MANAGEMENT ACCOUNTING PRACTICES' ADOPTION AMONG LISTED MANUFACTURING COMPANIES IN SRI LANKA

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ABSTRACT

This study provides empirical evidence regarding the use of a wide range of management accounting practices in Sri Lanka's listed manufacturing companies. Data gathered from the google drive questionnaire from 96 accountants was used to enable the analysis. The finding shows that the listed manufacturing companies in Sri Lanka make extensive use of traditional MAPs such as budgeting, costing system, and capital budgeting techniques. The finding also suggests that the majority of the listed manufacturing companies widely use strategic planning and risk management which are advanced MAPs. Further, the results reveal that many listed manufacturing companies have taken one or more non-financial information-based MAPs, but the dependence on financial information-related MAPs is greater than non-financial information practices. Continuous improvement programs, value chain analysis, shareholder value analysis, and strategic planning are the most common non-financial information processes utilized by listed manufacturing organizations. Moreover, the newly evolved MAPs like activity-based costing, value creation techniques, long-term decision systems, and discounted cash flow techniques of capital budgeting are used to a lower extent by listed manufacturing companies. The study suggests due to some reasons, it is improbable for the listed manufacturing companies in Sri Lanka to implement wide-ranging MAPs.

Keywords: Management Accounting Practices, Level of Adoption, Listed Manufacturing Companies, Sri Lanka.

INTRODUCTION

The globalized business world challenged the performance and survival of many of the industrialized sectors, specifically developing nations like Sri Lanka. It can be seen from many economic indicators like global competitive ranking, gross domestic product growth rate, export performance, value edition of manufacturing in Sri Lanka is declining over the last five years. Though there are many reasons for the poor performance of the Sri Lankan manufacturing sector, the most important reasons for the performance drop are the week economic planning, miscalculations of predictions, improper maintenance of energy and labor cost, the inadequate capability of meeting the competition and ineffective decision making. This is reinforced by the fact that the most important explanation for the high unsuccess rate of business firms in developing countries is the unwillingness to make sufficient use of crucial management and business practices (Ahmad, 2014; Richard, 2000). One of the established management practices is the management accounting practices (MAPs) which can provide financial and non-financial information to managers to make their strategic decision in their planning, controlling, and performance evaluation. Baines and Langfield-Smith (2003) also stated that managers require

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unique types of management accounting practices in highly unpredictable conditions that complement their decision-making needs and assist with monitoring strategy progress. It is also argued that the absence of adopting appropriate MAPs (i.e., costing system, budgeting) could cause business failure specifically within the manufacturing sector because those organizations' production processes are very complex, technologically advanced, and have to compete on costs and prices (Gichaaga, 2014).

Thus, MAPs become an important business practice related to the planning, evaluating, and controlling the complex production process of manufacturing sectors towards its sustainability. Despite the economic benefits of manufacturing sectors around the globe and specifically for Sri Lanka, there are very little researches documented concerning the broad usage of MAPs among manufacturing companies in Sri Lanka. Researchers into the adoption of MAPs among Sri Lankan manufacturing organizations, such as Fonseka, Manawaduge and Senaratne (2005), Subasinghe and Fonseka (2009); Fonseka (2012); De Zoysa et al. (2014); Gunarathne and Alahakoon (2016); Kariyawasam (2018) are still fragmented and attentive in different and few aspects of MAPs. The study of broader sets of MAPs among Sri Lankan manufacturing sectors specifically within the listed companies is lacking. This claim is demonstrated by the sequence of literature evaluating the adoption of MAPs among developed and developing countries in the last five decades ago.

For example, studies by Gordon and Naraynan (1984); Shields et al. (1991); Chenhall and Langfield-Smith (1998); Chow et al. (1999); Joshi (2001); Haldma and Lääts (2002); Sulaiman et al. (2004); Hyvonen (2005); Abdel-Kader and Luther (2006); Wu et al. (2007); Waweru and Uliana (2008); Mat et al. (2010); Uyar (2010); Anh and Mia (2011); Ahmad (2012); Mohamed (2013); Ahmad and Leftesi (2014); Ghasemi and Mohamad (2015); Andesto (2016); Mansor and Azudin (2017); Krisnadewi and Erawati (2018). Therefore, this study has been motivated by the lack of research into the application of broad sets of MAPs by manufacturing sectors in Sri Lanka. This paper helps to fill the void in the literature by the case analysis of listed manufacturing companies in Sri Lanka. Sri Lanka is one of the developing countries located in the South Asian region and the listed manufacturing companies dominated more than half of the total listed companies of the Colombo Stock Exchange in Sri Lanka.

