Management Accounting Systems Changes and Practices Adopted by Large Manufacturing Companies in Nairobi Kenya

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Abstract

Better decisions and improved efficiency and effectiveness of existing operations are always attributed to the information provided by management accounting systems(MASs) in an organization. Based on Drury's (2008) suggestion for practice and theory in management accounting, this study explores the practical sense of management accounting by focusing on the potential influence of contextual variables on management accounting practices (MAPs) in large Kenyan manufacturing companies located in Nairobi. To compete successfully in today's highly competitive global environment, companies are adopting new MAPs, changing their manufacturing systems and investing in new technologies. This study focuses on the changes in MAPs and how such changes have been adopted by large manufacturing companies in Kenya. The findings indicate that many changes have taken place in management accounting techniques in the surveyed companies. Both traditional and advanced management accounting techniques are used by the surveyed organizations. Advanced management accounting techniques, notably, customer satisfaction, quality and innovation and on-time delivery, have been adopted, while traditional management accounting techniques, notably, incremental budgeting, variable costing, standard costing and variance analysis, sales and return on investment, are being maintained. Regarding changes in management accounting techniques the study established that the majority of the responding organizations indicated

changes relating to the introduction of new techniques as replacements, modification of information or output of its MAS and the introduction of new techniques where none existed.

Key words: *Management Accounting Systems, Practices, Adoption, Large Manufacturing Companies, Kenya*

Introduction

The origins of today's management accounting can be traced back to the industrial revolution of the nineteenth century. The emergence of managed, hierarchical enterprises during this period, such as armories and textile mills, resulted in management accounting costing techniques being established to provide information on costs in an attempt to improve the cost structure. Further innovations in MASs occurred in the early decades of the twentieth century to support the growth of diverse multi-activity corporations. Several important operating and budgeting activities were devised to coordinate activities and allocate resources to groups. The most important management accounting innovation was the return-on-investment (ROI) that provided an overall measure of the commercial success of each operating unit and of the entire organization.(Kaplan and Artkinson,2007).

Management accounting change refers to a move from the way in which a particular management accounting practice (MAP) or technique is applied. As such, management accounting change is found to consist of addition, replacement, output modification, operational modification and reduction (Sulaiman and Mitchell, 2005). Replacement of existing techniques and information output modifications have frequently been found to be highly significant. Changes in MASs range from the introduction of a comprehensive costing system, to tentative, partial and temporary ones of a more modest type (Anderson and Young, 2001), Innes and Mitchell,

1990). Instances of change have also been found to involve adding supplementary information to existing performance measurement packages (Vaivio, 1999).

Management accounting change is not a uniform phenomenon. Consequently one might expect the causal factors of change to vary and this has indeed been confirmed by management accounting researchers. It is evident that both external factors (environmental) and internal factors (relating to the organization concerned) have influenced the recent development of new MASs and techniques. According to Shields (1997), the potential change drivers are competition, technology and organizational design and strategies. These drivers of change also indicate the differing roles causal factors can have in the process of change. Change in the environment implies uncertainty and risk, creating the demand for a further change in management accounting (Vaivio, 1999).

According to Johnson and Kaplan (1987), most of the MAPs in use in the mid-1980s had been developed in 1925 and for the next 60 years there was a slowing down or even a halt in management accounting innovation. They claim that, over the years, organizations have become fixated on costs, and that MASs of the 1920s are obsolete and no longer relevant to the changing competitive and manufacturing environment. In the 1980s, major new challenges emerged for management accounting. Companies rediscovered the critical role that manufacturing plays in creating competitive advantage for their organizations. The quality of manufacturing and of product design were emphasized, as well as a reduction in inventory levels and manufacturing lead times represented by just-in-time production and the introduction of computer-controlled manufacturing operations. In this new manufacturing environment MASs must be designed to support the drive for manufacturing excellence. Measurement systems must evolve to

support efforts to increase quality and productivity, to move to just-in-time and computer-integrated manufacturing production systems and to invest in new technologies. Since the mid-1980s management accounting practitioners and academics have sought to modify and implement new techniques that are relevant to today's business environment (Kaplan and Atkinson, 2007).

Organizations commonly utilize traditional management accounting techniques, such as full costing, job order costing and process costing. Developments in management accounting in the past two decades have provided more advanced management accounting techniques, including activity-based costing (ABC), activity-based management (ABM), target costing, value-added accounting, cost of quality reporting, economic value added, life cycle costing, throughput accounting and back flush costing. These form a set of contemporary MAPs. Each technique has its advantages and disadvantages and may be applicable in certain circumstances.

Szendi and Elmore (1993) drew a distinction between contemporary and traditional MAPs. They found that new management accounting techniques are being adopted while traditional systems are being maintained, suggesting that management accounting is at a transitional stage. The inclination of organizations towards new management accounting techniques has been explained as being facilitated by management accountants whose behaviour is innovative and cognitive in style and so they are more likely to initiate radical changes in the practices of their organizations (Emsley *et al.*, 2006).

As can be seen in Osewe (1998) and Minja (1995), performance measurement techniques, which are one of the many management accounting practices, keep on changing. This study was aimed at finding out, in the Kenyan context, which of the various MAPs that have evolved

over time have been adopted in response to changes in the environment, culture, technology or any other contingent factor. In Kenya, for example, liberalization of the economy in the 1990s opened the door to intensive competition from overseas companies in the domestic market. This has resulted in a situation where most firms are now competing in a highly competitive global market. The government's policy of protection limited the ability of foreign companies to compete in the domestic market. This meant that there were few incentives for firms to maximize efficiency, improve MAPs or minimize costs. However, in the mid-1990s many organizations, including manufacturing firms, began to encounter severe competition from foreign competitors that offered high quality products at low prices. Privatization of government-controlled entities in the same period contributed to changes in the business environment.

