Management control systems, business strategy and performance of family businesses in Sri Lanka.

Nilakshika,K.L.T., Karunarathna, K.K.S.S, Godakanda,I.S, Wijesinghe,T.S.R,
Peiris S.M, Chandrasiri J.M, Kumara H.R.N, Siriwardena D.P,
Madhushani D.M & Kumarasiri P.M.

1. ABSTRACT

This paper seeks to evaluate the relationships among management control systems (MCS), business strategy and organizational performance of family businesses (FBs) in Sri Lanka and see whether MCS has significant impact on achieving business strategy and performance. Family businesses play a major role in Sri Lankan economy as a developing country. For the research purpose, we limit our scale to family businesses in Western province. In order to describe the MCS in the study we use Levers of control model introduced by Simons (1994).

The influence of (i) Diagnostic Control Systems (DCS) on the cost leadership strategy for FBs; and (ii) Interactive Control Systems (ICS) on the differentiation strategy for FBs to be discuss in deep from this paper. To this end, this study was carried out using a sample of 91 family businesses in Sri Lanka located on Western province. The findings show that family businesses management control systems are linked with their business strategy and further the MCS has a relationship with the firm performance which is mediated by their business strategy. This study is useful for firm managers and practitioners as it can encourage them to develop systems that allow control of the firm direction and improve the firm's competitiveness.

2. KEY WORDS:

Management Control Systems (MCS), Strategy, Organizational Performance, Levers of Control framework (LOC framework), Diagnostic Control Systems (DCS), Interactive Control Systems (ICS), Cost Leadership Strategy, Differentiation Strategy.

3. INTRODUCTION

Today's business environment is very competitive, complex and dynamic. Hence the companies face with the challenge of coping up with the changes in the business environment and to ensure the survival and growth of their businesses. This needs both responding promptly to the opportunities and threats that arise in the business environment strategically. In this aspect, Management Control System (MCS) plays a vital role and provides the platform for implementing strategy that leads to competitive advantage and superior sustainable performance. Management accounting researchers argue that one of the ways firms can continually rejuvenate themselves to survive and succeed in these complex and uncertain environments is to understand the role of MCS in creating competitive advantages (Simons, 2000; Widener, 2007).

MCS includes management accounting systems, budgetary practices, performance measurement systems, project management systems, planning systems, and reporting systems (Simons, 1990). The purpose of MCS is to provide information that is useful for managerial decision-making, planning, monitoring and evaluation of organizational activities to alter employee behavior (Merchant & Otley, 2007). There can be identified different types of management controls systems but for the simplification purpose we are focusing on levers of control in our study.

Simons (1987, 1990, 1991, and 1994) presented a series of cases that contribute to a theory of how senior managers can use controls to implement and develop strategy, which concluded in his book 'Levers of Control' (Simons 1995b), where he has outlined how management controls can contribute to effective strategy implementation. Simons argued that it is not the identification of controls associated with particular strategies that are important, but the distribution of management attention among controls. He introduced four key constructs that have to be analyzed and understood in order to implement strategy successfully: core values; risks to be avoided; critical performance variables and strategic uncertainties. For the research purpose, we limit our study to following two dimensions.

- Diagnostic control systems used to motivate, monitor and reward achievement of specified goals.

- Interactive control systems used to stimulate search and learning, allowing new strategies to emerge as participants throughout the organization to respond to perceived opportunities and threats.

Business strategy provides the ultimate direction where the business wants to be. Strategy is a decision or a stream of decisions taken to determine where you want to be and how you should get there. (Johnson & Scholes, 2008). Further there is evidence that high organizational performance may result from a matching of an organization's environment, strategy and internal structures and systems (Govindarajan & Gupta, 1985; Govindarajan, 1982).

Organizational performance is another important variable when identifying the link between Management control systems and business strategy of businesses organizations. Performance is a set of financial and non-financial indicators which offer information on the degree of achievement of objectives and results (Lebans & Euske 2006 after Kaplan & Norton, 1992). Organizational performance will be the intermediate to recognize the relationship between above variables.

We have analyzed the aforementioned in the context of family businesses in Sri Lanka. Due to the difference in capacity, management, regulatory requirement variation and other aspects in contrast to Public listed companies, we have thus sought to analyze the situation of management control systems, business strategy and performance in family businesses in Sri Lanka.

The Family Business (herein referred to as 'FB') sector has been identified as an important strategic sector in the overall policy objectives of the Government of Sri Lanka (GOSL) and it is seen as a driver of change for inclusive economic growth, regional development, employment generation and poverty reduction. FB's sector is envisaged to contribute to transform lagging regions into emerging regions of prosperity.

The Government of Sri Lanka recognizes FB's as the backbone of the economy, as it accounts for more than 75% of the total number of enterprises, provides 45% of the employment and contributes to 52% of the Gross Domestic Production (GDP). FB's promote broad based equitable development and provide more opportunity for Women and Youth participation in the economic development of the country.

There cannot be find exact definition for family businesses. Hence, we decide to limit our scope on family businesses using SME definition. Family Businesses and SMEs' are defined differently by different countries based on different parameters such as number of employees, business turnover, capital investment, etc. Different definitions are also being used by different organizations within the same country to define Family Businesses and SMEs for different purposes, which is common in our country as well. However, according to the recent guidelines issued by the Central Bank of Sri Lanka (CBSL), a Family Business or a SME is defined as an enterprise that has an annual turnover less than Rs 600 million and borrowings below Rs 200 million.

Further according to department of industry and commerce – Sri Lanka definition the category of Small and Medium Sized Enterprises (SMEs) is made up of enterprises which employ less than 300 employees and which have an annual turnover not exceeding Rs.750 Mn. For the purpose of our study we used above definition and take the population as businesses below 300 employees and turnover below 750 Million. And further for the purpose of convenience we only selected family businesses which are located in the western province of Sri Lanka.

Table 1: Defining SMEs in Sri Lanka

Size / Sector	Criteria	Medium	Small	Micro
Manufacturing Sector	Annual Turnover	Rs. Mn. 251 - 750	Rs. Mn. 16 - 250	Less than Rs. Mn. 15
	No. of Employees	51 - 300	11 - 50	Less than 10
Service Sector	Annual Turnover	Rs. Mn. 251 - 750	Rs. Mn. 16 - 250	Less than Rs. Mn. 15
	No. of Employees	51 - 200	11 - 50	Less than 10

(Reference: department of industry and commerce, defining SME)

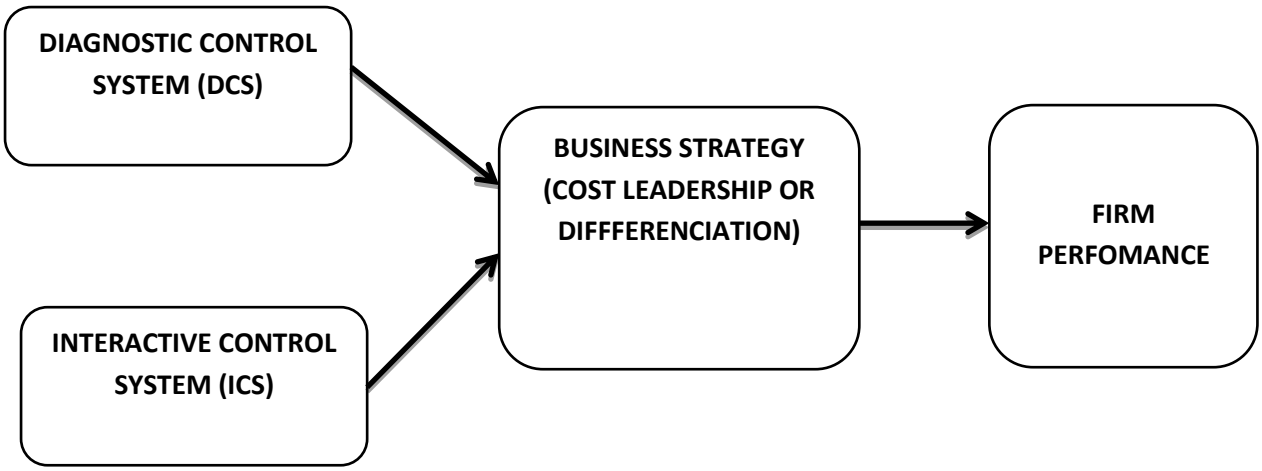


Figure 1-Conceptual Framework of the study

Selected MCS of Simon's levers of control frameworkand with Michael Porter's business strategies are used to build the relationship between the MCS, business strategy and the firm performance.

4. HYPOTHESES DEVELOPMENT

In this study the hypothesis are developed to compare the relationships among MCS (DCS and ICS), business strategy and performance in family businesses.

- **Diagnostic control system and business strategy**

H1 - The use of diagnostic control systems will have a positive influence on the implementation of business strategy on cost leadership.

DCS are traditional management control systems used to monitor and optimize targets and outcomes. And also, these are formal feedback mechanisms used to control and reward the achievement of preset organizational outcomes. Further they are used to restrain employee behavior and encourage conservatism in the implementation of intended strategies. Accordingly, the tight control of processes through is more likely to be related with a cost leadership strategy than a differentiation strategy

- **Interactive control systems and business strategy**

H2 - The use of interactive control systems will have a positive influence on the implementation of business strategy on differentiation.

ICS encourage opportunity-seeking behavior, experimentation, and produce the development of new ideas and initiatives. Further ICS focus on continually monitoring customer needs, identifying and developing new ideas, creativeness, and innovations. These characteristics of ICS are more consistent with the implementation of the differentiation strategy.

- **Management control systems, business strategy and performance**

H3 - There is an effect on diagnostic control systems on performance, mediated by cost leadership business strategy for family businesses.

H4 - There is an effect on interactive control systems on performance, mediated by differentiation business strategy for family businesses.

Early studies of Simon's levers of control framework for performance measurement systems have not provided a theoretical link between MCS and performance or empirical evidence that MCS influence performance (1995, 2000).Most studies have, however, proposed an indirect link between MCS and performance through business strategy. A direct relationship between MCS and performance was therefore not assumed. Accordingly this study examines the overall effects of DCS and ICS on performance, mediated by business strategy, for family businesses.

5. RESEARCH PROBLEM

How family businesses in Sri Lanka use Management Control Systems to implement their strategy?

6. RESEARCH OBJECTIVES

(1) To what extent do FBs use MCS and performance measurement systems (PMS) in their business operations?

(2) How does MCS contribute to the implementation of business strategy?

(3) What is the effect of performance measurement systems on MCS of business strategy implementation on family businesses in Sri Lanka?

(4) How does the mediating role of business strategy implementation in the relationship between the PMS of MCS and firm performance on family businesses in Sri Lanka?

7. LITERATURE REVIEW

7.1 MANAGEMENT CONTROL SYSTEMS (MCS)

There are several definitions of MCS in the literature. One of the first definitions was provided by Anthony, 1965 as the process by which managers ensure that resources are obtained and used effectively and efficiently in the achievement of the organization's objectives. Simons, 1987 viewed the MCS as the formal routines and procedures using information to maintain or alter patterns in organizational activity, and include formal processes for planning, budgeting, cost control, environmental scanning, competitor analysis, performance evaluation, resource allocation.