LITERATURE REVIEW

Management Accounting Practices

Management Accounting Practices (MAPs) are defined in a variety of ways in the academic literature. While some definitions emphasize MAPs as a component of a larger management information system (Otley, 1980; Horngren, 2004), others refer to them as management accounting systems (MAS), which provide information for managers with the goal of planning, decision-making and controlling (Abdel-Kader & Luther, 2008; Chenhall & Morris, 1986; Kaplan & Atkinson, 1996). MAPs are also strategies that allow management to gather important data for making informed decisions (Alleyne & Weekes-Marshall, 2011).

Based on the definitions found in the literature, MAPs can be classified as an information system. A control system is what MAPs are. It is a manager's view of support.

In the previous literature, there was no comprehensive list of MAPs. Measuring management accounting procedures has turned out to be a difficult task. According to the findings of the literature research, multiple dimensions have been utilized to measure MAPs. Some research, like Gordon & Narayanan (1984); examined MAPs utilizing management

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accounting information aspects including external, non-financial, and future-oriented. Others employed the stages of development (drifting, conventional, quantitative, and integrative) (Fonseka et al., 2005; Azudin & Mansor, 2017) as well as information qualities (scope, timeliness, aggregation, and integration) (Hammad et al., 2013; Ghasemi et al., 2016) at the same time. Traditional MAPs like budgeting and standard costing were employed in studies like (Guilding et al., 1998), but advanced management accounting practices like activity-based costing and target costing were used in others (Baines & Langfield-Smith, 2003; Nassar et al., 2011). The sophistication level of MAPs has been explored by researchers (Abdel-Karder & Luther, 2008; Fonseka, 2012). Single MAP is also used to research, primarily budgeting (Guilding et al., 1998) and activity-based costing (Morenoa & Montemayor, 2008). Other studies employ a diverse collection of conventional and contemporary MAPs, such as costing systems, performance assessment budgeting, decision support systems, and strategic management accounting (Shield et al., 1991; Joshi, 2001; Ahamed, 2012). This study uses 10 dimensions to assess MAPs, with an emphasis on both traditional and modern MAPs. They are costing systems, short-term decision systems, long-term decision systems, budgeting, standard costing system, capital budgeting, resource utilization techniques, risk management, value creation techniques, and strategic planning.

Adoption of Management Accounting Practices

This study does not provide a comprehensive literature review on the adoption of MAPs is not the whole purpose of this study. The literature review to follow, however, would primarily deal with certain previous findings of the topic under investigation both from developed and developing countries.

Shields et al. (1991) found that Japanese and U.S companies have mostly adopted variable and absorption costing methods and Japanese firms widely use process costing to accumulate the cost of products. Their finding also indicates that U.S. firms do not use cost volume profit analysis while Japanese firms mostly use it as one of the short-term decision-making MAPs. Besides, they found that both Japanese and U.S companies use operational budget and standard costing techniques as their optional control system. Moreover, their study shows that return on sales is mainly used by Japanese firms while return on investment is mostly used by U.S. firms as the performance evaluation method.

Chenhall and Langfield-Smith (1998) in a study of the Australian manufacturing sector found that Australian manufacturing companies use mostly traditional MAPs than contemporary MAPs. However, the study indicates that some of the contemporary MAPs are used by Australian firms in remarkably activity-based costing and benchmarking. Furthermore, the finding of their study reveals that larger Australian companies have adopted a series of MAPs, highlighting non-financial information and necessitating still more operational devotion.

Guilding et al. (1998) investigated the budgeting practice and standard costing system of U.K. and New Zealand (NZ) manufacturing firms. Their study finds that manufacturing companies from both countries are widely use budgeting and standard costing system. Wijewardena and Zoysa (1999) in their comparative analysis of MAPs among Australian and Japanese manufacturing companies reveal that standard costing, budgets, and historical financial statements are widely used by Australian firms for controlling costs, planning, and financial statements preparation while target costing is mostly used by the Japanese firms for costs reduction at the planning and designing stage of production. Also, their finding indicates that Japanese firms implement recurrent changes to MAPs compared to firms in Australia.