Kenya's manufacturing firms are diverse in terms of the products they are engaged in and size as determined by the number of employees in such firms. These firms range from small and medium sized to large. Large manufacturing firms are those employing more than one hundred employees with an annual turnover or production level in excess of Kshs.500 million (International Finance Corporation,2002). Although these firms engage in the production of a wide range of products, food and beverages, metal engineering and textile firms account for 63% of manufacturing added value (GOK, 2006). The sector was developed under the import substitution policy (1967) but the policy's emphasis now is export-oriented industrialization. The sector is heavily dependent on the production of consumer goods. Government participation in the manufacturing sector is smaller than that of private enterprises due to the privatization policy. In the private sector, companies are owned and operated by both local and foreign investors. Most companies are subsidiaries of multinational corporations.

The large manufacturing firm sector was selected for this study because it is claimed that the origin of today's MASs can be traced back to the

industrial revolution, therefore making it reasonable to assume that manufacturing firms will pioneer the adoption of changes in MASs. Another criterion is that large manufacturing firms have adequate resources, and so can easily meet the cost of implementing changes in MASs.

Problem of Research

The business environment in Kenya has changed rapidly as a result of globalization. Since the liberalization of the Kenyan economy in the 1990s, this sector has continued to experience both global and local competition. In this regard, manufacturing firms are required to rethink and improve their processes. According to the directory of manufacturing industries, firms are classified as: food, beverages and tobacco; textile, wearing apparel and leather industries; manufacture of wood and wood products; manufacture of chemical, petroleum, rubber and plastic products; manufacture of non-metallic mineral products; basic metal industries; and manufacture of fabricated metal products, machinery and equipment.

The operating environment of manufacturing entities in which management accounting is practised has faced dramatic changes because of advances in information technology, the highly competitive environment, a change in customer demands and the focus on quality. In many developed countries MAPs have introduced new costs and MASs in order to cope with these changes in the operating environment. Such MASs include ABC, ABM, target costing, product life cycle costing, quality cost management, customer accounting, and the balanced scorecard approach to performance measures. For example, in Canada, Libby and Waterhouse (1996) reported a 31% change in MASs within a period of three years, refuting claims that management accounting is generally resistant to change. In the UK, Burns et al (1999) found significant changes in MAPs in the last decade. They argued that the changes were due to the way in which management

accounting is used and not necessarily to the introduction of new systems or techniques. A 1990 UK survey reported by Bromwich and Bhimani (1994) indicates that the cost management techniques most commonly used or planned to be used by UK firms were ABC, cost modelling and cost of quality. Other techniques were target costing, strategic management accounting and throughput accounting. The 1990 survey is consistent with Boer (2000) that found an emphasis on strategic management. A USA survey by Silk (1998) estimated that 60% of Fortune 1000 firms have introduced a balanced scorecard.

However, little research has been conducted on the adoption of these practices in developing countries. For example, Cadez and Guilding (2007) surveyed manufacturing companies in Slovenia that had adopted Australia's strategic management accounting system, but found it had not been uniformly adopted. Some techniques that are highly ranked in one country had relatively lower ranking in another country. They attributed this to contextual differences in the economy and culture of the countries. Wallace (1990) in his study found no differences in techniques in rich and poor countries, although Less Developed Countries (LDCs) import grossly inappropriate practices. Wallace, from his study, found no management accounting system that is unique to LDCs.. Wallace (1990) claims that accounting in LDC institutions is a tale of the importation of western practices by transnational accounting firms.

Bromwich and Bhimani (1989) argue that merely transplanting new MASs devised in foreign settings for coping with the changing business environment is not totally satisfactory because of the diverse conditions under which different companies operate. They further argue that consideration should always be given to the political, economic, social and cultural environment that surrounds a firm. Evidence of the use of contemporary and more

sophisticated management accounting tools and techniques in emerging and/or developing nations remains mixed and does not currently suggest a "natural" evolution as argued by (Van Triest and Elshahat, 2007).

A management accounting system is contingent upon many factors and therofore it is important to note that an organization's competitive advantage can be a derivative of the MAPs and MASs adopted by it. Understanding these factors and the nature of the MAPs and MASs adopted by organizations needs to be documented. Contingent factors vary from one organization to another and it is impossible to describe the character and prevalence of each factor of management accounting. The circumstances in which organizations find themselves are distinctive in nature and largely affect the adoption, mechanism and sophistication of their MAS.

The focus of this paper is large manufacturing entities in Nairobi, Kenya. Prevoius studies like those by Waweru *et al.* (2004), Osewe (1998) and Minja (1995) focused on the MAPs adopted by organizations, for example, performance measurement techniques. This paper aims to examine the changes in MASs and MAPs and the factors that enhance or hinder their adoption over time. It aims to bridge the knowledge gap by finding out what MAPs or MASs are being used and what factors affect the changes in MAPs.

Research Focus

Contigency Theory in Managerial Accounting

The contingency theory of management accounting describes the situational factors and states that an MAS is contingent upon these factors in reality. These idiosyncratic circumstances or contingent factors are major contributors to the non-formation of a universally accepted effective MAS.

The contingency theory can be applied by studies investigating the adoption of MASs and MAPs. It is a methodology for studying organizational behaviour and for demonstrating how contingent factors such as technology, culture, the environment (both internal and external) and management influence the structure, design and function of organizations.