Otley, 1994 defines the MCS as formal and informal systems which gathers and uses information to evaluate the performance of different organizational resources like human, physical, financial and also the organization as a whole considering the organizational strategies. Recently, Gooneratne & Hoque (2013) proposed a definition that encompasses most of the aspects previously mentioned: MCS are defined as the formal organizational systems designed and implemented by management to ensure that organizational goals are achieved.

The research article we use as the basis for this research has been selected the levers of control framework for their study. Further there are only few researches conducted on this framework with family business and strategy perspective. Hence it is decided to select LOC framework to continue this research. However, in this study we only focus on interactive controls and diagnostic controls of this framework.

7.2 LEVERS OF CONTROL FRAMEWORK

In contemporary management control thinking, the levers of control framework (LOC framework; Simons, 1994; 1995) have gained a top position. Based on a series of case studies in the late 80's and early 90's Simons (1995) developed the levers of control-framework – to provide a theory for the control of business strategy. The Simons' (1995b) levers of control framework combine a focus on strategy with a wider view of the control mechanisms that can be utilized to implement strategy. Simons' (1999) framework suggests four basic levers to control business strategy which are beliefs systems, boundary systems, diagnostic control systems and interactive control systems.

Two of the control systems, belief systems and interactive controls, are used as positive control systems encouraging the search for new opportunities and motivating organizational members to engage in creative behavior. By contrast, the negative control systems, boundary and diagnostic systems, are used to balance these positive systems, by constraining search behavior and allocating attention. (Simons 1995)

According to Androniki Triantafylli the two of the control systems- beliefs systems and interactive control systems – motivate organizational participants to search creatively and expand opportunity space. These systems enhance intrinsic motivation by creating a positive informational environment that encourages information sharing and learning. The other two systems- boundary systems and diagnostic control systems- are used to constrain search behavior and allocate scarce attention. These systems rely on extrinsic motivation by providing explicit goals, formula- based rewards, and clear limits to opportunity seeking behavior.

According to Simons getting the maximum benefit of these levers in implementing strategy does not lie in how each is used individually, but rather in how they complement each other when used together. Accordingly, he explained how these four levers of control can be used to guide business strategy. As a sum, a research on the balance between four levers in LOC framework has been provided some empirical evidence that firms jointly use all four control levers (e.g., Mundy, 2010; Widener, 2007). Furthermore, in these studies the researchers argued that organizations which could achieve a balance has led to desirable organizational

outcomes including organizational learning and performance (Widener, 2007), development of organizational capabilities (Mundy, 2010), and creativity (Van Elten and Widener, 2013). However, the Management Accounting literature is remarkably silent on what balance looks like.

7.3 BELIEF AND BOUNDARY SYSTEMS

Beliefs systems are used to inspire and direct the search for new opportunities, and are related to the core values. Beliefs systems help convey an organization's overall strategy, vision, and mission. A beliefs system is ''the explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purposes, and direction for the organization (Simons, 1995, p. 34).

Beliefs systems are controls, designed to respond to the demands of innovation and encourage the employees to search for new opportunities. Thus, they are not specific enough to be used as standards or as a basis for performance evaluation. (Simons 1995). Paul S. Adler and Clara Xiaoling Chen, 2011 argued that beliefs systems play a vital role in nurturing the employee motivation and encourage innovations. Further they stated that beliefs systems can be established through mission statements, statements of purpose, employee principles, and management and employee meetings. Marginson (2002) has found that the beliefs system opened the door for new ideas, actions and initiatives.

7.4 DIAGNOSTIC AND INTERACTIVE CONTROLS

After the brief discussion on belief and boundary systems, we now turn to examine diagnostic and interactive controls. Diagnostic control system is a formal feedback system to monitor and supervise the outcome of an organization and to fix any deviation happened in performance (Simons, 1994). This feedback system is used to track all variance in an established target with an exception. The analysis on critical performance variable will give an influence on diagnostic control system (Simons, 1994). Accordingly, diagnostic control systems, serve mainly as management tools, which are used to monitor organizational outputs

and compare them to the preset standards, in order to correct possible deviations and keep the intended strategy on track.

According to Simons the critical performance variables monitored by diagnostic control systems can be both financial and non-financial by nature, depending on the factors that the management sees as crucial for the success in the current intended strategy. Examples of controls that can be used as diagnostic controls are profit plans and budgets, goals and objective systems, balanced scorecards, project monitoring systems and strategic planning systems. (Simons 2000).

Interactive control system is a formal system which is used by top manager to regularly and personally involve in decision making activities done by subordinate in a firm (Simons, 1987; Simons, 1994; Simons, 1995; Simons, 2000). Interactive control system is used to stimulate and enhance a dialogue or head to head conversation in order to build an information bridge among the hierarchy, functional department and profit center. According to Simons, 1990 system can be classified as an interactive system, if the top manager in the firm reports that the system is frequently used personally and regularly. And it also becomes the priority both for top manager and for the subordinate.

By contrast to diagnostic control systems, interactive control systems require extensive management attention. Simons (1995) defines interactive control systems as "formal information systems that managers use to involve themselves regularly and personally in the decision activities of subordinates". According to Simons (1994) top management can turn any diagnostic control system to interactive control system, by constant interest and attention. Since the interactive control systems require much top management attention, they are therefore expensive to maintain. Thus, Simons (1995) argues that top management will usually choose only one control system to be used interactively. The number of interactive controls used is also affected by rational and strategic reasons. Accordingly, Simons (1991) found that some managers do not have any control systems in interactive use. This was due to the managers not having a clear vision of their business.

7.5 STRATEGY

The term strategy does not have a universally accepted definition. Thus, it is commonly accepted as a shrewd or smart way of determining and achieving one's goals and objectives. The word 'strategy' can be traced back to the Greek word 'strategos' defined as the art of the army commander in chief of the ancient Greek city-states. In the war context, strategy closely relates to the concept of leadership where the war commanders had to take a stream of decisions under conditions of high stress and with incomplete and ambiguous information. Hence, strategy commenced as an art and developed later as a science.

Though there is no universally accepted definition for organizational strategy, it has been defined by various scholars in different perspectives.

"The broad programme for achieving an organization's objectives and implementing its mission" (*Stoner & Freeman,1995)*

"Strategy is the direction and scope of an organization over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fulfilling stakeholder expectations" (Johnson & Scholes, 2008)

"The determination of the basic long term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of the resources necessary for carrying out these goals" (Alferd Chandler, 2003)

"A stream of coherent and unified decisions or actions" (Henry Mintzberg,1982)

Further the different typologies of business strategies have been identified by various scholars and some of them are; intended strategy vs. emergent strategy by Mintzberg (1988), defender strategy vs. prospector strategy by Miles & Snow's (1978) and generic strategies by Michael Porter (1980).

There can be identified a common tendency among these different typologies. That is the relative emphasis on efficiency and effectiveness of the firm's market share. In defender strategy (Miles and Snow, 1978) and the cost leadership strategy (Porter, 1980), it describes the relative focus of the firm on efficiency to become the lowest cost producer. On the other hand, the firm's relative focus on effectiveness where searching for new opportunities and

offering new products is described by prospector strategy (Miles & Snow, 1978) and differentiation strategy (Porter, 1980). For this research, we selected Michael Porter's generic strategies (1980) as it is more familiar and understandable.

Porter has identified three kinds of generic strategies as cost leadership, differentiation and focus. These three generic strategies consolidate into two basic strategies, Cost leadership and differentiation, which means that focus generic strategy is actually complementary and is obtainable in both Cost leadership and differentiation strategies (Campbell-Hunt 2000). These two main strategies are broad in market scope but vary based on the competencies of the organizations, whether it has uniqueness competency or the low-cost competency.

The cost leadership strategy is where the firm expects to get the advantage of economies of scale by producing a standard product in high volumes (which focus on efficiency). Conversely the differentiation strategy is in the process of creating and offering a new product or service which is perceived as unique and provide a superior value to the customers (which focus on effectiveness).

Porter (1980) argues that both these categories show different directions through which an organization can compete and achieve competitive advantage while enhancing the performance. A firm which follows cost leadership strategy could achieve competitive advantage by becoming the lowest cost producer within the market/industry it operates. A firm implementing a cost leadership strategy emphasizes ''aggressive construction of efficient-scale facilities, vigorous pursuit of cost reductions from experience, tight cost and overhead control, avoidance of marginal customer accounts, and cost minimization in areas like R&D, service, sales force, advertising, and so on'' (Porter, 1980, p. 35). A firm which follows differentiation strategy could achieve competitive advantage by becoming innovative and unique in the market. A firm generates these perceptions through advertising programs, marketing techniques and methods, offering products with greater reliability, durability, features and aesthetics, and superior performance than their competitors (Miller, 1988; Mintzberg, 1988; Porter, 1985). This strategy would be required substantial investments in research and development as well as in marketing.

Most of the previous empirical studies on competitive strategy - performance using Porter's (1980) generic strategies typology have supported that there is a relationship between competitive strategy (cost leadership/differentiation) exist in both transition and advanced economies (e.g., Acquaah, Adjei, & Mensa-Bonsu, 2008; Aulakh, Kotabe, &Teegen, 2000; Beal &Yasai-Ardekani, 2000; Campbell-Hunt, 2000).

When considering organizational performance, Chenhall and Langfield-Smith (2003) explored how gain sharing systems (i.e. formal performance measurement and reward system) support in encouraging high performance. Further it can be described that by sharing benefits of the competitive strategies with the organization employees, they would motivate and encourage to work towards achieving goals or targets which support the strategy and sustaining competitive advantage.

8. METHODOLOGY

8.1 THE SAMPLE

Structured questionnaires were sent to 150 organizations through e-mail covering family businesses which are located on western province of Sri Lanka. Responses were received from 95 firms. Ninety One (91) responses were useable, for a response rate of 60.67%. Of the 91 useable responses, there were 45 service family businesses and 46 manufacturing family businesses. To check for potential response bias, the researcher ensured that all the respondents who completed the questionnaires were knowledgeable about the about the business strategy and the one who will use MCS either diagnostically or interactively. Table 1 presents the details of respondent profile

TABLE 1 Respondents Profile

Firm age (years)	***Frequency***	***Valid Percent***	***Cumulative Percent***
Less than 10	*26*	*28.6*	*28.6*
10–20	*42*	*46.2*	*74.7*
21–30	*19*	*20.9*	*95.6*
30 and over	*4*	*4.4*	*100.0*
Firm size (number of employees)			
Less than 10	*17*	*18.7*	*18.7*
11 – 50	*44*	*48.4*	*67.0*
51 – 300	*28*	*30.8*	*97.8*
300 and over	*2*	*2.2*	*100.0*
Ownership structure			
Sole propitiate (Local)	*31*	*34.1*	*34.1*
Sole propitiate (Foreign)	*54*	*59.3*	*93.4*
Partnership	*6*	*6.6*	*100.0*
District			
Colombo	*50*	*54.9*	*54.9*

Gampaha	*27*	*29.7*	*84.6*
Kaluthara	*14*	*15.4*	*100.0*
Business Sector			
Manufacturing	*46*	*49.5*	*49.5*
Service	*45*	*50.5*	*100.0*

8.2 MEASUREMENT OF VARIABLES

To establish the validity of the questionnaire used to operationalize the constructs, the content and construct validities were both examined. Content validity was assessed by reviewing the items for face validity and calculating the internal consistency of the variables (through the use of Cronbach's alpha coefficients). Construct validity was assessed using factor analysis to examine convergent and discriminant validity. All items had high loadings (0.40 or greater) on their respective constructs. The exploratory factor analyses of the items that were used to operationalize MCS and business strategy are presented in Tables 2 and 3, respectively.