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Rahman et al. (2003) concluded that the use of MAPs is lower than financial accounting information among Malaysian-owned and Multinational manufacturing and service firms for their managerial activities. Their finding further indicates that few companies use traditional MAPs like budgeting and standard costing. A survey among four Asian countries; China, Singapore, Malaysia, and India has been carried out by (Sulaiman et al., 2004). The finding indicates that all four countries use mostly traditional MAPs like standard costing, cost volume profit analysis, return on investment, and budgeting compared to the advanced MAPs like total quality management, activity-based costing, target costing, and balanced scorecards.

Mahfer and Omar (2004) studied the level of adoption of MAPs by Malaysian companies. The results imply that commonly adopted financial accounting information and conventional MAPs like budgeting and very few companies started to use advanced MAPs like activity-based costing, just in time, activity-based costing, target costing, and balanced scorecards. In Finland, an assessment of MAPs adoption and its advantages was undertaken by (Hyvonen, 2005). The result suggests that budget is utilized by most of all firms studied for many purposes such as cost control, performance evaluation, and cashflow determinations. Besides, the finding demonstrates that return on investment and accounting rate of return is most widely used as capital budgeting techniques. Further, a moderate-level adoption of absorption costing and lower-level adoption of activity-based costing exists among the surveyed organization.

The research in U.K Abdel-Kader and Luther (2006) implied that the traditional MAPs are widely utilized by the firms in Food and Drink industry in the U.K and the MAPs indicated in the textbooks are not fully used by the surveyed organizations. Wu et al. (2007) in a study from China concluded that Chinese state-owned enterprises (SOE) mostly use sales and profit budgets and target costing for cost control than Joint Venture (JV) companies of China. The finding, further, indicates that decision-making techniques and responsibility accounting techniques are less practiced among these Chinese organizations.

A comparative study of Europe and Mexico done by Moreno and Montemayor (2008) conclude that a lower rate of adoption of activity-based costing exists in Mexico than in Europe. Research in the extent of using MAPs conducted among Malaysian production firms by Mat et al. (2010) demonstrates that the use of traditional MAPs is higher than advanced practices.

In Turkey Uyar (2010) concluded that the manufacturing companies frequently used costing method is job costing, and the popular methods of overhead cost allocations are prime costs, and direct cost, budgeting is also predominantly used. Furthermore, this study indicates that traditional MAPs are apparent as important MAPs compared to advanced MAPs such as transfer pricing and strategic planning.

Anh and Mia (2011) investigated the MAPs usage among Vietnamese organizations and found that traditional MAPs are commonly accepted than contemporary MAPs among Vietnamese firms. A survey by James (2012) among the manufacturing firms in Jamaica indicates that traditional MAPs are utilized more than advanced MAPs. Ahmad (2014) indicates that traditional MAPs such as financial performance measures, budgeting, costing systems are adopted compared to advanced MAPs such as activity-based costing, non-financial performance, and strategic management accounting, besides the use of capital budgeting is very low among the small-medium sized manufacturing organizations in Malaysia.

Ghasemi and Mohamad (2015) investigated the degree of using traditional and contemporary MAPs among manufacturing firms in Iran. The analysis reveals that traditional MAPs are mostly used by these companies than contemporary MAPs. In Bali Krisnadewi and

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Erawati (2018) find that lower use of MAPs, particularly the preparation of budgeting implemented within the Bali hotels. In addition to the above findings, a few Sri Lankan pieces of literature are also available. For example, Fonseka et al. (2005) stated that even in the private sector, in Sri Lanka the use of MAPs remains cooperatively limited. They reveal that the usage rate of 24 MAPs out of 36 is less than 30 percent. The results show also that MAPs are used in most industries for planning and management control purposes. They further reveal that the use of MAPs is considerably less, and the degree to which they vary in particular business industries, as regards other functions like policy design, decision making, optimal use of resources, efficiency management, and value enhancement. Further, Subasinghe and Fonseka (2009) observed that within the Sri Lankan business sectors MAPs' usage is lower and the firms do not proactively use the MAPs. Their finding further indicates that multinational corporations (MNCs) mostly use MAPs than local companies and those MNCs treat the management accountants' role as tremendously important. In addition to these Fonseka (2012) stated that the majority of Sri Lankan industrial firms did not use advanced management accounting techniques. Furthermore, he claims that international firms operating in Sri Lanka have implemented advanced management accounting procedures, but indigenous enterprises have a low level of complexity in management accounting practices. De Zoysa et al. (2014) analyzed the MAPs of Sri Lankan firms and concluded that traditional MAPs are mostly used. They further indicated that major reason for lower adoption of advanced MAPs is Sri Lankan organization depends mostly on financial reports in making their organizational decisions. Further, Gunarathne and Alahakoon (2016) investigated the adoption of environmental MAPs among Sri Lankan organizations. Their finding indicates that large-size firms use several environmental MAPs than small-size firms, however, the adoption of those practices is not systematic. Kariyawasam (2018) claims that Sri Lankan-listed manufacturing companies use different costing methods and the costing information is widely used for pricing the products.