The contingency theory assumes that no single type of organizational structure and/or design is equally applicable to all firms operating in a given economy. It contends that organizational effectiveness is dependent on a fit between the type of technology, culture, environment and the size and type of the organization and the design or structure of the information system.

This paper investigates the extent to which MAPs have been adopted, the accompanying changes over time in MASs, and the factors affecting these two aspects,. It therefore draws on the contingency theory.

Empirical Literature Review

Changes in MASs entail a move from using traditional management accounting techniques/tools to using innovative or contemporary MAPs. The changes may also encompass the way in which management accounting is used and not necessarily the adoption of new management techniques.

Chenhall and Langfield-Smith (1998), surveying the Australian manufacturing sector, found that traditional management accounting techniques had been more widely adopted than recently developed techniques and that greater attention is being paid to newer techniques, especially activity-based techniques and benchmarking. Their concluding comments suggest that future research should be directed at gaining a better understanding of the factors that influence differences between countries

in the level of adoption of recently developed management accounting techniques.

Joshi (2001) reported on a survey administered in 1998 among 60 Indian industrial firms. Overall, the level of sophistication seems high: 65% of the respondents use multiple allocation bases, and ABC adoption in the sample is 20%. ABC adoption seems especially high, given that reported adoption rates in Western countries range between 10 and 20% (Brown *et al.*, 2004, p. 330) .

Haldma and Laats (2002) conducted research in Estonia using the contingency theory. Estonia regained its independence in 1991 and has since undergone fundamental political and structural changes. These changes were found by the researchers to have influenced the operations of the companies there. The authors found some evidence that changes in cost and MAPs are associated with shifts in the business and accounting environment as external contingencies, and with changes in technology and organizational aspects as internal contingencies. Of their sample, 7% use ABC. Multiple allocation bases for costs are used by 70% of respondents. Haldma and Laats (2002, p. 395) also observe that, in their sample, the "level of sophistication of a cost accounting system tends to increase in line with company size".

The survey reported on by Garg et al. (2003) was conducted in 2003 and it found that traditional management accounting techniques are still widely used and new cost management techniques are not a priority. The survey also found that the most widely used techniques were operational budgeting, quantitative techniques, traditional costing and overheads allocation. The techniques also used widely were ABM and standard costing, capital budgeting, break-even analysis and transfer prices. Other techniques, which were newer management accounting developments such as the balanced

scorecard, value chain analysis and supply chain costing, were rarely adopted.

Clarke *et al.* (1999) studied the state of MAPs in Ireland. The data were collected from a questionnaire survey mailed to 511 Irish manufacturing companies. They found that ABC systems were not as widely used in Irish companies as in companies in the USA, the UK and Canada, because "the practice of management accounting in Ireland is marginalized." In other words, Irish management accountants work as record keepers rather than innovators and decision facilitators, possibly due to supply and demand barriers. Also, the results indicate that ABC was not well understood by Irish management accountants.

Xiao *et al*. (2007) studied the use of MAPs in China and attempted not only to establish if there had been an increase in the use of MAPs by businesses in China but also to see if there were differences in use, depending on businesses' location in China, the industry type and the size of the business. They found that in general there had been an increase in the use of MAPs but that the various degrees of regional economic development in China had little impact on that use. However, based on their observations, they concluded that larger firms and firms in the manufacturing sector are more likely to have implemented management accounting methods.

Waweru *et al.* (2004) conducted research on changes in management accounting in South Africa. The research was done using the contingency theory framework, using four retail companies to gain an understanding of the changes in their MASs and to find out the reasons for them. The findings indicate that considerable changes have taken place in the MASs in the four cases. Such changes include increased use of contemporary MAPs, notably ABC allocation system and the balanced scorecard approach to measuring performance. The paper suggests that recent environmental

changes in the South African economy arising from the government's reform/ deregulation policy and global competition largely facilitated the changes in the MASs of the participating organizations.

Mat *et al.* (2010) studied management accounting and organizational change in Malaysian manufacturing firms. They found that the majority of responding companies had reacted positively to changes in the competitive business environment and advanced manufacturing technology. Significant changes in MAPs were also influenced by structure and strategy.

Studies that have been carried out in Kenya have largely concentrated on the application of specific MAPs. Minja (1995) sought to find out whether divisionalised companies measure the performance of their divisions, what the objective of performance measurement was and what indicators were used to measure performance. He concluded that control, profitability, planning and strategy formulation, managerial performance, investment decisions and managerial remuneration were the main objectives of performance measurement. The main measurement indicators were accounting profit, return on investment, residual income and sales revenue.

Osewe (1998) studied the factors guiding the choice of performance measures used and the association between organizational characteristics and performance measurements. His conclusion was that most firms preferred financial measures to non-financial measures. Waweru (1999) carried out a survey on the application of MAPs by publicly quoted companies in Kenya. The findings from his analysis led to the following conclusions; budgeting was the mostly used practice, planning and control were indentified as the major purposes of management accounting reports, simple management accounting techniques were found to be preferred to complex techniques and management accounting theory related well with practice.

These studies examined the kind of practices that organizations apply most (Wangari 2008, Arithi 2001, Nzule 1999, Waweru 1999, Osewe 1998 Gathumbi 1997 and Minja 1995), but none has sought to explore why and how management accounting systems have changed and why new or innovative practices have or have not been adopted in the Kenyan context.

This study sought to bridge this knowledge gap. It is against this background that the following research questions arose: in the last two decades what changes have occurred in MASs in large manufacturing companies in Nairobi, Kenya and what factors facilitate/hinder changes taking place in MASs in large manufacturing companies in Nairobi, Kenya?

