SURVEY OF ACTIVITY-BASED COSTING SYSTEM IMPLEMENTATION IN NIGERIA MANUFACTURING SECTOR

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Abstract

The relevance of the traditional volume-based cost allocation practices in today's manufacturing environment has been questioned and strongly criticized. In other to overcome the deficiencies of the traditional volume-based costing system and to provide more accurate information for management planning and control, activity-based costing was proposed. However, till date, there is virtually little or no study that has reported the extent of activity-based costing implementation in the Nigerian manufacturing sector. Thus, this study sets out to ascertain the extent of activity-based costing implementation in the Nigerian manufacturing sector. The population of the study comprises the 86 manufacturing companies quoted in the Nigerian Stock Exchange Market. Using survey design, data were obtained 24 randomly selected manufacturing companies through the administration of structured questionnaire. Descriptive statistics was employed in the analysis. The result of the analysis revealed that there is 74.2% activity-based costing system implementation rate in Nigeria manufacturing sector. It is recommended for future researchers to investigate the factors that facilitate the implementation of activity-based costing system.

Key words: Activity-based Costing, Traditional Costing System, Accurate Product Costing, Manufacturing, Implementation Rate, Nigeria.

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Introduction

The relevance of the traditional volume-based cost allocation practices in today's manufacturing environment has been questioned and strongly criticized by accounting academicians, practitioners, and consultants (Bjornenak & Falconer, 2002; Adeniji, 2009). They argued that traditional cost allocation practices are crude and subjective, and that allocations do not reflect the pattern of cost causation in firms using advanced manufacturing technologies (Dabor & Eragbhe, 2005; Dandago & Tijjani, 2005). The traditional cost accounting techniques, which assume that all products consume all resources in proportion to their production volumes, tend to apportion too great a proportion of overheads to high-volume products and too small a proportion of overheads to low-volume products. This usually results in a misleading and inequitable division of costs between low-volume and high-volume products (Adeniji, 2009). To overcome such deficiencies and to provide more accurate information for management planning and control, activity-based costing was proposed.

Statement of Problem

Literature reveals that studies abound on the extent of activity-based costing implementation in the various economic sectors of most advanced countries. Over the last decade, several surveys show that the trend in developed countries has been an increase in the adoption and implementation of the activity-based costing method (Baird et al. 2004). For instance, in the USA, UK and France, surveys between the early 1990s and 2008 have indicated an increasing extent of activity-based costing implementation in each of these countries. In the USA, the implementation rate of the activity-based costing method has increased from 11% (Armitage & Nicholson, 1993) to 52% (Kiani & Sangeladji, 2003) and that of UK companies has increased from 6% (Innes & Mitchell, 1991) to 23% (Tayles & Drury, 2001). Manufacturing firms in France increased their activity-based costing implementation from 15.9% (Alcouffe, 2002) to 33.3% (Rahmouni, 2008).

Moreover, in recent years, some studies have been done on the implementation of the activity-based costing systems in developing countries. Ngongang (2010) reported implementation rate of 9.3% in Cameroon while in the study carried out by Moalla (2007) on activity-based costing

implementation status in Tunisia, 23.75% was reported. Similar studies carried out in Morocco, South Africa, Thailand and Malaysia reported 12.9% (Elhamma, 2012), 12% (Sartorius, Eitzen & Kamala, 2007), 35% (Chongruksut & Brooks, 2005) and 36% (Ruhanita & Daing, 2007) implementation rates respectively. However, till date, there is virtually little or no study that has reported the extent of activity-based costing implementation in the Nigerian manufacturing sector.

Objective of the Study

Sequel to the problem statement highlighted above, the objective of the current study is to ascertain the extent of activity-based costing system implementation in the Nigerian manufacturing sector.

Research Question

In other to achieve the objective of this study, the research question below has been posed. "What is the extent of activity-based costing system implementation in the Nigerian manufacturing sector?"

Literature Review

Dahlgren, Holmström and Nehler (2001) conducted a survey during autumn 1999. The sample contained 400 Sweden manufacturing firms with more than 50 employees with a response rate of 37%. The aim of the paper was to describe and explain the diffusion and the adoption of activity-based costing in Swedish manufacturing. The results revealed that only 16% of the firms have implemented activity-based costing.

