacturing process is a complex task. This study proposes a decision support system based on multi criteria analysis to support production managers in evaluating most effective AR device for specific manufacturing process.

Ong et al. (2007) proposes a two-prong approach to bridge the gap between the Product Design and Planning and Workplace Design and Planning processes in the early design stage. Firstly, an Augmented Reality based human-computer interface is developed to provide a highly immersive and intuitive environment that allows engineers to design and plan assemblies with sufficient information of the assembly environment during the early design stage. With this environment, engineers can manipulate and evaluate the virtual prototypes of new product designs in the real assembly environment. This will improve the assembly design and planning and reduce re-designing and re-planning activities. This paper proposes an “AR Assembly System Architecture”.
**Table 4 – Models and Frameworks**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Model/Framework</th>
<th>Applied Field of Study</th>
<th>Advantages/ Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Verlinden et al., 2004)</td>
<td>Two Augmented Prototyping models and the WARP augmented Prototyping platform</td>
<td>Product Layout Planning</td>
<td>Ability to gain Augmented prototyping that supports presentation and exploration at relatively low cost</td>
</tr>
<tr>
<td>(Bradley, 2007)</td>
<td>Methodology to perform 2D real time augmented reality tracking on non-rigid objects like clothes</td>
<td>AR/VR/AV</td>
<td>Capability to generate realistic augmentations on flexible cloth while undergoing rippling and wrinkling, even in difficult illumination conditions.</td>
</tr>
<tr>
<td>(Kursun and Kalaoglu, 2009)</td>
<td>A simulation technique for line balancing</td>
<td>Apparel</td>
<td>Determining the bottlenecks in the process and providing scenarios which can provide decision alternatives to manufacturers</td>
</tr>
<tr>
<td>(Lenin et al. 2014)</td>
<td>Development of a meta-heuristic for layout planning in linear sequence machines</td>
<td></td>
<td>Determines the best linear sequence of machines that minimizes the total flow distance in units, total investment cost of machines in final linear sequence of machines, total material handling cost, and total number of machine types arranged in the final linear sequence.</td>
</tr>
<tr>
<td>(Kentli et al., 2013)</td>
<td>A heuristic to minimize the total setup time subject to machine changeovers in models ordered</td>
<td></td>
<td>Optimization of throughput of apparel manufacturing and optimization of setup time between production lines.</td>
</tr>
<tr>
<td>(Slovic et al., 2015)</td>
<td>Two-phased PDCA model for continuous process improvement</td>
<td></td>
<td>Addresses the implementation of the lean and continuous improvement practices</td>
</tr>
<tr>
<td>(Mohibullah, 2016)</td>
<td>Provide a guideline to improve productivity</td>
<td>*</td>
<td>Provide a guideline for reducing amount of defects, material handling, manpower, saving time, improving productivity and cost reduction</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------</td>
<td>---</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>(Elia et al. 2016 et 2016)</td>
<td>Develop a model to evaluate different AR systems.</td>
<td>*</td>
<td>A multi criteria model to support quantitatively production managers and researchers in evaluating the performance of different AR devices.</td>
</tr>
<tr>
<td>(Ong et al., 2007)</td>
<td>Presents a model that integrates the assembly Product Design and Planning (PDP) activities with Workplace Design and Planning (WDP) activities to improve efficiency and quality of assembly design and planning at the early design stage.</td>
<td>*</td>
<td>An AR-aided assembly design and planning system</td>
</tr>
</tbody>
</table>
Conclusions and future work

Figure 1 – Conceptual Framework
Facility layout planning has become a major factor of consideration with regard to the manufacturing industry, specifically apparel sector. It is due to ill-planned ineffective product layout planning having an impact in the areas of productivity, cost, profitability and effectiveness of the manufacturing process at large. Therefore facility layout solutions must be designed in a manner to avoid and reduce negative aspects of product flow, reliability and quality.

Many companies are concerned about planning facility layout in a way that maximizes productivity. Facility layout planning has a significant impact on a business’s bottom-line and having well designed facility layout can reduce operating expenses. Furthermore, machine change over time can be reduced through an optimal layout plan. The traditional methods of layout planning which are time consuming and inefficient, results in net benefit not being considerably advantageous to justify the cost. Over the last few decades, many prototypes and algorithms were presented to address this situation using mathematical models and operations management principles. The above mentioned models and algorithms differed based on the need to be met and constraints which were prevailed upon.

The application of augmented reality and virtual reality in different fields, especially in facility layout planning could now represent a disruptive innovation for improving performance. It gives a good idea of how the finished system will work. Use of augmented reality and virtual reality in development and implementation of interactive prototypes, described in this paper shows that the use of above mentioned technology based element sets is beneficial in many aspects. Augmented reality based facility layout planning has the capability to allow managers to create a visual model using specifications from the current layout designs which aids them in making decisions regarding the most efficient possible layout when adding or removing individual sections.

Augmented reality and virtual reality, even though not heavily used in the industry, have been subjected to successful researches on visualizing, prototyping and forecasting. It has the capability to develop a practical representation and analysis based on a mathematical model. Therefore, there exists an opportunity to combine above discussed theoretical developments done in optimization of layout in apparel sector with the augmented and virtual reality technological platforms. The combined effort will support user by graphically providing analytical support in identifying bottlenecks in production line and decision support in
gaining productivity, effectiveness and optimization. A systematic review on researches done in last few decades on optimal layout planning in apparel industry using Augmented Virtuality is presented in this paper. Recent researches done in facility layout planning, augmented reality and apparel industry are identified and summarized along with the methodologies and key findings. This review comprehensively and systematically analysed researches that have been published in the above context in order to identify knowledge gaps vital for the enhancement of planning and functional context of apparel sector.

Through the systematics review of literature it was identified that, even though there are many researches published, still there is a need of relating the models and algorithms in facility layout plan to augmented reality prototyping and apparel industry. Therefore, as a future scope of work, a combined effort of the above mentioned areas can be suggested. However, current AR applications are mainly concerned with assembly guidance and maintenance or aesthetic evaluation. There is the lack of a systematic methodology to utilize the benefits of an augmented reality and virtual reality environment to improve assembly design and planning in the early design stage. Furthermore, there is a vital need of a methodology of measuring the efficiency of various facility layout planning models and algorithms to derive at the optimal plan which suits the constraints and particular product layout of an organisation.

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Discovering the Ambiguity of MIS Led Organizational Decision-Making Approach

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Abstract

Budgetary investment for MIS (Management Information System) is considerably progressive compared to the other business investments. The intention of the MIS is to support for managerial decision making effectively and on time. However, it is evident by literature and the practical scenario, that the decisions made with the support of MIS are not viable up to the level anticipated. The real cause for this situation is not directly observable, as MIS is an automated form of organization decision making process. This process is constructed with two main interventions, as: technological and human. The research attempts to identify which intervention and in which phase(s) of organizational decision-making process, affects the business decisions. The research outcomes will be then considered to address the gaps resides towards a successful decision-making process effectively supported by MIS. Six organizations from the same sector were selected as the sample which use a MIS outsourced from one software provider. The data was collected against independent variables as identified under each phase of organizational decision making in terms of MIS. The results of the research revealed the practical effect and gaps on organizational decisions due to MIS.

Keywords: MIS, Decision Making, Information System
INTRODUCTION

People drive businesses in pursuit of success, where business success depends on people who manage them. Managing a business is all about making decisions throughout the process of aligning organizational resources towards achieving business objectives. Business decision making is, therefore, considered a vital role for managers to distinguish them from non-managers in organizations. Decision making is a process of choosing the most appropriate alternatives from among sets of options and manage to execute such options towards achievement up to operational level (Rangriz et al., 2011; Marume & Ndudzo, 2016; Harvey, 2007).

Decisions are made based on problems or opportunities faced by a business. The aim of business decisions will always be profit optimization. Therefore, business decision making is a process of choosing the most cost effective and profit focused alternatives from among a set of options under given constraints. Hence, it should be done in a systematic manner to minimize the risks created by business decisions. The process of decision making is, therefore, identified in several steps as: problem/opportunity identification, analysis of problem, collection of all possible data, analysis of data collected, preparing data, identifying possible alternatives, assessing the effects of alternatives, taking decisions, execution of the decision and receiving the feedback on execution (Marume & Ndudzo, 2016). A similar process can be defined as: clarify the decision which needs to be taken, collect relevant facts, identify the possible alternatives, evaluate the effects of alternatives, select the most viable alternative(s), take actions to implement them, evaluate the action implemented and its consequences (Stibel, 2014; Michael et al., 2014).

Decision making is not a part of management; it is management itself as each component of management ends up with decisions. Hence, decision making has become an integral role for managers as they need to make dozens of business decisions in a day. However, it would be challenging as the success of a manager depends on the success rate of the decisions made by him/her.

LITERATURE REVIEW

Decisions making by managers remains a critical process and has an elevated level of subjectivity involved with it. The process attempts to identify the business problems and
resolve them and/or identify opportunities to make benefits out of them. Hence, the decision-making process is identified in existing literature as follows (Asemi & Safri, 2011).

![Diagram of the decision-making process and problem solving](image)

Figure 1: Steps in Huber’s Model (Asemi & Safri, 2011)

No decision is economically valuable until it is implemented into actions which can be visible as results directly or indirectly favorable to business. Such actions are directed to address a problem or an opportunity as defined to achieve business objectives. Therefore, the decision making process is integrated with organizational problem solving. Problem solving however, commences with a consecutive step of the decision making process, which is implementation (figure 1). The implementation is the process of executing recommended solutions into action under a given work setting with a problem or opportunity resident in. Therefore, commercial lance is keen to see how organizational problems are addressed through a systematic decision-making process (Efraim & Jay, 2001).

**Decision Making Process and Problem Solving**

As specified above, decision making comprises intelligence, design and choice phases.

**The Intelligence Phase:** The intelligence phase involves a systematic identification of problem or opportunity for the collection of appropriate facts. Appropriateness of intelligence phase depends on certain qualities of facts collected: accuracy of facts, adequate level of facts, facts modeled in proper formats, whether they are appropriate to address a given context, and are quantifiable enough to use common measures, accuracy of information sources, availability of data, poor data (data with limited details) are some of the critical qualities of facts (Efraim & Jay, 2001; Marko, 2016; Zimmerman & Kanter, 2012; Nowduri,
2011; Bob, 2012; Akol, 2009). However, ensuring appropriateness of facts at this phase is critical as such facts may be expensive.

There is a direct impact of the quality of facts on the quality of decisions. The real risk is not the incomplete decisions based on inappropriate facts provided at this phase, it is the inaccurate decisions which would be risky to implement. On the other hand, the same situation may occur due to information overloading too; the opposite of inadequateness of facts, which is termed as information under loading (Efraim & Jay, 2001; Marko, 2016; Zimmerman & Kanter, 2012; Nowduri, 2011; Bob, 2012).

Examining the literature carefully, the most independent factors by which the managerial decisions can be affected are illustrated as follows:

![Figure 2: Factors Affecting for Managerial Decisions at the Intelligence Phase of Decision Making Process](image)

**The Design Phase:** The design phase involves projecting and analyzing possible alternatives on facts available and presenting them in a meaningful manner for decision makers to drive towards efficient and effective decisions. Exact understandings of the problem/opportunity, assessing the workable solutions for feasibility and modeling the problem/opportunity are the prerequisites for this stage. Modeling is about conceptualizing a problem or an opportunity
and presenting relevant facts in an abstract manner in quantitative and/or qualitative forms (Efraim & Jay, 2001).

Modeling output can be normative or descriptive. Normative models are generated in a quantifiable manner by presenting all possible alternatives in the best examining way with figures while the descriptive model is generated in a subjective way as what they are with no or less quantifiable figures (Efraim & Jay, 2001).

Modeling process is affected by two main factors, as: decision variables and principle of choice. Decision variables are described as the decisions which are affected by a decision maker’s cognitive responses, attitudes, values, perceptions, beliefs based on their personal experiences and perceived constraints. Principle of choice is about the guiding criteria for making a choice from among possible alternatives. Decision variable is a factor that can be managed by the decision makers whereas the principle of choice is a constant guideline for decision makers to minimize personal bias from decisions made and to minimize the risk of decision execution (Marko, 2016; Zimmerman & Kanter, 2012; Čalopa, 2017; Sacha, 2011; Efraim & Jay, 2001).

The risk of choosing the correct alternative with the models designed. The decision maker chooses a favorable alternative out of models designed. The factors influencing a manager’s decision making would depend on any combination of decision variables of the decision maker and the normative or descriptive way of model. Further, considering the human involvement in the decision making process, two components are observed: Judgment and Choice. Judgment is a process of assessing the possible alternatives on decision variable while choice is determining specific alternatives from among a set of alternatives to be implemented (Stibel, 2014; Michael et al., 2014).

The vulnerability to make inaccurate decisions is involved at this point too as the personal variable effect on decisions. Therefore, the consistent efficacy of decisions cannot be guaranteed at this level, till the results of actions which are led by such decisions are evaluated. Therefore, measuring the resulting outcome of decisions becomes important. The situation proven so far by the existing literature can be illustrated as (figure 3) (Efraim & Jay, 2001; Marko, 2016).
The modeling of design phase is found to be a vital part of the decision-making process as the decisions made by decision makers are heavily affected by model designs. Validating models prior to use is again critical as it is contextual to a given situation of the problem or opportunity (Marko, 2016).

![Diagram](image)

Figure 3. Factors Affecting for Managerial Decisions at the Design Phase of Decision Making Process

Any decision is supposed to be correct as much as possible, minimizing the risk of failure. Therefore, organizational decision making is supported by technology in different aspects, with provided systems, tools, techniques, methods, etc. (Efraim & Jay, 2001; Marko, 2016; Zimmerman & Kanter, 2012).

In general practice, the way of business information placed or/and designed on information systems’ reports or other computer-generated reports are known as report specifications. Report specification is the structure of the report layout on how each piece of information is placed. This helps the decision makers to make efficient and effective decisions. Vulnerability again appears at this point too if the report layout is designed in an inappropriate way. Then the decisions made by managers would be erroneous. This is likely to happen regardless of the technologies involved in designing report specifications in the design phase.

**The Choice Phase:** Choice phase selects appropriate generation of alternatives till this phase is completed. This phase makes use of certain techniques, such as: analytical techniques (solving a formula), algorithms (step-by-step procedures) and heuristics (rules of thumb) (Harvey, 2007; Efraim & Jay, 2001).
Analytical technique uses mathematical formulae to generate an optimal solution or project for certain results in each scenario. This technique is common in solving structured problems. Structured problems are found in business context where the scenario is repetitive and common and also the initiation, process and results are clearly identified with the possible constraints. Solution for such problems can be used by having a proven set of steps (Harvey, 2007; Efraim & Jay, 2001).

The choice phase consists of an algorithm which follows the set of rules and procedures step-by-step to solve problems found. Algorithms are proven to be used to generate error-free solution in structured problems (Harvey, 2007; Efraim & Jay, 2001).

Heuristics come as a subjective technique in the choice phase where the decision variables of the decision maker come into play in choosing the best possible alternatives to a given context. Qualities such as subjective, informal, judgmental knowledge gained through experience in a given context lead to choose possible solutions at this stage. Semi-structured problems which are neither fully structured nor totally unstructured and unstructured problems for which no algorithm can be employed to reach optimal solution, are addressed in this way in an organizational context (Harvey, 2007; Efraim & Jay, 2001; Marko, 2016; Zimmerman & Kanter, 2012).

The Implementation Phase: As shown in figure 1, the problem-solving process commences with the implementation phase where the practical application of alternative(s) chosen for a given problem or an opportunity, gets identified. This involves a systematic process of executing actions towards solving a problem or addressing an opportunity. The results which are planned in the decision making process are being generated as measurable output in this level. Level of management involvement is very high in this process (Harvey, 2007; Efraim & Jay, 2001; Marko, 2016; Zimmerman & Kanter, 2012).

Support of Information Systems in Business: Computerized systems are in operations for commercial purposes with various intentions. Generally, formal, repetitive transactions of which input and output are pre-determined and identical and can be easily automated are known as a computer system, while, the information systems are more socially interacted as they are heavily influenced by people. Therefore, the information system does not always follow pre-determinant factors and has no representation of an algorithmic model at the point
where the people make decisions and actions based on the information produced by information systems (Gilman, 2012).

Information systems are generally found in business usage and otherwise. Information systems such as: knowledge management systems, artificial intelligence systems, geographic information systems and related others which are not directly used for business purposes fall under ‘other classification of information systems’.

Information systems, used for commercial purposes are categorized mainly into 2, as ‘operations support systems’ and ‘management support systems’ (Gilman, 2012; George & James, 2010; Kenneth & Laudon, 2011).

The ultimate purpose of information systems coming under ‘management support systems’, is to generate meaningful information for the decision makers to make quick and reliable decisions in organizations. Information systems collect data produced at each business transaction, transform it into meaningful models of information into various forms of reports and disseminate them for the decision makers as appropriate. As decision making is one of the key roles of managers, information systems reside as a backbone for them to maintain the management process smoothly. To accomplish this purpose, information system is made by combining the hardware, software, communication networks, data resources, procedures and people. Information systems, in other words, an organized combination to collect, organize, store and disseminate information as required throughout the organization (Gilman, 2012; George & James, 2010; Kenneth & Laudon, 2011).

Transforming data into information is the most important part of the information system. Consequently, the information is used to make decisions by people and such decisions will be implemented as actions at the end (Gilman, 2012).

Management Information Systems (MIS): Data, in a business context, is simply facts that occur with business transactions. Data, in its nature, is unorganized and need to be processed.
Information, on the other hand, is a systematically organized and interpreted data used to make decisions for a given business purpose with reduced risk and uncertainty. As discussed above, the information is essential across all the levels of management, which are: strategic, tactical and operational (Predrag & Tanja, 2012; George & James, 2010).

Management Information System (MIS) is a type of Information System (IS) used for support to fulfill the managerial purposes in organizations. MIS is an automated information system with the intention to gather, store, process data and generate meaningful information to cater for a given business purposes and disseminate data and/or information for functional levels in various models, such as: tables, charts, diagram, graphs (Predrag & Tanja, 2012).

