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Full Length Research Paper

Applicability Of Activity Based Costing By Manufacturing Firms In Zaria Local Government Area Of Kaduna State, Nigeria

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The thrust of this study is to examine the level of application of Activity Based Costing (ABC) in the manufacturing companies in Zaria local Government Area of Kaduna state, Nigeria. As business environment is fast changing, accountants, managers, entrepreneurs and other stakeholders are to invent new ideas and strategies capable of drastically eliminating unnecessary expenses which invariably enhance the performance of their firms, increase their profitability and ensure their going concern status. Five manufacturing companies were conveniently sampled and copies of questionnaire were administered to the twenty five (25) randomly selected staff of these companies. Correlation co-efficient and T-test were used in testing the formulated hypothesis. The study reveals that none of the companies was applying ABC in apportioning its overhead cost to cost centers and cost units; they go by the traditional method of costing which was still obtainable in the sampled companies and as a result most of them are at the verge of collapsing, because they are not operating at full capacity. The study recommends that there is the need for general awareness campaign on the benefits of ABC and how it is being practically applied in advanced countries with a view to resuscitating and enhancing the financial performance of ailing companies in the country.

Key Words: Activity Based Costing; Traditional Costing; Cost Drivers; Indirect Costs; Manufacturing Firms; Local Government Area

INTRODUCTION

There is no gain saying that manufacturing activities are indisputably the most powerful catalyst for transformation of socio-economic and even political structures of any meaningful economy. The trend of globalization has challenged managers and accountants to device more sophisticated techniques in business to remain active in both domestic and international market. Prior to the evolution of the modern management techniques, business environment knew only one conventional (traditional) approach to cost allocation and apportionment; the traditional system of costing, which absorbs all overheads on production volume bearing in mind only labour or machine hours. This method over the years has proved unable to withstand the present

business scenario which is characterized by stiff competition. The tedious nature of allocation and apportionment as well as other loopholes and weaknesses of the conventional system is what led to the invention of Activity-based costing (Ado, 2007).

Dabor and Eragbhe (2005) observe that traditional costing system, particularly its indirect cost allocation technique, treats indirect cost as homogenous lumps to be allocated to product lines on a single volume related basis using direct approach. The conventional method apportions indirect costs arbitrarily without well grounded justification, (Drury 2002). This fact is another punch to the old system. One should not forget the fact that, irrespective of the approach chosen in the end there should be a report which should portray in succinct, lucid but comprehensive manner the financial position of the organization.

Adeniji (2001) says information is anything worth communicating. And where such information is qualitative, concise and unambiguous it is said to be good information. By implication, any information obtained arbitrarily will produce arbitrary result (Garbage in garbage out), the revise is the case. The ultimate goal of producing information is to provide all stakeholders with accurate information which will guide their decision. Indeed, conventional costing system has been subjected to sustained and varied criticism in recent years. For instance Innes and Mitchell (1995) and Johnson and Koplan (1987) say traditional costing system hinders cost management because it creates the difficulty of identifying cost driver relationship and hence misguides cost reduction action.

Activity-Based Costing (ABC) was pioneered in 1980 by Cooper and Kaplan (Lucey, 2002). Wood and Sangster (2005) see ABC as an approach which assigns manufacturing overhead costs to products in a more logical, scientific and organized manner by first assigning the activities that are the real cause of the overhead. It basically considers only cause-and-effect cost allocations. Unlike the traditional system it does not arbitrarily assigns cost without measuring the benefit to be viewed from doing so.

The attempt here, therefore, is aimed at determining the level of applicability of ABC in Nigeria using some selected manufacturing industries in Zaria local government. In striving to do that, a hypothesis was formulated which says Nigerian companies do not apply ABC in allocating costs to units produced.

LITERATURE REVIEW

Conceptual Issues

The resultant effect of globalization is severe and fierce domestic and universal competition, acute decline in profit margin, escalation of input prices among companies. In order to remain in business stakeholders invented many sophisticated and or advanced techniques which include, Total Quality Management (TQM), Just In Time (JIT), Activity-Based Costing (ABC), Activity-Based Management (ABM), Kaizen costing with a view to giving a competitive edge among stiff competitors (Albaladejo, 2003). The emphasis of this study was on ABC and how it has been appreciated by Management accountants in manufacturing companies in Zaria City.

ABC has been defined by scholars at various times amongst which are Hill (1995), Nachtmann and Al-Rifai (2004), Bhimani and Pigott (1992), Azadvar, Alizadeh and Bazorgmehrian (2012), Klaus-Rosinska and Rynca (2011), Krishnan (2006), CIMA (2001) to mention but a few. For instance, Azadvar, Alizadeh and Bazorgmehrian (2012) see ABC as an accounting and cost management approach which examines objectively the process of producing goods and provision of services as well as the subsequent precise prediction of every individual cost activity. It is by and large, an accurate managerial approach to subduing the intricacies of the traditional costing system. Klaus-Rosinska and Rynca (2011) opined that ABC is all about knowing objectively why a cost must be incurred in an organization. In its contribution CIMA (2001), stated that ABC is an approach to the costing and monitoring of activities which involves tracing resource consumption and costing final outputs. It should not be seen and or considered as another method of costing but a scientific approach to properly managing an organization.