Chongruksut (2002) conducted a mail questionnaire survey among firms listed on the Stock Exchange of Thailand (SET) that operate in the Bangkok region. One of the aims of the study was to examine the implementation of activity-based costing by firms based in Thailand. A total of 292 questionnaires were sent to the accounting/finance managers. 101 questionnaires were usable and represent a response rate of around 35%. In relation to the activity-based costing implementation rate, the findings indicate that 11.9% (12 firms) had already implemented the activity-based costing, 2% had rejected implementation, and around 23% of respondents were

intending to implement activity-based costing. The highest percentages of the responses 63% (64 firms) had no plans to implement activity-based costing.

Cotton, Jackman and Brown, (2003) conducted a survey on the usage of activity-based costing in New Zealand (NZ). The target population consisted of Chartered Accountants (CAs) who were Corporate Sector members of the Institute of Chartered Accountants in NZ (ICANZ), and who were in active employment in commercial firms, local government organizations and state owned enterprises. The questionnaire was sent by mail to a target population of 748 firms and resulted in a response rate of approximately 40%. Regarding activity-based costing implementation rates, the findings reveal that 20.3% of respondent firms were implementing activity-based costing, but fewer companies in NZ compare with the UK were considering using activity-based costing (11.1%), and fewer companies in NZ had rejected the system after assessment (10.8%). The remaining companies (57.8%) were not considering the implementation of activity-based costing.

Pierce and Brown (2004) conducted a survey of large manufacturing, service and financial sector organizations to investigate the implementation state of activity-based costing systems in Ireland. The questionnaire was designed using a series of questions taken directly from Innes et al. (2000), and was sent by post to a named individual in each company, identified from professional accounting institutes' listings as holding a position as head of management accounting, head of finance or chief executive. The total response rate of the study was 23.2%, out of 550 questionnaires sent. The results show higher implementation rates than previously reported in Ireland. Around 28% of respondent companies were implementing activity-based costing systems, 52.4% of respondent companies were not considering the implementation of the system, 9% of respondent companies were still considering it and 10.7% had rejected the implementation of the activity-based costing.

Manalo (2004) conducted a telephone survey among the Top 500 Corporations in the Philippines. The findings indicate that around 17% (i.e., 83 firms) are implementing activity-

based costing, 55% (275 firms) are still using traditional costing systems, and the rest of the total sample 28% (142 firms) are still considering activity-based costing implementation.

Cohen, Venieris and Kaimenak (2005) conducted a questionnaire survey during 2003 on a sample of 177 leading Greek companies. The study aimed to examine the implementation rate of activity-based costing by Greek companies that belong to all three sectors of the Greek economy, i.e. manufacturing, retail and services, as well as investigating the reasons that influence a company's decision to change its current management accounting system. A total of 88 completed questionnaires were received and analyzed, which represent a response rate of 49.7%. In relation to the activity-based costing implementation rates, 40.9% (36 firms) of respondents have already implemented activity-based costing, while 59.1% (52 firms) were non- activity-based costing implementers. Of the non- implementers, 31.9% (28 firms) had rejected activity-based costing, 13.6% (12 firms) were considering the implementation of activity-based costing, and 13.6% (12 firms) were not considering activity-based costing implementation.

Sartorius, Eitzen and Kamala (2007) conducted a telephonic and an e-mail survey of listed South African companies on the Johannesburg Securities Exchange (JSE). A quantitative methodology was adopted in their study to evaluate the extent of activity-based costing implementation. The results of the study show that the extent of activity-based costing implementation in South Africa is low, only 11.6% of respondent companies have implemented activity-based costing systems.

Kip and Augustin (2007) conducted an in-depth study of German and U.S companies to compare the cost accounting methods. The results show that German companies emphasize management accounting more, and U.S companies place their accounting emphasis on financial reporting. In addition, the findings report that more German companies than U.S companies are satisfied with their costing systems. Regarding the implementation of activity-based costing systems, the results show a small difference in the percentages of firms that are implementing ABC between the two countries. The result reported 19% for German and 21% for the American firms, the highest percentages came from non-manufacturing firms; 38% in the U.S and 27% in Germany.

Maelah and Ibrahim (2007) investigated the status of activity-based costing adoption among manufacturing organizations in Malaysia. Mail survey questionnaires were distributed to manufacturing organizations throughout the country using purposive judgment sampling. The questionnaires were directed to the accountants or heads of accounts of selected manufacturing organizations. The study found that activity-based costing adoption in Malaysia was at infancy stage, with 36% adoption rate.

Elhamma (2012) carried out an empirical investigation on the adoption and diffusion of activity-based costing in Morocco. The study was based on data collected using questionnaires sent to enterprises based in Morocco. Of the 412 questionnaires sent out, a total of 76 questionnaires were returned. The study revealed that the adoption rate of the activity-based costing method in Moroccan firms was 12.9%. This rate was 21.87% in large enterprises and 3.33% in Small and Medium Scale Enterprises. It was 14.58% in Industrial firms and 7.14% in other enterprises. The study provided additional knowledge on the status of activity-based costing adoption and diffusion in Morocco.