Effective decisions are produced through a systematic process with clearly determined elements which are handled in structured steps (Adeoti, 1997; Satyanarayana et al. 2009; Peter, 2000; Harvey, 2007). Actions would be efficiently implemented throughout an effective decision-making process (PMI, 2015). IS, is therefore, expected to support this task through a systematic process. Hence, the goal of MIS is to improve the information quality fed into it and produce meaningful information towards effective decision making in organizations (Hasan, 2013).

Aligning to the Porter’s Value Chain, the functional levels can be recognized as: primary and support activity. The activities which provide an enterprise a competitive advantage such as: inbound logistics, operations, outbound logistics, marketing and sales and service are called primary activities, whereas, the activities which provide an enterprise to sustain with the intention of the primary activities by coordinating across all activities, which are: firm’s infrastructure, human resource management, technology development, procurement are called as secondary activities (Yaser, 2014; Ensign, 2001). Information systems play a significant role to ensure a smooth communication of data and information across the value chain by connecting between basic activities, between basic and support activities and between support activities by optimizing the organization’s decision-making process (Gilman, 2012).

Transaction Processing System (TPS) is a type of information system that is intended to capture and maintain data of repetitive business transactions. The intention of TPS is to gather, process, store data/facts occurred throughout business transaction. Even though the
TPS does not support managerial decision making directly, it indirectly does so by providing data/facts as needed in meaningful ways to MIS.

As shown in the (figure 5) below, the data floods which come from TPS and/or any other systems to the MIS. The data is then converted into organized forms as appropriate in the MIS processes. This process is done in accordance with the design phase of decision making process (figure 1 and figure 3).

The output models are determined based on different management needs and report specifications are designed at this level. The vulnerability of making erroneous report specifications may happen here, if the business need is not studied or understood. However, the responsibility of designing MIS processes is with the software development party if technical expertise is outsourced. Further, this point is identified as a ‘technological intervention’ towards decision making as it has connected with the MIS.

Then, the user’s impact on information passed to the ‘user’s processes’ occurs due to the decision variables shown in figure 3. At this point, the decisions taken by the decision maker based on information produced by MIS may vary due to the personal attributes of him/her, even though, principle of choices (guiding criteria) are applied to minimize the personal impact towards the decisions.

This can be identified as ‘human intervention’ to the goal of MIS, which is optimizing organizational decisions with minimized risk and uncertainty on a given business purpose.

Management information systems are heavily in use in the contemporary commercial context. About 80% of usage of management information systems at medium scale enterprises is found in contemporary literature (Ramachandra & Srinivas, 2012). It is an influential figure as small and medium enterprises are crucially important for a nation’s economic growth (Department of Census & Statistics, 2015; World Bank, 2015; Oecd, 2000).
Can Information Systems Replace Managers? It is crucially important to investigate whether the managers can be replaced by software, as it may, therefore, lead to replacing the whole management process one day (Suzy & Charles, 1996; Akshat, 2017). In reading the existing literature, it is evident that every action of an enterprise originates on the process of planning. Planning is the initial stage of business management. Efficient and effective decisions are taken at the end of each step of management. They are: planning, organizing, commanding, coordinating, controlling. Observing carefully, vulnerability of making faulty decisions can happen at each step of management (Haidar, 2016; Timms, J. et al. 2011).

The smallest component of the process of business management is the business transaction. Business transactions are commonly seen in both back office and front office operations such as: purchases, payments, sales, and receipts of cash, etc. However, this smallest component is the reflection of whether the process of management is successful or not (King & Kelleher, 2013; Pohanková, 2010; Next & Battlefield, 2008).

Group of related transactions to fulfill a specific purpose is identified as a business practice (Quartz, 2007; Mckenzie & Bank, 2015). As seen in business transactions, the similar components, therefore, can be found in business practices also. The interrelated components of business transaction/ practice can be illustrated as follows.

![Figure 6: Components of a Business Transaction/ Practice](image)

According to figure 6, it is clearly seen that the decisions made by people result in a combined intervention of human and automation of information (Steven, 1976; Devin, 2015; Suzy & Charles, 1996). Further, it is evident that, some components of the business transaction/ practice can be covered in information management under automation such as: recording data/facts of transactions, reviewing results with what is planned whereas other components such as: planning and organizing, action implementation, making decisions on evidence, correcting/improving actions are highly management related which cannot be automated. The components which can be accomplished by information management can be
automated up to a great extent whereas the other components of business transaction/practice are highly human dependent.

This argument leads to prove that no manager can be replaced by any software in terms of business management. However, software can be used to make the decision making process efficient and effective by empowering the information management components of business transaction/practice with information technology. Software which generates information for managerial decision making supports them to do so efficiently and effectively, rather than replacing them (Devin, 2015).

PROBLEM STATEMENT

Having spent considerable investments on management information systems and other information systems by business organizations, still the decisions taken by the organizational decision makers upon the information produced by the information systems have not met with the goal of the MIS. Either, the accuracy of the decisions or the efficiency of decision making process is disturbed at any level in accordance to the existing literature discussed. However, the same cause was experienced by the business organizations in the practical scenario too. Accordingly, the organizational decision making is not up to the level anticipated.

This situation has led to implement the actions based on such decisions which are less effective or are vulnerable for risks. The problems identified by investigating the aforesaid situation in the practical scenario are as follows:

- Is the data collected from various information sources for the MIS consistent, reliable and adequate to address a given problem/opportunity (as in the Intelligence phases of the decision-making process)?
- Is the organization of data into information (models designed as reports) properly aligned to address a given problem/opportunity (as in the Design phases of the decision-making process)?
- Do decision makers make decisions upon information presented in reports with less or no personal prejudice (as in the Choice phases of the decision-making process)?

RESEARCH QUESTION
By considering the practical problems identified above, the research question is defined as: “what are the factors affecting organizational decisions driven by MIS?”

**OBJECTIVES**

**General Objective:** To identify the factors affecting organizational decisions driven by MIS.

**Specific Objectives:**
1. To conceptualize the theoretical process of decision making.
2. To identify the gaps in the decision-making process in terms of technology (MIS) and human intervention.
3. To validate the effect of gaps in practical usage in organizational decision making.

**Proposed Theoretical Model**

The contemporary literature proves that both efficiency and effectiveness of business decisions are influenced by numerous factors (Efraim & Jay, 2001; Marko, 2016; Zimmerman & Kanter, 2012; Nowduri, 2011; Bob, 2012; Čalopa, 2017; Sacha, 2011).

When these factors are mapped with the process of systematically transferring data into actions implemented (figure 4), it can be theoretically visualized as follows:
In summarizing the literature discussed, it is evident that decisions can be effected in any phase of the decision-making process. Numerous factors intervene in different phases of the decision making process. When such factors are mapped systematically with the different phases of transformation of data into action implementation through decision making, it can be identified into 3 main levels, as: pre-processing level, processing level and decision making level (figure 7).

In investigating the industry practice of business decision making, the ultimate decision is made by humans based on various aspects of information as generated and modeled by information systems. However, an argument is clearly emerged upon above literature that the vulnerability of making ineffective/ inaccurate decision may occur due to either involvement human and/or technology processes.

Accurate and efficient decisions are the main intention of MIS. However, available literature evidently proves that this intention can be disrupted at any level of decision making and problem solving processes (figure 7). This situation is again conceptualized by the diagram below (figure 8).

**Figure 8: Independent Factors for Efficient and Effective Decisions**

**METHODOLOGY**
The research follows realism philosophy as no statistical methods fit perfect. Therefore, research is defended with several triangulation methods to ensure the reliability of final research outcome. The research approach is deductive as it defines a research question by considering the literature and practical concerns on the topic. Strategy of this research is case study which involves extensive investigation of several business organizations in same real-life context. The data is therefore collected by interviewing relevant parties, investigation of related official records (MIS generated reports), observing certain scenario (how the MIS report formats are initially modeled by MIS service providers).

Mixed method is employed as the choice of data collection where quantitative and qualitative methods are employed, yet, emphasized on qualitative method based on the nature of the research. The time horizon approach of the research is cross-sectional as one aspect of several organizations was focused as the research clue (Saunders & Tosey, 2012; Yunibesith, 2003).

Techniques and procedure employed by the research are explained in this section followed by the research onion layers defined above. No statistical techniques were employed as the study was based on selective case studies, which were six organizations. This sample is not to generalized any assumption made by the research, yet, to discover the feasible factors affecting organizational decisions driven by MIS.

Therefore, a survey was conducted to investigate the industry practice of problem solving in terms of MIS. Accordingly, 6 business organizations from the production sector where the same management information system is outsourced from a software vender were selected. A single software vender was selected to maintain the consistence of the intelligence and design phases of the problem solving process.

In this study, the interviews and observations were also held to collect the data related to the Intelligence phase. The data related to the Design phase was collected by observing the different report designs produced by MIS developed by the software vender. The data related to the Choice phase was collected from decision makers by conducting interviews and using questionnaires. Reliability of the research is tested by employing the triangulation methods as no statistical reliability or validity tests can be applied based on the nature of the research as explained above.

RESULTS AND DISCUSSION
Data related to the Intelligence phase of the decision-making process was collected considering the 6 main aspects of: accuracy of data, adequateness of data, quantifiably (less subjectivity), accuracy of data sources, availability of data, data with limited details as shown in the figure 2 (appendix 1).

Data related to the Design phase of the decision making process was collected considering the 5 main aspects as: poorly addressed the scenario, average addressed the scenario, above average addressed the scenario, satisfied in addressing the scenario, good in addressing the scenario (appendix 2).

Data related to the Choice phase of the decision making process was collected considering the 5 main aspects as: traditional way of decision making, relaying on info., but, personal judgments affect, highly relied on information – experience affect, always seeking for more facts in making decisions, always seeking for more facts in making decisions and makes decisions accordingly (appendix 3).

Five levels of weightages were assigned based on the gravity applied by each aspect. They are as: 1- Poor, 2- Average, 3- Above average, 4- Satisfied, 5- Good. The data sum up against the 3 phases was then converted into a percentage value. The summary of results for each organization is given in the table below.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Intelligence phase (%)</th>
<th>Design phase (%)</th>
<th>Choice phase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. 1</td>
<td>67</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Org. 2</td>
<td>77</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Org. 3</td>
<td>80</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Org. 4</td>
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<td>20</td>
</tr>
<tr>
<td>Org. 5</td>
<td>83</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Org. 6</td>
<td>67</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

When the results were summarized against each phase, it could be presented as follows.
According to the study, the total effect of decision making process in relation to MIS is found as 61%. In other words, the gap in the decision making process in relation to MIS is proven as 39%. This scenario is shown in the diagram below.

This shows that the effect of MIS, despite the gaps proven in distinct phases of decision making, is only 61%. When this effect rate is broken down into ‘technological’ and ‘human’ interventions which are the independent factors for organizational decisions, it can be illustrated as follows:
When the gap of 39% is broken down into the 3 main phases of decision making, it can be presented as follows:

![Figure 12: Gap of Decision Making Process in Relation to MIS](image)

When this gap is broken down into ‘technological’ and ‘human’ interventions which are the independent factors for organizational decisions, it can be illustrated as follows:

![Figure 13: Breakdown of the Gap of Decision Making Process in relation to MIS](image)

CONCLUSION
MIS is intended to support managerial decision making effectively and on time. However, it is evident in available literature and the empirical research that, the intention of MIS is not properly apparent. In other words, the investments spent by enterprises have failed to reach the expected goal of the MIS.

The goal of MIS, which is an effective decision on time, is independently affected by 2 main interventions, which are: technological and human. The research focused to find out how these independent factors affect the organizational decision making individually.

Six organizations that use MIS provided by one software provider only, were selected. The data collected in terms of organizational decision making phases related to intelligence, design and choice. These 3 phases, then, were mapped with the MIS in terms of technological and human interventions.

The result proved that the effect of MIS is only 61% including the intelligence and design and choice phases. The intelligence and design phases represented technological intervention to the organizational decisions and the choice phase represented the human intervention for the same. Further, it was proven that the gap for the organizational decisions and the MIS involvement is 39%. The gap between the intelligence and design phases represented 23% and the choice phase was represented as 17%. This proves that the personal characteristics of the decision makers can be considered as the greatest gap for organizational decision making. This is not a technical aspect for MIS.

The most effective alternative will be chosen by a human from among a set of alternatives, which has then to be implemented as actions. When these actions are not viable enough, the failure of the decision is evident. This issue resides unseen as organizational decisions are made in a combination of technological and human intervention. However, the research result shows, that the most affecting intervention for organizational decisions comes from the human intervention and not technological intervention.

Furthermore, it is evident that, the effect for organizational decision making due to MIS is about 60% of the total investment of MIS. About 40% of a gap resides towards MIS in the practical scenario.

FUTURE WORKS
Further studies should be carried out to analyze the weightage system and its consistency based on each variable.

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APPENDIXES

### Appendix 1 - Intelligence Phase

<table>
<thead>
<tr>
<th>Organization</th>
<th>Accuracy</th>
<th>Data with limited details</th>
<th>Adequateness</th>
<th>Quantifiability</th>
<th>Accuracy of data sources</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. 1</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Org. 2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Org. 3</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Org. 4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
### Appendix 2 - Design Phase

<table>
<thead>
<tr>
<th>Organization</th>
<th>Poorly addressed the scenario</th>
<th>Average addressed the scenario</th>
<th>Above Average addressed the scenario</th>
<th>Satisfied in addressing the scenario</th>
<th>Good in addressing the scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. 1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Org. 2</td>
<td>3</td>
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<td></td>
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<td></td>
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<tr>
<td>Org. 3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Org. 4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Org. 5</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Org. 6</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Appendix 3 – Choice Phase

<table>
<thead>
<tr>
<th>Organization</th>
<th>Traditional way of decision making</th>
<th>Relaying on info., but, personal judgments affect</th>
<th>Highly relied on information. Experienced affect</th>
<th>Always seeking for more facts in making decisions</th>
<th>Always seeking for more facts in making decisions and makes decisions accordingly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. 1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Org. 2</td>
<td>3</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Org. 3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Org. 4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Drivers of Innovation Performance of the Sri Lankan Software Development Industry

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Kuruppuarachchi, D., University of Sri Jayewardenepura, Sri Lanka.

Abstract

This study investigates the impact of R&D management practices and knowledge management practices on innovation performance of the Sri Lankan Software Development firms. In this study, management style & leadership, and resource support are considered as driving forces of R&D management practices while market orientation is considered as an antecedent for the overall relationship structure. A conceptual framework is constructed with the support of related literature. Research constructs are operationalized with exiting psychometric instruments which were already validated for their content. A disproportionate stratified random sample of 128 R&D managers and engineers considering the involvement in software development is selected from 32 firms and an online survey is conducted using a structured questionnaire. Results reveal that direct positive effects from R&D management practices, market orientation, and knowledge management practices are statistically significant on the innovation performance of the software development firm. Moreover, R&D management practice is positively affected by knowledge management, management style & leadership and resource support. Findings of this research provide an empirically validated framework to boost the innovation performance of the Sri Lankan software industry.

Keywords: Innovation Performance, R&D Management, Sri Lankan Software Development Industry, Market Orientation, Knowledge Management
Introduction

Innovation is a trendiest word in the current era of knowledge based economy. For today’s business organizations, creation and exploitation of knowledge have become a competitive advantage. Moreover, the global competition has been strengthened due to the rapid developments in information technology. Hence, organizations are seeking for innovative products, processes, and technologies to win the markets due to this competition. In the era of knowledge-based economy, the proverb in the software development industry is that “Knowledge is power”. The knowledge has become competitive in the area of Information Technology. The global competition has been strengthened due to the rapid development in information technology. The speed of “go to market” is accelerating at an exceptional rate (Huang and Lin, 2006). Furthermore, R&D activities become a critical component, when the innovation is requesting by other departments of the organization. Some organizations rely on R&D for growth via new product or process introduction; as well as to stimulate incremental improvements in existing product or process. On the other hand, certain organizations do not conduct R&D and they consider R&D as an unnecessary expense. They may either outsource their R&D activities or acquire others’ innovative developments. Thus, the innovation performance in the presence of R&D management, knowledge management, and market oriented organization culture is an interesting issue to investigate.

The Software Development industry in Sri Lanka is thought to be one of the quickest developing industry and ahead or keeping pace with regional and global trends. In the Sri Lankan IT-BPM Industry Review, 2014 (SLASSCOM, 2014) has mentioned that the global demand for IT/BPM software & services was at USD 1.2 trillion in 2013 with the enhanced monetary conditions. There was a 4.5% growth over 2012. Sri Lanka’s fortunate geographic area at the southern tip of India spots it at the junction associating South Asia, Far East and the Pacific with Europe and the America. Sri Lanka has been moved to the middle-income developing market status, and transforming the strategic location advantage to be the economic hub for the region. The global presence is one of the evidence for the Sri Lanka’s development as a niche destination for Software Product Engineering and Finance Accounting Outsourcing. Developing as a foremost source destination for global IT-BPM services, Sri Lanka is achieving the global brand recognition and visibility. The local and foreign investors are now ready to invest in the Sri Lankan Software development industry. The competition of the Sri Lankan Software development industry has been growing with the
global market competition. To maintain the position in the industry, software development companies are using a strategic weapon called “Innovation”. Therefore, innovation has been identified as a critical factor for the software development industry (Balasooriya, 2014). While the private sectors of most developed countries are expending over 65% for R&D, Sri Lanka is expending merely 18% (World Data Bank, 2014).

Motivated by the above mentioned facts on trending innovations in the software industry and the need for more investments in Sri Lanka on R&D as a country, this study attempts to investigate how innovation performance is driven by R&D management practices, knowledge management practices, and market orientation of a software development firm. Moreover, this study examines the importance of resource support, leadership, and management style for boosting the R&D management practices of a firm. Based on existing literature, a conceptual framework is formed and analyzed using a random sample of 128 responses. A partial least square structural equation model (PLS-SEM) is used to demonstrate the relationships and to test underlying hypotheses.