The study specifically sought to explore what changes have taken place in MASs in large manufacturing companies in Nairobi, Kenya, to establish what MASss have been adopted by large manufacturing companies in Nairobi, Kenya and to identify the factors that facilitate/hinder changes taking place in MASs in large manufacturing companies in Nairobi, Kenya.

Methodology of Research

Research Design

This study employed a descriptive survey research design. A descriptive survey is used to collect data from members of a population in order to determine the status of that population with respect to one or more variables (Mugenda and Mugenda, 2003). Descriptive survey designs are appropriate where gaining an understanding of the characteristics of a population and the way in which they use common practices is sought (Sekaran, 2007). The study focused on large manufacturing companies located in Nairobi because most of them are concentrated in Nairobi and so they represented all the categories that were required for the study. It was found to be convenient for collecting data given the available time.

Sample of Research

The population of the study comprised all the large manufacturing companies in Nairobi. Large manufacturing companies are those employing more than one hundred employees and/or with an annual turnover or production level in excess of Kshs.500 million(International Finance Corporation, 2002). As at June 2007, there were 2,085 manufacturing companies in Kenya (GOK), of which759 were located in Nairobi.

The disproportionate stratified random sampling technique was used to select a sample of 50 companies. This was considered adequate for this study because a sample of 50 is well above that of 30, which has been recommended as the minimum sample size for surveys (Saunders et al. 2000). In similar studies on manufacturing companies in Kenya, Nzule, 1999, and Odongo, 2008, used a sample size of 35 and 30, respectively.The classification and sample selection is presented in Table 1.

Table 1: *Sampling Procedures*

Category	*Total Number in Category*	*Proportion (%)*	*Sample Size*
Agro processing.	226	29.8	15
Wood and wood products.	74	9.7	5
Capital goods & spare parts.	28	3.7	2
Iron and steel products	43	5.7	3
Electrical and electronics.	24	3.2	2
Construction & equipment.	54	7.1	3
Pulp and paper	114	15	7
Chemical processing	134	17.6	9
Ceramics and glass making	62	8.2	4
Total	**759**	**100**	**50**

The number of employees was used to determine the firm's size. Large manufacturing firms are those employing more than 100 staff according to the Kenya Industrial Research Development Institute (KIRDI, 1997).

Instrument and Procedures

Primary data was collected for this research, using a semi-structured questionnaire. The questionnaire was administered through the drop-and–pick-up-later method, accompanied by a covering letter explaining the purpose of the study and assuring confidentiality of the information provided.

The questionnaire was administered to executives in firms' accounting and financial departments (management accountants) or their equivalent that had a firm knowledge of the cost and MAPs that had been adopted and used by their firms. The survey covered the large manufacturing firms based in Nairobi, according to their number of employees selected from the KIDRI directory.

Data Analysis

The data was checked for completeness, coded and presented using tables. Demographic data of the firms used in the survey is presented in tables. Data was analyzed using descriptive statistics for data based on scales, and regression-path analysis using the Statistical Package for Social Sciences (SPSS) for data relating to contextual variables having an influence on MAS changes or adoption. The analysis was tied to each objective so as to reach a reliable conclusion.

Validity of the research instrument was established by presenting it to a panel of three accountants with long experience of management accounting to refine its content. Construct validity was tested to see how well the

collected data correlated to theory. Reliability of the research instrument was established through a pilot study in one of the large manufacturing firms that was not included in the study. Any ambiguities, weaknesses and inconsistencies that were noted were corrected before actual data collection.

Results of Research

The Profile of the Companies

This section presents the profile of the responding companies. The majority of the respondents are companies with a business life of over 20 years (93.8%), followed by companies that have been in existence for 11-20 years (6.3%) and none of the respondent companies has a business life of less than 10 years. Out of the various industries engaged in this study, only 11 (34.4%) are local companies, while 20 (62.5%) are foreign companies operating in Kenya. The sample consisted of 50 manufacturing companies, of which 32 responded. Out of the 32 companies participating in this research, 34.4 % produce consumer products, 62.5% supply industries and 3.1% supply both consumers and industries. Of the responding companies, 18.8% have an annual turnover of less than Kshs.500 million, while 71.9 % have an annual turnover of over Kshs.500 million.

As regards number of employees, the majority of the respondents indicated that they had 200-499 (53.1%) employees, followed by those with over 500 employees (25%) and 100-199 employees (21.9%).

In terms of industry category, as presented in table 1, it can be seen that the majority of the respondents are in chemical processing (31.3%), followed by agro processing (25%), pulp and paper (12.5%), construction and equipment (9.4%), wood and wood products, iron and steel products and ceramics and glass making (6.3%) each, capital goods and spare parts (3.1%) with no response from the electrical and electronics industry.

Management Accounting Systems in Use

The respondents were asked to indicate whether they use the 23 systems listed, which were adopted directly from Libby and Waterhouse (1996), and whether such systems have been changed in the last 10 years. The findings are presented in Table 2. From the table it can be seen that most of the respondent manufacturing companies in Kenya use most of the MASs listed in the table. These are organizational performance measurement systems (65.6%); direct allocation of manufacturing overheads (59.4%); measures of performance in terms of quality and the use of more non-financial performance measures (53.1%); capital budgeting systems (50.0%); strategic planning systems (46.9%); operational planning (43.8%); budgeting, individual or team-based performance measurement, direct allocation of other overheads and information reported more frequently (40.6%). MASs other than those listed in Table 2 were reported to be used minimally by the surveyed organizations.