Job and Okparachui (2012) conducted a case analysis to investigate whether activity-based costing is being used by manufacturing firms in Calabar Export Processing Zone (CEPZ) of Nigeria. The study examined the limitations of the traditional costing systems in overhead cost allocation in product diversity. Survey and exploratory research design were employed in the study. The population of the study consisted of twenty five manufacturing firms with more than 500 employees in Calabar Export Processing Zone of Nigeria. Stratified random sampling technique was used to select 8 sample firms. Primary data were obtained through the administration of questionnaire to 40 respondents. The results of the analysis revealed that 25 firms (representing 62.5%) of the sample are users of activity-based costing system.

Salawu and Ayoola (2012) investigated activity-based costing adoption among manufacturing companies in Nigeria. The primary data were sourced through questionnaires administered to the Management Accountants of 40 selected manufacturing companies in South Western part of Nigeria. Descriptive statistics was employed to analyze the data. The study reveals that 60% of

the respondents have adopted activity-based costing. Familiarity with and adoption of activity-based costing was found to be across the manufacturing, as more than half of the sample are familiar with it.

Maiyaki (2011) investigated the practicability of activity-based costing in the Nigerian retail banks with samples from 3 branches of First Inland Bank in Ilorin, Bauchi and Kano respectively. Using non-structured interview as instrument, the study revealed that 90% of the employees of the selected banks do not have the knowledge about activity-based costing system. On whether the system is practicable, most of the respondents were positive. However, they considered the implementation of the system to be difficult because some tasks overlap and involve more than a department.

Askarany and Yazdifar (2011) carried out an investigation into the mixed reported adoption rates for activity-based costing in Australia, New Zealand and the UK. Data were obtained from the primary sources through the administration of questionnaires to 2041 registered CIMA members in Australia, New Zealand and the UK in 2007 (1175 in Australia, 366 in New Zealand and 500 in the UK) followed by 56 interviews. The selection of the total number of CIMA members for each country and also the selection of each individual member in each country was based on the total numbers of registered and qualified CIMA members in each country who were working in managerial accounting sections of organizations in 2007. The findings revealed that 42.6% of organizations in Australia are adopting activity-based costing at some level and the extent of adoption of activity-based costing in New Zealand and the UK is 38% and 36.4% respectively.

Materials and Methods

The survey research design is employed in this study. The population comprises the 86 manufacturing companies that are quoted in the Nigerian Stock Exchange, meanwhile, the sample comprise of 24 randomly selected manufacturing companies. Primary data were obtained through the administration of structured questionnaire to 500 accountants, cost accountants, management accountants, senior accountants and financial managers on full-time employment in the Nigerian manufacturing sector. Data analysis is conducted using the descriptive statistics.

Results

This section of the paper presents the data analysis results.

Table 1: Distribution of respondents by office designation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Financial Manager	102	25.1	25.1	25.1
	Management Accountants	66	16.2	16.2	41.3
	Senior Accountants	62	15.2	15.2	56.5
	Accountants	131	32.2	32.2	88.7
	Cost Accountants	46	11.3	11.3	100.0
	Total	407	100.0	100.0	

Source: **Field survey, June, 2013**

Table 1 above presents the distribution of respondents by office designation. A total of 102 representing 25.1% of the respondents are financial managers while 66 representing 16.2% of the respondents are management accountants. Furthermore, 62 representing 15.2% of the respondents are senior accountants, 131 representing 32.2% of the respondents are accountants while 46 representing 11.3% of the respondents are cost accountants. It can be observed that the larger portions (57.3%) of the respondents are accountants and financial managers by office designation.

Table 2: Distribution of respondents by professional affiliation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None of 1 to 5	128	31.4	31.4	31.4
	ICAN	189	46.4	46.4	77.9
	ACCA	41	10.1	10.1	88.0
	CIMA	19	4.7	4.7	92.6
	ANAN	23	5.7	5.7	98.3
	CITN	7	1.7	1.7	100.0

Table 2: Distribution of respondents by professional affiliation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None of 1 to 5	128	31.4	31.4	31.4
	ICAN	189	46.4	46.4	77.9
	ACCA	41	10.1	10.1	88.0
	CIMA	19	4.7	4.7	92.6
	ANAN	23	5.7	5.7	98.3
	CITN	7	1.7	1.7	100.0
	Total	407	100.0	100.0	

Source: **Field survey, June, 2013**

Table 2 above presents the distribution of respondents by professional affiliation. A total of 189 representing 46.4% of the respondents ICAN professional body while 41 representing 10.1% of the respondents belong to ACCA professional body. Furthermore, 19 representing 4.7% of the respondents belong to CIMA, 23 representing 5.7% belong to ANAN while 7 representing 1.7% of the respondents belong to CITN professional body. However, a total of 128 representing 31.4% of the respondents do not belong to any of the professional bodies.