In his contribution Hill (1995) ABC is but the establishment and or identification of an activity within a given company and their relationships with specific products rather than to functional areas. It is an examination of activities across the entire chain of value adding organizational processes (Bhimani and Pigott; 1992, Singer and Donoso; 2006). ABC is a costing methodology that identifies activities in an organization and assigns the cost of each activity with resources to all products and services according to the actual consumption by each activity.

Prior to the emergence of ABC in the 1980's the traditional costing system considers only direct material and labour as the major yardsticks of indirect cost allocation relegating other supporters to the background. Tanis and Hasan (2012) opined that most manufacturing companies were shifting from the labour intensive approach to business into capital intensive as such there should a dramatic change in the role in which labours play in manufacturing business environments. As a result of influx or increased in manufacturing costs, uncorrelated productive machine hours with overheads and advancement in technology, the traditional costing approach has became inefficient and ineffective because it makes accounting information inaccurate (Anand, Sahay and Saha; 2000, Adamu and Olotu; 2010).

This is simply because it could no longer provide

accurate and reliable information needed. Folk, Garrison and Noreen (2002) opine that ABC could be seen as a costing approach which uses activities that drive indirect costs to cost objects. Wood and Sangster (2005) see ABC as the process of using cost drivers as the basis for the apportionment of indirect cost to individual products. By so doing it aids in removing the arbitrariness in the allocation of overheads to the barest minimum. One prime aim of ABC is that it ensures that costs appear as they should naturally.

Cost Drivers and their classification

Lucey (2002) opines that what ABC seeks to address is the abrogation of long run "over costs" and short run "under costs" inherited in the traditional system by striving to relate support overheads to products, not by the volume or capacity of production but by number of specific factors known as cost drivers. Cost drivers are simply put as any activity that stimulates and or causes a cost to be incurred. Drury (2002) says ABC system use many second-stage cost drivers such as the number of production runs for production scheduling and the number of purchase orders for the purchasing activity. Lucey (2002) further expands the Drury explanation by showing costs which influences cost drivers for instance, the number of production runs would have inspection, production planning and scheduling, set-up, tooling etc as different drivers.

In their attempt to elucidate on cost drivers Shank and Govindarajan (2008) divided drivers into two. The first is the structural drivers, which largely depends on the composition or structure of an organization which may be in relation to complexity of products, level of technology, scale and scope of operations etc. The second is the executional drivers, as the name implies, they only surfaced during the course of executing or implementing business operations amongst which include capacity utilization, workforce, plant layout etc. ABC system use many second-stage cost drivers, including non-volume-based-drivers such as the number production runs for production scheduling and the number of purchase orders for the purchasing activity. Omolehinwa (2000) opines that ABC is out to achieve two main objectives; the first is to ensure no product is charged beyond its fair share of the overhead and the second is to highlight to management where to concentrate with view to cost reduction (Waters et al 2003, Ness and Cucuzza, 1995).

Basic Steps of an effective ABC System

In order to establish an effective ABC system certain parameters must be observed. Waters, Abdullah and Richardson (2003) pinpointed four basic steps to be adopted in ensuring effective ABC operations. The first and foremost thing to do is to ensure all activities have been thoroughly identified. This is indeed a hard task particularly in a new business outfit, even the existing ones. Before now, organizations who have tried to identify activities do came up with hundreds of activities, but in order to standardize it, it has became a general caveat to be between twenty and thirty (20 - 30) activities depending on the size of an organization. The second stage is to scientifically assigned costs to the identified cost centers which will portray the actual amount each cost centre will consume as well as the aggregate. Peculiar costs (i.e. direct cost) need not be bothered about, but those that could be jointly used should be judiciously allocated or apportioned based on the cause-and-benefits or cost and benefit to be incurred and or derived respectively, using the Cost Benefit Analysis (CBA) approach this allocation is referred to as Resource Cost Allocation. Thirdly, is to select a cost drive-activity cost-driver. As usual the selection should not be done haphazardly without basis, critical thinking should be put forward at this stage to avoid the issue or assigning wrong drivers to a given cost centre, because it will amount to sheer waste of the available meager resources.

In any case their duty is to make analysis with respect to number of events that took place during a given transaction e.g. aggregate number of orders made and or aggregate inspection performed (Drury, 2002). The second activity driver is the duration drivers, as the name implies, these drivers are after the amount of time taken or required to undertake an activity. One major merit of the durational drivers is that it distinguishes a short time activity from a long one, unlike the transactional drivers. Last but not the least is the intensity drivers, these drivers put to bear the resources allocated to given cost centre and then records the actual and or estimated time for each type activity before assigning a specific resource directly to the products.