However, as to whether the systems have changed in any manner over the last 10 years, it can be seen that the frequency of change is smaller than the frequency of use in most systems. The least number of changes are reported with respect to direct allocation of manufacturing overheads (15.6%), reward system - bonuses (15.6%) and organizational performance measurement systems (18.8%).

Table 2: *Management Accounting Systems*

Management Accounting System	*Being Used*		*Have Changed*		*No Response*	
	Frq.	*%*	*Frq.*	*%*	*Frq.*	*%*
Budgeting	13	40.6	10	.3	9	28.1
Operational planning	14	43.8	11	34.4	7	21.9
Capital budgeting	16	50.0	10	31.3	6	18.8
Strategic planning	15	46.9	10	31.3	7	21.9
Other planning systems	7	21.9	8	25.0	17	53.1
Individual/team-based performance measurement	13	40.6	8	25.0	11	34.4
Organizational performance measurement	21	65.6	6	18.8	5	15.6
Measurement of performance in terms of quality	17	53.1	8	25.0	7	21.9
Measurement of performance in terms of customer satisfaction	12	37.5	9	28.1	11	34.4
Other performance measures	6	18.8	9	28.1	17	53.1
Direct allocation of manufacturing overheads	19	59.4	5	15.6	8	25.0
Direct allocation of marketing costs	12	37.5	8	25.0	12	37.5
Direct allocation of other overheads	13	40.6	8	25.0	11	34.4
Internal product transfers	9	28.1	6	18.8	17	53.1
Other costing systems	9	28.1	6	18.8	17	53.1
Reward systems – bonuses	16	50.0	5	15.6	11	34.4
Reward systems – pay for performance plans	12	37.5	10	31.3	10	31.3
Other reward systems	14	43.8	6	18.8	12	37.5
Information reported more frequently	13	40.6	7	21.9	12	37.5
Use of more non-financial measures	17	53.1	9	28.1	6	18.8
Information reported more broadly	6	18.8	10	31.3	16	50.0
Other changes to reporting systems	5	15.6	12	37.5	15	46.9
Other changes to systems that do not appear in this list	7	21.9	8	25.0	17	53.1

Source: *Survey Data*

Change in Management Accounting Techniques

Descriptive statistics for changes in management accounting techniques are presented in table 3. The results show a higher percentage of use of

traditional management accounting techniques. These results are consistent with the literature on the management accounting techniques applied in developing countries. Large manufacturing companies in Kenya still focus more on using traditional management accounting techniques. From table 3 the results show that the most popular traditional management accounting techniques used are sales (N/A= 0%), standard costs and variance analysis (N/A=3.1%), residual income (N/A= 6.3%) and incremental budgeting (9.4%). This is consistent with the findings of Chenhall and Langfield-Smith (1998). The most popular advanced management accounting techniques are quality and innovation (N/A= 6.3%) and labour efficiency (N/A=9.4%), while the advanced techniques rarely adopted by Kenyan manufacturing companies are beyond budgeting (N/A=75%), economic value added (N/A=37.3%), value chain costing and attribute costing (N/A=34.4%), target costing, life cycle costing and balanced scorecard (N/A= 31.3%). This is consistent with the findings of Arithi (2001), which revealed that the balanced scorecard and value chain costing did not appear to have taken root in large manufacturing firms in Kenya.

Table 3: *Change in Management Accounting Techniques*

Change in MAT	*No Change*	*New Techniques*	*New Techniques as Replacement*	*Modification of Output*	*Modification of Technical Operation*	*Abandonment*	*Mean*	*SD*	*N/A*
	%	%	%	%	%	%			%
Incremental budgeting	18.8	9.4	18.8	25.0	6.3	12.5	2.7	1.9	9.4
Activity-based budgeting	0	9.4	21.9	6.3	12.5	3.1	4.1	1.9	43.8
Zero-based budgeting	12.5	3.1	21.9	3.1	0	0	4.0	2.4	56.3
Beyond budgeting	3.1	3.1	6.3	6.3	3.1	0	5.1	1.7	75.0

Change in MAT	*No Change*	*New Techniques*	*New Techniques as Replacement*	*Modification of Output*	*Modification of Technical Operation*	*Abandonment*	*Mean*	*SD*	*N/A*
	%	%	%	%	%	%			%
Full absorption	25.0	9.4	21.9	3.1	9.4	3.1	2.5	2.3	18.8
Variable/marginal costing	18.8	6.3	21.9	18.8	9.4	0	2.6	2.0	15.6
Activity-based costing	12.5	6.3	18.8	12.5	12.5	0	3.3	2.2	28.1
Residual income	37.5	12.5	15.6	9.4	6.3	0	1.5	1.8	6.3
Sales	43.8	9.4	15.6	15.6	9.4	3.1	1.5	1.6	0
Return on investment	25.0	12.5	15.6	12.5	9.4	0	2.3	2.1	15.6
Economic value added	9.4	6.3	15.6	0	21.9	0	3.9	2.2	37.5
Balanced scorecard	12.5	9.4	12.5	6.3	12.5	3.1	3.5	2.3	31.3
Standard costs and variance analysis	34.4	6.3	12.5	9.4	15.6	6.3	1.9	1.9	3.1
Customer satisfaction	37.5	3.1	15.6	3.1	15.6	0	2.0	2.2	12.5
Labour efficiency	31.3	9.4	15.6	12.5	9.4	3.1	2.1	2.0	9.4
Quality and innovation	28.1	18.8	15.6	3.1	12.5	3.1	1.9	1.9	6.3
On-time delivery	31.3	15.6	15.6	3.1	12.5	3.1	2.1	2.2	12.5
Target costing	12.5	18.8	25.0	3.1	3.1	0	2.9	2.3	31.3
Life cycle costing	18.8	9.4	12.5	9.4	6.3	0	3.1	2.4	31.3
Benchmarking	28.1	9.4	9.4	15.6	15.6	0	2.5	2.1	15.6
Just-In-time	15.6	12.5	12.5	18.8		0	3.0	2.3	28.1
Total quality management	25.0	12.5	15.6	6.3	15.6	0	2.3	2.1	12.5
Attribute costing	21.9	6.3	6.3	12.5	6.3	0	3.3	2.5	34.4
Competitive position monitoring	25.0	9.4	15.6	9.4	15.6	3.1	2.7	2.2	18.8
Competitor cost assessment	18.8	12.5	15.6	9.4	6.3	0	2.8	2.3	25.0
Competitor performance appraisal	18.8	6.3	15.6	12.5	6.3	0	3.1	2.4	28.1
Customer profitability	25.0	9.4	18.8	9.4	6.3	0	2.6	2.3	21.9
Balanced scorecard	9.4	9.4	18.8	9.4	3.1	0	3.7	2.3	43.8
Lifetime customer profitability analysis	9.4	9.4	18.8	9.4	12.5	0	3.5	2.2	34.4
Quality costing	12.5	18.8	6.3	12.5	12.5	0	3.2	2.3	28.1
Strategic pricing	18.8	6.3	12.5	15.6	6.3	0	3.2	2.4	31.3
Value chain costing	18.8	9.4	12.5	12.5	6.3	3.1	3.2	2.4	34.4
Average	**-**	**-**	**-**	**-**	**-**	**-**	**2.9**	**2.1**	**-**