Table 3: Distribution of respondents by subsector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agricultural/Agro-allied	32	7.9	7.9	7.9
	Manufacturing/Industrial	42	10.3	10.3	18.2
	Apparel and footwear	18	4.4	4.4	22.6
	Automobiles	25	6.1	6.1	28.7
	Beverages	56	13.8	13.8	42.5
	Building materials	46	11.3	11.3	53.8
	Chemicals	32	7.9	7.9	61.7
	Food	97	23.8	23.8	85.5
	Healthcare	37	9.1	9.1	94.6

Textiles	22	5.4	5.4	100.0
Total	407	100.0	100.0	

Source: **Field survey, June, 2013**

Table 3 above presents the distribution of respondents by sub-sectoral groupings. A total of 32 representing 7.9% of the respondents belong to agricultural/agro-allied sub-sector while 42 representing 10.3% of the respondents belong to manufacturing/industrial sub-sector. Furthermore, 18 representing 4.4% of the respondents belong to apparel and footwear, 25 representing 6.1% belong to automobile, 56 representing 13.8% belong to beverages while 46 representing 11.3% of the respondents belong to building material sub-sector. Moreover, a total of 32 representing 7.9% of the respondents belong to chemicals sub-sector; 97 representing 23.8% of the respondents belong to food sub-sector, 37 representing 9.1% of the respondents belong to healthcare sub-sector and lastly, 22 representing 5.4% of the respondents belong to textile sub-sector. In all, the entire 10 sub-sectors were appropriately represented with food and beverages sub-sectors have the largest portion among the respondents' sub-sectors.

Table 4: Extent of ABC implementation in Nigeria manufacturing sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ABC Non-Implementers	105	25.8	25.8	25.8
	ABC Implementers	302	74.2	74.2	100.0
	Total	407	100.0	100.0	

Source: **Field survey, June, 2013**

Table 4 above shows that 302 representing 74.2% of the respondents agree that their companies currently allocates overhead costs to products by means of activity cost drivers such as number of purchase orders and number of set-ups; meanwhile, 105 representing 25.8% of the respondents do not agree that their companies currently allocates overhead costs to products by means of activity cost drivers such as number of purchase orders and number of set-ups. This shows that there is 74.2% activity-based costing system implementation rate in Nigeria manufacturing sector.

Discussions

The result of this study aligns with the result reported by Salawu and Ayoola (2012) who investigated activity-based costing adoption among manufacturing companies in South Western part of Nigeria. Salawu and Ayoola (2012) reported that 60% of the respondents have adopted activity-based costing. Meanwhile the current study reports a higher implementation rate of 74.2% among manufacturing companies that are quoted in the Nigerian Stock Exchange Market. This indicates that there has been a continuous expansion on the rate of activity-based costing system implementation in Nigeria between 2012 and 2013. This is a good development in the Nigerian manufacturing sector.

Similarly, the result of the current study concurs with the result of Job and Okparachui (2012) who conducted a case analysis to investigate whether activity-based costing is being used by manufacturing firms in Calabar Export Processing Zone (CEPZ) of Nigeria. The population of the study consisted of twenty five manufacturing firms with more than 500 employees in Calabar Export Processing Zone of Nigeria. The results of the analysis revealed that 25 firms (representing 62.5%) of the sample are implementers of activity-based costing system.

Conclusion

The main objective of this study is to examine the degree of activity-based costing system implementation in the Nigerian manufacturing sector. The data analysis revealed that the current level of activity-based costing system implementation in the Nigerian Stock Exchange quoted manufacturing companies stands at 74.2%. In other words, 74.2% of the manufacturing companies that are quoted in the Nigerian Stock Exchange have implemented activity-based costing system as a means of apportioning overhead costs.

Recommendations

Sequel to the result of this study the following are the recommendations. The manufacturing companies which are yet to implement activity-based costing system are encourage to do so in other to ensure accurate costing information for decision making. Future researchers should seek to investigate the factors that facilitate the implementation of activity-based costing system in the Nigerian manufacturing sector.

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