METHODOLOGY

The study was administered to 129 manufacturing companies listed under the Colombo Stock Exchange in Sri Lanka. Those manufacturing companies a listed under a different group of industries such as Automobiles & Components, Capital Goods, Commercial & Professional Services, Consumer Durables & Apparels, Energy, Food, Beverage & Tobacco, House Holds & Personal Products, Materials, Pharmaceutical, Biotechnology & Life Science and Utilities. A self-structured questionnaire in a form of google drive was sent to each of the sampled companies with a cover letter. After several reminders, 96 responses were received which shows a response rate of 74.4 percentage.

The answers from the earliest response of 50 percent and those from the latest 50 percentage were compared to assess whether the response varied from one group to another to analyze the non-response bias. The test was carried out using chi-square for interviewers' profiles and the use and scope of MAPs. There have been no variations found, which justify the non-exitance of non-response bias.

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RESULTS AND DISCUSSION

Respondents Profile

Respondents were sampled from ten different manufacturing industries in Sri Lanka, as indicated in Table 1. They varied across industries – the highest response rate is 35.4 percent from the Food, Beverage, and Tobacco industry, and the lowest is 1.0 percent from Automobiles & Components and Pharmaceuticals, Biotechnology & Life Science industries. Table 1 displays 28.1 percent from the capital goods sector, 1.25 percent from the Consumer Durables and Apparels industry, 11.5 percent from the material industry, 4.2 percent from commercial and professional services industry, and 2.1 percent from sectors of energy, households, and personal products and utilities.

Table 1
INDUSTRY WISE CLASSIFICATION

Industry	Frequency	Percentage
Automobiles & Components	01	1.0
Capital Goods	27	28.1
Commercial and Professional Services	04	4.2
Consumer Durables and Apparels	12	12.5
Energy	02	2.1
Food, Beverage & Tobacco	34	35.4
House Holds & Personal Products	02	2.1
Materials	11	11.5
Pharmaceuticals, Biotechnology & Life Science	01	1.0
Utilities	02	2.1
Total	96	100.0

Further, the information related to the company profile consists of the company's age; the number of employees and owners of companies are presented in Table 2 and described below.

Firstly, the company age is grouped into seven levels. As described in Table 3, only one firm is (1.04%) established recently, less than five years. The age of 41 companies (42.1%) are within 30-35 years, 29 companies (29%) are above 35 years, and 12 companies (12%) are within 20-25 years. According to these statistics, most 85 percent of the companies are matured organizations. The age category of 5- 10 years and 10-15 years represent only one organization, each with 1.04 percent. The age of another eleven originations (11.4%) belongs to the age category of 15-20 years.

Second, the workforce arrays from less than 500 to more than 2500. The lowest is reported (9.37%) under more than 2500 employees while the highest is reported (33.38%) under the category of 2000-2500. The categories 500-100 and 100-1500 are reported with 11.4 percent, while 1000-1500 is reported with 1.54 percent. Approximately 80 percent of the organizations are employed with more than 1000 employees.

Ownership of the companies is operationalized based on their originations, whether domestically owned or foreign-owned companies. According to Table 4, 91 percent of the companies are with domestic ownership, while only 9 percent of the companies are foreign-owned.

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Table 2 RESPONDING FIRM' PROFILE			
Company Profile		**Number of Respondents**	**Percentage**
Variable	**Category**		
Age of company	Below 5 years	1	01.04
	5 – 10 years	1	01.04
	10 - 15 years	1	01.04
	15 -20 years	11	11.46
	20- 25 years	12	12.50
	30-35 years	41	42.71
	Above 35 years	29	30.21
	Below 5 years	1	01.04
Number of employees	Less than 500	11	11.46
	500-1000	11	11.46
	1000-1500	13	13.54
	1500-2000	19	19.79
	2000-2500	33	34.38
	Above 2500	9	09.37
Ownership of company	Domestic	87	91.00
	Foreign	9	9%

Management Accounting Practices Usage

The respondent was requested to state whether each of the MAPs was used by the sampled organization. If their response is yes, further question into the nature of usage was carried out based on a five-point Likert scale. Table 3 describes the degree to which the MAPs designated had been used. The table divides the data into four main columns; first the type of management accounting practice, second the response (yes/no), third a description of the results was provided with the rank of the MAPs by adoption.