The contribution of the study is significant in several ways. First, this study introduces an extended framework for enhancing innovation performance in the presence of R&D management practices, knowledge management practices, and market orientation. Second, this study examines the innovations performance of the Sri Lankan software industry for the first time. Third, relationships revealed in this study help the management of the software development firms not only in Sri Lanka but also in other developing countries to organize their resources and stimulate the management process to boost innovation performance.

Literature Review

**Innovation performance**

Innovation is a critical instrument for organizations to secure a place in the competitive world of the future (Zhang et al., 2004). Innovation capability as the capacity to adequately absorb, allocate, and use skills and knowledge to enhance existing technology, and to realize new products and technology (Cirera et al., 2015; Huang and Lin, 2006; Lall, 1992). Innovation capability concerns the integration of specific capacities to deliver performance. But the capabilities cannot be accessed directly. Therefore, the appraisal of performance is relatively easier as the ability explained by performance. Shyu and Chiu, (2002) document that innovation comprises of a progression of exercises in the areas of science, technology,
organization, finance, and commerce, and that innovation is shown when it is effectively marketed.

With respect to the measurement of innovation performance, many past studies have been mentioned that input and the output are the most imperative components to consider, the inputs being the expenditures, manpower, force of R&D, and imported technologies; and the outputs being the result of the innovation, marketing, and development of new products, the number of licenses and number of patents (Liu and White, 1997; Romijn and Albaladejo, 2002). Assessing innovation performance is a complex job, as there is such a wide range of determinants and there are normally time slacks between R&D exercises and the subsequent performance (Zhang et al., 2004). MacPherson (1997) claims that the innovation as the aftereffect of commercialization after a time of effective design, development, and the fruition or proper refinement of a product. Innovation performance can be measured using both qualitative and quantitative approaches. The quantitative measurements are the number of patents, the number of new products, technical or scientific reports (Huang and Lin, 2006; Romijn and Albaladejo, 2002) Szakonyi (1994) documents that another measurement for innovation performance as the degree of novelty of the products. In contrast, Huang & Lin (2006) document that the novelty is one factor which affect the marketability of products. Therefore, they claim that it is difficult to evaluate the degree of novelty alone.

**R&D Management Practices**

R&D Management is defined as the discipline of designing and leading R&D processes, managing R&D organizations, and ensuring a smooth transfer of new know-how and technology to other groups or departments involved in innovation (Roussel et al., 1991). A management process is required to maximize the success via helping to supervise their R&D investments and connect R&D spending to real world business results. These new product development processes demand more upfront planning and a close alignment between the company’s strategic planning, technology planning, product research and product development functions.

It has been characterized that the software development industry as an industry that requires a suitable R&D expenditure and utilizes a substantial number of engineers. People, not products, are the major assets of innovative companies, and hiring the right people should be their top priority (Gupta and Singhal, 1993). In the product innovation business, companies
need to do whatever they can to attract and retain the talent that is needed to come up with the latest and best products or services (Hagel J. and M., 1999). Hence, the top priority for human capital in R&D organizations is the attraction and retention of talent to support product or service growth (Kochanski et al., 2003). Further, Maughan, (2012) stated that innovative organizations have accessed and exploited knowledge from the external environment (such as other organizations, seminar, conferences, forums) through "open innovation". By communicating research issues to outsiders, R&D productivity can increment by as much as 60% (Maughan, 2012).

In order to measure the current level of R&D practices in a software development firm, environmental facilities (includes information exposure and sharing, technical report Access), and incentives & encouragement (includes the compensation & reward, trust, affirmation & recognition), are used as the key dimensions which are adopted from Huang & Lin, (2006).

**Knowledge Management**

Knowledge management incorporates with organizing, sharing and utilizing knowledge so as to generate importance and accomplish competitive advantage for an organization (Ibrahim and Reid, 2009). A well-designed and well-implemented knowledge management system can bring about higher efficiency, higher customer satisfaction and decreased costs. Conversely, inadequately planned and implemented knowledge management system can drive up call time, and increase dissatisfaction on customers. There are two major types of knowledge; tacit knowledge and explicit knowledge. Tacit knowledge is hard to explain furthermore, hard to articulate, content, or drawings. On the other hand, explicit knowledge speaks to a substance that has been captured in some substantial frame, for example, words, audio, or images. Additionally, tacit knowledge tends to live "inside the heads of the people who knows it," while explicit knowledge is typically contained inside physical or solid media.

The management of knowledge is frequently recognized as a significant forerunner of innovation (Carneiro, 2000). By using data of New Zealand firms, Darroch & McNaughton, (2007) explored a knowledge management instrument which involves three components (knowledge acquisition, knowledge dissemination and responsiveness to knowledge), is regressed alongside three-component innovation scale which covers the incremental innovation. They demonstrate that knowledge acquisition and responsiveness to knowledge are more vital for innovation than knowledge dissemination. More generally, knowledge
dissemination and responsiveness to knowledge have been suggested as the most effective dimensions on the creation and maintenance of competitive advantage, for example, innovation, in view of their vagueness and unique to the firm (Day, 1994; Fahey and Prusak, 1998; Leybourne and Kennedy, 2015).

Moreover, Lundvall and Nielsen, (2007) document that product innovation is a significant factor of competition. For the establishment of “Learning Organizations”, knowledge management is a key element. Wang and Ellinger (2011) have further pointed out that the individual-level innovation performance and organizational level innovation performance are the main outcomes of organizational learning which consist of four indicators; information acquisition, information distribution, information interpretation, and organizational memory. This study uses knowledge acquisition, knowledge dissemination, and responsiveness to knowledge as the dimensions of knowledge management practices in line with Wang and Ellinger (2011) and Darroch and McNaughton (2007).

**Market Orientation**

Market orientation is a customer focused way to deal with product design and is a part of organizational culture that is accepted to have broad impacts on the firm. Information management is defined as the core component and market orientation which is characterized as the organization-wide generation of market knowledge relating to present and future customer needs, dissemination of the knowledge crosswise over divisions, and organization-wide responsiveness to it (Kohli and Jaworski, 1990). The success of a new product on the market is significantly influenced by marketing activities. Therefore, innovation performance of R&D team should be measured only up to the point at which promising, marketable products are generated. As long as new products or improvements to products are supposed to have market potential, then R&D team should not be held accountable for, whether products are marketed successfully or not (Huang and Lin, 2006).

Han, Kim, and Srivastava, (1998) examine how the three core components of market orientation (customer orientation, competitor orientation, and inter-functional coordination) affect the two core components of organizational innovativeness, which course to influencing corporate performance. Jiménez- Jimenez, Valle, and Hernandez- Espallardo (2008) empirically tested the relationships between market orientation, organizational learning, innovation and performance and demonstrate that the market orientation and organizational
learning boost the innovation process. Moreover, Akman and Yilmaz, (2008) investigate the relationships among market orientation, innovation strategy, innovative capability and innovation success in small and medium-sized business in developing countries. Verhees and Meulenberg, (2004) explore the consolidated impact of market orientation and innovativeness of product innovation and company performance in small firms. They pointed out that the proprietor's innovativeness penetrates all factors in the model and affects market orientation, innovation, and performance.

Literature evidence indicate that market orientation of a firm not only leads the innovation performance, but also enhances the learning process and management involvement on the innovation process. Considering the above mentioned antecedent role of market orientation, this study uses the customer orientation, competitor orientation, and inter-functional coordination as dimensions of the level of market orientation consistent with Han, Kim, and Srivastava, (1998).

**Resource Support, Management Style and Leadership**

In order to drive innovation smoothly, R&D expenditure must be the key power in an organization who are doing R&D activities (Huang and Lin, 2006; MacPherson, 1997; Romijn and Albaladejo, 2002). It helps to sustain and grow R&D functions progressively. Therefore, sufficient R&D budget needs to be allocated and adequate equipment or facilities and office support, including administrative requirement, should also be provided (Huang and Lin, 2006). The employee benefit and job security have also been identified as a direct influencer on innovation performance (Chang and Chen, 2002).

On the other hand, an organization requires well committed leadership and management support in order to create an innovative culture (Maughan, 2012). Therefore, the qualifications and experience of a manager who involves in R&D activities are imperatively significant on innovation performance, however the criteria that is used to choose potential R&D managers are still biased in favor of the person with the best technical skills (Clarke, 2002). Elkins and Keller (2003) point out in their review that transformational project leaders who convey a motivational vision and provide intellectual stimulation and leaders who build up a top notch leader–member exchange relationship with project members are connected with project achievement. Furthermore, Hamel (2006) indicates that leadership is essentially
imperative since innovation is in management principles and processes that make a long term advantage and create extraordinary shifts in competitive position.

In this study, the R&D Budget, Equipment, Facilities, and Office Support are used as dimensions of resource support which are adopted from Huang and Lin, (2006). Moreover, management style and leadership is measured using proactive thinking, educational background & expertise, and leadership dimensions in line with Huang and Lin, (2006) and Romijn and Albaladejo, (2002).

Methodology

This paper intends to examine the direct impact of R&D management and knowledge management practices on the innovations performance of the software development firms while investigating the role of market orientation as an antecedent. Moreover, this study accounts the indirect effect of resource support, management style and leadership on innovations performance through R&D management practices. In line with Huang & Lin (2006), Wang and Ellinger (2011), Darroch and McNaughton (2007), Mahmoud et. al. (2016), Dibrell et. al. (2011), Verhees and Meulenberg (2004), Romijn and Albaladejo (2002) among others, the framework tested in this study is illustrated in Figure 1.

![Figure 16: Research Framework](image)
Research Hypotheses

Conceptual framework in Figure 1 illustrates following hypotheses to be tested in this study. These hypotheses are formulated with the support of grounded theory demonstrated in the previous section.

Hypothesis 1: There is a positive impact from R&D management practices on innovations performance.

Hypothesis 2: There is a positive impact from knowledge management practices on innovations performance.

Hypothesis 3: There is a positive impact from market orientation on innovations performance.

Hypothesis 4: Knowledge management practices has a positive impact on R&D management practices.

Hypothesis 5: Market orientation has a positive impact on R&D management practices.

Hypothesis 6: Market orientation has a positive impact on knowledge management practices.

Hypothesis 7: Management style and leadership of the firm has a positive impact on R&D management practices.

Hypothesis 8: Resource support of the firm has a positive impact on R&D management practices.

Hypothesis 9: Management style and leadership positively affect resource support of the firm.

Hypothesis 10: Market orientation positively affects management style and leadership.

It should be noted that Hypothesis 1 – Hypothesis 3 demonstrate direct effects from R&D management practices, knowledge management practices, and market orientation on innovations performance while Hypothesis 4 and Hypothesis 5 indicate indirect impact of knowledge management practices and market orientation on innovation performance with the mediation of R&D management practices. Moreover, Hypothesis 6 establishes an indirect effect from market orientation on innovations performance via knowledge management practices as a mediator. Management style & leadership tend to mediate the relationship...
between market orientation and R&D management practices through Hypothesis 7 and Hypothesis 9 while resource support tends mediate the relationship between management style & leadership and R&D management practices through Hypothesis 8 and Hypothesis 10.

Measurements
In order to measure research constructs in the research framework illustrated in Figure 1, this study uses indicators adopted from Huang and Lin, (2006) to measure R&D management practices, resource support, management style & leadership, and innovation performance. Measurements of knowledge management practices are adopted from Wang and Ellinger, (2011) and Darroch and McNaughton, (2007) while market orientation is measured using the indicators adopted from Han, Kim and Srivastava, (1998). All the measurement indicators are measured using 1-5 Likert scale to be consistent with existing literature. A structured questionnaire is constructed based on the measurements to conduct the survey.

Sampling and Data Collection
This study is based on the Software Development industry in Sri Lanka. The population of the study consisted of the organizations which perform R&D and innovation activities in the Sri Lankan Software Development industry. The population is limited to the Colombo Geo-location where most the Software Development companies are located. The foreign branches of the above organizations are not included in the study and hence, the empirical domain is limited to the Sri Lankan Software Development industry. The unit of analysis of this study is an organization and the sample is drawn from 84 registered members of Sri Lanka Association of Software and Service Companies (SLASSCOM). In order to minimize the single response bias, four most suitable respondents from the same organization such as engineers and managers who are involved in innovation and R&D activities are selected for the data collection. Thirty-two companies are randomly drawn from SLASSCOM representing 38% of the population and respondents are contacted via email. Thus, 128 responses are used for the data analysis.

Data of this study are collected using a structured self-administered online questionnaire. A pilot study of ten responses was conducted to streamline the questionnaire for its readability and understandability. Certain technical terms have been rephrased because of the feedback
received from the pilot survey as some indicators were not consistent with the software industry sector\(^45\).

**Data Analysis Procedures**

This study performs an initial investigation of construct validity and reliability of scale measurements although those measurements are retrieved from existing literature. This assures that these measurements suit to the context that this research has been carried out. Construct validity is assured under both convergence and discriminant validity criteria using average variance extracted (AVE) and Fornell-Larcker method respectively. An AVE value must be 0.5 at least to indicate sufficient convergent validity, meaning that a latent variable is able to explain more than a half of its indicators on average. Fornell-Larcker criterion for discriminant validity checks whether the square root value of the AVE of the corresponding construct is greater than those correlations with other constructs. In order to assure the reliability of measurement scales, internal consistency is assessed using measures Cronbach’s alpha which provides a value greater than 0.7 for a reliable set of measures. Due to Cronbach alpha's limitations in the population (Hair et al., 2014), composite reliability measure is also used to assure the internal consistency with the same threshold level.

This study uses partial least square structural equation modelling (PLS-SEM) approach for testing research hypotheses. PLS-SEM method is used against covariance based structural equation modelling (CB-SEM) as PLS-SEM provides more robust results in the presence of relatively small samples, and for the data which deviate from multivariate normality (Hair et al., 2011). Thus, the conceptual framework is assessed for its significance and relevance using coefficient of determination \((R^2)\), and the effect size \((f^2)\). All the computations are performed SmartPLS 3.0 software with 5000 bootstrapped samples.

**Results**

First, this section presents a description of the sample, results corresponding to validity and reliability along with the purification of measures, assessment of the structural relationships, and the decisions on research hypotheses. Second, the discussion is made based on both

\(^{45}\) Results of the pilot survey are not reported to conserve the space but available upon request.
existing literature and findings of this study for the identification of consistent and contrasting facts.

Description of the sample

Table 27: Sample Profile

<table>
<thead>
<tr>
<th>Panel A: Respondents’ profile</th>
<th>Panel B: Firm profile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td><strong>No of employees</strong></td>
</tr>
<tr>
<td>Male</td>
<td>Less than 200</td>
</tr>
<tr>
<td>101</td>
<td>10</td>
</tr>
<tr>
<td>Female</td>
<td>200-500</td>
</tr>
<tr>
<td>27</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Greater than 500</td>
</tr>
<tr>
<td></td>
<td>11</td>
</tr>
<tr>
<td><strong>Age group</strong></td>
<td><strong>Age of company</strong></td>
</tr>
<tr>
<td>Below 25 years</td>
<td>Less than 3 years</td>
</tr>
<tr>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>25-30 years</td>
<td>3-6 years</td>
</tr>
<tr>
<td>64</td>
<td>11</td>
</tr>
<tr>
<td>31-35 years</td>
<td>More than 6 years</td>
</tr>
<tr>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>Above 35 years</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td><strong>Global Presence</strong></td>
</tr>
<tr>
<td>Graduate</td>
<td>Yes</td>
</tr>
<tr>
<td>91</td>
<td>30</td>
</tr>
<tr>
<td>Postgraduate Diploma</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>Masters Degree</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
</tr>
<tr>
<td><strong>Working experience</strong></td>
<td></td>
</tr>
<tr>
<td>Less than 3 years</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td></td>
</tr>
<tr>
<td>3-5 years</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
</tr>
<tr>
<td>More than 5 years</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

Source: Survey Data

Table 1 illustrates frequency distributions for characteristics of respondents and firms included in the surveyed sample. Panel A of Table I presents respondents’ profiles and Panel B presents firm profiles. It is evident from Panel A that the majority of the respondents is males (78.9%) which is a common phenomenon in the software development industry. Moreover, 65% of the respondents are up to 30 years old depicting the youngness of the employees in the industry.

As far as educational qualifications are concerned, it is evident that the majority is graduate level qualified (71.1%). Also, a majority (56.2%) of the respondents are with less than three years of experience. According to Panel B in Table 1, 65.5% of the companies are up to 500 employees in size, and 74.9% of the companies are up to 6 years old indicating medium-sized and youngness of the companies in this industry. Furthermore, only 6.1% of the companies are limited to local market while all other companies are multi-national. This is inevitable as the software industry standards, products, and policies are global than being local.

Validity and Reliability of Research Constructs
Prior to estimating the structural model in Figure 1, a confirmatory factor analysis and reliability analysis are conducted to verify the measurement model. All the other indicators used in the model depicted adequate convergence to the underlying constructs. Finalized results of the validity and reliability analysis are illustrated in Table 2. It is evident from Table 2 that the sample adequacy (KMO > 0.5) and significance of the inter-item correlations in the indicator measures (Bartlett’s test p-value < 0.05) exist. Minimum factor loadings presented in Table 2 verify that all factor loadings are greater than 0.7 indicating a satisfactory indicator convergence into underlying constructs. All AVE values presented in Table 2 which are located in the diagonal of the matrix are also greater than 0.5 indicating more than 50% of the variation in the underlying indicators are explained by the corresponding construct. Thus, convergence validity is justified.

