

AN EMPIRICAL STUDY OF ACTIVITY-BASED COSTING (ABC) SYSTEMS WITHIN LISTED COMPANIES IN SRI LANKA: CRITICAL SUCCESS FACTORS AND BARRIERS TO ABC IMPLEMENTATION

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Abstract

The purpose of this study is to contribute the implementation of ABC as an overhead costing system in the context of listed Companies in Sri Lanka. The main objectives of the study identify the level of ABC implementation and find the critical successful factors that facilitate and motivate the decision to implement ABC. Additional objectives include determining the problems associated with ABC implementation and assessing the degree of success of ABC implementation. This study will be a quantitative research. Companies which are falling under listed companies in the Colombo Stock Exchange (here in after CSE) will be the population and the sample will be Manufacturing and diversified holding companies from the listed companies in the CSE. The data collection method will be included questionnaires and direct interviews. Response rate through to those two methods was approximately 55%. The survey findings indicates that most of the listed manufacturing and diversified holding companies in Sri Lanka are not using the ABC system instead of that they are using traditional costing systems. However the knowledge level of ABC is high within the management. Main factor that facilitate the ABC system is adequate training provide to employees and the main factor which is motivating the ABC is increasing proportion of overhead cost. According to our analysis, the greatest difficulty in implementing ABC was high cost of ABC consulting and difficulty in gathering data on cost drivers. Further we have found that the main reason for not implementing ABC is the satisfaction with the current costing system.

Keywords: Activity based costing, ABC determinants, Motivational factors of ABC, Barriers of ABC

1. Introduction

Business environment is changing day by day with new technologies, methods, techniques, and innovations. Every aspect in the world is changing day by day. Management accounting also changes regularly. In past years cost structure of the environment was different. It means before direct labour cost had the huge percentage in cost structure and other costs took only

small part in total cost. However, nowadays the environment cost structure changed. Direct labour cost's part in cost was decreased and other facility cost have big part in total cost. Therefore, to sustain in this changing environment and achieve the competitive advantage companies need to adopt new strategies, methods, new innovations, new systems and more complex new costing systems.

There are many costing systems such as process costing, job costing, and absorption costing and, activity based costing. Absorption costing is traditional costing method; it is used to allocate the all cost of production to product or service. However, there are some limitations in absorption costing. When the product range is small absorption costing is reliable, but if the product range will increase and if there are many diversify products then the reliability of cost allocation will be questionable. Because of this firm will affect in the competitive market. In production machine and other overhead cost are taking the main part. Because of that direct labour hours as absorption rate is unsuitable and it is out-dated. For each different product and services the cost structure will be different, therefore the absorption costing is not a good method to allocate the costing appropriately to the outputs.

To eliminate these limitations, ABC costing was developed by the firms. Activity Based costing (ABC) is using by the organizations to identify the activities that are being carried the organization and allocate the cost to these activities. ABC is defined as a costing methodology that assigns indirect costs to individual activities or process cost pools and then traces those costs to users of the activities that include products and customers (Player & Keys 1995). This concept was initially developed in United States in the manufacturing sector. ABC was clearly defined by Robert S. Kaplan and W. Bruns in 1987. ABC system is an improved method for overhead cost allocation, profitability evaluating and operating cost managing.

This is an innovative costing method to allocate overheads and costs with higher accuracy. Activity Based Costing uses cost drivers to identify and allocate the costs of product and services. ABC not only improves the accuracy of product- and service-costing but also helps managers understand how resources are used through financial performance, such as return on investment and bottom line statements (Cagwin and Bouwman 2002). Activity based costing is mostly using in the manufacturing sectors. Because, it develops the reliability of cost data, hence producing nearly true costs and better classifying the cost incurred by the company during its production process.

Nowadays usage of activity based costing is increasing since the high level managers and experts are having the clear idea about the costing system. However, ABC has some drawbacks for examples to implement the Activity Based System in a company will cost more time and resources and it needs to an expert supervision always. There were several researches which had done in past years to address the implementation of ABC, critical successful factors to implementation of ABC, problems associated with ABC. This study will examines the level of ABC implementation in listed companies in Sri Lanka as well as investigating the reasons that influence of both motivates factors and barriers regarding

implementation of ABC. According to the stated research objective we developed following research questions;

1. Currently what is the status of ABC implementation in listed companies in Sri Lanka?
2. What are the factors that motivate the process of ABC implementation in listed companies in Sri Lanka?
3. What barriers to ABC implementation have the Sri Lankan listed companies encountered?