Table 2 shows that all most all the responding companies use a costing system and budgeting which shows the ranks first among the listed manufacturing companies in Sri Lanka. This shows that costing information and budgeting is more important for planning and controlling the activities of the organizations. In contrast, the less preferred prates are resource utilization techniques and short-term-decision systems. Besides, strategic planning was used by almost 93% of the respondents which carried third ranking. This implies that Sri Lankan-listed manufacturing companies are more focusing on long-term strategies. Further, there was a slight difference between capital budgeting and risk management which had a ranking of fourth and fifth respectively. Moreover, value creation techniques, standard costing techniques, and long-term decision systems were also adopted by most of the organizations with the ranking of sixth, and eighth respectively. In conclusion, almost 82 percent of the respondents use all the ten groups of MAPs which shows a higher adoption of MAPs among Sri Lankan listed manufacturing companies.

Table 3 MANAGEMENT ACCOUNTING PRACTICES USAGE AND RANKING OF PRACTICES			
	No	**Yes**	**Rank**
Costing System	0	96	1
Budgeting	0	96	1
Strategic Planning	7	89	3

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Capital Budgeting	9	87	4
Risk Management	10	86	5
Value Creation Techniques	13	83	6
Standard Costing Technique	13	83	6
Long-term Decision System	16	80	8
Resource Utilization Techniques	17	79	9
Short-term Decision system	17	79	10

The reasons for the increased use of these MAPs by the listed manufacturing companies reflect the growing complexity of manufacturing firms, particularly for companies utilizing advanced technologies. These companies are typically more capital-intensive which leads these firms to more risk tolerance, meaning that decision making and formulation of the business plan are more analytic, and these firms have comparatively larger access to resources and restraint of high cost. These reasons were supported by (Ahmad, 2014; Abdel-Kader & Luther, 2008; Chenhall & Langfield-Smith-1998).

Level of Adoption of MAPs

The discussion about the level of adoption of ten major groups of MAPs was presented in the above section. The level of adoption of 57 specific MAPs beneath the above broad groups is investigated in this section. The degree to which MAPs are adopted has been investigated by asking respondents, who have answered yes to the broad group of MAPs, to show frequency of adoption in five-point Likert Scale (where 1 indicates 'strongly disagree' to 5 'strongly agree') of variety of detailed MAPs.

The results of 57 MAPs are presented in Table 3. These practices were alienated into four levels to facilitate the discussion (Level 1, 2, 3, and Level 4) according to the mean value's descending order. Level 1 consists of the first 10 practices listed as being of the comparatively high level of adoption. The next ten practices were categorized as a comparatively moderate level of adoption at Level 2, and the other 10 practices were classified as the lowest level of adoption at Level 3. The remaining 27 practices were placed at Level 4, which were comparatively lowest in the level of adoption. This classification offers a modest "high-low" snapshot from the highest level of adoption (level 1) to the lowest level of adoption (Level 4). The description of these results is then conducted in the following paragraph.

Level 1: High level of adoption

Table 4 displays that the first rank under Level 1 was for internal audit which is a non-financial-based MAP while the rank from two to ten is composed of financial-based MAPs. Practices under budgeting lead the ranks (rank 2- 9). In the meantime, the tenth ranks belong to the cost reduction program. The findings reveal that the respondents widely adopted the financial-based traditional MAPs. While criticized for some shortcomings, conventional MAPs among Sri Lankan-listed manufacturing companies remain pertinent.

The higher use of MAPs concerned with financial information is strongly compliant with several prior investigations. For instance, Chenhall & Langfield-Smith (1998) in Australia, Guilding et al. (1998) in U.K. and Newzealand, Joshi (2001) in India, Sulaiman et al. (2004) in China, Singapore, Malsiya and India, Mahfer & Omar (2004) in Malaysia, Hyvonen (2005) in Finland, Abdel-Kader & Luther (2006) in the U.K., Uyar (2010) in Turkey and Krisnadewi and

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Erawati (2018) in Bali who stated budgeting as the main MAP for planning, cost control and performance evaluation.