Table 2 also illustrates inter-construct squared correlations along with the AVE values. According to Fornell-Larcker criterion for the discriminant validity, AVE of a construct should be greater than the squared correlation values with other constructs. This criterion is acceptable well in Table 2 and hence, discriminant validity is justified. Reliability of the research constructs are assured using internal consistency in measures which is assessed using both Cronbach’s alpha and composite reliability. It is evident from the last two columns in Table 2 that all reliability measures are greater than 0.7 and therefore, it can be stated that adequate level of internal consistency exists in all constructs.
Table 2: Validity and Reliability Analysis

<table>
<thead>
<tr>
<th></th>
<th>Confirmatory Factor Analysis</th>
<th>Squared Correlations (AVE)</th>
<th>Reliability Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KMO Statistic</td>
<td>Bartlett’s Chi-square (p-value)</td>
<td>Min. Loading</td>
</tr>
<tr>
<td>Innovation Performance (IP)</td>
<td>0.739</td>
<td>196.0 (&lt;0.001)</td>
<td>0.870</td>
</tr>
<tr>
<td>R&amp;D Management Practice (RDMP)</td>
<td>0.759</td>
<td>279.3 (&lt;0.001)</td>
<td>0.700</td>
</tr>
<tr>
<td>Knowledge Management (KM)</td>
<td>0.715</td>
<td>261.7 (&lt;0.001)</td>
<td>0.890</td>
</tr>
<tr>
<td>Market Orientation (MO)</td>
<td>0.716</td>
<td>185.2 (&lt;0.001)</td>
<td>0.844</td>
</tr>
<tr>
<td>Management Style &amp; Leadership (MGLS)</td>
<td>0.683</td>
<td>141.9 (&lt;0.001)</td>
<td>0.744</td>
</tr>
<tr>
<td>Resources Support (RESS)</td>
<td>0.500</td>
<td>123.9 (&lt;0.001)</td>
<td>0.940</td>
</tr>
</tbody>
</table>

Source: Survey Data
Estimation of Structural Relationships

The fitted SEM using SmartPLS 3.0 is illustrated in Figure 2 along with its standardized coefficients of all direct effects. Values within construct symbols represent adjusted R-square values of corresponding endogenous variables. Table 3 illustrates the statistical significance of all coefficients including direct, indirect, and total effects. Table 3 also presents effect size of each direct effect using $f^2$ statistic.

According to Figure 2, R&D management practices, knowledge management practices, and market orientation are positively related to innovations performance. However, direct relationships in Table 3 indicate that the direct relationship from knowledge management is not significant at 5% level. Thus, $H_1$ and $H_3$ are accepted but not $H_2$. Nevertheless, knowledge management is indirectly related to innovations performance through the mediation of R&D management practices since $H_4$ is accepted along with $H_1$. According to $f^2$ values, R&D
management practices provides the highest effect (0.14) indicating its dominance on innovations performance.

Market orientation is not significantly related with R&D management practices at 5% level and thus H₃ is not accepted. However, Market orientation is significantly related with knowledge management practices, and management style & leadership leading to accept H₆ and H₁₀ respectively at 5% level. Thus, the antecedent role of market orientation is evident except on R&D management.

Table 3: Results of the Fitted SEM

<table>
<thead>
<tr>
<th>Direct effects</th>
<th>Coefficient</th>
<th>Std.Error</th>
<th>t-Stat</th>
<th>p-value</th>
<th>Effect size (f²)</th>
<th>Decisions on Hypotheses at α = 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDMP  IP</td>
<td>0.376</td>
<td>0.099</td>
<td>3.804</td>
<td>&lt; 0.001</td>
<td>0.140</td>
<td>H₁: Accepted</td>
</tr>
<tr>
<td>KM  IP</td>
<td>0.087</td>
<td>0.137</td>
<td>0.635</td>
<td>0.526</td>
<td>0.004</td>
<td>H₂: Rejected</td>
</tr>
<tr>
<td>MO  IP</td>
<td>0.357</td>
<td>0.105</td>
<td>3.397</td>
<td>&lt; 0.001</td>
<td>0.097</td>
<td>H₃: Accepted</td>
</tr>
<tr>
<td>MO  RDMP</td>
<td>-0.225</td>
<td>0.121</td>
<td>1.865</td>
<td>0.062</td>
<td>0.036</td>
<td>H₅: Rejected</td>
</tr>
<tr>
<td>MO  KM</td>
<td>0.800</td>
<td>0.054</td>
<td>14.761</td>
<td>&lt; 0.001</td>
<td>1.775</td>
<td>H₆: Accepted</td>
</tr>
<tr>
<td>MGLS  RDMP</td>
<td>0.220</td>
<td>0.115</td>
<td>1.907</td>
<td>0.057</td>
<td>0.038</td>
<td>H₇: Rejected</td>
</tr>
<tr>
<td>RESS  RDMP</td>
<td>0.262</td>
<td>0.085</td>
<td>3.068</td>
<td>0.002</td>
<td>0.080</td>
<td>H₈: Accepted</td>
</tr>
<tr>
<td>MGLS  RESS</td>
<td>0.689</td>
<td>0.050</td>
<td>13.716</td>
<td>&lt; 0.001</td>
<td>0.906</td>
<td>H₉: Accepted</td>
</tr>
<tr>
<td>MO  MGLS</td>
<td>0.778</td>
<td>0.039</td>
<td>19.810</td>
<td>&lt; 0.001</td>
<td>1.532</td>
<td>H₁₀: Accepted</td>
</tr>
</tbody>
</table>

Indirect effects on IP

| KM  IP         | 0.214       | 0.075     | 2.864  | 0.004   |                 |                                     |
| MO  IP         | 0.274       | 0.101     | 2.702  | 0.007   |                 |                                     |
| MGLS  IP       | 0.150       | 0.059     | 2.529  | 0.011   |                 |                                     |
| RESS  IP       | 0.098       | 0.051     | 1.913  | 0.056   |                 |                                     |

Total effects on IP

| RDMP  IP       | 0.376       | 0.099     | 3.804  | < 0.001 |                 |                                     |
| KM  IP         | 0.302       | 0.104     | 2.891  | 0.004   |                 |                                     |
| MO  IP         | 0.631       | 0.053     | 11.809 | < 0.001 |                 |                                     |
| MGLS  IP       | 0.150       | 0.059     | 2.529  | 0.011   |                 |                                     |
| RESS  IP       | 0.098       | 0.051     | 1.913  | 0.056   |                 |                                     |

According to the effect sizes in Table 3, market orientation shows the highest effect on knowledge management (f² = 1.8) and then on management style & leadership (f² = 1.5). It is also evident from the direct relationships in Table 3, management style & leadership does not affect R&D management practices but resource support does at 5% level. This leads to reject H₇ and accept H₈. Management style & leadership leads increase resource support significantly at 5% and thus, H₉ is also accepted. Table 3 also illustrates total effects on innovation performance. It is evident that all total effects excluding resource support are significant at 5%.

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Overall, tested relationships in Figure 2 provide evidence for direct or indirect effects from R&D management practices, knowledge management practices, and market orientation on innovation performance of the software industry which are significant at 5% level supported by the results in Table 3. Moreover, R&D management practices are influenced by knowledge management practices as well as by resource support. Resource support is led by management style and leadership while market orientation leads firm’s management style and leadership.

Discussion and Implications

Research in the last decade on innovation in services has suggested that such firms rely heavily on the abilities of their workforce and on cooperation with outside organizations such as suppliers, customers and other sources, and that in-house R&D plays little or no role in either becoming innovative or in the intensity of innovation (Leiponen, 2005; Tether, 2002). However, this study documents that in-house R&D is a significant determinant of becoming an innovator, but only if the R&D is formalized in some way. Huang and Lin, (2006) documents that The relationship between R&D management practice and innovation performance is contingent upon whether there is a formal R&D budgeting procedure, whether there is adequate and timely equipment support, and whether the facility for R&D is well planned specifically for the team. In consistent with Huang and Lin, (2006), environmental facilities and incentives & encouragement towards R&D have been assessed in this study for the effect on innovation performance. Results of this study clearly demonstrate the direct impact of management of R&D towards better innovation performance.

Knowledge acquisition, knowledge dissemination, and responsiveness to knowledge are beneficial for firms’ innovation outcomes firms that share more knowledge externally also benefit through improved relative innovation performance (Ritala et al., 2015). Alegre (2011) documents that such knowledge management practice can enhance sustained competitive advantages in innovation performance in biotech enterprises, but it does so indirectly through the creation of knowledge management dynamic capabilities. This study also identifies that the impact of knowledge management practices on firm’s innovations performance does not appear directly but indirectly. Results of this study clearly demonstrate that knowledge management practices help to improve R&D management leading to better performance innovations. Thus, the management of software development industry must establish a mechanism for knowledge acquisition, knowledge dissemination, and responsiveness to knowledge if they intend to plan R&D for innovations.

Farrell (2000) argues that market–oriented firms are effective in producing knowledge, where this culture of knowledge production inevitably leads to knowledge–questioning values. Mahmoud et. al. (2016) documents that a market orientation is positively related to a learning orientation. In line with the previous literature, this study also supports the hypothesis that
market orientation leads knowledge management practices. However, this study does not find a direct relationship from market orientation to R&D management practices. Instead indirection relationships are evident through knowledge management and management style & leadership. Moreover, resource support should be followed by the leadership and management to achieve intended objectives of the R&D management process. Ultimately, the antecedent role of market orientation is evident in the process of managing a software development firm towards better innovations performance.

For managers who involved in R&D activities, and upper or middle management of the organization, it gives better understanding and insight into how their leadership style, education background and expertise will influence the innovative performance through R&D management practices, knowledge management practices and market orientation. They must focus on more value creation in their future R&D and innovation activities in Sri Lankan software development industry. The management of the organization and R&D managers can also think about the adequate resource support (R&D budget, equipment, & facilities, office support) for R&D activities and create more value for the innovation performance because none of the direct relationships are significant without resource support. Overall, this study would be an ideal kick off for a new framework for a better level of innovation performance in the software industry, with a strategic focus on R&D management, knowledge management, and market orientation.

Conclusion

This study combines knowledge from three management areas, namely, R&D management practices, knowledge management practices and market orientation to disclose the answer to the question, how R&D management practices, knowledge management practices and market orientation drive innovation performance in the software development industry in Sri Lanka? With the support of extant literature, the relationships are formulated on a conceptual framework. A survey based empirical study is carried out representing the Colombo District where majority of the firms are located to test the proposed conceptual framework. A PLS-SEM is employed to test the underlying relationships. Results reveal that direct positive effects from R&D management practices, market orientation, and knowledge management practices on innovation performance are statistically significant. Moreover, R&D management practices is positively influenced by knowledge management, management style & leadership, and resource support. Ultimately, market orientation plays an antecedent role in managing software development firms towards innovation performance.
References


Factors Affecting Citizens’ Intent to Use Government Websites: With Reference to MBA Students in The University of Sri Jayewardenepura in Sri Lanka

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ABSTRACT

Sri Lanka started its e-government initiative in 2005 under the ‘e-Sri Lanka national development project’. The online portal offers A-Z government web indexes, 108 e-services for citizens, 51 e-services for businesses and 10 non-residence related e-services. Like in many other developing countries, the E-government initiative in Sri Lanka has faced a number of challenges since its inception. Sri Lanka ranked 74th on according to the E-Government index in 2014. Even though the government spent millions of dollars on this project, e-government adaption in Sri Lanka is low when compared to some countries in Asia. That is because of lack of current information on the sites, less user friendliness, less usefulness and less ease of use. The main objective of this study is to investigate significant factors affecting citizens’ intent to use Government websites with reference to MBA students in the University of Sri Jayewardenepura, Sri Lanka. This research used an online survey as a form of data collection covering 8 variables. These data were used to analyze the effect on demographic variables and understand the relationship and causal relations among quantitative variables against the dependent variable. Findings show the rejection of variables “Trustworthiness”, “Trust in Internet”, “Facilitating Conditions” and “Computer self-efficacy” from the conceptual model and acceptance of “Trust in Government”, “Perceived Usefulness” and “Perceived Ease of Use” from the model. Policy recommendations suggested enhancing the country’s overall use of government websites.

Keywords: E-government, Sri Lanka, Government Websites, Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB)
INTRODUCTION

Sri Lankan government started e-Sri Lanka project in year 2005 with the help of World Bank and Information Communication Technology Agency (ICTA) in Sri Lanka. Government spent about 400 millions of rupees to transfer public services to government websites thinking that majority of Sri Lankan population would use this service (ICTA 2011, p. 2). The Citizens’ usage of government websites is still at low rate in Sri Lanka due to various factors. As per the Sri Lankan government statistics on year 2015, 26.8 percent of the people in Sri Lanka are computer literate. This is a dramatic increase from 11.4 in the year 2006 (Department of Census and Statistics 2015, p.1). According to Wang & Lo (2012, p. 2) E-government services provide better access to information, greater efficiency, increased citizen participation, reduced transaction costs, increased accountability and transparency. E-government can be an engine of development for the people. In delivering E-government for the people, public services are designed to be responsive, citizen-centric and socially inclusive. Governments also engage citizens through participatory service delivery processes (United Nations E-government Survey 2014, p. 48).

In a given country E-government readiness is measured by EGDI. (E-government Readiness Index). According to that Sri Lanka scored 0.5418 and moved to 74th position in the year 2014 from 115th position in 2012 (United Nations E-government Survey 2014, p. 48). The Sri Lankan government started e-Sri Lanka project in the year 2005 with the help of World Bank and Information Communication Technology Agency (ICTA) in Sri Lanka. The government spent about 400 millions of rupees to transfer public services to government websites thinking that majority of Sri Lankan population would use this service (Government Organizations Visitors Survey 2011, p. 2). According to the government Visitors survey in 2011, only 13% of people use the internet to obtain health services and 85 percent visitors had preferred to obtain the services over the counter. This figures clearly showed us even though the government has spent money on E-government programs, citizen’s usage is still at a low percentage of obtaining services through government websites. This may be due to various reasons. Therefore, it is
necessary to find out the significant factors affecting citizens’ intent to use Government websites in Sri Lanka and provide policy measures to increase the citizens’ use of websites.

OBJECTIVE OF THE STUDY

The main aim of this study is to examine the significant factors affecting citizens’ intent of using government websites in Sri Lanka and find out to what extent these factors are affecting on it and provide recommendations based on the findings.

SIGNIFICANCE OF THE STUDY

The main significance lies on Sri Lankans who are looking for to get government information by using government websites. The major advantage of getting services online is the reduction of time spent on traveling and waiting can be reduced. Currently, in Sri Lanka time spent on traveling to the major city of Colombo is a nightmare due to heavy traffic conjunction. Apart from that, online services are normally faster and more accurate than the traditional services. From the government’s point of view, the more is citizens’ use of government websites, the more is the reduction of operation and management costs.

In order to retrieve information from government websites, a person should possess a basic understanding of computers, and have acquired skills in understanding of English language for academic purposes. This study purposefully selected MBA/MSc students as the sample to determine what are the significant factors affecting the use of government websites and how users can intensify the usage of government websites.

LITERATURE REVIEW

This review starts with an introduction of E-government theories and definitions. Although the literature covers a wide variety of such theories, this review will focus on two major models and a variable which emerge repeatedly throughout the literature. A number of theoretical models
such as planned behavior (TPB) have hypothesized subjective norm to have a significant direct impact on behavioral intention (Ajzen 1991). TAM (Technology Acceptance Model) and TPB (Theory of Planned Behaviour) are these two models and Trustworthiness as the variable which review the factors affecting citizens’ intent to use government websites.

E-Government

An E-government is futuristic and is deemed to be a business friendly government where these aspects will provide utmost services to citizens, businesses, employees and government organizations. E-government is relatively a new field of study in the Information Systems (IS) domain that is concerned with the use of ICT by the government agencies to electronic delivery of its services (The World Bank, 2011). There are four stakeholders in e-Government. Government to Citizen services (G2C), Government to Business services (G2B), Government to Employees services (G2E), Government to Government services (G2G).

According to Carter & Belanger (2005) the relationship of government with recipients of its electronic services is characterized as government to citizen (G2C), government to business (G2B); government to employees (G2E); government to government (G2G). Wimmer & Tambouris (2002) identified E-government in four evolutionary phases namely (1) publishing (web presence); (2) interacting; (3) transacting and (4) transforming.

According to the World Bank (2011) E-government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. Means and Schneider (2000) defined E-government as the relationships between governments, their customers (businesses, other governments, and citizens), and their suppliers (again, businesses, other governments, and citizens) by the use of electronic means. (Yildiz, 2007) referred that E-government is the use of ICTs by public administration to create a networked structure for interconnectivity, service delivery, efficiency, effectiveness, transparency, and accountability.
In the Sri Lankan context, Senadeera (2013) refers E-government as the use by government agencies of information technologies that have the ability to transform relations with citizens, businesses, and other arms of government. Chandraguptha (2012) stated that E-government is a process of reform in the way Governments work, share information, engage citizens and deliver services to external and internal clients for the benefit of both government and the clients that they serve.

Each government sought to achieve certain objectives from the development of its E-government program. These objectives are extremely important. They justify the huge resources often dedicated to E-government initiatives. Rabaiah & Vandijck (2009) mentioned that those people responsible for the commencement and development of E-government must work hard to convince the decision makers about the necessity for E-government. Without support from the leadership, E-government is predestined for failure as many studies suggested. Justification is critical for the success of E-government initiatives.

**Theories and Models of E-Government:**

Oualid Abidi et al. (2012) states that different theoretical models have been proposed to explain the cognitive determinants of E-government use, the most popular are the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), the Diffusion of Innovation model (DOI), the Trust based models and the Theory of Planned Behavior (TPB).

TAM is considered as one of the most influential and commonly employed theories for explaining an individual’s acceptance of information systems. Lee et al. (2003, cited in Wangpipatwong et al. 2008). Because it suggests a smaller number of factors; Perceived Usefulness and Perceived Ease of Use, which jointly account for usage. According to a study on ‘Utilization of E-government services’, compatibility, trustworthiness and perceived ease of use all have direct positive relationships with citizens’ intent to use E-government services (Carter & Belanger, 2005, cited in Wang and Lo, 2012). Furthermore, it has been tested several times in empirical research and the tools used with the model have proven to be of quality and have yield

The investigation of continuance intention or intention to continue using E-government websites has not been found yet. The ‘TAM” is regarded as the most prominent model because it includes factors which are specific, simple, easy to understand, and can be manipulated through system design and implementation. Additionally, it has not yet been apparently validated in the context of E-government website continuance. When applied in the context of ongoing use, continuing capability to overcome obstacles is necessary for the continuance of intention. The Theory of Planned Behavior Ajzen (1991, cited in Wang & Lo, 2012) and Technology Acceptance Model Davis (1989, cited in Wang & Lo, 2012) adapt the Theory of Reasoned Action (TRA) Fishbein & Ajzen (1975, cited in Wang & Lo, 2012) model to explore IT acceptance.