The main objectives of the study will be identify the level of ABC implementation in listed companies in Sri Lanka and find the critical successful factors that facilitate and motivate the decision to implement ABC. Additional objectives include determining the problems associated with ABC implementation and assessing the degree of success of ABC implementation.

2. Literature review

Under the literature review we have discussed about definition of Activity Based Costing, ABC implementation in developed and developing countries, the extend of ABC information support to other functional area, factors that facilitate the implementation of ABC system and problem and the reason for the non- implementation of ABC.

2.1 Activity Based Costing

Activity-based costing (ABC) is a well-known innovative technique of management accounting to allocating overhead cost. It is a costing model that identifies activities in an organization to assigns resource costs through activities to the products and services provided to customers and ABC is very important because now a day's organization perform in a complex & competitive environment with the wide range of products, shorter product life cycles, and more complex production processes.

Regarding the definition of the ABC, it is a costing model that identifies the cost pools, or activity centers, in a firm and assigns costs to products and services (cost drivers) based on the number of events or transactions involved in the process of providing a product or service (McKenzie 1999).

According to Gosselin (1997) identifies the three levels of activity management such as AA, ACA, and ABC. AA consists of exploring the activities and procedures that helps to convert the inputs (Material, labour and other resources) into outputs, whereas ACA progress AA through identify the cost of each activities in deeply and the factors which affect the production process, finally ABC progress a further stages of traced cost to products and services through identifies activity-based overhead cost.

2.2 ABC implementation in developed and developing countries

The objective of this section is to review the empirical research regarding ABC implementation on both developed and developing countries to determine the various criteria that were used to determine the adoption and implementation rate of ABC.

According to the prior studies have found low adoption rates among companies both in the developing and developed countries. As an example in Australia, Van-Nguyen and Brook's (1997) survey of 120 Australian manufacturing companies found the adoption rate to be a mere 12.5 per cent. Clarke, Hill and Stevens (1999) examined the adoption of ABC in Irish companies. Their survey based on 204 indicates that 12% companies implemented ABC. In Canada, Armitage and Nicholson (1993) investigated the adoption rate of ABC among 740 largest companies in Canada.

The above mention surveys evidence suggests that, over the past decade, there has been a growing awareness of ABC, but the overall rate of implementation has been low.

2.3 The extend of ABC information support to other functional area

Prior studies report that the major expected benefits from ABC, by the companies that include it in their future plans, relate to the better understanding of cost causation and behaviour, gathering more accurate cost information for product costing, conducting customer profitability analysis in a more accurate way, improving cost control, making use of better performance measures, refining the decision making process, improving profitability information and using more accurate cost information for pricing.

ABC has been used to support strategic decisions such as, product-range decisions (Johnson and Kaplan 1987), customer profitability analyses (Bellis-Jones 1989), cost reduction (Brimson 1991), and cost modelling (Cooper 1994), budgeting (Kaplan 1994), inventory valuation, and performance measurement (Cotton et al 2003).

2.4 Factors that facilitate the implementation of ABC system

The objective of this secession review empirical study of organizational behaviour issues and critical success factors of ABC implementation in both developed and developing countries.

Shields and Young (1989) describes a 7C model to describe the success factors of ABC implementation, such as; culture, controls, champion, change process, commitment, compensation, and continuous education. Developing on this model, subsequent studies identify success factors such as objective of adoption, top management support, adequate training, performance measurement and incentives, ownership by non-accountants, top management commitment (Foster and Swenson 1997).

As for these several researchers point of view, we conclude the following factors have given more priorities to implement the ABC success. Such as, top management system is the most important factor in building success in ABC implementation, if the management has a positive commitment regarding the implementation is adequate to for the adopters to change the practice as soon as possible and gaining legitimacy power, and influencing behaviour are the key objectives which is fulfilled by the design of the ABC. New norms in the systems are created by the managers when they need a change. This will happen when the motivation for implementation is normative. Management team must have clear ideas about the adoption &

implementation, and using ABC. ABC training can develop a powerful team for the ABC model.

2.5 Problem and the reason for the non- implementation of ABC

Despite the advantages of the ABC over traditional cost model, however there are various unavoidable factors which cause the barriers to ABC implementation. Innes and Mitchell's (1995) survey on UK's largest firms revealed that almost half (40 %) of the companies currently assessing ABC reported reservations regarding the adoption of ABC in the short run. More specifically, the main problems that were indicated by the companies surveyed refer mostly to the scale, complexity and cost of designing and implementing ABC, top management support, difficulties inherent in replacing a costing system which has been used for many years, lack of the appropriate expertise and finally technical issues (such as the identification of cost drivers). Cobb et al. (2013) explain that the high set-up cost due to the adequate time, effort, and money spent by the management in order to identify the cost drivers as well as the additional staff involved in the ABC implementation system.