8.2.1 Firm performance

Firm performance was measured with a subjective instrument using five measures:

- Productivity growth (GPROD)
- Growth in sales and revenues (GREV)
- Growth in net income/profits (GNI)
- Return on assets (ROA)
- Return on sales (ROS)

In our questionnaire, the respondents were asked to rate the businesses performance on the five measures of performance relative to their competitors over the past three years on a scale ranging from (1) ''much worse'' to (5) ''much better''. Further the firm performance was therefore constructed by averaging the ratings of the five measures as follows.

Firm Performance = GPROD+GREV+GNI+ROA+ROS

8.2.2 Management control systems

Although this study is based on the Simon's levers of control framework, this research paper only focuses on diagnostic and interactive uses of management control systems. The

variables used to operationalize the MCS variables (DCS and ICS) were derived from Simons' (1995, 2000), Henri's (2006) and Widener's (2007) concepts and questions. The respondents were asked to rate the degree to which the organizations are currently using MCS for various management control initiatives on a five-point scale, ranging from (1) ''very low'' to (5) ''very high.'' To ensure that the items in the questionnaire measures both DCS and ICS an exploratory factor analysis was conducted. Accordingly, all of the items which represent the management control systems loaded on two factors – Diagnostic Control Systems and Interactive Control systems.

Table 2 EXPLORATORY FACTOR ANALYSIS OF MANAGEMENT CONTROL SYSTEMS ITEMS.

Rotated Component Matrix		
	Component	
	1	***2***
Diagnostic control systems (DCS)		
Use feedback systems to track performance goals	*0.859*	*0.127*
Identifying and analyzing the firm's key performance indicators	*0.850*	*0.214*
Monitor employees' attitudes towards budgetary items	*0.843*	*0.168*
Require managers to prepare monthly or quarterly statements and report actual accomplishments and compare them with planned goals	*0.834*	
Rarely follow-up on exception reports with significant exceptions and initiate actions to get things back on track	*0.798*	*0.274*
Monitor the company's market share regularly	*0.794*	*0.182*
Set goals for the company's annual profit plans	*0.793*	*0.289*
Use incentives as a way of motivating employees to achieve their goals	*0.792*	*0.322*
Rarely review monthly or quarterly exception reports	*0.771*	*0.127*
Interactive control systems (ICS)		
Continuously address information generated from annual profit plans, budgets, and other issues on a recurring basis at the highest level of the company	*0.163*	*0.838*

Use information generated from annual profit plans, budgets, and other issues to create new action plans	*0.210*	*0.831*
Frequently involve managers in face-to-face discussions of the information generated from annual profit plans, budgets, and other issues at all levels to address future strategic uncertainties	*0.191*	*0.826*
Engage managers at all levels of the organization to frequently and regularly focus their attention on budgets and key performance indicators	*0.227*	*0.818*
Use information generated from annual profit plans, budgets, and issues to guide the search for new opportunities and stimulate experimentation, and learning	*0.000*	*0.817*
Debate underlying data, assumptions and action plans before setting the company's performance goals	*0.221*	*0.785*
Continuously monitor customer needs and market changes to take advantage of emerging opportunities and mitigate unexpected threats	*0.245*	*0.752*
Percentage of variance explained	*39%*	*31%*
Cumulative percentage of variance explained	*39%*	*70%*
Extraction Method: Principal Component Analysis. *Rotation Method: Varimax with Kaiser Normalization.*		
a. Rotation converged in 3 iterations.		

The method employed was principal component analysis with varimax rotation. Factor loadings greater than an absolute value of 0.40 are shown in bold font.

Since the variables which represented the DCS are highly correlated, all the factor loadings which represent the DCS have factor loadings more than absolute value 0.4. Factor loadings represent how much a factor explains a variable in factor analysis. Loadings can range from -1 to +1. Loadings close to -1 or +1 indicate that the factor strongly affects the variable. Loadings close to zero indicate that the factor has a weak effect on the variable. Accordingly there were no variable that should be removed in creating the construct validity of the questionnaire in relation to MCS.

According to the exploratory factor analysis conducted, nine items regarding goal accomplishment, monitoring, the review of key performance variables, comparing actual results to established standards, and feedback and tracing of progress towards goals loaded on factor 1. This variable was labeled DCS and operationalized using the average responses to the nine items (a = 0.948). Seven items regarding the personal participation of top and operating managers in the day-to-day activities of the firm such as: face-to-face discussions and debates on underlying data, assumptions and action plans, the provision of opportunities for experimentation and learning, continuously monitoring customer needs and market changes, etc. loaded on factor 2. This variable was labeled ICS and operationalized using the average responses to the seven items (a = 0.927) (see Table 3).

8.2.3 Business strategy

Business strategy was measured using Porter's (1980) generic competitive strategies. The respondents were asked to rate the degree to which their businesses have emphasized on cost leadership strategy and differentiation strategy on a five -point scale ranging from (1) ''much less'' to (7) ''much more.'' To ensure that the items appear in the questionnaire measures the underlining construct of the business, an exploratory factor analysis was conducted. Accordingly, all of the items which represent the management control systems loaded on two factors- differentiation and cost leadership strategies.

Similarly, to the MCS since the variables which represented the business strategy are highly correlated, all the factor loadings which represent the differentiation and cost leadership strategy have factor loadings more than absolute value 0.4. Accordingly, there were no variable that should be removed in creating the construct validity of the questionnaire.

The differentiation strategy (a = 0.949) was measured using the average of the nine items that loaded highly on this factor: developing new products and services; upgrading or refining existing products and services; providing products or services for high priced market segments; the improvement of existing customer service; innovation in marketing products and services; advertising and promoting products and services; and building brand and company identification. The cost leadership strategy (a =0.931) was operationalized using the average of the seven items that loaded highly on this factor: offering a broad range of products/services; operating efficiency; offering competitive pricing for products/services; forecasting market growth in sales; control of operating and overhead costs; and innovation

in the production process or service offerings. Three items cross-loaded highly on both differentiation and cost leadership – offering specialty products/services, effective control of distribution channels, and emphasizing high quality standards or high quality services – and were thus excluded from the operationalization of each of the business strategies (see Table 3).

TABLE 3 EXPLORATORY FACTOR ANALYSES OF COMPETITIVE STRATEGY ITEMS.

Rotated Component Matrix[a]		
	Component	
Differentiation strategy	***1***	***2***
Advertising and promotion of products and services	*.843*	*-.152*
Building brand and company identification	*.841*	*-.276*
Developing new products or services	*.831*	*-.201*
Effective control of distribution channels	*.828*	*-.264*
Upgrading or refining existing products	*.825*	*-.254*
Products or services for high priced market segments	*.820*	*-.265*
Improvement of existing customer service	*.815*	*-.302*
Innovation in marketing products and services	*.814*	*-.181*
Offering specialty products and services	*.788*	*-.110*
Cost leadership strategy		
Innovation in production process or service offerings	*-.121*	*.824*
Offering competitive prices for products and services	*-.309*	*.822*
Operating efficiency	*-.350*	*.822*
Offering a broad range of products or services	*-.261*	*.812*
Emphasizing high quality standards or high quality service		*.797*
Forecasting market growth in sales	*-.207*	*.797*
Control of operating and overhead costs	*-.322*	*.745*
Percentage of variance explained	*41%*	*31%*
Cumulative percentage of variance explained	*41%*	*72%*

Extraction Method: Principal Component Analysis. *Rotation Method: Varimax with Kaiser Normalization.*
a. Rotation converged in 3 iterations.

The method employed was principal component analysis with varimax rotation. Factor loadings greater than an absolute value of 0.40 are shown in bold font.
b All items that loaded on more than one factor were excluded from the operationalization of the competitive strategy variables.

8.2.4 Control variables

This study controlled for number of factors that might influence a firm's performance, the use of MCS and strategy. The control variables are the ownership structure, firm size and firm age. Firm age was measured as the number of years since the formation or incorporation of the firm. Firm size was measured by referring to the number of employees.

9. ANALYSIS AND DISCUSSION

Descriptive Statistics were carried out toverify the sample characteristics. Table 4 shows a descriptive statistic of minimum value, maximum value, mean and standard deviation of all variables involved in the study. Further table 4 reports the reliability of the research variables diagnostic controls, interactive controls, cost leadership strategy, differentiation strategy and organizational performance scale using Cronbach's coefficient alpha. Ideally, Cronbach alpha coefficient of a scale should be above 0.70 (Pallant, 2001). All the constructs have Cronbach alpha of above 0.70, indicating that all the constructs have good internal consistency.

Variable	*No. of items*	*Min*	*Max*	*Mean*	*Std. Deviation*	*Cronbach Alpha*
DCS	*9*	*1.00*	*5.00*	*3.3484*	*.96157*	*0.948*
ICS	*7*	*1.43*	*5.00*	*3.1215*	*.84811*	*0.927*
Cost Leadership	*9*	*1.71*	*5.00*	*3.1539*	*.95042*	*0.931*
Differentiation	*7*	*1.44*	*5.00*	*3.4302*	*.84782*	*0.949*
Firm Performance	*5*	*2.60*	*5.00*	*3.6209*	*.47629*	*0.778*

TABLE 4 DESCRIPTIVE STATISTICS

In order to test the relationship between diagnostic use and interactive use of MCS with business strategy, a multiple linear regression was conducted together with a correlation analysis. Hypothesis 1 and 2 covered through this analysis. **Correlation Analysis** was used to find outthe significant relationship among value MCS, business Strategy and firm performance. **Regression Analysis** was used to find outthe significant impact among MCS, business strategy and performance. And also, the data analysis for the research was performed with the help of the latest SPSS computer package.

Further mediated regression analysis is used to test the hypothesis 3 and 4 (Relationship between the MCS and business performance mediated by the business strategy).