Source: *Survey Data*

Likert scale of 0-5: 0=No change; 1=New techniques; 2=New techniques as replacements; 3=Modification of information output; 4=Modification of technical operations; 5=Abandonment; N/A= Not applicable

Changes in Management Accounting Dimensions

Table 4 represents the frequency of changes in management accounting dimensions in each respondent's company. The results show that a majority of the responding companies have not made changes in their management accounting techniques (31.23%). Excluding this group, the most commonly occurring changes are the replacement of management accounting techniques (23.31%) and information output modification (14.81%). This is consistent with Sulaiman and Mitchell (2005). The introduction of new techniques (14.52%) was ranked fourth. The modification of the technical operation of the MAS and the removal of replacements (abandonment) show the lowest percentages (13.93% and 2.2%, respectively).

Table 4: *Changes in Management Accounting Dimensions*

Dimensions of Change	*Frequency*	*Percentage (%)*	*Rank*
No change	213	31.23	1
Introduction of new techniques	99	14.52	4
Introduction of new techniques as replacements	159	23.31	2
Modification of information or output	101	14.81	3
Modification of technical operation	95	13.93	5
Abandonment	15	2.20	6
	682	100.00	

Source: *Survey Data*

Factors Facilitating Changes in Management Accounting

This section presents an analysis of the factors facilitating changes in the adoption and use of management accounting systems and techniques.

Competition: The descriptive statistics for all the indicators of the competition variable as a factor stimulate changes in management accounting are presented in Table 6. The results indicate that competition positively influences changes in management accounting and all the indicators seem to be equally likely with an overall mean of (3.67). However, competitors' actions and competitors' markets/channels were found to have the greatest influence, with a standard deviation of (0.99 and 1.19, respectively).

Table 5: *Competition*

Competition	*Negligible %*	*Less Negligible %*	*Moderate %*	*Intense %*	*Extremely intense %*	*Mean*	*S.d*
Price competition	15.6	0	18.8	25.0	34.4	3.67	1.42
New product development	9.4	12.5	21.9	37.5	15.6	3.39	1.20
Marketing/channels	6.3	6.3	21.9	28.1	28.1	3.72	1.19
Competitors' actions	3.1	3.1	18.8	37.5	31.3	3.97	.99
Competitors' markets	9.4	9.4	18.8	28.1	28.1	3.60	1.30
Average	-	-	-	-	-	3.67	1.23

Likert scale of 1-5: 1=negligible; 2=less negligible; 3=moderate; 4=intense; 5=extremely intense.

Source: *Survey Data*

Manufacturing technology: Table 7 presents the descriptive statistics for all variables in manufacturing technological advancements. The results show that most of the respondents indicated that flexible manufacturing technology and computer-aided manufacturing were the most important indicators, with standard deviations of (1.22 and 1.36, respectively).

Table 6 : *Manufacturing Technological Advancements*

Manufacturing Technologies	*Irrelevant %*	*Less Irrelevant %*	*Moderate %*	*Important %*	*Extremely Important %*	*Mean*	*S.d*
Flexible manufacturing systems	6.3	9.4	9.4	34.4	37.5	3.90	1.22
Computer-aided manufacturing	12.5	9.4	9.4	37.5	28.1	3.61	1.36
Just-In–Time	21.9	9.4	12.5	21.9	31.3	3.32	1.58
Computer–int. manufacturing	28.1	9.4	18.8	21.9	15.6	2.87	1.50
Others	6.3	0	0	9.4	6.3	3.42	1.72
Average	-	-	-	-	-	3.42	1.47

Likert scale of 1-5: 1=Irrelevant; 2=Less irrelevant; 3=Moderate; 4=Important; 5=extremely important.