According to the previous studies, these are the most cited barriers in ABC implementation such as difficulty in the design system, lack of software package, and a higher amount of set-up cost, the difficulty of gathered data and lack of management support. Other than this factor, when they introduce the ABC, they faced many problems such as costly, non-user friendly, tailor-made software and getting commitment from higher level manager.

2.6 Research gap

ABC is an improved method and one of the most important innovations in management accounting regarding allocating overhead costs, evaluating product profitability and managing operating costs or which involves allocating resource consumption and costing final outputs.

However there are several studies which have focused on extend of ABC implementation, reason for not implementing ABC, the problem associated with ABC and critical success factors that facilitate the ABC implementation. However, in the prior view of the finding interpret an ambiguous result on understand the existing knowledge on ABC, and how this development facilitate the effective management accounting practices in the Sri Lankan context. Our aim is to gather valid evidence about the current state of ABC adoption and implementation within Sri Lankan listed companies.

3. Methodology

3.1 Research approach

This research is expected to be as a quantitative research. Highly structured methods such as structured questionnaires, focused interviews, annual reports were used to collect the data and analysed them (collected data) by using SPSS 23 to reach the conclusion.

3.2 Population and sample

The population of the study represented listed companies in Colombo Stock Exchange (CSE) as at 1st January 2018. Eventually we select listed manufacturing companies and diversified holdings (60 companies) as sample to our study to enhance the accuracy of the finding.

3.3 Data collection

A questionnaire survey was employed to determine the extent of ABC adoption and implementation among the listed companies in Sri Lanka and to identify the factors that facilitate and motivate the decision to implement ABC. For this research study, we select listed manufacturing companies and diversified holdings as our sample which was gathered from the website of Colombo Stock Exchange (CSE).

Firstly we sent google form via email to collect data. We were distributed 60 questionnaires were distributed and 12 questionnaires were returned giving a rate of response of 20%. Thereafter based on response, further we collect data from direct interview and finally all to gather the response rate is 55%. It is a primary data collection method. To get further information we used annual reports to collect company's product details. It is referred as a secondary data collection method. When we prepare the questionnaire, we include all variable that are needed to achieve our research objective and further some questions are included to collect profile of the company.

3.4 Analytical strategy

The analytical strategy constructed based on the company characteristic, respondent profile and survey findings. This research paper followed descriptive strategy and identified the main factors through mean, frequency and standard deviation of the finding.

4. Analysis and discussion

The first part of research analysis is to provide a descriptive analysis of the individual respondents and the companies under study. This information will be helpful for understanding the background of respondents and their respective companies. Second part of the analysis discussed about the research objectives of the study. The results of each objective are constructed based on the research questions.

4.1 Descriptive statistics on company characteristics

Respondents were included listed companies in the Colombo Stock Exchange in Sri Lanka. On the basis of work position of respondent in the organization classified as follows: 32.3% of respondents are assistant accountants, whereas the proportion of respondents of management accountant was close to 10%. Respondents who are worked as accountant constitute 25.8% of the total respondents.

29% of respondents are Bachelor degree holders and 25.8% of respondents are followed chartered accountants. Therefore major respondents have high qualifications with Bachelor degree or Chartered accountants or CIMA. As well as most respondents have experience in the company between 2 and 5 years of 45.2%.

Table 1: Respondents profile.

	Frequency	Percent	Cumulative Percent
<i>Work position</i>			
Management accountant	3	9.7	9.7
Finance manager	6	19.4	29
Head of accounting Department	2	6.5	35.5
Assistant accountant	10	32.3	67.7
Accountant	8	25.8	93.5
Assistant management accountant	1	3.2	96.8
Assistant executive	1	3.2	100
	31	100	
<i>Academic qualification</i>			
Bachelor degree	9	29	29
Master degree	4	12.9	41.9
ACMA	1	3.2	45.2
CIMA qualified	6	19.4	64.5
AAT	2	6.5	71
ACCA	1	3.2	74.2
CA	8	25.8	100
	31	100	
<i>Experience in the company</i>			
Less than 2 years	9	29	29
2 - 5 years	14	45.2	74.2
6 - 10 years	3	9.7	83.9
More than 10 years	5	16.1	100
	31	100	

Source: Survey results

Table 2 shows the classification of the respondent's cost categories based on break down the total company cost into direct material, direct labour, production or service overhead, non-production overhead cost as well as the number of products produced by the respondents. 67% of respondent companies were incurred production or service overhead costs less than 24%, while 19.4% were the level of overhead between 25% and 49%, and 12.9% of respondents were the level of overhead between 50% and 74%. As well as 64.5% of respondent companies were incurred costs as non-production overhead costs less than 24%, while 32.3% were the level of overhead between 25% and 49%, and 3.2% of respondents were the level of overhead between 50% and 74%.