‘Trustworthiness’ is an important determinant of citizens’ intent to use government websites. Citizens’ trust, leading to adoption and use of government websites, has two dimensions: Trust on the Governments and Trust on Internet. According to a study on ‘Utilization of E-government services’, compatibility, trustworthiness and perceived ease of use all have direct positive relationships with citizens’ intent to use E-government services. (Carter & Belanger 2005, cited in Wang & Lo, 2012).

As such, computer self-efficacy - a belief of one’s capability to use the computer to accomplish a task (Compeau & Higgins, 1995, cited in Wangpipatwong et al. 2008). Studies of computer self-efficacy suggest that computer self-efficacy is a significant determinant of an individual’s decision to use computers. Hill et al, (1987, cited in Wangpipatwong et al. 2008) reported that computer self-efficacy influences an individual’s expectation of the outcomes of using computers and ultimately affects his/her decision to use computers.
The government has to improve the organizational and technical infrastructure which will be used to perform the e-government tasks. According to a study by Al-Shafi (2009, cited in Alraja M, 2016) facilitating conditions was correlated positively to e-government adoption but not significantly and if employees able to access required resources, as well as to gain needed knowledge and having the necessary support to use information technology infrastructure, they will be more likely to adopt e-government (Alraja M, 2016).

There is few e-government technology studies have been undertaken in developing countries. Akman et al. (2005) for example, investigated the impact of gender and education in the use of egovernment services in Turkey. The researchers reasoned that there are differences in gender, education and occupation between people using ICT. Different groups of people were surveyed in the public and private sectors. The findings showed that differences in gender and education had a significant impact on the adoption of e-government services. The researchers found that males used e-government information and services more than females, and as the level of education of survey participants increased, the interaction with e-government also increased. Charbaji & Mikdashi (2003) investigated the attitudes towards e-government with a sample of 220 graduate students at different universities in Lebanon, using a questionnaire with cognitive, affective and conative dimensions. The cognitive dimension refers to people’s thinking process of acquiring knowledge, understanding and awareness; the affective dimension refers to people’s emotions, feelings and attitudes towards e-government; and the conative dimension refers to process of people to do or make decisions making to the intention of using e-government.

Likewise, Roger (1995); Limayem et al. (2003, cited in Wangpipatwong et al. 2008, p.1) states that initial use of government websites is an important indicator of e-government success. However, it does not necessarily lead to the desired outcome unless a significant number of citizens move beyond the initial adoption and use e-government websites on a continued basis. Furthermore, discontinuance may occur after the adoption of innovation if the system does not meet the user’s needs regardless of its successful prior adoption.

Global Trends in E-Government:
Due to a number of factors, there are wide disparities among regions and countries in their state of e-government development as observed throughout the UN 2014 Survey. One clear observation is that the income level of a country is a general indicator of economic capacity and progress, which thus influences its e-government development. Access to ICT infrastructure and the provision of education, including ICT literacy, are related to the income level of a nation’s development. There are many countries that have significantly advanced in their e-government usage despite relatively low national income. There are clear opportunities for future improvement of e-participation, including technology trends due to change of wind occurring world over. For example, social media and mobile devices/technology which are inherently interactive, as well as crowd sourcing. (United Nations E-government Survey 2014, p.26) There are also severe challenges, including the digital divide, low user take-up and the lack of incentives for participation. According to the survey by United Nations E-government Survey (2014) there is also an increasing use of public kiosks from 24 countries in 2012 to 36 in 2014 for use as open-access facilities in public areas and locations providing free use of online services, especially in marginalized or remote areas and where the individual use of ICT is not widespread.

According to United Nations E-government Survey (2014) progress in e-government development has been attained through increased e-participation, the growth of the mobile channel and social media, expanded usage and the burgeoning of open government data. Many challenges remain, such as low income, ongoing digital divides, the inadequacy of institutional change processes and lack of innovative e-government leadership.

**E-Government in Sri Lanka**

The launching of Lanka Gate, the official portal (www.lk or srilanka.lk) of Sri Lanka, on the Internet was the implementation step of the e-Sri Lanka project by the Government of Sri Lanka. Using the site, citizens can obtain more than 20 e-Services such as e-Revenue License Issuance, Issuance of Examination Certificates, etc. (Lanka Gate, 2013) and updated information from the
government agencies. Sri Lanka started its e-government initiative in 2005 under the ‘e-Sri Lanka national development project’. The online portal offers A-Z government web indexes, 108 e-services for citizens, 51 e-services for businesses and 10 non-residence related e-services. The portal also offers extensive mobile and SMS services. It is an e-participation portal with easily accessible government forms and a developed open data portal with data available in various formats as well as a whole-of-government strategy (Government Organizations Visitors Survey 2011, p. 10). Re-engineering of the government is a part of the e-Sri Lanka program started in the year 2008 as the major component of the e-Sri Lanka Development Project; with an initial fund allocation of US $ 35.2 million which amounts to 42 percent of the total fund allocation of US $ 83 million for the e-Sri Lanka Development Project (Government Organizations Visitors Survey 2011, p. 16).

According to the United Nations E-government Survey (2014, p. 48) Sri Lanka ranks first in the Southern Asia, with the Maldives ranking in the second position. The Sri Lankan government has made a substantial effort to develop its online portal which now ranks 74th in the world. Sri Lanka had been under the bad hands of three decades old civil war was successfully rescued recently and is trying to regain the lost time and opportunities by embarking on comprehensive development roadmaps by the government. Sri Lanka’s e-government policies have been geared towards including all segments of the population and offering services to everyone, regardless of their IT literacy levels or access to the internet. With mobile usage rates in the country exceeding 100 per cent and even the poorest people today have cell phones. Sri Lanka offers many m-government services. The Government Information Center (GIC) is now providing more than 65 online services through basic phones calls, such as train schedules, job opportunities abroad, flight schedules, exam results, economic indicators, medical services and contact details.

According to the ICTA, the following are the objectives of E-government;

1. to improve delivery of public services and information
2. to enhance transparency, openness of, and engagement with the administration
3. to increase productivity of Business, Citizen and Employees

4. to improve efficiency in the design, processing and delivery of government services to contribute broader government economic and social outcome
METHODOLOGY

For this study, the sample was calculated using the data obtained from the MBA/MSC of the Faculty of Management Studies and Commerce of the University of Sri Jayewardenepura. The main technique used for the calculation was using Convenience sampling theory discussed by Saunders, Lewis and Thornhill (2007). Therefore, a sample of 207 MBA/MSC students was calculated using the convenient sampling method to carry-out the investigation. This method is used to improve the accuracy of the investigation; simplicity in data collection can be conducted in short duration of time as well as the cheapest method to implement. Moreover, this sample involves the public who have basic to advanced ICT knowledge. The participants were asked to complete the questionnaire at a convenient time for them. The Questionnaire consists of 34 items, which deal with the variables and sub variables that identified in the Conceptual model. Wangpipatwong et al (2008) conducted a research in Taiwan to find out the factors affecting e-government using the TAM and Computer-self efficacy. Also, Wang & Lo (2012) conducted a research in Taiwan to find out factors affecting using of government websites by adopting TAM, TPB and Trustworthiness as a theoretical framework.
By considering above literature, following Conceptual Framework formulated to support the research model.

Figure 1: Conceptual Framework Explaining Factors affecting citizens’ Intent to use government websites
This study posits the following hypotheses based on the identified variables.

**Hypotheses:**

*Hypothesis a1:* A Higher level of Trustworthiness will be significantly affecting a higher level of intent to use government websites.

*Hypothesis a2:* A Higher level of trust in the Internet will be significantly affecting a higher level of intent to use government websites.

*Hypothesis a3:* A Higher levels of trust in the government will be significantly affecting a higher level of intent to use government websites.

*Hypothesis a4:* A Higher levels of facilitating conditions will be significantly affecting a higher level of intent to use government websites.

*Hypothesis a5:* Computer self-efficacy of citizen will be significantly affecting citizen’s intention to use government websites.

*Hypothesis a6:* Perceived Ease of Use will be significantly affecting on user attitudes toward the use of government websites.

*Hypothesis a7:* Perceived Usefulness will be significantly affecting on user attitudes toward the use of government websites.

**Questionnaire Design**

**Demographic Variables**

A structured questionnaire is used and online survey method was used to collect data about demographics and research variables of from the respondents. Part one of the questionnaire was the Demographic variables which include Gender, Marital status, Province of stay, Sector of employment, Age, Highest educational qualification, Position and Salary. Part two was to measure the research variables and consisting of 34 items which deal with the variables and sub variables that identified in the Conceptual model. The scale employed in this questionnaire measured in a continuum representing strongly disagree (1) to strongly agree (5). Thus (3) on the
scale indicated indifference (i.e., either agree or disagree). The questionnaire was sent accompany with a covering letter explaining the research objectives. In this study, ordinal scale measurements were used to quantify the dependent and independent variables.

**Population and Sample:**

The population studied in this research is 497 MBA/MSC Students, who were registered in the years 2010, 2011, 2012, 2013 and 2014 respectively at the University Sri Jayewardenepura. Students were contacted through email notifying them and requesting them to fill the online questionnaire. Out from 497 students, 207 students responded to the questionnaire. This represents 42.2 percent of response rate. This mean 283 members of the sampling frame did not participate in this study. This may due to the fact that some of the MBA/MSC students no longer were using email addresses they used at the time of the registration or that some may have already gone abroad.

**Sample:**

The sample size of this study was limited to the MBA/MSC students in the University of Sri Jayewardenepura who enrolled in years 2010, 2011, 2012, 2013 and 2014 which represent a significant number of representations of MBA/MSC population of Government Universities. MBA/MSC students are citizens of Sri Lanka who belong to different age groups, variety of skills, living in various geographical locations and belonging to dissimilar genders and having various needs of getting information from Government in the course of their daily routine. Research is focused on understanding the internet browsing habit to access e-government website from year 2010 – To date.

**Sampling Method:**

This research was used Convenience sampling Technique which is also known as availability sampling, is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate to the study (Saunders et al. 2012)

**Proposed Statistical Method:**

In this research, frequency analysis was used to describe the demographic analysis and the alpha test was conducted to ensure the reliability of the research. Factor analysis was used to ensure
mainly the construct validity. Correlation analysis was used to examine the correlation among variables and stepwise regression was used to identify the causal relationship among independent variables against the dependent variable.

**ANALYSIS AND DISCUSSION**

According to this demographics study, most of the respondents are male and have earned masters’ degree qualifications. Even though gender does not specify the significance of this study, respondents who have received highest education show more inclined to use government websites; Most of the respondents belong to the married category and reside in the Western province. It shows that people who are married may have more felt needs of getting government services than those are unmarried. Most of the other provinces in the country may seek assistance by in person over the counter service due to less traffic and less volume in requests that in the Western province many people tend to obtain service through online portal due to such issues as transportation and wasting time in long queues.

According to the frequently analysis, results show that most of the respondents were male and it accounts to 65.7 percent while it is about 34.3 percent in the case of female respondents out of the total sample. Most of the respondents were married and it amount to 79.7 percent while it is about 20.3 percent in the case of unmarried respondents out of total sample. The Western province comprised with 64.3 percent while the Northern and the North Central province amounted to 1.4 percent. Out of 207 respondents, 137 were from private sector employment which accounted to 66.2 percent. The number of respondents from public sector was 58 and amounted to 28%. Results show the percentage of 72.5 that most of the respondents were from the age range of 31 – 40 years of age, indicating only 3 people are more than 51 years of old. Respondents were asked to record their highest educational qualifications. Most of the respondents achieved their Masters level (81.2%) and the employment position of Manager Level was 47.3%. The most respondents’ monthly salary levels were from 60001 – 80000.
Reliability and Validity

Table 1: Summary of Reliability and Validity of Independent and Dependent variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Reliability (Cronbach’s) &gt;0.6</th>
<th>Validity(Cum Variance) before removing variables</th>
<th>Validity (Cum Variance) &gt; 50%</th>
<th>No of Items</th>
<th>Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>.727</td>
<td>47.489</td>
<td>55.431</td>
<td>4</td>
<td>TR5</td>
</tr>
<tr>
<td>TI</td>
<td>.669</td>
<td></td>
<td>62.224</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>TG</td>
<td>.820</td>
<td>35.723</td>
<td>55.107</td>
<td>6</td>
<td>TG1, TG8</td>
</tr>
<tr>
<td>FC</td>
<td>.744</td>
<td>38.028</td>
<td>56.819</td>
<td>4</td>
<td>FC1, FC2</td>
</tr>
<tr>
<td>CSE</td>
<td>.695</td>
<td></td>
<td>63.522</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>PEOU</td>
<td>.850</td>
<td></td>
<td>77.442</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>PU</td>
<td>.706</td>
<td></td>
<td>63.786</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>DV</td>
<td>.618</td>
<td></td>
<td>56.877</td>
<td>3</td>
<td>-</td>
</tr>
</tbody>
</table>

Reliability test was confirmed and that the measures are internally consistent, as all of the constructs possessed a Cronbach’s alpha greater than (0.60). Perceived Ease of use scored 0.850 and Trust in Government measured 0.820 which shows higher reliability than other variables.

Table 2: Descriptive statistics of research variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DV</td>
<td>4.2754</td>
<td>.39668</td>
</tr>
<tr>
<td>TR</td>
<td>4.1655</td>
<td>.43313</td>
</tr>
</tbody>
</table>
Following are the breakdown of questions, which support each of the variables mentioned in Table 2.

Dependent variable (DV) consists of 3 questions: DV1 - Most of the time I go through e-government websites to obtain my services. DV2 - Most of the time I continually visiting e-government websites to obtain the government services. DV3 - I like to use the government websites in future. This variable results the mean value of 4.2754 which is considered in the agreed level.

Trustworthiness (TR) consists of 5 questions and resulted the mean value of 4.1655: TR1- I feel confident that services will be delivered as promised. TR2 - Government websites provide personalized services. TR3 - Websites provide mechanism to communicate with government agents when needed. TR4 - Government website provide Quality service. TR5 - Government websites always provide trustable information.

Trust in Internet (TI) consists of 3 questions and resulted the mean value of 4.0322. TI1 - I feel my transactions are secure when using an e-government service. TI2 - I do not believe that there could be negative consequences from using e-government services. TI3 - I do not see any potential Risks of using Government websites.

Trust in Internet (TG) consist of 8 questions and resulted the mean value of 4.0250, TG1 - I believe that E-government websites are competent. TG2 - Government electronic services are Effective. TG3 - I believe Government websites are up-to-date with information. TG 4 -
Government websites are accurate. TG5 - Most Government websites exhibit care. TG6 - Most Government websites exhibit honesty. TG7 - Most Government websites provide good will to their citizens. TG8 - I believe the most Government websites are truthful in their dealing with the citizens.

Facilitating Conditions (FC) consists of 6 questions and resulted the mean value of 3.1932. FC1 - Information is written for users of different cultures. FC2 - Information is written for users of different languages. FC3 - The site is accessible to users with disabilities. FC4 - I have access to use public computers /terminals in Government office Lobby or Kiosk. FC5 - e-government websites are mobile ready and up to date with e-government mobile apps. FC6 - I have access to printers to aid printing documents. The low mean value shows that respondents are not happy about the facilitating conditions available for using government websites.

Computer self-efficacy (CSE) consists of 3 questions and resulted the mean value of 4.0998. CSE1 - I feel confident of using computer to obtain the government service. CSE2 - I would feel comfortable using the e-government system on my own to get my task done. CSE3 - I feel confident using software that I have never used before.

Perceived Ease of Use (PEOU) consist of 2 questions and resulted the mean value of 4.2512. PEOU1 is the my interaction with the site is clear and understandable and PEOU2 is the it is easy to learn how to interact with government websites.

Perceived Usefulness (PU) consist of 3 questions and resulted the mean value of 4.2673. PU1 is I perceived that using the e-government websites can enhance the effectiveness of citizens’ transactions with the government. PU2 is by using e-government services can improve the service quality that I will receive. PU3 is I think I can save (time, money) using e-government services.

### Table 3: Correlation matrix Correlations

<table>
<thead>
<tr>
<th>DV</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.350**</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>.105</td>
<td>.134</td>
</tr>
<tr>
<td></td>
<td>.365**</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>.172*</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td>.251**</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>.282**</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>.344**</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

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Table 3 revealed that Trustworthiness (TR), Trust in Internet (TI), Trust in Government (TG), Computer Self-efficacy (CSE), Facilitating Conditions (FC), Perceived Ease of use (PEOU),
Perceived Usefulness (PU) are significantly related with the dependent variable at 0.01 and 0.05 levels.

There is no multicollinearity issue in the model as there is no high correlation among independent variables. Further analysis becomes possible to identify the factors affecting Intent to use government websites.

**Table 4: Results of Linear Regression**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Sig. F change</th>
<th>Beta Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.365&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.133</td>
<td>.129</td>
<td>.37019</td>
<td>.000</td>
<td>.365</td>
</tr>
<tr>
<td>2</td>
<td>.435&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.189</td>
<td>.182</td>
<td>.35887</td>
<td>.000</td>
<td>.267</td>
</tr>
<tr>
<td>3</td>
<td>.453&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.205</td>
<td>.193</td>
<td>.35632</td>
<td>.049</td>
<td>.202</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), TG  
b. Predictors: (Constant), TG, PU

This research included all seven variables in the stepwise regression. Table 4 depicts the output based on the analysis. The adjusted R-Square is the proportion of variation in the dependent variable (Citizens’ Intent to use Government Websites) that is explained by the independent variables. Therefore 19.3 percent of the variation of Citizens’ Intent to use Government Websites can be explained by those three independent variables in the model.
Table 5: Results of Anova Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>4.323</td>
<td>1</td>
<td>4.323</td>
<td>31.543</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>28.093</td>
<td>205</td>
<td>.137</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>32.415</td>
<td>206</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>6.143</td>
<td>2</td>
<td>3.071</td>
<td>23.848</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>26.273</td>
<td>204</td>
<td>.129</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>32.415</td>
<td>206</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Regression</td>
<td>6.642</td>
<td>3</td>
<td>2.214</td>
<td>17.437</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>25.774</td>
<td>203</td>
<td>.127</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>32.415</td>
<td>206</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), TG

b. Predictors: (Constant), TG, PU

c. Predictors: (Constant), TG, PU, PEOU

d. Dependent Variable: DV

This table 5 shows whether the proportion of variance explained in the first table is significant. It also tells whether the overall effects of the independent variables on Intent to use government websites are significant. The Sig. (or p-value) is .000 which is below 0.05 level. Hence the outcome of this research can conclude that the constructs; Trust in Government (TG), Perceived Ease of use (PEOU), Perceived Usefulness (PU) are statistically significant or that the variables have a significant combined effect on the dependent variable.