Level 2: Moderate level of adoption

The moderate level of adoption is mainly encompassed with the non-financial information-related practices of value creation techniques, strategic planning, and capital budgeting techniques. Material usage budget is at the 12th rank which still means the cruciality of budgeting among the respondents. Continuous improvement programs, value chain analysis, and shareholder value analysis, and strategic planning are practices that the respondents often use as non-financial information-related MAPs. The findings show that Sri Lankan-listed manufacturing companies are beginning to focus on the latest MAPs. However, the accounting rate of return and payback period are the capital budgeting system predominantly used by the respondents. This result indicates that Sri Lankan-listed manufacturing organizations make their long-term capital decisions based on non-discounted cash flow techniques. Besides, the moderate level of adoption includes the MAPs of different inventory models (16th rank) and ideal standards (19th rank) which demonstrate the higher utilization of traditional MAPs.

Previous researches also reported the growing adoption of non-financial related MAPs among the organizations, for example, Chenhall and Langfield-Smith (1998) in Australia. However, Anh and Mia (2011) and Ahmad (2014) revealed the lower utilization of non-financial related MAPs as opposed to the finding of this study. Further, the moderate adoption of strategic planning (rank 14) which comes under the strategic MAP, is relatively an astonishment. This finding demonstrates that Sri Lankan-listed manufacturing companies have realized the importance of strategic focus in their managerial activities, one of the contemporary MAP. However, this finding is contrary to Uyar (2010), and Ahmad (2014) who found lower adoption of strategic planning in Turkey and Malaysia. Besides, the finding of a moderate level of adoption of non-discounted cashflow techniques as the capital budgeting appraisal methods also goes with that of inter alia Hyvonen (2005).

Level 3: Lower level of adoption

Level 3 offers ten MAPs of the comparatively low level of adoptions. Table 4 displays under this level mostly consist of practices under standard costing system, risk management, and resource utilization techniques. Four practices related to the standard costing system carry rank from 22nd to 25th. Further, the results on management audit and business process reengineering representing the value creation techniques and risk adjustment and quantification of risk related to risk management obtain little concentration among the listed manufacturing companies in Sri Lanka. Also, flexible budget, one of the budgeting techniques, and relevant information, one of the short-term decision system practices receive the lowest ranks, 28th and 30th, under this level. Though the use of standard costing system comes under lower level, their ranks are within 25th. This result is consistent with Shields et al. (1991) and Guilding et al. (1998) who demonstrated multi-county evidence of higher utilization of standard costing systems.

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Table 4
RANKING OF LEVEL OF ADOPTION OF MAPS

	Mean	Std. Deviation	Rank
Level 1: High Level of Adoption			
Internal Audit	3.938	0.944	1
Cash Budget	3.906	0.879	2
Sales Budget	3.854	0.946	3
Production Budget	3.802	0.897	4
Labor Budget	3.750	0.777	5
Master Budget	3.740	0.904	6
Incremental Budget	3.740	0.857	6
Material Purchase Budget	3.729	0.835	8
Overhead Budget	3.729	0.823	8
Cost Reduction Program	3.698	0.723	10
Level 2: Moderate Level of Adoption			
Continuous Improvement Program	3.688	0.697	11
Material Usage Budget	3.646	0.957	12
Value Chain Analysis	3.625	0.681	13
Strategic Planning	3.604	0.848	14
Accounting Rate of Return	3.594	0.811	15
Pay-back Period	3.573	0.875	16
Different Inventory Model	3.573	0.887	16
Profitability Analysis	3.531	0.887	18
Shareholder Value Analysis	3.500	0.854	19
Ideal Standard	3.500	0.629	19
Level 3: Low Level of Adoption			
Currently Attainable Standard	3.479	0.736	21
Variance Analysis	3.469	0.735	22
Management Audit	3.458	0.841	23
Revenue Variance	3.458	0.644	23
Use of Average of Past Cost and Revenue Standard	3.438	0.788	25
Explicitly of Risk Adjustment	3.438	0.761	25
Business Process Reengineering	3.438	0.814	25
Quantification of Risk	3.427	0.732	28
Flexible Budget	3.427	1.028	28
Relevant Information	3.417	0.773	30
Level 4: Lowest Level of Adoption			
Internal Rate of Return	3.406	0.758	31
Reorder Level	3.406	0.811	31
Variable Costing	3.396	0.729	33
Costs Variances	3.365	0.663	34
Job Costing	3.344	0.734	35