Finally, the classification of the respondents based on product diversity that was measured by number of products, 41.9% of respondent companies were producing less than 20 products, while 29% were producing between 20 and 50 products, in other words, the majority of listed manufacturing companies in Sri Lanka. 70.9% producing less than 50 products. 16.1% were producing between 51 and 100 products and few companies 6.5% producing more than 200 products. Finally, respondents were asked to indicate the rate of overhead to total cost.

Table 2: Company characteristics

	Frequency	Percent	Cumulative Percent
<i>Level of production or service overhead</i>			
0% - 24%	21	67.7	67.7
25% - 49%	6	19.4	87.1
50% - 74%	4	12.9	100.0
	31	100.0	
<i>Level of non-production overhead</i>			
0% - 24%	20	64.5	64.5
25% - 49%	10	32.3	96.8
50% - 74%	1	3.2	100.0
	31	100.0	
<i>Number of Products</i>			
Less than 20	13	41.9	41.9
20-50	9	29.0	70.9
51-100	5	16.1	87.0
151-200	1	3.2	90.2
More than 200	3	9.8	100.0
	31	100.0	

Source: Survey results

4.2 Main findings

In this section, this paper discusses the finding of the research each objective wise. This section has three sub units according to the objective. First objective of this research paper is to identify the status of ABC implementation in listed manufacturing and diversified companies in Sri Lanka.

What is the current state of ABC adoption and implementation in your company?

Questionnaire survey was used to gather data about the current state of ABC adoption and implementation within the listed manufacturing and diversifies holding companies. Survey

has collected the data to determine the stage of adoption and implementation for each company.

Table 3: The level of ABC adoption and implementation for each company.

Stage	Name of the Stage	Number of the Companies	Percentage
A	Not considered	0	0
B	Considering	1	3%
C	Considered then rejected	0	0
D	Approved for implementation	0	0
E	Analysis	25	81%
F	Getting acceptance	1	3%
G	Implemented then abandoned	0	0
H	Used somewhat	4	13%
I	Used extensively	0	0
	Total	31	100%

Source: Survey results

According to the survey results, only one company is considering the ABC system in their costing. 81% of the respondents are currently in the analysis stage of the ABC. One company is cited that they getting acceptance for the ABC and four companies (13%) are somewhat using the ABC system in their companies. The implementation rate of the listed manufacturing and diversifies holding companies are 84% (analysis and getting acceptance). These results are deferred from the previous studies. Khasharmeh (2002) found that the implementation rate of ABC was about 10% (four companies of 40 using ABC and the implementation rate was 10.7% in Al-Khadash and Feridun (2006) study. However those studies do not segment ABC into stages. Somehow the results slightly similar with Nassar and David (2015) studies result which had 55.7% of implementation rate.

What is the degree of ABC success in manufacturing and diversified holding companies which are listed in Colombo stock exchange? ”.

To gather the data questionnaire was given with five-point scale (1- poor and 5 - very good) to the users. Through to that result are shown their perception in overall success in ABC in their organization.

According to the result which is shown on table 4, most of the implementers have chosen average level and fair level. However in Sri Lanka manufacturing and diversified companies are rarely using ABC as their main costing system. They use the ABC as support system to their main costing method for some extent. Therefore this result reflects the real situation of the companies.

Table 4: Level of success

	Frequency	Percent	Valid Percent	Cumulative Percent
Poor	5	16.1	16.1	16.1
Fair	10	32.3	32.3	48.4
Average	14	45.2	45.2	35.5
Good	2	6.5	6.5	-
Total	31	100	100	100

Source: Survey results

The table 5 indicates the two way comparison of between level of adoption of the ABC system in the company and level of success of that adoption level. According to the findings from the data, most of the companies (more than 80%) are in the analysis stage of ABC implementation. Success level of the adoption level which is analysis is fair and average (36% & 40% respectively). In future adoptive level of ABC will increase because as per the results most of the companies are in the analysis stage.