9.1 CORRELATION ANALYSIS AND REGRESSION ANALYSIS

This study examined and compared the relationships among management control systems (MCS), business strategy and firm performance in family businesses in Sri Lanka. Accordingly, the study, hypothesized that the interactive use of MCS will have a positive influence on differentiation strategy while the diagnostic use of MCS will have a positive influence on cost leadership strategy. The hypotheses were tested using structured questionnaire data collected from 46 manufacturing businesses and 45 service businesses. **Appendix 4** displays the Pearson correlation matrix for overall sample representing all variables. The overall sample correlation analysis results indicate that DCS positively and significantly correlated with cost leadership strategy as hypothesized in this study. Further it also indicates that ICS positively and significantly correlated with differentiation strategy as hypothesized. (e.g., the correlation between the cost leadership strategy and DCS is 0.855, while the correlation between the differentiation strategy and ICS is 0.823). The findings from the overall sample (Both manufacturing and service) show that while DCS influence the implementation of the cost leadership strategy for they do not influence the implementation of the differentiation strategy.

However, for the further analysis we conducted a separate correlation analysis for both manufacturing and service sector. These separate correlation matrixes were attached in the **Appendix 5 and 6**. According to the results, the diagnostic use of MCS is more correlated with cost leadership strategy in manufacturing family businesses than the service family businesses. Further the interactive use of MCS is more correlated with differentiation strategy service family businesses than the manufacturing family businesses. Therefore, the effect of DCS on cost leadership strategy was stronger for manufacturing businesses rather than service businesses, while the effects of ICS on differentiation strategy was stronger for service businesses rather than manufacturing businesses.

It was also noted that there is an inverse correlation between the differentiation strategy and DCS when considering the overall sample. Even when this overall sample is categorized under service and manufacturing still this inverse correlation can be seen. This relationship may be because DCS focus on the achievement of preset goals and discourage opportunity seeking behaviors and experimentation across the organization.

Further In order to test the relationship between diagnostic and interactive use of MCS with cost leadership and differentiation strategy multiple linear regression was conducted. Accordingly, two analyses were done; (1) regression analysis by considering the DCS and ICS are independent variables and Cost Leadership strategy as dependent variable; and (2) regression analysis by considering the DCS and ICS are independent variable and Differentiation strategy as dependent variable.

TABLE 6 REGRESSION ANALYSES BETWEEN MCS AND COST LEADERSHIP STRATEGY

Coefficients[a]								
		Unstandardized Coefficients		***Standardized Coefficients***			***Collinearity Statistics***	
Model		***B***	***Std. Error***	***Beta***	***t***	***Sig.***	***Tolerance***	***VIF***
1	***(Constant)***	***1.392***	***.346***		***4.024***	***.000***		
	DCS	***.721***	***.059***	***.802***	***12.123***	***.000***	***.814***	***1.229***
	ICS	***-.114***	***.066***	***-.114***	***-1.727***	***.088***	***.814***	***1.229***
Adjusted R2 = 0.858; R2 =0 .736 F=103.22; p= 0.000								
a. Dependent Variable: Cost Leadership Strategy								

The correlation findings show that diagnostic use of MCS, significantly correlated with Cost Leadership strategy (see Table 5). Further according to the regression analysis, we can see that diagnostic use of MCS has the largest contribution in explaining cost leadership strategy *than the interactive use of MCS* (B=0.721; *Beta = 0.802; p = 0.000)*. ***Diagnostic use of MCS systems relies on extrinsic motivation by providing explicit goals, formula- based rewards, and clear limits to opportunity seeking behavior. While the cost leadership strategy is characterized by tight cost and overhead control, economies of scale, the use of efficient scale facilities and offering standardized products. Accordingly, it is more likely that the Cost leadership strategy is supported by the DCS.*** It was further noted that there is a significant negative relationship between the cost leadership strategy and ICS (B=-0.114; *Beta = -0.114; p = .000)*. The negative relationship between interactive use of MCS and cost leadership could be due motivate organizational participants to search creatively and expand opportunity space rather than constrain search behavior and allocate scarce attention.

According to Pallant (2001), when a small sample involved, it is better to report adjusted R square rather than R square. It is because the adjusted R square statistic provides a better estimate of the true population value. Since the sample size of this study is only 91, the study will report adjusted R square. According to the regression analysis conducted between the MCS and cost leadership shows that the independent variable i.e. diagnostic use and interactive use, explains 85.8 percent of the variance in cost leadership strategy. The independent variables made a unique and statistically significant contribution to the prediction of cost leadership strategy as indicated by the F-value (F =103.22; p = 0.000, see Table 5). Further ANOVA test in the regression analysis is significant since the P value is 0.000. It is below than the level 0.05 or 5%. Therefore, we can conclude that 5% of the impact is in the significant level.

TABLE 7 REGRESSION ANALYSES BETWEEN MCS AND DIFFERENTIATION STRATEGY

Coefficients[a]								
		Unstandardized Coefficients		*Standardized Coefficients*			*Collinearity Statistics*	
Model		*B*	*Std. Error*	*Beta*	*t*	*Sig.*	*Tolerance*	*VIF*
1	*(Constant)*	*1.394*	*.428*		*3.260*	*.002*		
	DCS	*-.217*	*.073*	*-.214*	*-2.967*	*.004*	*.784*	*1.276*
	ICS	*.812*	*.081*	*.723*	*10.005*	*.000*	*.784*	*1.276*
Adjusted R2 = 0.845; R2 =0 .713 F=87.091; p= 0.000								
a. Dependent Variable: Differentiation								

The findings of the correlation analysis between MCS and differentiation strategy shows that interactive use of MCS, significantly correlated with Differentiation strategy (see Table 5). Further regression results show that interactive use of MCS has the largest contribution in explaining Differentiation strategy *than the diagnostic use of MCS* (B=0.812, *b = 0.723; p = 0.000)*. It was further noted that there is a significant negative relationship between the differentiation strategy and DCS (B==0.217, *Beta = -0.214; p = .004)*. In addition, regression

analysis conducted between the MCS and differentiation shows that the independent variable i.e. diagnostic use and interactive use, explains 84.5 percent of the variance in cost leadership strategy. The independent variables made a unique and statistically significant contribution to the prediction of cost leadership strategy as indicated by the F-value (F =87.091; p = 0.000, see Table 7).

A good regression model should not happen correlation between the independent variables or not happen multicollinearity. Therefore, the presence of multicollinearity is assessed by performing tolerance and variance inflation factor (VIF) using SPSS. As shown in ***Table 6*** VIFs were for interactive (VIF = 1.229) and diagnostic (VIF = 1.229). As shown in the ***Table 7*** VIFs were for interactive (VIF = 1.276), diagnostic (VIF = 1.276). According to regression output the VIF value obtained is between 1 and 10. Therefore, none of the VIFs in the regression models were greater than 3, which are much smaller than the critical threshold of 10, indicating that multicollinearity is not a concern in derived two regression models.

To test hypothesis 3 and 4 and establish the relationship between the MCS and firm performance we conducted a mediated regression analysis per the methodology suggested by Baron and Kenny (1986). According to Baron and Kenny (1986), to test the effect of mediation, we estimated the following four regression equations and followed following steps;

1. *Regressed the dependent variable on the independent variable;*
2. *Regressed the mediator on the independent variable;*
3. *Regressed the dependent variable on the mediator;*
4. *Regressed the dependent variable on both the independent variable and on the mediation.*

The study, therefore, estimated (1) the effect MCS on the business strategy; (2) the effect of MCS variables on performance; and (3) the effect of MCS, and business strategy variables on performance. The beta coefficients from the mediated regression analysis were used to test Hypothesis 3 and 4. Baron and Kenny (1986) further state that ‘‘to establish mediation, the following conditions must hold: First, the independent variable must affect the mediator in the first equation; second, the independent variable must be shown to affect the dependent

variable in the second equation; and third, the mediator must affect the dependent variable in the third equation.''

FIGURE 2- MEDIATORY RELATIONSHIP BETWEEN MCS AND PERFORMANCE THROUGH BUSINESS STRATEGY

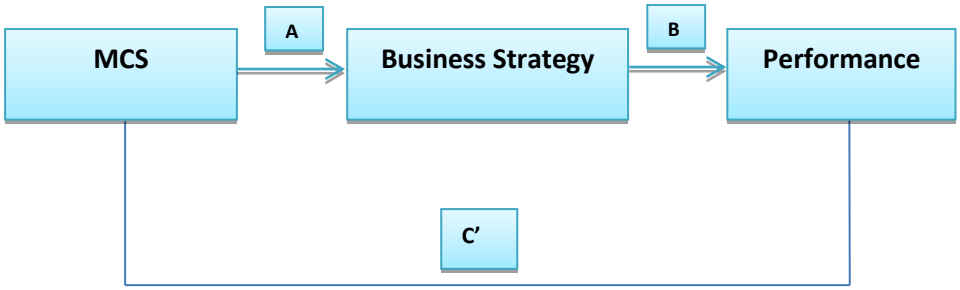


TABLE 8 DESCRIPTION OF THE REGRESSION ANALYSIS	
Step 1	Conduct a simple regression analysis with independent variable (X) predicting dependent variable (Y) to test for **Path C** alone, $Y = B_0 + B_1X + e$
Step 2	Conduct a simple regression analysis with independent variable (X) predicting mediator (M) to test for **Path A** alone, $Y = B_0 + B_1X + e$
Step 3	Conduct a simple regression analysis with Mediator (M) predicting dependent variable (Y) to test for **Path B** alone, $Y = B_0 + B_1X + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y to test for **Path C'**, $Y = B_0 + B_1X + B_2M + e$

According to Baron and Kenny if one or more of these relationships derived from step 1 to 3 are not significant, researchers usually conclude that mediation is not possible or likely. Assuming that there are significant relationships from Steps 1 to 3, step no 4 is used to assess whether the mediation is partial or full. In mediation, the relationship between the independent variable and the dependent variable is hypothesized to be an indirect effect due to the influence of a third variable called mediator. As a result, when the mediator is included in a regression analysis model with the independent variable, the effect of the independent variable is reduced. Therefore, in step no 4; ***if independent variable is no longer significant when mediator is controlled, the finding supports full mediation. If independent variable is still significant when mediator is controlled (i.e., both independent variable and mediator both significantly predict the dependent variable), the finding supports partial mediation.***

In H3 the study assumed that there is an effect on diagnostic control systems on performance, mediated by cost leadership business strategy for family businesses. Accordingly, to test the effect of mediation we assessed following four regression models as proposed by Baron and Kenny (1986). The summery of the assessed regression models were as follows;

TABLE 9- EFFECT ON DIAGNOSTIC CONTROL SYSTEMS ON PERFORMANCE, MEDIATED BY COST LEADERSHIP STRATEGY

	Independent	*Dependent*	B_0	B_1	B_2	*SE(X)*	*SE(M)*	*Beta(X)*	*Beta(M)*	*F*	*Sig-Overall*
Path C	*DCS*	*Performance*	*2.9462*	*0.2083*		*0.0521*		*0.4213*		*15.9720*	*0.000*
Path A	*DCS*	*Cost Leadership*	*0.8763*	*0.7668*		*0.0529*		*0.8553*		*209.7640*	*0.000*
Path B	*Cost Leadership*	*Performance*	*2.7040*	*0.2686*		*0.0566*		*0.4685*		*22.4940*	*0.000*
Path C'	*Cost Leadership & DCS*	*Performance*	*2.7436*	*0.0940*	*0.1733*	*0.0996*	*0.1114*	*0.1870*	*0.3081*	*10.4630*	*0.000*