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Decision Trees	3.333	0.731	36
Probabilistic Models	3.323	0.784	37
Batch Costing	3.312	0.882	38
Benchmarking for long-term decision	3.312	0.845	38
Net Present Value	3.302	0.723	40
Cost-volume profit analysis	3.292	0.934	41
Use of Normal Standard	3.281	0.672	42
Absorption Costing	3.281	0.657	42
Sampling Techniques	3.271	0.810	44
Process Costing	3.260	0.820	45
Total Quality Management	3.260	0.832	45
Bayes Theorem	3.250	0.707	47
Shareholder Value Analysis	3.219	0.695	48
Economic Order Quantity	3.198	0.716	49
Activity-Based Costing	3.167	0.745	50
Program Budgeting	3.167	1.007	50
Contract Costing	3.156	0.808	52
Profitability Index	3.135	0.745	53
Life Cycle Costing	3.135	0.837	53
Just in Time	3.094	0.765	55
Zero-based budgeting	2.917	1.170	56
ABC Analysis (Pareto analysis)	2.729	1.132	57

Level 4: Lowest level of adoption

Level-4 evidence demonstrates the comparatively lowest level of adoption of MAPs. The finding shows that listed manufacturing companies in Sri Lanka rarely use the discounted techniques of capital budgeting such as internal rate of return and net present value. This finding is similar to the finding of Ahmad (2014), who reported lower adoption of capital budgeting techniques among Malaysian companies. In contrast, Chenhall & Langfield-Smith (1998) found that capital budgeting techniques were widely adopted by Australian companies with rank 2. It is renowned that the lowest adoption of discounted cash flow techniques by Sri Lankan listed manufacturing companies demonstrate the lowest use of sophisticated MAPs which is comparable with the finding of Fonseka (2012).

Also, the results suggest a job, batch, absorption, and process costing as opposed to variable costing are the least adopted costing system. In the meanwhile, activity-based costing is the lowest option in comparison to the type of costing system. This is not a surprising result since the high degree of the use of activity-based costing has not been documented in this research or other previous studies. Chenhall and Langfield-Smith (1998), for example, have found that activity-based costing adoption is comparatively low (ranked 38). Likewise, Abdel-Karder and Luther (2006) revealed the activity-based costing at 32 ranks of 38 MAPs. Moreno and Montemayor (2008) also reported lower adoption of activity-based costing in Mexico.

Level -4 data also shows that three risk management techniques such as decision trees, probabilistic models, and Bayes theorem are not used properly. Further, seven out of nine resource utilization techniques (reorder level, sampling techniques, total quality management,

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economic order quantity, life cycle costing, just in time and ABC Analysis (Pareto analysis) are little adopted by the listed manufacturing companies in Sri Lanka. Besides, contemporary budgeting techniques such as program budgeting and zero-based budgeting, benchmarking for long-term decision systems reported the very least adopted techniques. An overall, these findings demonstrate that Sri Lankan-listed manufacturing companies still lack in using some of the advanced MAPs. This finding is consistent with inter alia Sulaiman et al. (2004) in Malaysia and India, Moreno and Montemayor (2008) in Mexico, Smith and Djajadikerta (2010) in Malaysia, James (2012) in Jameca, Ahmad (2014) in Malasiya, Fonseka et al. (2005) Subasinghe and Fonseka (2009); Fonseka (2012) in Sri Lanka.

In general, the outcome of Table 4 shows clear evidence that listed manufacturing companies in Sri Lanka have well-practiced traditional MAPs (specifically, traditional budgeting, conventional costing, and financial information-related MAPs) in opposition to certain newly evolved MAPs. However, these companies have recognized the importance of non-financial-based MAPs and already implemented some of those practices such as strategic planning.

CONCLUSION

This study documents findings obtained from 96 replies out of 126 listed manufacturing companies representing ten different manufacturing sectors in Sri Lanka on the level of adoption of MAPs. Based on the result, it can be concluded that the majority of the Sri Lankan listed manufacturing organizations use all ten groups of MAPs (costing system, budgeting, strategic planning, capital budgeting, risk management, value creation techniques, standard costing techniques, long-term decision system, resource utilization techniques, and short-term decision system). The finding also suggests that the level of adoption is higher for traditional MAPs (costing system and budgeting) than advanced MAPs. However, strategic planning which is an advanced MAP is recognized as an important MAP among the listed manufacturing companies in Sri Lanka.