Source: *Survey Data*

Organizational strategy: The literature identified strategy as the most important factor for the survival of any organization. This is evident from the results presented in Table 8. The majority of the respondents reported an increased emphasis on their organizational strategy. The indicators were rated as either important or extremely important by most respondents. The results indicate that strategies that focus on the customer are emphasized more by the surveyed organizations (for example, provide high quality products - 68.8%, provide on-time delivery - 40.6% and make dependable delivery promises - 34.4%). Except for provide low costs (9.4%) and provide unique products (6.3%), none of the strategic variables was identified as irrelevant. The items - provide high quality products, provide on-time delivery and make dependable delivery promises - are seen as the most important strategies, with standard deviations of (0.66, 0.79 and 0.80, respectively). Therefore, strategy is greatly emphasized as it has an average mean score of (4.11).

Organizational structure: Table 9 provides details of the descriptive statistics for organizational structure items. Improved communication was emphasized by the majority of responding organizations, which (40.6%) of the respondents rated extremely important, with a standard deviation of (1.11). However, an interesting result is indicated by the respondents in the decentralization item, which (25.0%) rated as an irrelevant variable in influencing changes in management accounting, while another (25.0%) rated the variable as extremely important and (15.6%) rated it as moderate. This clearly indicates that some large Kenyan manufacturing companies have vertical structures and others have horizontal structures.

Table 9: *Structural Changes*

Organizational Strategy	*Irrelevant %*	*Less Irrelevant %*	*Moderate %*	*Important %*	*Extremely Important %*	*Mean*	*S.d*
Provide on-time delivery	0	3.1	9.4	37.5	40.6	4.28	0.79
Make dependable delivery promises	0	3.1	12.5	40.6	34.4	4.17	0.80
Provide high quality products	0	3.1	21.9	0	68.8	4.67	0.66
Provide low costs	9.4	3.1	25.0	28.1	25.0	3.62	1.23
Provide unique products	6.3	6.3	21.9	21.9	37.5	3.83	1.23
Average	-	-	-	-	-	4.11	0.95

Likert scale of 1-5: 1=Irrelevant; 2=Less irrelevant; 3=Moderate; 4=Important; 5=Extremely important.

Source: *Survey Data*

Hindrances to Changes in Management Accounting

Table 10 provides details of the descriptive statistics for variables that act as hindrances to changes in management accounting. All the variables positively hinder changes in management accounting. Of the variables lack of top management support and lack of adequate computing resources

were emphasized by the respondents, rating them extremely important by (37.5% and 31.3%, respectively). These results support the findings of Al-Omiri and Drury (2007) that high quality information systems are useful for providing the detailed data needed for more sophisticated costing systems. The lack of adequate computing resources limits the introduction of changes in management accounting.

Table 10: *Factors Hindering Changes in Management Accounting*

Organizational Size and type	*Irrelevant %*	*Less Irrelevant %*	*Moderate %*	*Important %*	*Extremely Important %*	*Mean*	*S.d*
Increase in acc. staff	18.8	12.5	31.3	18.8	12.5	2.93	1.31
Expansion	6.3	6.3	25.0	34.4	25.0	3.67	1.14
Increase in resources	3.1	6.3	18.8	43.8	18.8	3.75	0.98
Average	-	-	-	-	-	3.45	1.14

Likert scale of 1-5: 1=Irrelevant; 2=Less irrelevant; 3=Moderate; 4=Important; 5=Extremely important.

Source: *Survey Data*

Overall Rating of Contextual Variables

Table 11 presents the descriptive statistics for the overall rating of the factors facilitating changes in management accounting. The average mean score of (3.80) shows that these factors positively influence changes in management accounting. The results presented in table 11 show that competition and organizational strategy are more influential factors than the others, with a standard deviation of (0.78 and 0.80, respectively), indicating an insignificant variation in the respondents. This is consistent with Waweru et el (2004), who found that competition was a major factor influencing changes in management accounting. This is also consistent with Langfield-Smith (1997), who found that strategy influences MASs, and Kober et al (2007), who argued that MASs both shape and are shaped by strategy. Robbins (1990) emphasized structure.

Table 11: *Overall Rating of Contextual Variables*

Contextual variables	*Irrelevant %*	*Less Irrelevant %*	*Moderate %*	*Important %*	*Extremely Important %*	*Mean*	*S.d*
Competition	0	3.1	18.8	46.9	25.0	4.00	.78
Manufacturing technology	3.1	9.4	15.6	21.9	40.6	3.96	1.18
Organizational strategy	0	0	28.1	34.4	28.1	4.00	0.80
Organizational size and type	3.1	12.5	28.1	25.0	21.9	3.55	1.12
Organizational structure	9.4	9.4	25.0	18.8	28.1	3.52	1.32
Average	-	-	-	-	-	3.81	1.04

Likert scale of 1 to 5; 1=irrelevant; 2= less irrelevant; 3= moderate; 4 =important; 5= extremely important

Source: *Survey Data*

The descriptive statistics in Table 11 are supplemented by a summary of the regression analysis in Table 12. The fit of the contextual variables (independent variables) and the management accounting change index (dependent variable) was tested. The results show that competition and structure have a positive relationship with changes in management accounting, having coefficients of (4.262 and 2.864, respectively) explaining 15.3% of the change in MASs.