X represents the independent variable, M represents the mediator, SE represents the Standard Error, Sig represents the overall significance of the model

Detailed regression analysis *conducted to assess the Effect on diagnostic control systems on performance, mediated by cost leadership strategy is shown under Appendix 2.* ***By observing the results since the relationships derived from path C, A and B are significant we can conclude that there's possible mediation between DCS and firm performance through Cost Leadership strategy.*** According to the regression output in path C' when the cost leadership strategy (mediator) is included in a regression analysis model with the DCS (independent

variable), the effect of the independent variable is reduced. Therefore, since *independent variable is no longer significant when mediator is introduced, the finding supports full mediation between DCS and firm performance through cost leadership strategy.*

TABLE 9- EFFECT ON INTERACTIVE CONTROL SYSTEMS ON PERFORMANCE, MEDIATED BY DIFFERENTIATION STRATEGY

	Independent	*Dependent*	B_0	B_1	B_2	*SE(X)*	*SE(M)*	*Beta(X)*	*Beta(M)*	*F*	*Sig-Overall*
Path C	**ICS**	**Performance**	**3.6382**	**(0.0115)**		**0.0597**		**(0.0213)**		**0.0370**	**0.8480**
Path A	**ICS**	**Differentiation**	**0.3047**	**0.9269**		**0.0730**		**0.8227**		**161.3240**	**0.0000**
Path B	**Differentiation**	**Performance**	**3.7127**	**(0.0190)**		**0.0580**		**(0.0373)**		**0.1070**	**0.7440**
Path C'	**Differentiation & ICS**	**Performance**	**3.6995**	**0.0045**	**(0.0250)**	**0.1174**	**0.1057**	**0.0081**	**(0.0498)**	**0.0690**	**0.9337**

X represents the independent variable, M represents the mediator, SE represents the Standard Error, Sig represents the overall significance of the model

In H4 the study assumed that there is an effect on interactive control systems on performance, mediated by differentiation strategy for family businesses. Detailed regression analysis was also conducted to assess the effect on interactive control systems on performance, mediated by differentiation is shown under Appendix 2. Accordingly, to the results of the regression analysis, (Path a, b and C) used to examine the indirect effect of interactive control systems on performance, mediated by differentiation strategy were not statistically significant. ***Therefore, we can conclude that there's no possible mediatory between ICS and performance mediated by differentiation.***

Further Michael Sobels's (1982) Sobel test was used examine the statistical significance of the mediatory effect of cost leadership strategy between the DCS and firm performance. Since there is no mediation between the ICS and firm performance we didn't consider that relationship to the Sobel Calculation.

In statistics, the Sobet test is a method of testing the significance of the mediation. Sobel test provides the statistical significance of the mediation but it doesn't provide the extent of the mediation. The sobel test result was: Z=4.507 and Sig = 0.000. According to the Sobel results

there is a statistically significant mediation between the DCS and firm performance through cost leadership strategy. (For Detailed Sobel calculations refer Appendix 7).

Further the indirect effects use of DCS on performance were standardized by multiplying the betas of the MCS variables on business strategy by the effects of business strategy on performance (to compute the moderating or indirect effects diagnostic use of MCS on performance through the cost leadership strategy for Family Businesses: the beta representing use of DCS on the cost leadership strategy was multiplied by the beta of the cost leadership strategy's effect on performance.

The study results show 40% effect on diagnostic control systems on performance, mediated by cost leadership strategy. Study results also depicted 16.8 percent mediatory effect from cost leadership when predicting the firm performance through diagnostic use of MCS.

9.2 REGRESSION ANALYSIS TO ASSESS THE EFFECT OF CONTROL VARIABLES

TABLE 10- EFFCT OF CONTROL VARIABLES

Regression Analysis														
	Cost leadership strategy				Differentiation strategy				Firm performance					
	Model 1	Sig	Model 2	Sig	Model 3	Sig	Model 4	Sig	Model 5	Sig	Model 6	Sig	Model 7	Sig
Firm age	0.08	0.53	0.03	0.69	(0.04)	0.75	(0.01)	0.86	0.07	0.30	0.06	0.40	0.05	0.44
Firm size	0.03	0.82	(0.10)	0.25	0.24	0.13	(0.10)	0.28	0.05	0.57	(0.04)	0.60	(0.02)	0.84
Business sector	0.07	0.70	0.09	0.36	(0.20)	0.36	(0.26)	0.03	(0.11)	0.31	(0.09)	0.37	(0.04)	0.72
Diagnostic control system (DCS)			0.74	0.00			(0.18)	0.02			0.22	0.00	0.12	0.26
Interactive control system (ICS)			(0.09)	0.25			0.86	0.00			0.07	0.32	0.01	0.91
Cost leadership													0.22	0.06
Differentiation													0.12	0.27
Overall Sig	0.82		0.00		0.40		0.00		0.32		0.01		0.01	
R Square	0.10		0.74		0.04		0.74		0.04		0.19		0.27	
F Test -ANOVA table	0.30		41.14		0.99		38.29		1.17		3.16		3.17	
B-Constant	3.09		1.26		3.03		1.75		3.54		2.79		2.07	
Sig represents the individual significance of the variable														

Table 10 presents the results of the regression analysis to examine the effects of the control variables on business strategy (cost leadership and differentiation) and performance. Model 1, Model 3 and Model 5 was developed by considering the firm age, firm size and business sector as independent variable while business strategies and firm performance are dependent variables. The results from Model 1 and 3 show that firm age is positively related to the cost leadership strategy, while firm age is negatively related to the differentiation strategy. But both cost leadership strategy and differentiation strategies are positively correlated to the firm size. However, none of the correlation coefficients are significant in Model 1 and 3 ($P > 0.05$). In contrast, according to Model 5 both firm size and firm age are positively correlated with the firm performance. Similarly, as in Model 1 and Model 3 the correlation coefficients are not significant.

Models 2 and 4 present the effects of MCS (DCS and ICS) on business strategy (cost leadership and differentiation) while the effects of control variables are also incorporated. When the effect of MCS are incorporatedwith the control variables, the results indicate thatDCS ($b = 0.74$; $p < 0.05$) was positively related to the cost leadership strategy. Equally, ICS ($b = 0.86$; $p < 0.05$) are positively related to the differentiation strategy. Therefore, it can be concluded that both H1 and H2 were supported even when the control variables are incorporated.

Model 6, which examines the effects of the MCS variables on performance while the control variables are incorporated, indicates that DCS ($b = 0.22$; $p < 0.05$) and ICS ($b = 0.07$; $p > 0.05$)) are all positively related to performance. Therefore, the results show that the relationship between ICS and performance is not significant. In Model 7, the business strategy variables were added to Model 6 to examine the effects of the business strategy variable on performance in the presence of the MCS variables for the full sample. The results from Model 7 show that the effect of DCS is no longer significant in determining the firm performance. Similar to the mediatory regression analysis the resultsimply that the cost leadership strategy positively mediates the DCS-performance relationship.

These findings clearly point out that the role of MCS is to support the implementation of business strategies, and it is useful for managers in both manufacturing and service family businesses to match the appropriate control system to a given business strategy to obtain the maximum benefit from its use. The findings further indicate that the influence of MCS on business strategy is depending on whether the family business operates in the manufacturing or service sector. While ICS had a largerimpact on the differentiation strategy for service family businesses, DCS had a larger impact on cost leadership strategy in manufacturing family businesses (refer Appendix 5 and 6).

Several notable findings were obtained from the study. The findings from the overall sample show that while DCS influence the implementation of the cost leadership strategy for both manufacturing and service family businesses, they do not influence the execution of the differentiation strategy. Furthermore, the implementation of the cost leadership strategy fully mediates the relationship between DCS and performance; however, ICS the only support the implementation of the differentiation strategy; the differentiation strategy doesn't mediate the ICS-performance relationship.

10. CONCLUSION

This study sought to evaluate the relationships among management control systems (MCS), business strategy and organizational performance of family businesses (FBs) in Sri Lanka and to understand whether MCS has significant impact on achieving business strategy and performance. Basically, this paper explores the influence of Diagnostic Control Systems (DCS) on the cost leadership strategy for FBs; and Interactive Control Systems (ICS) on the differentiation strategy for FBs in depth.

The conclusions drawn from this study can be indicated as follows. The study reveals that DCS positively and significantly correlated with cost leadership strategy whilst ICS positively and significantly correlated with differentiation strategy as hypothesized in this study. Further it was indicated that diagnostic use of MCS has the largest contribution in explaining cost leadership strategy than the interactive use of MCS whilst interactive use of MCS has the largest contribution in explaining Differentiation strategy than the diagnostic use of MCS.

Also, it was also noted that there is an inverse correlation between the differentiation strategy and DCS. Even when it is categorized as service and manufacturing still this inverse correlation can be witnessed. It was further noted that there is a significant negative relationship between the cost leadership strategy and ICS.

According to the results, the diagnostic use of MCS is more correlated with cost leadership strategy in manufacturing family businesses than the service family businesses. Further the interactive use of MCS is more correlated with differentiation strategy service family businesses than the manufacturing family businesses.

Therefore, the effect of DCS on cost leadership strategy was stronger for manufacturing businesses rather than service businesses, while the effects of ICS on differentiation strategy was stronger for service businesses rather than manufacturing businesses.

It examines that there is possible mediation between DCS and firm performance through Cost Leadership strategy whereas there is no possible mediatory between ICS and performance mediated by differentiation.

According to the results, it shows that firm age is positively related to the cost leadership strategy, while firm age is negatively related to the differentiation strategy. But both cost leadership strategy and differentiation strategies are positively correlated to the firm size. In contrast both firm size and firm age are positively correlated with the firm performance.

The findings show that family businesses management control systems are linked with their business strategy and further the MCS has a relationship with the firm performance which is mediated by their business strategy. Further DCS seem to be more beneficial when a FB is implementing an efficiency-based (cost leadership) strategy, while ICS is more valuable when a FB is implementing a market-based or differentiation-based strategy. However, the real value MCS have for FBs is in the balanced use of DCS and ICS to implement both the cost leadership strategy and the differentiation strategy.

11. REFERENCES

- Acquaah, M. (2013). Management control systems, business strategy and performance:A comparative analysis of family and non-family businesses in atransition economy in sub-Saharan Africa, JFBS-96, http://dx.doi.org/10.1016/j.jfbs.2013.03.002

- Acquaah, M. (2011a). Business strategy and competitive advantage in family busi-nesses in Ghana: The role of social networking relationships. Journal of Develop-mental Entrepreneurship, 16(1), 103–126.