This research also looked at the level of adoption of a variety of specific MAPs by Sri Lankan-listed manufacturing companies. Responses outlined the level of adoption of 57 MAPs under the ten broad groups mentioned above. The finding suggests that variable costing is the most commonly applied costing system while activity-based costing is the least costing system. The greater use of the variable costing method corresponds to the industries in which respondents are involved. The majority of listed manufacturing companies still use a complete set of functional, cash, and master budgets and strategic planning to a considerable degree. The most famous timing for the budget is by annual. Most respondents suggested that non-discounted cash flow techniques have been used highly than discounted cash flow techniques in evaluating capital budgets. The most widely used cost reduction program, value creation techniques are internal audit, continuous improvement programs, and value chain analysis. Under the short-term decision system, different inventory models and profitability analyses are mostly used. The risk management and quantification of risk are implemented by most of the responding organizations, however, the contemporary methods for quantifying risk are rarely adopted. Practices listed under resource utilization techniques long-term decision system are relatively limited and less frequent of adoption. The ideal standard is the most used standard among the responding organization as a standard costing technique.

The results provide some unique results in the Sri Lankan-listed manufacturing organizations' adoption level of MAPs. The findings show that Sri Lankan-listed manufacturing

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businesses, in general, have broadly used simple MAPs such as budgeting, costing systems, and strategic planning. The adoption of advanced techniques like activity-based costing, life cycle costing, and just in time, is likely to be inferior to that of the advanced techniques in the developed countries because the respondents are located in a developing country. This opinion is similar to Sulaiman et al. (2004) who appealed that China, Singapore, Malaysia, and India tend to use traditional MAPs like standard costing, cost volume profit analysis, return on investment, and budgeting compared to the advanced MAPs like total quality management, activity-based costing, target costing and balanced scorecards.

This position also receives support from other researchers in the developing countries including in India, Joshi (2001), in Vietnam, Anh and Mia (2011), and in Bali, Krisnadewi and Erawati (2018). Joshi (2001) concluded that autocratic leadership, Indian management's traditional attitudes, and long-term orientations, were the reasons for the poor use of newly evolved MAPs in Indian companies. Many Indian businesses consider it very costly to introduce modern MAPs specifically for benchmarking. There are other potential reasons like lack of experience, training, and knowledge in these fields. Subasinghe and Fonseka (2009) in Sri Lanka endorsed the view of Joshi (2001) by claiming that major reasons for lower adoption of MAPs were top management consciousness, degree of planning and control, secondary to financial accounting, and organizational cultural support. Studies in developed countries (Chenhall & Langfield-Smith, 1998; Abdel-Karder & Luther, 2006), though claiming the growing use of new MAPs, has agreed that the simple or conventional MAPs are still prevalent in most organizations. It is claimed that greater acceptance of conventional MAPs might be accredited because the information provided by these practices is the most available in contracts with advanced MAPs. Owing to the complexities, practicalities, and costs involved in receiving information, the advanced MAPs are not commonly in use.

Therefore, it is concluded that simple MAPs are widely used in Sri Lankan-listed manufacturing companies. The research suggests that there is sufficient scope to upsurge both the expertise and awareness of the importance of MAPs among the listed manufacturing companies in Sri Lanka as these practices play an important role in any organization's progress. The findings reveal that conventional and financial information-related MAPs have strong use, but the use of advanced MAPs appears to be occasional. Therefore, Sri Lankan policymakers may train the entrepreneurs and prospective graduates in Sri Lanka.

This study has increased the understanding of MAPs in the Sri Lankan context. As a developing economy, Sri Lanka has worked towards equivalence with more developed countries and finds it important to have the appropriate information to support the effort to improve Sri Lankan-listed manufacturing companies' performance. This research could also be used as a basis for further research and comparison of MAPs between other sectors of organizations listed under the Colombo Stock Exchange in Sri Lanka. Finally, this study offers further empirical evidence and elucidation on the adoption of MAPs in listed manufacturing companies in Sri Lanka and therefore promotes understanding of MAPs in developing countries like Sri Lanka.

This research has few limitations. First, only listed manufacturing companies were considered. Second, the data were collected using a questionnaire only. Application of a qualitative approach like case studies with different sectors like trading and service sectors would offer real insight that a questionnaire approach does not glean from.

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