Table 5: Level of ABC success for each implementation stage

ABC Implementation stage		Level of success				Total
		Poor	Fair	Average	Good	
Considering	Count	0	1	0	0	1
	% within ABC adoption and implementation.	0%	100%	0%	0%	100%
Analysis	Count	5	9	10	1	25
	% within ABC adoption and implementation.	20%	36%	40%	4%	100%
Getting acceptance	Count	0	0	0	1	1
	% within ABC adoption and implementation.	0%	0%	0%	100%	100%
Used somewhat	Count	0	0	4	0	4
	% within ABC adoption and implementation.	0%	0%	100%	0%	100%
Total	Count	5	10	14	2	31
	% within ABC adoption and implementation.	16%	32%	45%	7%	100%

Source: Survey results

Table 6 shows the findings of the frequency of use of ABC information. This measure assumes that the more extensive the use of ABC information, the more successful its implementation (Innes & Mitchell, 1995; Krumwiede, 1998). Five-point scale from 1- never

to 5- always was given to the respondents. According to the findings (Table 6), respondents using the ABC information for budgeting (mean score 4.23), planning (mean score 4.13), decision making (mean score 3.58) and product costing (mean score 3.74). An average result has come for the pricing decision and customer profitability analysis. ABC information using for the performance measurement is the least.

Table 6: Frequency of using ABC

	Minimum	Maximum	Mean	Std. Deviation
Product costing	2	5	3.74	0.965
Determine customer profitability	1	5	3.06	0.814
Decision-making	2	5	3.58	0.672
Planning	2	5	4.13	0.885
Budgeting	2	5	4.23	0.845
Price Decision	2	5	3.19	0.873
Performance measurement	1	5	2.74	0.965

Source: Survey results

In this session we discussed about the second objective of this research paper such as critical success factors that facilitate and motivate the decision to implement ABC. The result of the study reported based on the finding gathered from below stated research questions.

What is the current state of ABC adoption and implementation in your company?

The most cited factors that facilitate the decision to implement ABC were that adequate training was provided for designing ABC (mean score = 3.74) and top management support (mean scores = 3.71) the responses are summarised in Table 7. Therefore based on our analysis, the above mentioned factor that has highest priority to facilitate the decision to implement ABC within the Listed Companies in Sri Lanka.

According to the previous studies result (Nassar & David, 2015) the most cited factors are adequate training was provided for designing ABC and operating data in the information system are updated real time. Baird et al.(2007) training in designing, implementing and using the ABC system leads employees to understand, accept and encourage its use. The essential and key factor that facilitates the decision to implement ABC is top management support (Shields, 1995; Krumwiede, 1998). In general, the results of this study are similar to the previous studies.

Table 7: Factors that facilitate the decision to implement ABC

Factors	Minimum	Maximum	Mean	Std. Deviation
Adequate training was provided for designing ABC	2	5	3.74	0.729
Operating data in the information system are updated real time	2	5	3.55	0.768
Adequate training was provided for using ABC	2	5	3.61	0.667
Management has provided adequate resources	2	5	3.61	0.761
ABC received active support from top management	2	4	3.71	0.588
Consultant companies are regularly consulted when dealing with problems	1	4	2.58	0.807
Top management have a clear commitment to use ABC information	2	4	3.39	0.715
Education is being provided	2	5	3.32	0.653
Detailed sales and operating data are available in the past 12 months	2	4	2.65	0.839
The choice of any accounting systems is introduced by consultant companies	2	5	2.81	0.792
There is a permanent managerial consultant in the company	2	4	2.35	0.661
There are individual within the company who promotes to adopt a new system	2	5	2.42	0.848
There is a role for some employees to create awareness of new system	2	5	2.68	0.748
The objectives of ABC implementation were clearly understood	1	4	2.9	0.651

Source: Survey results

What are the factors that motivate the process of ABC implementation?

Table 8 shows the result. ABC users largely indicated that increasing proportion of overhead costs (Mean score = 3.9), growing cost including administration and production (Mean score = 3.77) and currently the increasing number of product variance (Mean score = 3.65) were also cited as major factors that motivate ABC implementation.

These factors that motivate the process of ABC implementation in the current research result seem same as to Booth and Giacobbe's (1997) findings. They found that the perception of importance of indirect costs and high number of product lines were the main factors that motivate the implementation of ABC.