Based on the test result, it was found that Trustworthiness (TR), Trust in Internet (TI), Facilitating Conditions (FC) and Computer Self-efficacy (CSE) are rejected. Trust in
Government (TG), Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) were accepted.

Based on the findings, a revised model was derived as depicted below.

**DISCUSSION**

According to the test results, the citizens’ higher perception of usefulness and ease of use of government websites directly enhance the level of the citizens’ continuance intention to use e-government websites. Perceived usefulness was the strongest predictor of continuance intention. This outcome yields the implication that usefulness is more interesting to some citizens than others. Hence, developing e-government websites that are easy to use will enhance the usefulness of the websites and indirectly increase the continuance intention to use the websites.

According to a study on ‘Utilization of e-government services’, compatibility, trustworthiness and perceived ease of use all have direct positive relationships with citizens’ intent to use E-government services. (Carter & Belanger 2005, cited in Wang & Lo, 2012). In Malaysia, Lai,
Sheikh Obid and Meera (2005) have empirically tested e-Filing system acceptance among the tax practitioners. They found that e-Filing system was perceived as useful and easy to use and the respondents had positive attitudes towards using the system. Myeong et al. (2014) mentioned that “The world’s least corrupt countries show a high correlation between the quality of e-government and the level of trust in government.”

Welch et al. (2005, cited in Myeong et.al 2014) addressed the relationships between Internet use, citizen satisfaction with e-government, and trust in government. They found positive relationships of the use of government websites to e-government satisfaction and website satisfaction and a positive relationship between e-government satisfaction and trust in government.

The results of this research revealed that the citizens’ computer self-efficacy was negatively related to the Factor affecting Citizens’ intent to use Government websites. According to the literature, higher the computer self-efficacy of the citizen, the higher the continuance intention to use E-government websites. A plausible explanation is that computer self-efficacy may diminish the significance when citizens gain increasing experience with E-government websites. Thus, further research may be investigated to determine the importance of Internet self-efficacy. Also the lack of Facilitating Conditions for the public to obtain E-government services through public places is another factor, which affects the usage of government websites.

After analyzing the responses, this shows that respondents are more vigilant of detecting the potential risks that could occur during online accessing of government websites. Security of the transactions is a major concern as service is new to the country and there are not many payment gateways. Also citizens are more concerned on the information recorded in the government websites when browsing and filling online forms. They may have fear of using those will affect adversely on their privacy and financial and personal confidentiality. Also poor facilitating conditions and lack of computer knowledge contributed to the fact that there exists a lower usage of government websites in Sri Lanka.
CONCLUSIONS AND RECOMMENDATIONS

This study has several limitations. First, although the response rate of this study can be considered high in terms of a web-based survey, the mixed-mode survey which uses several ways of data collection together with the choice of completion method may be employed to increase responses. Secondly, this study intends to elicit data from knowledgeable citizens who are ready for e-government. However, there are other citizens who employed in government institutes (especially civil servants), citizens who have lower levels of education, lower income, and weaker computer self-efficacy which are not covered by this research which are the future research directions.

To conclude, the results from this study suggest that Trust in Government, Perceived Ease of Use and Perceived Usefulness can be applied to understand the significant factors affecting citizens’ intention to use E-government websites with reference to the MBA Students in the University of Sri Jayewardenepura. Nevertheless, it is important to note that the citizens place a different emphasis on the determinants of continuance intention. They focus primarily on perceived usefulness and perceived ease of use, but place less emphasis on computer self-efficacy.

Furthermore, the conclusions that have emerged from the analysis presented in this study are as follows:

1. The full potential of electronic government services is unlikely to be realized without substantial citizen adoption of such services and their participation in such initiatives. This point is clearly reflected in the Sri Lankan government’s recent efforts on e-government development and diffusion within which one of the major objectives outlined is to promote design, development and diffusion of citizen centric online services for efficient delivery of public services.
2. Trust in Government, Perceived ease of use, Perceived usefulness were identified as the significant factors affecting citizens’ intent use of government websites in Sri Lankan national perspective.

3. Even though the empirical findings proved that the effect of the factors (namely, Trustworthiness, Trust in Internet, Facilitating Conditions, and Computer Self-efficacy) were positively affecting the use of E-Government, this research resulted those factors were not significant.

**Policy Measures of increasing Government services in Websites and public usage**

1. Trust in Government which will influence continuing using government websites. Government websites should be up-to-date with the relevant information, effective and competent in providing electronic services. Also, integrity of the government services could be increased by making sure websites are accurate, provide care and exhibit honesty of the information/services that offered. Increasing goodwill and truthfulness of the websites can attract more people to use websites.

2. A government website should be clear and understandable even for a novice user. It should provide clear interaction paths (eg: self-guided menus) and offer flexibility.

3. Online transactions for government services could offer many advantages. It would allow the general public to pay for their services using Credit cards and have no need to worry about taking cash.

Finally, author believes that additional studies could be conducted in the future in order to assess the influence of other groups of factors stemming from the Trustworthiness, TAM and TPB model, namely those related to subjective norms and Trust in Internet. Also, further studies
needed to include more diverse population such as people in different sectors, deferent job categories and education levels who have basic Internet knowledge but willing to obtain government services online.

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Impact of Some Operational Factors on Acceptance Quality Pass Rate in Apparel Manufacturing

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ABSTRACT

Acceptance Quality Level (AQL) pass rate is a key process performance indicator in apparel manufacturing. We investigated the impact of some operational factors namely: work hours, absenteeism, style changes, output, in-line reject rate, and end-line reject rate on AQL pass rate in apparel manufacturing. In this study, daily production records of three apparel factories over a period of 5-6 months were considered. Causal analysis was performed using the statistical package SPSS. Correlation and step-wise regression analysis results indicated that in-line and end-line reject rates are the most significant factors affecting AQL pass rate. However the relationship between the reject rates and AQL pass rate was negative suggesting that detection and rejection of defective items during the process hasn’t resulted in increased probability of passing AQL inspections. Corrective measures may not have been undertaken after detecting higher levels defectives during the process. Output also has a positive relationship with AQL pass rate suggesting that large lots have a greater probability of meeting the AQL. Though work hours, style changes, and absence do not have a direct impact on AQL pass rate, they have an indirect impact on AQL pass rate through standard output.

Key words: AQL Pass Rate, Reject Rate, Apparel Manufacturing
INTRODUCTION

Sri Lankan apparel industry is predominantly export oriented. In the global apparel market, quality is essentially a key factor of competitiveness, and thus the apparel manufacturers are striving to attract and retain customers by continuously meeting and exceeding their quality expectations. Quality level of a finished garment item is usually measured against customer expectations and specifications on various dimensions and characteristics (sizes, appearance, weight, application of accessories, heat-resistance, various decorations, etc.). Before releasing finished garments from the factories, they are usually tested for Acceptance Quality Level (AQL) specified by the customers. Acceptance Quality Level (AQL) refers to the maximum percentage of defectives that would be considered as acceptable (Spashett, 2017). Thus AQL is the worst percentage of defects that a manufacturing system can tolerate before corrective and preventive actions are to be initiated. AQL checks are usually carried out on sample basis. If the AQL is not met, the manufacturer has to review the production process to identify the factors causing the defects.

Since apparel manufacturing operations are labour intensive, manufacturing defects are unavoidable and frequent quality inspections are required. In apparel production lines, quality inspections are usually carried out at various stages of production such as before the production process, during the production process, at the end of the production process and at the point of release. The main purpose of quality inspections before, during, and after production is to maximise the probability of meeting the AQL specifications or to increase the AQL pass rate. The outcomes of in-process (in-line) and end-process (end-line) quality inspections can thus provide early signals on the AQL pass rate.

Relatively higher in-line and end-line reject rates may indicate a batch of poor quality and a greater probability of failing to meet the AQL. In contrast, one can expect that early detection and rejection of defects, and thus higher rates of in-line and end-line reject rates, would reduce the risk of failing to meet the AQL. The nature of the relationship between the in-line and end-line reject rates and the AQL pass rate (if there exist any) can therefore be positive or negative. A
better understanding of the nature of this relationship would help the management to generate informed expectations about the probability that a batch of finished garments meet the customer specifications. However reject rates may not be the sole indicators of AQL pass rate. Owing to the labour intensive nature of apparel manufacturing, several operational factors such as working hours, absenteeism and output can vary day to day. These factors can also have an impact on the AQL pass rate. Therefore the objective of this work is to investigate the impact of operational factors: work hours, absenteeism, style changes, output, in-line reject rate and end-line reject rate on AQL pass rate in apparel manufacturing. Statistical causal analysis methods were used to address the research questions.

LITERATURE REVIEW

Apparel quality and its determinants have been widely discussed in literature. Geršak (2004) investigated the impact of fabric elastic potential on appearance quality of garments. Das (2010a) discussed various aspects of garment quality such as dimensions and fitness, appearance, decorations, accessories, etc. Das (2010b) analysed quality standards of apparels in US and non-US markets with fibre configuration, dimensional conformity, spirality, labelling and flammability. He observed that the required quality standards differ in studied markets. Baral and Kifor (2013) analysed the outcomes AQL inspections in woven garments (trouser) manufacturing units in Bangladesh and identified various types of defectives which cause AQL failures. Thilagavathi and Viju (2013) discussed the process related factors affecting the quality of apparels. They commented on issues related to key stages of manufacturing such as cutting, sewing and packaging. Keist (2015) discussed the differences between quality control and quality assurance with respect to apparel industry. He pointed out that quality assurance incorporates quality into each stage of apparel production while quality control deals with evaluation of quality after production. Wickramasinghe and Perera (2016) studied the impact of total productive maintenance practices (TPM) on production performance of textile and apparel manufacturers in Sri Lanka. They found that TPM has a significant positive impact on garment quality. Though studies like Wickramasinghe and Perera (2016) has focused on the impact operational factors on apparel quality, as far as we can say, no research has specifically studied
the operational determinants of the AQL pass rates in apparel manufacturing. AQL pass rate is a key determinant of the manufacturers overall performance and it is useful for apparel manufacturers to study the operational factors which affect AQL pass rate.

METHODOLOGY

The objective of this study was to investigate the impact of operational factors, namely work hours, absenteeism, style changes, output, inline reject rate and end-line reject rate on AQL pass rate in apparel manufacturing. We used secondary data: daily production and quality inspection records for a period of 5-6 months from January to May/June 2017 from three apparel factories. The experimental data set contained 308 records after eliminating the records with missing data and outliers (caused by machine breakdowns, etc.). The details of the dependent and independent variables are given below.

Dependent variable is AQL pass rate (AQL): the percentage of production lots (batches) which passed the AQL inspection.

Independent variables:

Work hours (Whours) = The total sewing operator work hours utilised in the particular day.

Absenteism (Absence) = the percentage of sewing operators who were absent on the particular day.

Style changes (Schange) = the number of style changes took place during the day.

Output = the standard output calculated as output in units multiplied by the standard minute value for the particular style.

In-line reject rate (Inline) = percentage of items rejected during the sewing process.

End-line reject rate (Endline) = percentage of items rejected at the end of the sewing process.
The hypothesis to be tested may be given as follows.

Null hypothesis: \( H_0 = \) none of the above factors \((i = 1, 2, \ldots, 6)\) has a significant impact on the AQL pass rate.

Alternative hypothesis: \( H_a = \) at least one of the factors \((i = 1, 2, \ldots, 6)\) has a significant impact on the AQL pass rate.

Given that all the variables are continuous, we used correlation and step-wise regression methods to investigate the causal relationships. SPSS 17 was used for the analysis. We first performed a correlation analysis with all the variables and then performed step-wise regression with selected variables as explained below under results and discussion.

RESULTS AND DISCUSSION

The descriptive statistics of the data set are summarised in Table 1 in the Appendix. AQL pass rate has varied from 72\% to 100\% over the period considered (Maximum failure rate: 18\%). In-line and end-line reject rates have varied from 2\% to 17\%. Output averaged 1601 standard minutes while work hours averaged 3255 operator hours. A maximum of 4 style changes has taken place in a day. Absenteeism ranged from 1\% to 19\%.

The correlation analysis results are given in Table 2. The results indicate that only work hours \((r=0.293, p=0.000)\), output \((r=0.417, p=0.000)\), in-line reject rate \((r=0.435, p=0.000)\) and end-line reject rate \((r=0.475, p=0.000)\) have significant correlation with AQL pass rate. Absenteeism and style-changes do not have a significant correlation with AQL pass rate. Therefore, we then performed a stepwise regression analysis with AQL pass rate as the dependent variable and the other correlated variables (work hours, output, in-line reject rate and end-line reject rate) as the independent variables.
While performing the step-wise regression in SPSS, we checked the Gauss-Markov conditions to verify that the ordinary least square estimators would be best unbiased estimates. The stepwise regression analysis results are given in Tables 3 and 4. According to the results, only three variables namely output, in-line reject rate and end-line reject rate can be considered as statistically significant predictors of the AQL pass rate. Work hours cannot be considered as a significant predictor of AQL pass rate. The best fitted model to predict the AQL pass rate was:

\[ AQL = 0.999 - 1.011(\text{End-line reject rate}) - 0.575 (\text{In-line reject rate}) + 2.138E^{-5} \text{ (Output)} \]

The coefficients for both in-line and end-line reject rates are negative indicating that higher levels of rejects during and after production hasn’t increased the probability of meeting AQL; rather higher levels of in-line and end-line rejects indicate poor process performance leading to more AQL failures. The output has a positive impact on AQL pass rate indicating that large lots have a greater probability of meeting AQL (the coefficient is small because output > 1000 while AQL ≤ 1). There could have been a learning affect. Though the model is significant \( (F(3,304)=52.646, p=0.000) \), only 34.2% of the variance in AQL pass rate can be explained by the model. Hence there may be other factors such as quality of material which were not considered in this study having a significant impact on the AQL pass rate.

The correlation results in Table 2 indicate that the excluded variables (work hours, absenteeism and style changes) have significant correlation with the independent variables included in the model. Hence we then performed regression analysis considering each of the predictor variables in the AQL model as the dependent variable and the excluded variables as the independent variables to find out whether there is any indirect relationship or path. The results indicated that the excluded variables are statistically significant predictors of the output, but not that significant predictors of in-line and end-line reject rates. The regression results with output as the dependent variable are given in Tables 5 and 6. According to the results, work hours, style changes and absenteeism can be considered as statistically significant predictors of output. The best fitted model to predict the AQL pass rate was:
Output = -60.747 + 0.567 (Work hours) - 89.020 (Style changes) - 1596.155 (Absenteeism)

We observed that 74.2% of the variation in output can be explained by the model. This is an unintended but interesting finding of this study. Thus we can conclude that though work hours, absenteeism and style changes do not have a significant direct impact on AQL pass rate, they have an indirect impact on AQL pass rate through output as illustrated in Figure 1.

![Figure 1: Factors directly and indirectly affecting AQL pass rate](image)

**CONCLUSIONS AND RECOMMENDATIONS**

We studied the impact of work hours, absenteeism, style changes, output, in-line reject rate and end-line reject rate on AQL pass rate in apparel manufacturing using statistical methods. The results indicate that only in-line reject rate, end-line reject rate and output have a statically significant impact on AQL pass rate. Both in-line and end-line reject rates have a negative impact on AQL pass rate. These results suggest that earlier detection and elimination of defectives hasn’t cleaned the lots and hasn’t increased the probability of meeting the AQL. If the detection of higher levels of defectives during and at the end of the process had been followed by corrective measures, AQL pass rate would have increased. Rather, our results suggest that more in-line and end-line rejects indicate some issues in the production process which has continued to
produce batches of low quality and reduced probability of meeting the acceptable quality level. Therefore the key recommendation of this study is that if greater levels of defectives are detected, the process should be reviewed and corrected immediately, before it leads to failures at the AQL inspection.

Output has a significant positive impact on AQL pass rate, i.e., greater the output greater the AQL pass rate. So it worth investigating whether there is a learning affect. Though work hours, absenteeism and style changes do not have a significant direct impact on AQL pass rate, they do have a significant impact on output, and thus have an indirect impact on AQL pass rate through output. We also found that the output can be reliably predicted using the three variables: work hours, absenteeism and style changes. The best fitted regression model could explain 74.2% of the variation in output. With the best fitted regression model for AQL pass rate, only 34.2% of variation in AQL pass rate can be accounted for by the independent variables: in-line reject rate, end-line reject rate, and output. Therefore we recommend further study on AQL pass rate considering other factor such as the quality of input materials.