Table 12: *Summary of Regression Analysis*

Coefficients (a)

Model	*Unstandardized Coefficients*		*Standardized Coefficients*			*95% Confidence Interval for B*	
	B	*Std. Error*	*Beta*	*T*	*Sig.*	*Lower Bound*	*Upper Bound*
(Constant)	20.932	7.845		2.668	.014	4.704	37.160
Competition	4.262	1.722	.498	2.475	.021	.700	7.824
Manufacturing technology	-.024	1.240	-.004	-.019	.985	-2.588	2.541
Organizational strategy	-1.814	2.261	-.219	-.802	.431	-6.492	2.864
Organizational size and type	-1.740	2.100	-.293	-.828	.416	-6.085	2.605
Organizational structure	2.864	1.676	.571	1.709	.101	-.602	6.330

Source: *Survey Data*

Discussion and Conclusion

This study was about changes in MASs, the MAPs adopted by large manufacturing companies in Nairobi, Kenya and some of the factors facilitating/hindering changes being made in MASs. The objectives of this study were to explore what changes have been made in MASs, to establish what MASs have been adopted by large manufacturing companies in Nairobi, Kenya, and to identify the factors that facilitate/hinder the introduction of changes in MASs in large manufacturing companies in Nairobi, Kenya. The study was grounded on two theories, namely, the contingency theory and the institutional theory of management accounting, which seek to explain why organizations tend to change their MAPs.

The paper utilized the descriptive survey research design. The study setting was large manufacturing companies located in Nairobi. Disproportionate stratified random sampling was used to select a sample of 50 companies

for the survey. However, the response rate was that 32 (64%) of the sampled companies participated in the survey, while 8 (16%) returned blank questionnaires, citing confidentiality of the information requested and lack of time to fill in the questionnaire as the main reasons. However, 10 (20%) of the sampled companies declined to take part in the survey.

The paper used primary data collected using a semi-structured questionnaire. The data obtained from the responding companies was analyzed using descriptive statistics. A multiple regression path analysis was used to analyze the extent to which changes in MASs are influenced by the identified contextual variables.

Conclusion

For an organization to survive in a competitive and ever changing world, it must change and put in place sound MAPs. This is what the study sought to find out from Kenyan manufacturing companies. The findings provide insights into the objectives the study aimed to achieve. With regard to changes in MAPs, the findings indicate that there have been some changes in the way in which MAPs are applied. Most of the respondents indicated changes in the dimensions of introduction of new techniques as replacements for existing parts of the management accounting system (23.31%), modification of the information or output of the MAS (14.81%), introduction of new techniques where no management accounting technique previously existed (14.52%), modification of the technical operation of the management accounting techniques (13.92%) and abandonment (2.2%). These changes have taken place in local and foreign companies with branches in Kenya. The study provides evidence for rejecting the general view that management accounting has not changed or is resistant to change.

As regards the kind of MASs adopted by large Kenyan manufacturing companies, the research findings indicate that most of the systems listed

are used by the surveyed organizations. Also from the findings it became evident that both traditional and advanced management accounting techniques have been adopted, although traditional techniques are being maintained. This was evident from the aspect of changes in management accounting relating to abandonment, recording the lowest score of (2.2%).

The third objective was to identify the factors facilitating/hindering the adoption of changes MASs. The findings from this study support the view that the internal and external environment of an organization have an impact on its MAS. The findings illustrated that it was important that MASs were changed in order to cope with changes in the business environment. Further, the findings provided more evidence on the contingent factors that force organizations to change their MAPs, the subject of prior research (Hoque and Hopper, 2004; Shields, 1997). The increase in global competition, structure and organizational strategy were the main contextual factors stimulating changes in MASs in the surveyed organizations.

Further, this study found out that lack of top management support, lack of adequate computing resources and lack of autonomy being given by the parent company were highlighted as the most critical factors acting as hindrances to changes in MASs. Also, group pressure may dictate the kind of practices adopted. This was evident from the study findings that any changes that were adopted by companies, which are subsidiaries, had to conform to those of the parent company. Some respondents indicated that whatever management accounting techniques are in place in their organizations were approved by the parent company.

Limitations of the Study

There are a number of limitations to these research findings. First, due to the relatively small sample size any generalization of the study results to non-manufacturing organizations or beyond cannot be made without caution. Second, the relatively low response rate is a major limitation in

this research, for example, the decline by quite a number of the sampled companies to take part in the survey, some returning blank questionnaires and response bias due to the unwillingness of other respondents to provide accurate information. Third, most of the findings in the study are from quantitative data and do not provide an in-depth understanding of the subject. Thus, a different approach, such as a qualitative case study, may shed light on this issue.

Recommendations and Suggestions for Further Research

To enhance the adoption of changes in MASs, the study suggests that the relevant professional accounting bodies establish a unit that promotes and implements the use of advanced management accounting techniques in Kenya. This professional association needs to maintain its leadership role of identifying, supporting and educating its members on the positive changes taking place in the management accounting profession. This unit will specifically need to encourage and support the interaction between accounting educators and practitioners in the country.

The management accounting applications can also be promoted to all industries and the public by encouraging research and writing on the topic of advanced management accounting. In addition, detail explanations need to be given to the management of manufacturing entities and the public about the difference between management accounting and the financial accounting. More articles and publications on management accounting should be printed in journals, magazines and other media. Successful changes in management accounting applications should be written about and printed in journals, magazines and other media, using a range of organizational role models to convince business organizations and the public that the new management accounting practices would be relevant to their own firms.

Further, the unit established should actively provide a consultancy service and technical support, and train management in how to apply up-to-date management accounting techniques. At workshops and professional events specific organizations and companies, especially manufacturing concerns, should be targeted to improve the rate of adoption of advanced management accounting techniques. Finally, it should be made mandatory for companies to incorporate management accounts in their financial statements.

The same research may be conducted focusing on service organizations in the Kenyan context to gain more understanding of this sector, as these entities have become increasingly important in most economies. As the sample used was small, similar research could be conducted on a developing country using the case study approach with a larger sample, which may provide more information on the issues explored in this study. A study could be conducted on the influence of contextual variables on changes in management accounting systems and their impact on organizational performance in a developing country context.

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