Table 8: Factors that motivates the decision to implement ABC

Factors	Minimum	Maximum	Mean	Std. Deviation
Increasing proportion of overhead costs	2	5	3.9	0.79
Growing cost (Administration, production)	2	5	3.77	0.805
Currently the increasing number of product variance	2	5	3.65	0.709
Increased competition	2	4	2.71	0.643
Currently facing allocation problems	1	4	2.84	0.688
Inability of TCS to provide relevant information	1	4	2.61	1.054
The inaccuracies of product cost of the traditional cost system	1	5	2.97	1.169
Currently lack of decision making information	1	5	2.68	0.871
Inability of the TCS to adopt to increased automation in production process	2	4	2.94	0.854
Globalization of consumer and product market	2	5	2.94	0.727
Increased regulation	1	5	2.74	0.815

Source: Survey results

In this session we discussed about the third objective which is barriers associated with ABC implementation and the reasons for not implementing ABC. The result of the study reported based on the finding gathered from below stated research questions.

What are the barriers of ABC implementation?

During the process of implementing ABC, the company could face problems related to change implementation in ABC practice. According to our analysis, the greatest difficulty in implementing ABC was high cost of ABC consulting (mean score = 3.77), difficulty in gathering data on cost drivers (mean score = 3.77) and high cost of ABC implementation (mean score = 3.68). The results are summarized in Table 9.

These results confirm the findings of Nassar and David (2015) and Booth and Giacobbe (1997). In addition, lack of software packages, difficulty in identifying activities and higher priority of other changes/projects, as well as changes required to company structure to fit activities selected were regarded as challenging tasks.

Table 9: Barriers of ABC implementation

Factors	Minimum	Maximum	Mean	Std. Deviation
High cost of ABC implementation	2	5	3.68	0.791
High cost of ABC consulting	2	5	3.77	0.717
Takes up a lot of computer staffs time	2	5	3.42	0.848
Difficulty in gathering data on cost drivers	2	5	3.77	0.762
Difficulty in designing system	2	5	3.52	0.851

Lack of software packages	2	5	3.35	0.877
Difficulty in identifying activities	2	5	3.42	0.992
Higher priority of other changes/ projects	2	4	3.19	0.654
Changes required to company structure to fit activities selected	2	4	3.35	0.755
Difficulty in designing cost drivers	2	5	3.65	0.755
Take up a lot of managers time	1	5	3.48	0.89
Coping with changes in accounting	2	4	3.06	0.727
Lack of top management support	1	5	2.84	0.969
Lack of commitment and cooperation among departments	2	5	3.23	0.845
Resistance to change	2	4	2.9	0.473
Lack of knowledge of data requirement and collection	2	4	3	0.577

Source: Survey results

What are the reasons to not implement the ABC systems among the listed manufacturing and diversified holding companies in Sri Lanka?

Most of the respondents companies are not using the ABC as their costing system instead of that they are using traditional costing system. We were given a question which contains twenty reasons to find out the reason behind that decision. It means we tried to find why the companies using the traditional costing system instead of ABC system. The reasons suggested in the questionnaire were broken down into three categories: inherent difficulties with ABC; company's characteristics and business environment and confidence in the existing cost systems. Results are summarized in table 10.

Out of the twenty reasons five reasons are cited as the most important for not implementation of the ABC. Those are satisfy with current system (means score 3.81), Costly to switch to ABC (mean scores 3.78), consultants too costly (mean scores 3.65), Difficulty in selecting cost drivers (mean score 3.68) and, the control of OH is already adequate (mean score 3.68). According to the results, the main reason for not implementing ABC is the satisfaction with the current costing system. The satisfaction with the current system seemed to be a common reason for the confidence in the existing cost systems group cited in Asian countries (Chung et al., 1997; Chen et al., 2001). Similar evidence is reported by Nguyen and Brooks (1997) and Chung et al.

Complexity and time consuming, lack of experiences, difficulties in collecting soft-wares and difficulties in selecting cost drivers also cited as important reasons for not implementation of the ABC system. Most of the respondents are not agreed with one reason which is lack of support from top management. It seems all the top management are ready to accept the new system like ABC within the company however due to other reasons still companies are using traditional costing system.

Other than that, there are some reasons which are not the reasons for not implementing the ABC system in the companies according to the findings. Those are lack of awareness of

ABC, have relatively small portion of overhead, less complexity in products/ services and no intensity of competition.