- Anthony, R. N., & Govindarajan, V. (1995). Management control systems (8th ed.). Boston, MA: Richard D Irwin Inc.

- Atkinson, H., Brander Brown, J., 2001. Rethinking performance measures: assessing progress in UK hotels. International Journal of Contemporary Hospitality Management, 13 (3), 128- 135.

- Annual report 2014, central bank of Sri Lanka, http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/annual_report/AR2014/English/content.htm

- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. Journal of Personality and Social Psychology, 51, 1173–1182.

- Chenhall (2003), "Management control systems design within its organizational context: Findings from contingency-based research and directions for the future", *Accounting, Organizations and Society*, Vol. 28 No. 2-3, pp. 127–168.

- Dent, J, F., Strategy, Organisation and Control: Some Possibilities for Accounting Research, Accounting, Organizations and Society (1990) pp. 3-24.

- Govindarajan, V., and Gupta, A. K. (1985). "Linking control systems to business unit strategy : impact on performance", Accounting Organizations and Society, 10, pp. 51-66.

- Hope, J., and R. Fraser. 1997. Beyond budgeting: Breaking through the barrier to ‘‘The Third Wave.’’ Management Accounting (December): 20–26

- Jayasekara J P D R&Thilakarathna A, Government Policy and Strategy for SME Development, Ministry of Finance and Planning, Sri Lanka (April) 2013
- Kaplan, R. S., and Norton, D. P 1992. The Balanced Scorecard - Measures That Drive Performance. Harvard Business Review 70 (1):71-79.

- Kaplan, R.S. and Norton, D.P. (1993), “Putting the balanced scorecard to work”, Harvard BusinessReview, Vol. 71 No. 5, pp. 134-47.

- Kaplan, R.S. and Norton, D.P. (1996a), “Using the balanced scorecard as a strategic management system”, Harvard Business Review, Vol. 74 No. 1, pp. 75-85.

- Kaplan, R.S. and Norton, D.P. (1996b), “Linking the balanced scorecard to strategy”, CaliforniaManagement Review, Vol. 39, pp. 53-79.

- Kaplan, R.S. and Norton, D.P. (2001b), “Transforming the balanced scorecard from performancemeasurement to strategic management: Part 1”, Accounting Horizons, Vol. 15 No. 1,pp. 87-104.

- Kaplan, R. S., and Norton, D. P. (2001), The strategy-focused organization: how balance scorecard companies thrive in the new business environment, Harvard business School Press, Boston

- Kober, R., Ng, J., Paul, B. J. (2007), “The interrelationship between management control mechanisms and strategy”, Management Accounting Research, doi : 10.1016/j.mar.2007.01.002, (Articles in press).

- Merchant, K. A., &Otley, D. T. (2007). A review of the literature on control and accountability .InC.Chapman, A. Hopwood ,& M.Shield(Eds.),Thehand bookof management accounting research(pp.785–804).Oxford, UK:ElsevierPress.

- Langfield-Smith, K. (1997), Management Control Systems and Strategy: a critical review , Accounting, Organizations and Society, 22(2), pp. 207-232.

- Lipe, M. G., &Salterio, S. (2000). The balanced scorecard: Judgmental effects of common and unique performance measures. The Accounting Review, 75(3), 283–298.

- Merchant, K.A. &Otley, D.T. (2006). A review of the literature on control and accountability, In Chapman, C., Hopwood, A. & Shield, M.. The handbook of management accounting research, Elsevier Press.

- Mintzberg, H., Patterns in Strategy Formation, Management Science (1978) pp. 934-948.

- Mintzberg, H., Crafting Strategy, Harvard Business Review (July-August, 1987) pp. 66-75.

- Mintzberg, H., Opening up the Definition of Strategy, in Quinn, J. B., Mintzberg, H. &Jones, R. M., The Strategy Process: Concepts, Context and Cases (Englewood Cliffs, NJ: Prentice-Hall, 1988) pp. 13-20.

- Mintzberg, H. (1990). The fall and rise of strategic planning. Harvard Business Review, January/February, pp. 107- 114.

- Mintzberg, H. (1994). Rethinking strategic planning, Part 1: Pitfalls and Fallacies. Long Range Planning. vol. 27, no. 3, pp. 12-21.

- Mintzberg, H. & Waters, J.A. (1985). Of strategies: deliberate and emergent. Strategic Management Journal, vol. 6 (7), pp. 257-272

- Nørreklit,H. (2000). The Balanced Scorecard—a critical analysis of some of its assumptions. Management Accounting Research, March.

- Silva, L M D; Jayamaha, Ariyarathna. Journal of Emerging Trends in Economics and Management Sciences 3.4 (Aug 2012): 354-360.

- Simons, R. (1987). "Accounting control systems and business strategy: an empirical analysis", Accounting Organizations and Society, 12, pp. 357-374.

- Simons, R. (1995), Levers of Control, Cambridge, M.A: Harvard Business SchoolPress

- Simons, R. (1990), "The role of management control systems in creating competitive advantage", Accounting Organizations and Society, 15, pp. 127-143.

- Simons, R., 2000. Performance Measurement & Control Systems for Implementing Strategy Text and Cases. Prentice Hall, Upper Saddle River, New Jersey.

- Widener S.K., 2007. An empirical analysis of the levers of control framework. Accounting, Organizations and Society, 32, 757-788.

APPENDIX 01 – QUESTIONAIRE ENGLISH AND SINHALA

SECTION 01 -Demographic characteristics

Company name: .....

District: Gampaha/ Colombo/ Kaluthara

Name and the position of the interviewee:
.....

Who engage in managing the business?
.....

Who is funding the business? (Owners own wealth, Loans EST.)
.....

Industry

Service	☐
Manufacturing	☐

Ownership structure

Sole propitiate (Local)	☐
Sole propitiate (Foreign)	☐
Partnership	☐
Private Limited company	☐

Firm size (number of employees)

Less than 10	☐
11 - 50	☐
51 - 300	☐
300 and over	☐

Firm age (years)

☐

Less than 10	☐
10–20	☐
21–30	☐
30 and over	

SECTION 02- Management control systems items

Please indicate by ticking the appropriate number, the extent to which you use following MCS,

(1= Very Low; 2=Low; 3= Moderate; 4= High; 5= Very High)

Diagnostic control systems (DCS)

		1	2	3	4	5
1	Identifying and analysing the firm's key performance indicators					
2	Set goals for the company's annual profit plans					
3	Require managers to prepare monthly or quarterly statements and report actual accomplishments and compare them with planned goals					
4	Monitor employees' attitudes towards budgetary items					
5	Monitor the company's market share regularly					
6	Use feedback systems to track performance goals					
7	Rarely review monthly or quarterly exception reports					
8	Rarely follow-up on exception reports with significant exceptions and initiate actions to get things back on track					
9	Use incentives as a way of motivating employees to achieve their goals					

Interactive control systems (ICS)

		1	2	3	4	5
1	Continuously monitor customer needs and market changes to take advantage of emerging opportunities and mitigate unexpected threats					
2	Debate underlying data, assumptions and action plans before setting the company's performance goals					
3	Engage managers at all levels of the organisation to frequently and regularly focus their attention on budgets and key performance indicators					
4	Continuously address information generated from annual profit plans, budgets, and other issues on a recurring basis at the highest level of the company					
5	Frequently involve managers in face-to-face discussions of the information generated from annual profit plans, budgets, and other issues at all levels to address future strategic uncertainties					
6	Use information generated from annual profit plans, budgets, and issues to guide the search for new opportunities and stimulate experimentation, and learning					
7	Use information generated from annual profit plans, budgets, and other issues to create new action plans					

SECTION 03 - Competitive Strategy followed by the firm

Differentiation strategy

Please indicate by ticking the appropriate number, the extent to which you have emphasised and implemented follows,

(1= Much Less; 2=Less; 3= Moderate4= More; 5=Much More)

		1	2	3	4	5
1	Developing new products or services					
2	Upgrading or refining existing products					
3	Products or services for high priced market segments					
4	Improvement of existing customer service					
5	Innovation in marketing products and services					
6	Advertising and promotion of products and services					
7	Building brand and company identification					
8	Offering specialty products and services					
9	Effective control of distribution channels					

Cost leadership strategy

		1	2	3	4	5
1	Offering a broad range of products or services					
2	Operating efficiency					
3	Offering competitive prices for products and services					
4	Forecasting market growth in sales					
5	Control of operating and overhead costs					
6	Innovation in production process or service offerings					
7	Emphasising high quality standards or high quality service					

SECTION 04 - Organizational Performance

Measurement of variables - firm performance

Please indicate by ticking the appropriate number, comparing the performance relative to their competitors and their own performance over past three years on a scale ranging of,

(1= Much Worse; 2=Worse; 3= Moderate4= Better; 5= Much Better)

		1	2	3	4	5
1	Productivity Growth - GPROD (increase in the number of quantity produced)					
2	Growth in Sales and Revenue - GREV					
3	Growth in net income/profits – GNI					
4	Return on Assets – ROA					
5	Return on Sales - ROS					

Market competition

To which extent to which the following activities have occurred in their organisation's industry within the past three years,

(1= Very Little; 2=Little; 3= Moderate; 4= Extensive; 5= Very Extensive)

		1	2	3	4	5
1	An increase in the number of major competitors					
2	The use of package deals for customers					
3	The frequency of new product or service introductions					
4	The rate of change in prices					
5	An increase in the number of companies with access to the same marketing channels					
6	The frequency of changes in government regulations affecting the industry					

ශ්‍රී ලංකාවේ පවුලේ ව්‍යාපාරයන්හි කලමනාකරණ පාලන පද්ධති ව්‍යාපාර උපායමාර්ග සහ කාර්යසාධනය විශ්ලේෂණය කිරීම.

ශ්‍රී ජයවර්ධනපුර විශ්වවිද්‍යාලයේ අවසන් වසරේ අප විසින් ඉහත සඳහන් විෂය ක්ෂේත්‍රය පිළිබඳ අධ්‍යයනයක නියැලෙන අතර මෙයින් ශ්‍රී ලංකාවේ පවුලේ ව්‍යාපාරයන්හි කලමනාකරණ පාලන පද්ධති, ව්‍යාපාර උපාය මාර්ග සහ ආයතනීය කාර්යසාධනය අතර ඇති සැබැඳියාව සහ ව්‍යාපාර උපාය මාර්ග ලඟාකරගැනීමටත් කාර්යසාධනය ඉහළ නංවා ගැනීමටත් කලමනාකරණ පාලන ක්‍රමයන්හි බලපෑම විශ්ලේෂණය කෙරේ. එබැවින් මෙම අධ්‍යයනය ව්‍යාපාර ආයතනයන්ට සහ එහි ඇල්ම ඇති පාර්ෂවයනිට උපකාරිවනු ඇතැයි අපේක්ෂා කරමු.