REFERENCES


1. APPENDICES

<table>
<thead>
<tr>
<th>Table 1: Descriptive statistics of the data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Output</td>
</tr>
<tr>
<td>Work hours</td>
</tr>
<tr>
<td>Style changes</td>
</tr>
<tr>
<td>Absenteeism</td>
</tr>
<tr>
<td>In-line reject rate</td>
</tr>
<tr>
<td>End-line reject rate</td>
</tr>
<tr>
<td>AQL pass rate</td>
</tr>
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</table>
Table 2: Pearson correlation (Significance 2-tailed). Estimated p-values are in brackets

<table>
<thead>
<tr>
<th></th>
<th>AQL</th>
<th>Whours</th>
<th>Absent</th>
<th>Schange</th>
<th>Output</th>
<th>Inline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whours</td>
<td>.293</td>
<td>(1)</td>
<td>.614</td>
<td>(1)</td>
<td>.240</td>
<td>(1)</td>
</tr>
<tr>
<td>Absent</td>
<td>-.095</td>
<td>(.007)</td>
<td>-.095</td>
<td>(.097)</td>
<td>-.095</td>
<td>(.097)</td>
</tr>
<tr>
<td>Schange</td>
<td>-.099</td>
<td>(.084)</td>
<td>-.110</td>
<td>(.055)</td>
<td>.087</td>
<td>(.129)</td>
</tr>
<tr>
<td>Output</td>
<td>.417</td>
<td>(.000)</td>
<td>.846</td>
<td>(.000)</td>
<td>-.575</td>
<td>(.000)</td>
</tr>
<tr>
<td>Inline</td>
<td>-.435</td>
<td>(.000)</td>
<td>-.547</td>
<td>(.000)</td>
<td>.349</td>
<td>(.055)</td>
</tr>
<tr>
<td>Endline</td>
<td>-.475</td>
<td>(.000)</td>
<td>-.062</td>
<td>(.278)</td>
<td>.052</td>
<td>(.364)</td>
</tr>
</tbody>
</table>

Table 3: Step-wise regression results summary (dependent variable: AQL)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.475a</td>
<td>.226</td>
<td>.224</td>
<td>.05419</td>
</tr>
<tr>
<td>2</td>
<td>.565b</td>
<td>.319</td>
<td>.315</td>
<td>.05091</td>
</tr>
<tr>
<td>3</td>
<td>.585c</td>
<td>.342</td>
<td>.335</td>
<td>.05013</td>
</tr>
</tbody>
</table>

Predictors:
- a. (Constant), Endline
- b. (Constant), Endline, Inline
- c. (Constant), Endline, Inline, Output

Table 4: Step-wise regression results (dependent variable: AQL)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-999</td>
</tr>
<tr>
<td>Endline</td>
<td>-1.346</td>
<td>.142</td>
</tr>
</tbody>
</table>

Faculty of Management Studies and Commerce,
University of Sri Jayewardenepura, Colombo, Sri Lanka
E-Mail: icbm@sjp.ac.lk | WEB: icbm.sjp.ac.lk
## Table 5: Step-wise regression results summary (dependent variable: Output)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.846a</td>
<td>.716</td>
<td>.715</td>
<td>290.46681</td>
</tr>
<tr>
<td>2</td>
<td>.859b</td>
<td>.738</td>
<td>.736</td>
<td>279.42386</td>
</tr>
<tr>
<td>3</td>
<td>.861c</td>
<td>.742</td>
<td>.740</td>
<td>277.48448</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Whours

b. Predictors: (Constant), Whours, Schange

c. Predictors: (Constant), Whours, Schange, Absence

## Table 6: Step-wise regression results (dependent variable: Output)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-407.850</td>
<td>74.264</td>
<td>-5.492</td>
</tr>
<tr>
<td></td>
<td>Whours</td>
<td>.617</td>
<td>.022</td>
<td>.846</td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
<td>-301.731</td>
<td>74.448</td>
<td>-4.053</td>
</tr>
<tr>
<td></td>
<td>Whours</td>
<td>.605</td>
<td>.022</td>
<td>.830</td>
</tr>
<tr>
<td></td>
<td>Schange</td>
<td>-90.026</td>
<td>17.771</td>
<td>-.149</td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td></td>
<td></td>
<td>-.473</td>
</tr>
<tr>
<td>---</td>
<td>-----------</td>
<td>---</td>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td>Whours</td>
<td>.567</td>
<td>.027</td>
<td>.778</td>
<td>21.024</td>
</tr>
<tr>
<td>Schange</td>
<td>-89.020</td>
<td>17.653</td>
<td>-.148</td>
<td>-5.043</td>
</tr>
<tr>
<td>Absence</td>
<td>-1596.155</td>
<td>694.750</td>
<td>-.085</td>
<td>-2.297</td>
</tr>
</tbody>
</table>
The Shipping and Logistics Performance and Its Impact to The Investments in Sri Lanka; A Contemporary Appraisal

Edirisinghe, L., Dalian Maritime University, China; CINEC Campus, Sri Lanka

ABSTRACT

The paradigm of interconnectedness continues to hold command in today’s global community. However, countries face many challenges in making it happen competitively given inherent geographic factors as well as resource constraints internally. Therefore, innovations in logistics play a key role to improve the logistics performance. Interestingly, the challenges provide opportunities for innovation if it received in a positive attitude. This however, may work well only with a highly competent workforce. Accordingly, the knowledge and skills in shipping and logistics management is the key. The transport efficiency in sea, land, and air transport, ports, and airports development becomes significant. Regional corporation can therefore attract a brighter future for the world not only through effective utilization of tangible resources but also the learning curve advantage. This paper discusses the shipping and logistics performance and its impact to the investments in Sri Lanka. It provides analysis of logistics related indexes and its impact of investments in Sri Lanka. The paper analyses the logistics performances under six pillars namely, Customs, Infrastructure, International Shipments, Logistics Quality & Competence, Tracking and Tracing, Timeliness. The logistics related indicators published by various international organizations reveals that Sri lanka needs focus on improving logistics performance and derive the benefits of country’s comparative advantages.

Keywords: Shipping, Logistic, LPI, Containers, Sri Lanka
INTRODUCTION

Sri Lanka is enriched with multiple comparative advantages in the areas of naval, aviation and commercial logistics. However, to derive the real benefits of the benevolence the country should enhance its performance in trading across borders. This research attempts to appraise impact of shipping and logistics performance on the investments, particularly the foreign direct investments (FDI) and discuss the insights for the way forward. The three areas of naval, aviation and commerce directly relate to international trade and this study examines internationally published reports that contain different indexes and rakings in relation to cross border movement of international trade. The paper compares the international trading environment, with specific attention to logistics with the global trends and the situation in Asia. The end of three decades civil war is the critical enabler and trend setter in its effort to transform the country to an economic centre of the world (Edirisinghe & Muller, 2013). The development strategy has been focused on capitalising on the geographically important location of the country and position the country to serve as a key link between the East and the West. Shipping is a business that grew up with the world economy, exploring and exploiting the ebb and flow of trade (Stopford, 2009). From 1981 to 2009, global transport of containerized cargo increased approximately 3.3 times faster than the world’s GDP (UNCTAD secretariat, 2011). Sri Lanka’s strategic geographical location therefore provide unmatched advantages for the country’s shipping and logistics activities.

Investment Promotion and facilitation

The sluggish recovery, persistent unemployment, and financial vulnerability, with no clear horizon for improvement were evident in many parts of the world since almost a decade now. CNN reported that the U.S. economy grew at an annual rate of 1.6% in 2016, the Commerce Department reported Friday. In the last three months of the year -- between October and December -- the economy grew at an annual rate of 1.9%. It's the slowest pace of growth since 2011 (Gillespie, 2017).
According to Figure 1, it is obvious the crucial role played by logistics in terms of sequential impact to investment promotion of a country, thus Sri Lanka is no exception to this phenomenon. This is a common challenge to maximize FDIs particularly for developing countries. However, the fact remains the need for improved logistics would become even more critical in the present context to Sri Lanka. There was a boom in FDIs to the country given the somewhat open economy in Sri Lanka in 1977. Subsequently, the Board of Investment of Sri Lanka (then Greater Colombo Economic Commission) took certain critical decisions in terms of trade facilitation and particularly with respect to Customs and border management aspects that plays a crucial role in logistics. In 1990 the regulations in international shipping was liberalized to great extent paving the way for international carriers to operate their services freely in Sri Lanka. The process of export shipment was made very efficient and customer friendly by removing certain
bottlenecks. The involvement of Central Freight Bureau in exports freight booking was made inactive. In today’s context Sri Lanka need focus on two fundamentals namely, 1) providing a better service to the existing investors and retain them and 2) create competitive advantages that attract new FDIs. The quality of logistics plays a key role in both these endeavours.

**Logistics Performance**

Logistics refers to a series of services and activities, such as transportation, warehousing, and brokerage, that help to move goods and establish supply chains across and within borders (Arvis, et al., 2016). The quality of logistics services—trucking, forwarding, and customs brokerage—is also central to trade efficiency (Edirisinghe & Muller, 2013). Sri Lanka’s strategic geographic location is the most vital factor in gaining comparative advantage over many competing countries. Therefore, it is fundamentally crucial to appraise the logistics performance to explore investment opportunities in Sri Lanka.

The World Bank’s Connecting to Compete report analyses countries in six components ascertaining various countries’ performances namely, logistics performance indicator (LPI). These components include, 1) The efficiency of customs and border management clearance; 2) The quality of trade and transport infrastructure; 3) The ease of arranging competitively priced shipments; 4) The competence and quality of logistics services; 5) The ability to track and trace consignments; and 6) The frequency with which shipments reach consignees within scheduled or expected delivery times.

Input and outcome LPI indicators have been defined as areas for policy regulations, and service delivery performance or Time, cost, reliability respectively. Accordingly, Customs, Infrastructure, and Services quality are considered input while Timeliness, International Shipments, Tracking and tracing are outcomes. Logistics performance is strongly associated with the reliability of supply chains and the predictability of service delivery available to producers.
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8th December 2017 | Colombo, Sri Lanka

and exporters. Supply chains— only as strong as their weakest links— are becoming more and more complex, often spanning many countries while remaining critical to national competitiveness. Comprehensive reforms and long-term commitments from policymakers and private stakeholders will be essential (Edirisinghe & Muller, 2013). Although these services and activities are carried out by private firms for the benefit of private firms, service delivery and the efficiency of supply chains depend on public sector provisions and interventions in several domains (Arvis, et al., 2016).

Investments in Sri Lanka

For Sri Lanka to achieve its desired growth, it will require prominent level of foreign direct investment (U.S. Department of State, 2015). Table 1 provides a summary of realised investments in Sri Lanka in recent years.

Table 1: Realised Investments in the BOI Enterprises

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Projects</td>
<td>2,045</td>
<td>1,997</td>
<td>1,951</td>
<td>1,989</td>
<td>1,929</td>
</tr>
<tr>
<td>Foreign Investment (Rs. million)</td>
<td>828,313</td>
<td>958,958</td>
<td>1,133,006</td>
<td>1,236,251</td>
<td>1,345,715</td>
</tr>
<tr>
<td>Total Investment (Rs. million)</td>
<td>1,280,837</td>
<td>1,512,021</td>
<td>1,755,702</td>
<td>1,991,808</td>
<td>2,179,813</td>
</tr>
</tbody>
</table>

(a) Cumulative figures as at end of the year
(b) Provisional

Source: Board of Investment of Sri Lanka as cited in (CBSL, 2016)

The government has planned to transform Sri Lanka into a strategically important economic centre by developing five strategic hubs; a knowledge hub, a commercial hub, a naval & maritime hub, an aviation hub, and an energy hub, taking the advantage of Sri Lanka's strategic location & resources. With a 56.8% contribution, the services sector remains the largest contributor to the national economy (BOI, 2017). Sri Lanka is a gateway to the world – located in dynamic Asia with easy access to air and sea routes of the world. The proposed Financial City aims to become the prominent financial hub in the region and it has commenced to attract foreign
investments from Indian, South Asian, and Middle East region as well as from European countries. Colombo has the potential to serve as a subsidiary market for eastern and western giants since it is located midway between the major financial markets such as London, Frankfurt, Dubai to the West / and Tokyo, Hong Kong, Singapore and Sydney to the East. There are opportunities to further enhance the outreach to promote products once the proposed FTAs are in operation with China, Singapore and Japan in addition to existing FTAs with India and Pakistan (Ceylon Chamber of Commerce, 2017).

The investment into Logistics infrastructure would impact the economic growth of small countries and vice versa (Sujeta & Navickas, 2014). Given the highly strategic geographic position Sri Lanka has many opportunities to reap the benefits in this context. Figure 1 provides insights to the modular process of this circular impact.

Figure 1 the relationship between investment and economic growth

METHODOLOY
This case study is a result of a desk research carried out into literature relating to the subject matter available in the public domain. It also administered interviews with industry professionals to clarify certain data derived from the literature. The study employed both primary data and secondary sources. Depth interviews have been conducted with five senior officers of Trade Associations such as Sri Lanka Shippers Council, Ceylon Chamber of Commerce, Department of Inland Revenue, Customs and Board of Investment of Sri Lanka. Quantitative analysis was done using the Doing Business Reports of The World Trade Organization, The World Bank and the International Finance Corporation, The Global Competitiveness Report of World Economic Forum, and Connecting to Compete Report. The study has cross examined these data using many other secondary sources such as Central Banka of Sri Lanka, United Nations, World Customs Organization, and many industry publications.

**KEY LOGISTICS INDICATORS OF SRI LANKA**

The Logistics environment is primarily influenced by the international trading patterns (Edirisinghe & Muller, 2013). In most countries, regulatory measures for trade in goods and services raise new and pressing challenges for efficient cross border movement of goods and services in the 21st century. Logistics make a major impact on economic activity in any country (Edirisinghe, 2013) Reforming the regulatory requirements in the logistics area has thus become a focal point of many governments in developing countries. It is vital to make a regional comparison of LPI results of Sri Lanka at this stage. However, the latest publication of Connecting to Compete report does not provide LPI results in 2016 for Sri Lanka. Therefore, LPI results across four editions namely, 2010, 2012, 2014, and 2016 have been considered (No. of countries evaluated 167) to derive the analysis in table 2.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>India</th>
<th>Pakistan</th>
<th>Sri Lanka</th>
<th>Bangladesh</th>
<th>Maldives</th>
<th>Nepal</th>
<th>Bhutan</th>
<th>Afghanistan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customs</td>
<td>46</td>
<td>66</td>
<td>79</td>
<td>104</td>
<td>83</td>
<td>151</td>
<td>134</td>
<td>146</td>
</tr>
</tbody>
</table>

Table 2: South Asia’s world rank in the Logistics Performance Indicator (LPI)
This comparison provides insights to key impediments in logistics performance in the country that may cause serious impact of Sri Lanka. Infrastructure and international shipments show a lagging compared with other regional economies which is alarming. Customs, Timeliness, Tracking and Tracing seems relatively better but much lower performance than India and Pakistan. The ranking of the Logistics quality and competence reflects better results placing Sri Lanka in the second place in the region but still way behind India. These moderate performances ultimately place the country in the third place in the region which is somewhat paradox to the highly strategic locational advantages. Table 3 compares the best and worst performers namely, Germany and Somalia. Also, two countries that has a direct competition with Sri Lanka regarding the logistics hub concept.

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>Sri Lanka</th>
<th>Singapore</th>
<th>United Arab Emirates</th>
<th>Somalia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customs</td>
<td>2</td>
<td>79</td>
<td>1</td>
<td>18</td>
<td>167</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>1</td>
<td>123</td>
<td>3</td>
<td>16</td>
<td>167</td>
</tr>
<tr>
<td>International Shipments</td>
<td>7</td>
<td>103</td>
<td>4</td>
<td>13</td>
<td>167</td>
</tr>
<tr>
<td>Logistics Quality &amp; Competence</td>
<td>1</td>
<td>67</td>
<td>5</td>
<td>23</td>
<td>167</td>
</tr>
<tr>
<td>Tracking and Tracing</td>
<td>1</td>
<td>82</td>
<td>9</td>
<td>19</td>
<td>167</td>
</tr>
<tr>
<td>Timeliness</td>
<td>2</td>
<td>87</td>
<td>6</td>
<td>18</td>
<td>167</td>
</tr>
<tr>
<td>Logistics Performance Indicator (LPI)</td>
<td>1</td>
<td>86</td>
<td>3</td>
<td>19</td>
<td>167</td>
</tr>
</tbody>
</table>

The table provides LPI scores of each component in addition to the rank of respective country. Therefore, it facilitates a quantitative comparison for components of qualitative nature. For
example, Singapore ranks No.1 with a score of 4.11 in the Customs in comparison to No.2 (Germany) with a score of 4.07. Similarly, Germany and Singapore are placed in No.1 and 3 respectively with corresponding scores of 4.38 and 4.22 respectively.

Customs and border management activities play a crucial role in logistics. Investors need import raw materials and export their finished goods with least delays and cost at the borders. Visibility in the system with respect to customs and other border management agencies to install electronic clearance stations at international border crossings would be essential (Edirisinghe & Zihong, 2014). The study therefore focused special attention regarding the index in the customs aspects. The role of Customs agencies is vital thus the World Customs Organization’s (WCO) Harmonized System Convention remains a crucial element of the global trading system (Harrison, Muller, & Holloway, 2009). The International Convention on the Simplification and Harmonization of Customs procedures (Kyoto Convention) entered into force in 1974 and was revised and updated to ensure that it meets the current demands of governments and international trade (W.C.O., 2017). The WCO Council adopted the revised Kyoto Convention in June 1999 as the blueprint for modern and efficient Customs procedures in the 21st century. Sri Lanka signed the RKC in 1999, subject to ratification. The dates of signature without reservation or of deposit of Instruments of ratification or accession is recorded as 26-06-1999. However, it was debated in the industry that a relatively slow progress of implementing the RKC is seen in Sri Lanka. The appeals Directorate was established in Sri Lanka in November 2014. The RKC requires that the customs examination be conducted as soon as possible thus the customs administration have a vital role to play with the expected increases in logistics activities in the country (Edirisinghe & Jayathilake, 2014). Table 4 illustrates vital comparison of some related data.

Table 4: Comparison of key Logistics Factors (Imports)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Germany</th>
<th>Singapore</th>
<th>United Arab Emirates</th>
<th>India</th>
<th>Sri Lanka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearance time (days)</td>
<td>Without physical inspection</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
ANALYSIS OF INVESTMENT RELATED FACTORS IN SRI LANKA

Global Competitiveness Index published by the World Economic Forum is another source used in this research. As reported in the Global Competitiveness Index (GCI) 2016/17, Sri Lanka was ranked 71 out of 138 economies with a score of 4.19. This is a decline from 68 with 4.21 in the previous report of 2015/16. Table 5, 6 and 7 provides vital information regarding factors that may impact investment in Sri Lanka.