General findings of the above research question which finds reasons for not implementing ABC were same as per some previous researches (Nicholls, 1992; Cobb et al., 1992; Chung et al., 1997; Nguyen and Brooks, 1997; Innes & Mitchell, 1998; Chen et al., 2001). In contrast, according to the findings by Nguyen and Brooks (1997), resistance to change by employees and no intensity of competition are the important reasons for not implementation of ABC in Australia.

Table 10: Reasons for not implementing ABC

	Minimum	Maximum	Mean	Std. Deviation
<i><u>Inherit difficulties with ABC</u></i>				
Costly to switch ABC	2	5	3.71	0.693
Consultants too costly	2	5	3.65	0.709
Lack of experience in ABC implementation	2	5	3.16	0.86
Too complex and time consuming	2	5	3.35	0.915
Lack of awareness of ABC	1	4	2.26	0.855
Difficulty in selecting cost drivers	1	5	3.68	0.871
Difficulties in selecting appropriate software	2	5	3.35	0.985
Difficulties in collecting data on the cost drivers	2	5	3.39	0.844
<i><u>Company's characteristics and business environment</u></i>				
The control of OH is already adequate	2	4	3.68	0.599
Cost accounting change is not our priority	1	5	2.35	0.798
Lack of top management support	1	5	1.94	0.929
Have relatively small portion of overhead	1	4	2.23	0.92
Less complexity in products/ services	1	5	2.26	1.032
Lack of internal resources	2	5	2.48	0.811
No intensity of competition	2	4	2.39	0.558
<i><u>Confidence in the existing cost systems</u></i>				
Resistance from employees	1	3	2.45	0.568
Satisfied with current system	2	5	3.87	0.562
Ambiguity of ABC benefit in the literature	2	5	3.32	0.748
Total perceived benefit is less than cost of implementation	2	5	3.26	0.815

Source: Survey results

5. Conclusion

This research examined the level of ABC implementation within the listed companies in Sri Lankan context and identifies the critical success factors, motivational factors and barriers to ABC implementation.

In the dynamic business environment, if an organization wants to survival in the market at least the organization has to follow some strategies to enhance the product quality, lower price to the products through reduce the production cost to an acceptable manner. Examine present use of activity-based costing (ABC) approach as an alternative option to the traditional cost accounting system. To find out how different motives for implementing activity based-costing may affect the implementation process and focuses on the factors that affect different stages of the implementation process.

The result of the study will be facilitate to make a suggestions on the existence of ABC implementation concept in listed companies in Sri Lanka and contribute the multi-attribute was composed of satisfaction with ABC implementation, the degree of using ABC in decision making and the success of ABC implementation. However, there is a lower rate of adoption and implementation of ABC in developed and developing countries. There is an ambiguous question on mind, why traditional costing system continues to implement by wide range of organizations and why management accounting innovations (ABC) have slow to change in the dynamic & competitive environment. This study makes a contribution to existing knowledge in the area of the implementation of ABC in listed companies in Sri Lanka. The majority of Sri Lankan listed companies are not currently implemented ABC as their main costing method.

Further, some companies implemented ABC because of an increasing proportion of overhead costs, growing costs including administration and production and currently the increasing number of product variance. In addition, the most cited factors that facilitate the decision to implement ABC were that adequate training was provided for designing it and received active support from top management for adoption and implementation. Therefore, training and support from top management were cited as the most facilitate and motivate factors.

On the other hand, the main barriers of implementing ABC that most users experienced were related to technical barriers (such as high cost of both consulting, difficulty in gathering data on cost drivers) rather than behavioural or organizational barriers (such as resistance from employees or lack of top management support). Finally, ABC information is widely used for many different purposes but using it to budgeting, planning, at decision making, and determining product costing represent the most widely used applications. It is least commonly used in performance measurement and determining customer profitability.

Some limitations should be noted when interpreting the results of this study. This study's scope is limited to focusing only on the level of ABC implementation, critical success factors and barriers to ABC implementation in listed companies in Sri Lanka. This limitation may restrict the generalization of the research findings to whole Sri Lankan context.