මෙම අධ්‍යයනය සඳහා අප විසින් සකසන ලද මෙම ප්‍රශ්නාවලිය සම්පූර්ණ කිරීමට ඔබගේ අඥනා දායකත්වය අප අපේක්ෂා කරන අතර ඔබ සපයන තොරතුරු වල රහස්‍යභාවය සහතික කරමු.

කාණ්ඩ 01

ආයතනීය ගති ලක්ෂණ

ව්යාපාරයේ නම ……

දිස්ත්රික්කය ……..

සම්මුඛ පරීක්ෂණය භාජනය වන්නාගේ නම සහ තනතුර ……

ව්යපාරය කලමනාකරණයේ නියැලෙන්නේ කවුරුන්ද……

ව්යාපාරය මූල්යයනය කරන්නේ *කවුරුන්ද (අයිතිකරු ප්රාග්ධනය,ණය)*……

ඔබ සිටින්නේ කර්මාන්තය වනුයේ

- ❖ සේවා
- ❖ නිෂ්පාදන

ඔබ ආයතනයේ හිමිකාරිත්ව ව්යුහය වනුයේ

- ❖ කේවල ස්වාමි(දේශීය)
- ❖ කේවල ස්වාමි(විදේශීය)
- ❖ හවුල් ව්යාපාර

ව්යාපාර ආයතනයේ ප්රමාණය(සේවකයින් ගණන)

- ❖ 10ට අඩු
- ❖ 11ත් 50ත් අතර
- ❖ 51ත් 300ත් අතර
- ❖ 300ට වැඩි

ව්යාපාරයේ වයස

- ❖ 10ට අඩු
- ❖ 10ත් 20ත් අතර
- ❖ 21ත් 30ත් අතර

❖ 30ට වැඩි

කාණ්ඩ 02

<u>කලමනාකරණ පාලන පද්ධති (MCS)</u>

ඔබගේ ආයතනයේ පහත කලමනාකරණ පද්ධති භාවිතයේ පරාසය මත ඔබගේ තේරීම ඉදිරියේ √ යොදන්න.

(1-ඉතා අඩු, 2-අඩු, 3-මධ්‍යස්ථයි, 4-වැඩි, 5-ඉතා වැඩි)

හඳුනාගැනීමේ පාලන පද්ධති (DCS)

මූලික කාර්යසාධන දර්ශක හඳුනා ගැනීම සහ විශ්ලේෂණය කිරීම.

1.
2.
3.
4.
5.

ආයතනයේ වාර්ශික ලාභ සැලසුම සඳහා අරමුණු පිහිටුවීම.

1.
2.
3.
4.
5.

කලමනාකරුවන් විසින් සත්‍ය ලඟාකරගැනීම වාර්තාකිරීම සහ එය සැලසුම්ගත අරමුණු සමඟ සැසඳීම සඳහා මාසික හෝ කාර්තුමය ප්‍රකාශන සහ වාර්තා පිළියෙල කිරීම.

1.
2.
3.
4.
5.

සේවක ආකල්ප අයවැයගත අයිතමයන් කෙරෙහි මෙහෙය වීම.

1.
2.
3.
4.

5.

ආයතනයේ වෙළඳපොල කොටස ක්‍රමානුකූලව මෙහෙයවීම.

1.
2.
3.
4.
5.

කාර්යසාධන අරමුණු කෙරෙහි යොමු වූ ප්‍රතිපෝෂණ ක්‍රමයන් භාවිත කිරීම.

1.
2.
3.
4.
5.

මාසික හෝ කාර්තුමය ව්‍යාතිරේක වාර්තා කලාතුරකින් සමාලෝචනය සිදුකිරීම.

1.
2.
3.
4.
5.

ව්‍යාතිරේක වාර්තාවන්හි සැලකිය යුතු බැහැරවීම් සොයා නැවත යථාතත්වයට අවශ්‍ය ක්‍රියාමාර්ග කලාතුරකින් සිදුකිරීම.

1.
2.
3.
4.
5.

ආයතනයේ අරමුණු ලඟාකරගැනීමට සේවකයින් අභිප්රේරණ සඳහා දිරිගැන්වීම් භාවිතා කිරීම.

1.
2.
3.
4.
5.

අන්යෝන්ය ක්රියාකාරී පාලන පද්ධති

අවස්ථාවන් ප්රයෝජනයට ගැනීම සහ තර්ජන අවම කිරීම සඳහා අඛණ්ඩව පාරිභෝගික අවශ්යතාවයන්හි හා වෙළඳපොලෙහි වෙනස්වීම් විශ්ලේෂණය කිරීම.

1.
2.
3.
4.
5.

ආයතනයේ කාර්යසාධන අරමුණු පිහිටුවීමටපෙර පවත්නා දත්ත,උපකල්පන හා ක්රියාපටිපාටි සැලකිල්ලට ගැනීම.

1.
2.
3.
4.
5.

ආයතනයේ අයවැය හා මූලික කාර්යසාධන දර්ශකයන් කෙරෙහි ආයතනයේ සියළුම මට්ටම්හිදී කලමනාකාරීත්වය නිරන්තරයෙන් අවධානය යොමු කිරීම.

1.
2.
3.
4.
5.

ආයතනයේ ඉහළ කලමණාකාරීත්වය වාර්ෂික ලාභ සැලසුම්,අයවැය සහ අනෙකුත් සමාවර්ත ගැටළු පිළිබඳ තොරතුරු කෙරේ අඛණ්ඩව යොමු කිරීම.

1.
2.
3.
4.
5.

අනාගතයේදි ඇතිවිය හැකි උපායමාර්ගික අවිනිශ්චිතාවයන්ට මුහුණදීමට කලමණාකාරීත්වය නිරන්තරයෙන් වාර්ෂික ලාභ සැලසුම්,අයවැය සහ අනෙකුත් සමාවර්ත ගැටළු පිළිබඳ තොරතුරු පිළිබඳ මුහුණට මුහුණ සාකච්ඡා වලට සම්බන්ධ වීම.

1.
2.
3.
4.
5.

නව අවස්ථා හඳුනාගැනීමටත් ප්රායෝගික පරීක්ෂණ සහ ඉගැන්වීම් කෙරෙහි පෙලඹවීමටත් වාර්ෂික ලාභ සැලසුම්,අයවැය සහ අනෙකුත් සමාවර්ත ගැටළු පිළිබඳ තොරතුරු භාවිතා කිරීම.

1.
2.
3.
4.
5.

නව ක්රියාමාර්ග සැලසුම් නිර්මාණ කිරීමට වාර්ෂික ලාභ සැලසුම්,අයවැය සහ අනෙකුත් සමාවර්ත ගැටළු පිළිබඳ තොරතුරු භාවිත කිරීම.

1.
2.
3.
4.
5.

කාණ්ඩ 03

<u>ව්යාපාර ආයතනය අනුගමනය කරන තරඟකාරී උපායමාර්ග</u>

පහත දෑ සම්බන්දයෙන් ඔබ ආයතනයේ අවධානය යොමුවීමේ සහ ක්රියාත්මක වීමේ පරාසය මත ඔබගේ තේරීම ඉදිරියේ √ යොදන්න.

(1-ඉතා අඩු, 2-අඩු, 3-මධ්යස්ථයි, 4-වැඩි, 5-ඉතා වැඩි)

විවිධාංගීකරණ උපායමාර්ග

නව භාණ්ඩ හා සේවා දියුණු කිරීම.

1.
2.
3.
4.
5.

පවත්නා භාණ්ඩ හා සේවා වැඩිදියුණු කිරීම.

1.
2.
3.
4.
5.

ඉහළ මිලක් නියම වූ වෙළඳපොල කාණ්ඩ සඳහා භාණ්ඩ හා සේවා

1.
2.
3.
4.
5.

පවත්නා පාරිභෝගික සේවා වැඩිදියුණු කිරීම.

1.
2.
3.
4.
5.

භාණ්ඩ හා සේවා ප්‍රචාරණය සහ ප්‍රවර්ධනය

1.
2.
3.
4.
5. .

සන්නාම ගොඩනැගීම සහ ආයතනය හඳුනා ගැනීම.

1.
2.
3.
4.
5.

විශේෂ භාණ්ඩ හා සේවා ඉදිරිපත් කිරීම.

1.
2.
3.
4.
5.

බෙදාහැරීමේ මාර්ග ඵලදායිව පාලනය කිරීම.

1.
2.
3.
4.
5.

භාණ්ඩ හා සේවා අලෙවිකරණයේදී නවෝත්පාදනයන් භාවිත කිරීම.

1.
2.
3.
4.
5.

පිරිවැය නායකත්ව උපායමාර්ග

පුළුල් පරාසයකින් යුත් භාණ්ඩ හා සේවා ඉදිරිපත් කිරීම.

1.
2.
3.
4.
5.

මෙහෙයුම් කාර්යක්ෂමතාවය.

1.
2.
3.
4.
5.

තරඟකාරී මිලගණන් ඉදිරිපත් කිරීම.

1.
2.
3.
4.
5.

වෙළඳපොල වර්ධනය පුරෝකථනය කිරීම.

1.
2.
3.
4.
5.

මෙහෙයුම් හා පොදුකාර්යය පිරිවැය පාලනය

1.
2.
3.
4.
5.

නිශ්පාදන ක්‍රියාවලියේ සහ සේවා සැපයීමේ නව නිපැයුම්

1.
2.
3.
4.
5.

ඉහළ ගුණත්වයෙන් යුත් ප්‍රමිතීන් සහ සේවා කෙරෙහි අවධානය

1.
2.
3.
4. .
5.

කාණ්ඩ 04

<u>ආයතනීය කාර්යසාධනය</u>

පසුගිය වසර තුනෙහි ඔබ ආයතනයේ තරඟකරුවන්ගේ සහ ආයතනයේ කාර්යසාධනය සසඳා ඔබගේ තේරීම ඉදිරියේ √ ලකුණ යොදන්න.

(1-ඉතා නරක,2-නරක,3-මධ්‍යස්ථයි,4-හොඳයි,5-ඉතා හොඳයි)

ඵලදායිතාවය වර්ධනය(නිශ්පාදනයේ වැඩිවීම)

1.
2.
3.
4.
5.

විකුණුම් සහ ආදායම් වල වැඩිවීම.

1.
2.
3.
4.
5.

ශුද්ධ ලාභය වැඩිවීම.

1.
2.
3.
4.
5.

වත්කම් මත ප්‍රතිලාභ අනුපාතය.

1.
2.
3.
4.
5.

විකුණුම් මත ප්‍රතිලාභ අනුපාතය

1.
2.
3.
4.
5.