Table 5: Analysis of selected components in “Institutions”

<table>
<thead>
<tr>
<th>GCI Rank in 2016/17 (out of 138 countries)</th>
<th>Sri Lanka</th>
<th>Switzerland</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st pillar: Institutions</td>
<td>2015/16</td>
<td>2016/17</td>
<td>2016/17</td>
</tr>
<tr>
<td>Irregular payments and bribes</td>
<td>88</td>
<td>78</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Finland ranks 1 &amp; New Zealand 2 (No corruption)</td>
</tr>
<tr>
<td>Favouritism in decisions of government officials</td>
<td>98</td>
<td>88</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Singapore ranks 1</td>
</tr>
<tr>
<td>Burden of government regulation</td>
<td>64</td>
<td>56</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Singapore ranks 1</td>
</tr>
<tr>
<td>Transparency of government policymaking</td>
<td>80</td>
<td>81</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Singapore ranks 1</td>
</tr>
<tr>
<td>Strength of investor protection, 0–10 (best)*</td>
<td>50</td>
<td>49</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Singapore ranks 1</td>
</tr>
</tbody>
</table>

These tables explain the overall GCI rank and key components of 3 key pillars of global competitiveness namely, institutions, infrastructure, and goods and market efficiency. The analysis consists data of Sri Lanka and Switzerland that ranks no. 1 in 2016/17 report. It is clear from the comparisons that even the best performing country has perform lower in certain factors. On the other hand, it provides some insights as to what factors may critically important in making the Sri Lanka’s rank better.

Table 6: Analysis of selected components in “Infrastructure”

<table>
<thead>
<tr>
<th>GCI Rank in 2016/17 (out of</th>
<th>Sri Lanka</th>
<th>Switzerland</th>
<th>Remarks</th>
</tr>
</thead>
</table>

Faculty of Management Studies and Commerce, University of Sri Jayewardenepura, Colombo, Sri Lanka
E-Mail: icbm@sjp.ac.lk | WEB: icbm.sjp.ac.lk
For example, Transparency of government policymaking, Quality of railroad infrastructure, Quality of air transport infrastructure, Degree of customer orientation, and Buyer sophistication has primarily helped Switzerland to achieve good performance.

Table 7: Analysis of selected components in “Goods and Market Efficiency”

<table>
<thead>
<tr>
<th>GCI Rank (out of 138 countries)</th>
<th>Sri Lanka 71</th>
<th>Switzerland 1</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of procedures to start a business*</td>
<td>104 94 54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of days to start a business*</td>
<td>59 56 56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalence of non-tariff barriers</td>
<td>92 73 58</td>
<td>Singapore ranks 1</td>
<td></td>
</tr>
<tr>
<td>Trade tariffs, % duty*</td>
<td>138 136 57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalence of foreign ownership</td>
<td>61 79 19</td>
<td>United Kingdom ranks 1</td>
<td></td>
</tr>
<tr>
<td>Business impact of rules on FDI</td>
<td>38 68 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burden of customs procedures</td>
<td>59 63 14</td>
<td>Hong Kong ranks 1</td>
<td></td>
</tr>
<tr>
<td>Imports as a percentage of GDP*</td>
<td>98 107 48</td>
<td>Hong Kong ranks 1</td>
<td></td>
</tr>
<tr>
<td>Degree of customer orientation</td>
<td>30 38 3</td>
<td>Japan ranks 1</td>
<td></td>
</tr>
<tr>
<td>Buyer sophistication</td>
<td>33 45 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Doing Business Report of International Bank for Reconstruction and Development (IBRD) -The World Bank provides various data that should be considered in investment decisions. Table 8 illustrates key components in logistics and new investments namely, international trading and starting up business. Table 8 refers to New Zealand and Netherlands in comparison to Sri Lanka. New Zealand is chosen its rank in “starting a business” and Netherlands is the best performer in trading across borders.

Table 8: Comparison of Doing Business Report of IBRD -The World Bank
Table 9 provides the trend of logistics related indicators of Sri Lanka namely, trading, export and import. The overall index on doing business has not been steady during 2007 to 2015. The results of 2016 and 2017 is not included in the same report as certain sub components of analysis show a difference after 2016.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Year: 2017</th>
<th>Sri Lanka</th>
<th>New Zealand</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of countries considered</td>
<td>No. of Countries: 190</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starting a business</td>
<td></td>
<td>74</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Trading across borders</td>
<td></td>
<td>90</td>
<td>55</td>
<td>1</td>
</tr>
<tr>
<td>Time to Export(days)</td>
<td>Documentary compliance(hours)</td>
<td>76</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Border compliance(hours)</td>
<td>43</td>
<td>38</td>
<td>0</td>
</tr>
<tr>
<td>Cost to export (USD per container)</td>
<td>Documentary compliance(US$)</td>
<td>58</td>
<td>67</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Border compliance(US$)</td>
<td>366</td>
<td>337</td>
<td>0</td>
</tr>
<tr>
<td>Time to import(days)</td>
<td>Documentary compliance(hours)</td>
<td>58</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Border compliance(hours)</td>
<td>72</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Cost to import (USD per container)</td>
<td>Documentary compliance(US$)</td>
<td>283</td>
<td>80</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Border compliance(US$)</td>
<td>300</td>
<td>367</td>
<td>0</td>
</tr>
<tr>
<td>Ease of Doing Business</td>
<td></td>
<td>110</td>
<td>1</td>
<td>28</td>
</tr>
</tbody>
</table>
### Table 9: Key Logistics indicators in Doing Business Report 2007-2015

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No of countries considered</td>
<td>189</td>
<td>189</td>
<td>185</td>
<td>183</td>
<td>183</td>
<td>181</td>
<td>178</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Trading across borders</td>
<td>69</td>
<td>51</td>
<td>56</td>
<td>53</td>
<td>72</td>
<td>65</td>
<td>66</td>
<td>60</td>
<td>99</td>
</tr>
<tr>
<td>Documents to export(number)</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Time to Export(days)</td>
<td>16</td>
<td>20</td>
<td>20</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Cost to export (USD per container)</td>
<td>560</td>
<td>595</td>
<td>720</td>
<td>715</td>
<td>715</td>
<td>865</td>
<td>810</td>
<td>797</td>
<td></td>
</tr>
<tr>
<td>Documents to import(number)</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Time to import(days)</td>
<td>13</td>
<td>17</td>
<td>19</td>
<td>19</td>
<td>20</td>
<td>20</td>
<td>21</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Cost to import (USD per container)</td>
<td>690</td>
<td>775</td>
<td>775</td>
<td>745</td>
<td>745</td>
<td>895</td>
<td>844</td>
<td>789</td>
<td></td>
</tr>
<tr>
<td>Ease of Doing Business</td>
<td>99</td>
<td>85</td>
<td>81</td>
<td>89</td>
<td>102</td>
<td>105</td>
<td>102</td>
<td>101</td>
<td>89</td>
</tr>
</tbody>
</table>

### THE ROLE OF SHIPPING IN SRI LANKA

Water transportation systems provides low speed and relatively low accessibility, but extremely high capacities (Banks, 2004). By means of water-carriage more extensive market is opened to every sort of industry than what land-carriage alone can afford it (Smith, 1776). About 90% of world trade is carried by the international shipping industry (I.C.S., 2005). Being at the southern tip of the only land mass extending towards the Indian Ocean between the Arabian and Malayan peninsulas, this strategic geographical positioning is naturally expected to give Sri Lanka an added competitive edge to develop herself as an Asian maritime hub (Edirisinghe & Gunaruwan, 2013). Once countries get embedded in the global supply chains they feel part of something much bigger than their own business (Friedman, 2005).

### Table 10: Container transhipment volumes handled in Colombo (in TEUs)

<table>
<thead>
<tr>
<th>Type</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transhipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty</td>
<td>357742</td>
<td>347521</td>
<td>352603</td>
<td>421235</td>
<td>492993</td>
<td>481989</td>
</tr>
<tr>
<td>Sub total</td>
<td>312382</td>
<td>306476</td>
<td>320811</td>
<td>369971</td>
<td>388832</td>
<td>435526</td>
</tr>
<tr>
<td>Laden</td>
<td>356167</td>
<td>349069</td>
<td>362509</td>
<td>409828</td>
<td>426974</td>
<td>482062</td>
</tr>
<tr>
<td>Total handling</td>
<td>701213</td>
<td>696424</td>
<td>681108</td>
<td>809631</td>
<td>915718</td>
<td>914301</td>
</tr>
<tr>
<td>Transhipment as a share of total throughput</td>
<td>73%</td>
<td>73%</td>
<td>74%</td>
<td>75%</td>
<td>75%</td>
<td>76%</td>
</tr>
</tbody>
</table>
Sri Lanka is dominated by container shipping. Containerisation which changed everything was the brainchild of Malcom McLean, an American trucking magnate (The Economist, 2013). However, the domestic exports and imports in Sri Lanka only accounts for a minor share (Edirisinghe & Ratnayake, 2015). According to table 9 Sri Lanka depends on transhipment volumes as much the neighbouring countries depends on Sri Lanka for their maritime logistics (Edirisinghe, 2017). Table 10 illustrates the share of transhipment volumes handled in Colombo for last six years. It clearly reflects the significant role played by Sri Lanka in facilitating the regional logistics and global container movements. The level of interconnectedness facilitated by Sri Lanka through maritime logistics could be further evaluated per volumes belong to each neighbouring country/port as tabulated in table 11.

Table 11: Transshipment volume connected via Colombo - Sri Lanka

<table>
<thead>
<tr>
<th></th>
<th>Inward TEUs</th>
<th>Outward TEUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bangalore</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Calcutta</td>
<td>74,611</td>
<td>63,842</td>
</tr>
<tr>
<td>Chennai</td>
<td>152,290</td>
<td>122,709</td>
</tr>
<tr>
<td>Cochin</td>
<td>79,229</td>
<td>75,762</td>
</tr>
<tr>
<td>Goa(Marmagoa)</td>
<td>9,941</td>
<td>10,045</td>
</tr>
<tr>
<td>Haldia</td>
<td>19,328</td>
<td>20,162</td>
</tr>
<tr>
<td>Hazira</td>
<td>5</td>
<td>1,225</td>
</tr>
<tr>
<td>Kattupalli</td>
<td>1,165</td>
<td>0</td>
</tr>
<tr>
<td>Krishnapathnam</td>
<td>32,029</td>
<td>20,760</td>
</tr>
<tr>
<td>Mangalore</td>
<td>22,828</td>
<td>25,066</td>
</tr>
<tr>
<td>Mundra</td>
<td>35,142</td>
<td>31,900</td>
</tr>
<tr>
<td>Nava sheva</td>
<td>52,709</td>
<td>39,189</td>
</tr>
<tr>
<td>Panaji</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Pipavav</td>
<td>12,533</td>
<td>4,451</td>
</tr>
<tr>
<td>Tuticorin</td>
<td>230,061</td>
<td>225,789</td>
</tr>
<tr>
<td>Visakhapatnam</td>
<td>30,861</td>
<td>29,883</td>
</tr>
<tr>
<td>Total</td>
<td>752,738</td>
<td>670,797</td>
</tr>
<tr>
<td>Maldives island</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23,932</td>
<td>26,926</td>
</tr>
<tr>
<td>Total</td>
<td>23,932</td>
<td>26,926</td>
</tr>
</tbody>
</table>
The containerization has its own problems despite the huge benefits it provides. The container inventory imbalance which accounts for 22% of container cost (Alderton, 2004) is one key issue faced by carriers. The fundamental reason for Container Inventory Imbalance (CII) is the external trade imbalance of countries (Edirisinghe & Zhihong, 2016 a). Usually, containers are supplied to exporters through reuse of laden import containers. If a particular port has no sufficient inventory to fulfill the exporters’ demand the carrier may import empty containers. Apart from the empty reposition there are two other sources to container supply namely, leasing and purchasing. These sources provide a kind of reactive solution to CII. A considerable amount of investments has been made in purchasing containers and vessels and building port infrastructures (Dong, Xu, & Song, 2013). There is no commonly accepted standard container inventory management (CIM) strategies adopted by carriers (Edirisinghe, Zhihong, & Wijeratne, 2016 b). The container imbalance creates different costs to the carrier as well as environmental issues globally (Edirisinghe, Zhihong, & Wijeratne, 2016 a). The surplus MTYs at one location needs to be transported to a location where there is a deficit of them (Edirisinghe, Zhihong, & Wijeratne, 2015).

### CONCLUSIONS AND RECOMMENDATIONS

If the transport cost is brought down the price of goods and services are expected to reduce. This would help a country to bring down its inflation. Similarly, the country’s exports will be more competitive in the global market due to lower transport cost (Edirisinghe & Zhihong, 2016).
However, logistics industry (predominantly the shipping business) today is faced with serious challenges. Global shortfall of competent workforce in maritime sector and declining demand for freshers is one of them. World fleet is registered in over 150 nations and manned by more than a million seafarers of virtually every nationality. There are various security threats caused by sea piracy. Environmental regulations are getting tougher every day. Maritime transport emits around 1000m tonnes of CO2 annually and this accounts 2.5% of global greenhouse gas emissions. Therefore, it is imperative that regulators need apply pressure on green logistics. The container inventory imbalance costs USD 15 Billion a year globally. This is evident in that fact that 20% of containers transported by sea and 40% by land are empty. More and alliances, acquisitions and mergers taking place which makes the industry heavily volatile. Congestion experienced by trucking companies is considerable thus congestion mitigation measures will be needed especially in the urban areas (Edirisinghe & Zhihong, 2014). Sri Lanka need focus on improving the quality standards of logistics. Container exchange is identified as an effective solution to the container inventory imbalance. Carriers exchange slots for more than two decades now (Edirisinghe, Jin, & Wijeratne, In press). However, they have still failed to implement this for containers although many service agreements already provide provisions to do so.

The rapid increase in world trade in the past decade has restructured the global maritime industry, having brought about new developments, deregulation, liberalization and increased competition. There have been dramatic changes in the mode of world trade and cargo transportation, characterized by the prevalence of business-to-business and integrated supply chains. These changes have been embodied in the increasing demand for value-added logistics services and the integration of various transportation modes. Therefore, high-quality logistics is paramount for any country for survival.

The container shipping, led to greatly reduced transport costs, and supported a vast increase in international trade. The management of container fleets, regardless of type and size, is a rather costly operation (Lagoudis, Fragkos, & Litinas, 2010). From 1981 to 2009, global transport of containerized cargo increased approximately 3.3 times faster than the world’s GDP (UNCTAD, 2011). It paved the way for hub and spoke mechanism. With liberalization of shipping in Sri
Lanka in the 1990s the domestic exporters and exporters many leading carriers entered into the Sri Lanka market. As previously explained carriers send their ships to Colombo to grab the ever-growing transhipment cargo and not for the relatively small domestic exports and imports. However, this trend enhanced the service quality of exporters in terms of multiple shipping opportunities from Sri Lanka to reach their buyers promptly. On the other hand, it facilitated quick access to required raw materials particularly accessories for garment manufacturers. Colombo is considered to be the last loading port (logically) on the wet-bound liner shipping voyage this scenario led to a freight war between carriers.

With major shipping traffic flowing through the Indian Ocean region and growing by up to 10 percent a year, it is paramount that ports can handle cargo efficiently and effectively to ensure minimal turnaround times. Sri Lanka’s geographic location is an unmatched advantage although it is not the only factor that future maritime stakeholders will be interested on. There are many lessons that could be learnt from neighbouring countries particularly, Singapore.

Boarder management is one strong pillar in effective maritime logistics. It was hypothesised that there should be a transparency in the present regulatory system with respect to Logistics and Transport. As revealed in previous literature neighbouring countries are said to have a better regulatory system than Sri Lanka; bureaucratic discretion by certain border management officials obstruct the free international trading rather than facilitating. Hiding to certain provisions in the regulatory framework these officials act as barriers unfortunately although there are highly motivated and committed officers particularly at the middle and higher level render a fantastic service to the mother land.

the government officers in Sri Lanka create more barriers than what is legitimately provided by the regulatory framework; International trading environment should be made totally free from the obsolete trading regulations; the bureaucratic discretion can be clearly observed in customs (i.e. “At the discretion of the officer”); Sufficient decentralization, strong financial controls and public accountability is required for better performance in trade; and Effective enforcement mechanisms of the concessions offered to international trade is required the authorities and other interested parties need carefully analyses the global perception about the region and Sri Lanka
and address key issues to improve the rankings. It is not necessarily that everything must be done by the governments. Many issues can be amicably solved by private public partnership or proper planning at organizational level. However, this approach may need highly motivated and competent professionals. Training new employees to prepare them for the jobs of the future isn’t the only issue. Companies also need to provide continuing education to current employees, to help them increase their skills and enhance job satisfaction (Ruske & Kauschke, 2012). Logistics professionals need strong analytical skills and understanding of new technologies. Skills in information technology, RFID and automation etc. is now a prerequisite for a job in maritime logistics. Transportation & logistics managers need to work together with governments to make sure there are programmes in place to train future employees. Government organizations such as National Apprentice and Industrial Training Authority (NAITA) already identified this requirement and positively engage in the process of validating minimum skill requirements for employments in the logistics and supply chain area. More effective market awareness through educational institute is required for better results. This needs long term planning by the authorities. Logistics and Transport should be introduced in the school curriculum at the secondary education level. The clear understating about the industry, its potential and benefits will create positive mindset in students that will lead to cognitive impact. Schools can also form educational clubs such as ‘Maritime society’, Logistics club’ because there are many private logistics companies and training institutes who may conduct very effective knowledge provoking programs in these clubs. This is one better way to take the message to the public because the parents will carefully evaluate the activities taking place in such club. If the education authorities do necessary initiatives at policy level, there are many private education institutes who can assist schools by providing resource personnel as a means of corporate social responsibility. Also, professional institutes such as Chartered Institute of Logistics and Transport, Institute of Chartered Shipbrokers may volunteer to assist such move from government.

REFERENCES