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Appendices

Appendix 1: Questionnaire

Questionnaire for An Empirical study of ABC system within listed companies in Srilanka: Critical Success factors and barriers to ABC implementation

Respondent Profile

01. Name of the Organization
02. Name of the respondent
03. Work Position
04. Academic qualification
05. Experience in the company

Company Profile

06. Do you adopt ABC System?

Yes ☐ No ☐

07. What is the other type of cost management technique used by the firm

- a) Standard Costing
b) Process Costing
c) Target costing
d) Others

08. How did you break down total company cost into following category out of 100%

- a) Direct Material
- b) Direct Labour
- c) Production/ Service overhead
- d) Non production overhead

09. Number of products produced by company

10. How would you characterize your management commitment to ABC implementation?

Not a Priority ☐

Low priority ☐

High priority ☐

Top priority ☐

11. How would you rate your ABC implementation on communication of the objectives and rationale for the project?

Poor	<input type="checkbox"/>
Fair	<input type="checkbox"/>
Average	<input type="checkbox"/>
Good	<input type="checkbox"/>
Excellent	<input type="checkbox"/>

12. What type of training is being provided for users of the ABC system?

Mechanics of ABC system	<input type="checkbox"/>
Applications/uses	<input type="checkbox"/>
Conceptual understanding	<input type="checkbox"/>
Implementation steps	<input type="checkbox"/>
Public seminars	<input type="checkbox"/>
In-house seminars	<input type="checkbox"/>

13. What is the current state of ABC implementation in your company?

Not considered	<input type="checkbox"/>	Getting acceptance	<input type="checkbox"/>
Considering	<input type="checkbox"/>	Implementation then abandoned	<input type="checkbox"/>
Considered then rejected	<input type="checkbox"/>	Used somewhat	<input type="checkbox"/>
Approval for implementation	<input type="checkbox"/>	Used extensively	<input type="checkbox"/>
Analysis	<input type="checkbox"/>		

*(Please tick the box which best indicates your level of agreement with the following statements
1- Never, 2- Rarely, 3-Occasionally, 4-regularly, 5 - Always)*

14. What area of decision making does use ABC information?

	1	2	3	4	5
Product costing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Determine customer profitability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decision-making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Planning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Budgeting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price Decision	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performance measurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(Please tick the box which best indicates your level of agreement with the following statements- 1: Strongly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Strongly Agree)

15. What are the factors facilitate the process of ABC implementation?

	1	2	3	4	5
Adequate training was provided for designing ABC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operating data in the information system are updated real time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Adequate training was provided for using ABC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management has provided adequate resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ABC received active support from top management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultant companies are regularly consulted when dealing with problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Top management have a clear commitment to use ABC information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Education is being provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Detailed sales and operating data are available in the past 12 months
 The choice of any accounting systems is influenced by consultant companies
 There is a permanent managerial consultant in the company
 There are individual within the company who promotes to adopt a new system
 There is a role for some employees to create awareness of new system
 The objectives of ABC implementation were clearly understood

16. What are the factors that motivate the process of ABC implementation?

Increasing proportion of overhead costs
 Growing cost (Administration, production)
 Currently the increasing number of product variance
 Increased competition
 Currently facing allocation problems
 Inability of TCS to provide relevant information
 The inaccuracies of product cost of the traditional cost system
 Currently lack of decision making information
 Inability of the TCS to adopt to increased automation in production process
 Globalization of consumer and product market
 Increased regulation

1	2	3	4	5

(Please tick the box which best indicates your level of agreement with the following statements- 1: Stongly disagree, 2: Disagree, 3: Netural, 4: Agree, 5: Strongly Agree)

17. What are the problems of ABC implementation?

High cost of ABC implementation
 High cost of ABC consulting
 Takes up a lot of computer staffs time
 Difficulty in gathering data on cost drivers
 Difficulty in designing system
 Lack of software packages
 Difficulty in identifying activities
 Higher priority of other changes/ projects
 Changes required to company structure to fit activities selected
 Difficulty in defining cost drivers
 Take up a lot of managers time
 Coping with changes in accounting
 Lack of top management support
 Lack of commitment and cooperation among departments
 Resistance to change
 Lack of knowledge of data requirement and collection

1	2	3	4	5

18. What are the reasons for not implementing ABC?

01. Inherit difficulties with ABC

Costly to switch ABC
 Consultants too costly
 Lack of experience in ABC implementation
 Too complex and time consuming
 Lack of awareness of ABC

1	2	3	4	5

Difficulty in selecting cost drivers
 Difficulties in selecting appropriate software
 Difficulties in collecting data on the cost drivers

02. Company characteristic and business environment

The control of OH is already adequate
 Cost accounting change is not our priority
 Lack of top management support
 Have relatively small portion of overhead
 Less complexity in products/ services
 Lack of internal resources
 No intensity of competition
 Resistance from employees

03. Confidence in the existence cost system

Satisfied with current system
 Ambiguity of ABC benefit in the literature
 Total perceived benefit is less than cost of implementation