Appendix 2 - Mediation Affect between MCS and Performance through cost leadership

1. Conduct a simple regression analysis with independent variable (X) predicting dependent variable (Y) to test for **Path C** alone.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.946	.180		16.323	.000
	DCS	.208	.052	.421	3.997	.000

a. Dependent Variable: performance

2. Conduct a simple regression analysis with independent variable (X) predicting mediator (M) to test for **Path A** alone.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.876	.183		4.794	.000
	DCS	.767	.053	.855	14.483	.000

a. Dependent Variable: cost leader

3. Conduct a simple regression analysis with Mediator (M) predicting dependent variable (Y) to test for **Path B** alone

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.704	.200		13.533	.000
	cost leader	.269	.057	.468	4.743	.000

a. Dependent Variable: performance

4. Conduct a multiple regression analysis with X and M predicting Y to test for **Path C'.**

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.744	.207		13.279	.000
	DCS	.094	.100	.187	.944	.348
	cost leader	.173	.111	.308	1.556	.124

a. Dependent Variable: performance

Appendix 3-Mediation Affect between MCS and Performance through differentiation

1. Conduct a simple regression analysis with independent variable (X) predicting dependent variable (Y) to test for **Path C**

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.263	.750		4.350	.000
	performance	-.040	.207	-.021	-.192	.848

a. Dependent Variable: ICS

2. Conduct a simple regression analysis with independent variable (X) predicting mediator (M) to test for Path A alone.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.305	.234		1.304	.196
	ICS	.927	.073	.823	12.701	.000

a. Dependent Variable: Differentiation

3. Conduct a simple regression analysis with Mediator (M) predicting dependent variable (Y) to test for **Path B** alone

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.699	.212		17.450	.000
	ICS	.005	.117	.008	.038	.969
	Differ	-.025	.106	-.050	-.236	.814

a. Dependent Variable: performance

4. Conduct a multiple regression analysis with X and M predicting Y to test for **Path C'.**

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.713	.190		19.580	.000
	Differentiation	-.019	.058	-.037	-.328	.744

a. Dependent Variable: performance

Appendix 4- Correlation matrix

		MANUFACTURING COMPANY OR SERVICE COMPANY	Ownership structure	number of employees	years	DCS	ICS	Differ	Cost _leader	performance
MANUFACTURING COMPANY OR SERVICE COMPANY	Pearson Correlation	1.0000	0.0625	0.1303	(0.0136)	0.0279	0.0028	(0.0778)	0.0448	(0.1042)
	Sig. (2-tailed)		0.5559	0.2183	0.8984	0.8049	0.9793	0.4847	0.6801	0.3397
Ownership structure	Pearson Correlation	0.0625	1.0000	0.3619	0.1697	(0.1696)	0.2755	0.2890	(0.0971)	0.1137
	Sig. (2-tailed)	0.5559		0.0004	0.1078	0.1302	0.0098	0.0081	0.3710	0.2973
number of employees	Pearson Correlation	0.1303	0.3619	1.0000	0.4474	0.1284	0.2566	0.1587	0.0679	0.1163
	Sig. (2-tailed)	0.2183	0.0004		0.0000	0.2533	0.0164	0.1520	0.5318	0.2864
Years	Pearson Correlation	(0.0136)	0.1697	0.4474	1.0000	0.0627	0.1383	0.0496	0.0899	0.1643
	Sig. (2-tailed)	0.8984	0.1078	0.0000		0.5783	0.2013	0.6563	0.4077	0.1306
DCS	Pearson Correlation	0.0279	(0.1696)	0.1284	0.0627	1.0000	(0.4487)	(0.5227)	0.8553	0.4213
	Sig. (2-tailed)	0.8049	0.1302	0.2533	0.5783		0.0000	0.0000	0.0000	0.0002
ICS	Pearson Correlation	0.0028	0.2755	0.2566	0.1383	(0.4487)	1.0000	0.8227	(0.4352)	(0.0213)
	Sig. (2-tailed)	0.9793	0.0098	0.0164	0.2013	0.0000		0.0000	0.0000	0.8481
Differentiation	Pearson Correlation	(0.0778)	0.2890	0.1587	0.0496	(0.5227)	0.8227	1.0000	(0.5244)	(0.0373)
	Sig. (2-tailed)	0.4847	0.0081	0.1520	0.6563	0.0000	0.0000		0.0000	0.7441
cost leadership	Pearson Correlation	0.0448	(0.0971)	0.0679	0.0899	0.8553	(0.4352)	(0.5244)	1.0000	0.4685
	Sig. (2-tailed)	0.6801	0.3710	0.5318	0.4077	0.0000	0.0000	0.0000		0.0000
Performance	Pearson Correlation	(0.1042)	0.1137	0.1163	0.1643	0.4213	(0.0213)	(0.0373)	0.4685	1.0000
	Sig. (2-tailed)	0.3397	0.2973	0.2864	0.1306	0.0002	0.8481	0.7441	0.0000	
**. Correlation is significant at the 0.01 level (2-tailed).										
*. Correlation is significant at the 0.05 level (2-tailed).										

Appendix 5-Correlations –Only for manufacturing Family Businesses

		Ownership structure	number of employees	years	DCS	ICS	Differ	cost_leader
Ownership structure	Pearson Correlation	1.0000	0.2576	0.0499	(0.0837)	0.2813	0.3034	(0.0310)
	Sig. (2-tailed)		0.0839	0.7421	0.6123	0.0612	0.0570	0.8437
number of employees	Pearson Correlation	0.2576	1.0000	0.3411	0.1963	0.2206	0.0591	0.1745
	Sig. (2-tailed)	0.0839		0.0204	0.2310	0.1454	0.7173	0.2630
Years	Pearson Correlation	0.0499	0.3411	1.0000	0.2576	0.1500	(0.0970)	0.3233
	Sig. (2-tailed)	0.7421	0.0204		0.1134	0.3254	0.5516	0.0344
DCS	Pearson Correlation	(0.0837)	0.1963	0.2576	1.0000	(0.3443)	(0.5549)	0.8690
	Sig. (2-tailed)	0.6123	0.2310	0.1134		0.0343	0.0005	0.0000
ICS	Pearson Correlation	0.2813	0.2206	0.1500	(0.3443)	1.0000	0.7979	(0.3343)
	Sig. (2-tailed)	0.0612	0.1454	0.3254	0.0343		0.0000	0.0305
Differ	Pearson Correlation	0.3034	0.0591	(0.0970)	(0.5549)	0.7979	1.0000	(0.4726)
	Sig. (2-tailed)	0.0570	0.7173	0.5516	0.0005	0.0000		0.0027
cost_leader	Pearson Correlation	(0.0310)	0.1745	0.3233	0.8690	(0.3343)	(0.4726)	1.0000
	Sig. (2-tailed)	0.8437	0.2630	0.0344	0.0000	0.0305	0.0027	
Performance	Pearson Correlation	0.2690	0.2152	0.2271	0.3754	0.0105	0.0614	0.4847
	Sig. (2-tailed)	0.0774	0.1606	0.1382	0.0220	0.9459	0.7143	0.0013
*. Correlation is significant at the 0.05 level (2-tailed).								
**. Correlation is significant at the 0.01 level (2-tailed).								

Appendix 6 - Correlations –Only for service Family Businesses

		Ownership structure	number of employees	years	DCS	ICS	Differ	cost_leader
Ownership structure	Pearson Correlation	1.0000	0.4535	0.2779	(0.2516)	0.2698	0.2987	(0.1586)
	Sig. (2-tailed)		0.0018	0.0646	0.1080	0.0840	0.0517	0.3039
number of employees	Pearson Correlation	0.4535	1.0000	0.5571	0.0609	0.2991	0.2633	(0.0352)
	Sig. (2-tailed)	0.0018		0.0001	0.7016	0.0543	0.0880	0.8205
Years	Pearson Correlation	0.2779	0.5571	1.0000	(0.1050)	0.1272	0.1543	(0.1017)
	Sig. (2-tailed)	0.0646	0.0001		0.5082	0.4222	0.3231	0.5111
DCS	Pearson Correlation	(0.2516)	0.0609	(0.1050)	1.0000	(0.5603)	(0.4992)	0.8471
	Sig. (2-tailed)	0.1080	0.7016	0.5082		0.0002	0.0009	0.0000
ICS	Pearson Correlation	0.2698	0.2991	0.1272	(0.5603)	1.0000	0.8645	(0.5377)
	Sig. (2-tailed)	0.0840	0.0543	0.4222	0.0002		0.0000	0.0002
Differ	Pearson Correlation	0.2987	0.2633	0.1543	(0.4992)	0.8645	1.0000	(0.5591)
	Sig. (2-tailed)	0.0517	0.0880	0.3231	0.0009	0.0000		0.0001
cost_leader	Pearson Correlation	(0.1586)	(0.0352)	(0.1017)	0.8471	(0.5377)	(0.5591)	1.0000
	Sig. (2-tailed)	0.3039	0.8205	0.5111	0.0000	0.0002	0.0001	
Performance	Pearson Correlation	0.0150	0.0692	0.1174	0.4739	(0.0497)	(0.1045)	0.4743
	Sig. (2-tailed)	0.9249	0.6634	0.4590	0.0023	0.7638	0.5155	0.0017
**. Correlation is significant at the 0.01 level (2-tailed).								

Appendix 7

Computing Sobel Test of Mediation for Baron & Kenny Approach.

enter data from three linear regression analyses:

STEP	PATH	B	SE	β
1	c	0.208	0.052	0.421
2	a	0.767	0.053	0.855
3 – 4	b	0.269	0.057	0.468
	c'	0.173	0.111	0.308

Decomposition: $c = ab + c'$

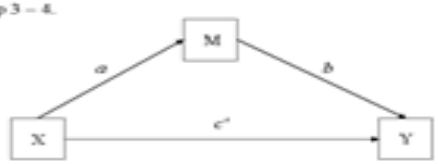
Results

Indirect Effect ($a \cdot b$) =	0.206
Sobel's SE = $\sqrt{[(a \cdot SE_b)^2 + (b \cdot SE_a)^2]}$ =	0.046
z = Indirect Effect ÷ Sobel's SE =	4.507
p =	0.000
Standardized Indirect Effect = ($\beta_a \cdot \beta_b$) =	0.401
Portion of (X → Y) due to M = ($c - c'$)/c =	16.8%

Step 1.

Step 2.

Step 3 – 4.



Note:
If test for mediation is to be conducted in the presence of covariates, include covariates when running regressions. Enter information for key paths in the box above.

Step 1: Show that the initial variable is correlated with the outcome. Use Y as the criterion variable in a regression equation and X as a predictor (estimate and test path c). This step establishes that there is an effect

Step 2: Show that the initial variable is correlated with the mediator. Use M as the criterion variable in the regression equation and X as a predictor (estimate and test path a). This step essentially involves treating the

Step 3: Show that the mediator affects the outcome variable. Use Y as the criterion variable in a regression equation and X and M as predictors (estimate and test path b). It is not sufficient just to correlate the mediator with the outcome; the mediator and the outcome may be correlated because they are both caused by the initial variable X. Thus, the initial variable must be controlled in

Step 4: To establish that M completely mediates the X → Y relationship, the effect of X on Y controlling for M (path c') should be zero. The effects in both Steps 3 and 4 are estimated in the same regression equation.