On the final analysis the cost drivers should be designed in such a way that they could be identified with individual products. The organizations are obliged to have techniques which are sensitive enough to measure the material used, time taken, area covered etc. Hongren et al (2003) added that in designing ABC, a good computation of per unit cost, total cost of products is relevant. Initially ABC was invented to satisfy the demand of manufacturing industries because the industry has to some extent a high level of overhead costs. But in recent times it has been proved that ABC is applicable in virtually all aspects of human endeavour. Name it, Financial and non-financial institutions, non-manufacturing etc (Wikipedia 2008). Once an organization may come up with a very good design of ABC there is the tendency that at the beginning of its operation the system may appear boring and awkward but in the long run, things will eventually change to reflect the good side of ABC.

Constraints of ABC

ABC also has associate shortcomings; Cobb, Helliar, and Innes (1995) divided the problems or limitations of ABC into two main segments. The first segment addresses theoretical limitations which according to them centers on conventional historic acquisition cost principle. This principle information which are obtained in an unscientific approach example the issue of depreciation, is it the straight line method that we are to use or the reducing balance method. Any slight mistake on close monitoring of event may hamper the whole process and in the end, the arbitrariness that would follow may definitely going to be greater than that of the traditional costing. They further argue that ABC should be seen as models and not a way out of the authenticity and validity of the model duly depends on the situation on ground. The situation may warrant the model to solve the problem but not at all time.

Switching from the traditional to the modern is another constraint. A close correlation that substantiates a causal relationship does not mean that controllability is also an established characteristic of variables involved. ABC may end of compelling workers to be redundant because they may not be willing to interfere on things which do not affect them. The modern approach to costing may not proffer lasting solution to the existing accounting information problems because the benefits of ABC have not any well established base. Similarly, increasing the cost driver volume will lead to increase organizational costs.

The most important thing to understand is the fact that things are objectively accepted or rejected by using scientific approach. For instance, Cost Benefit Analysis (CBA) to determine the relative advantages and disadvantages where one outweigh the other, it is sound to conclude that the better is the best. It then follows that, considering the benefits, (i.e. accuracy, reliability and prudence nature of ABC) one can conclude that ABC is by far better than the conventional system.

Relevance of ABC to Nigerian Companies

The fact remains the same that ABC has numerous advantages which manufacturing companies who are adopting it are enjoying. ABC is no doubt playing significant role in ensuring that only related and or relevant drivers were assign cost. Invariably, those cost that were hitherto been assigned arbitrarily will be eliminated. Hence, extra overheads will be judiciously used to other relevant cost. It is a common fact that most manufacturing companies in Nigeria were closed as a result of so many factors prominent among them is lukewarm attitude of government to provide the necessary wherewithal needed. But, at the same time, the inability of the management of most of the fallen companies failed to strategize via the adoption of modern managerial techniques like the ABC, Just-In-Time etc. ABC will guarantee the survival of companies, give them more profit and a better prosperous direction (Uyar, 2010). Klaus-Rosinska and Rynca (2011) ABC is about better understanding of cost; cost optimization; improve quality and higher customer satisfaction

Issues in the Implementation of ABC in Organizations

Empirical evidences have it that ABC is more profitable, more succinct and more comprehensive in terms of adequate, accurate and reliable information. Tanis and Hasan (2012) opined that despite the fact that ABC has more advantage than the traditional cost system. However, it has its own peculiar constraints among which include wrong establishment of relationship between cost drivers and activities which by implication can cause more harm than good. For a better result, there is the absolute need to be updating the ABC system on a continuous basis which scholars argued that is another constraint in the implementations process. Lin and Yu (2002) argued that the implementation and applications of new techniques in developing nations is not encouraging. This was the position and or finding of Triest and Elshahat (2007) and Joshi (2001) who conducted their study in Egypt and India respectively. Krumwiede (1998), Anand,Sahay and Saha (2000) stated that most institutions who had it tedious in the implementation of ABC as a result of the inability of getting qualified manpower that will implement it accordingly. Even in ABC, some overhead costs are difficult to assign to products and customers, such as the chief executive's salary. These costs are termed 'business sustaining' and are not assigned to products and customers because there is no meaningful method. ABC is considered a relatively costly accounting methodology

There were empirical evidences on companies that properly implemented ABC see Anderson and Young (1999), Dugdale and Jones (1997) and Innes and Mitchel (1995). CIMA (2001) stated most forward-thinking companies have implemented ABC while most of the large companies were in the process. Other result opined that proper implementation has to do with the size of the company. Most of the success stories of ABC implementations were large sized companies.

METHODOLOGY

In eliciting data for the purpose of systematically addressing the issue at stake, five major companies in Zaria Local government were conveniently selected which include: Electricity Meter Company Plc (EMCON), Rigid Park, British American Tobacco, Sunseed and Zaria Industry Limited (ZIL). Primary source of data were

Table 3.1 Summary of Respondents' Responses

	Responses										
Issues	1	%	2	%	3	%	4	%	5	%	**Remark**
Do you personally appreciate ABC as a management accounting technique?	15	0.6	5	0.2	2	.08	1	.04	2	.08	Poor knowledge
Do you consider the cost of switching from traditional costing to ABC high?	2	.08	2	.08	17	.68	3	.12	1	.04	No much idea
Do you know how ABC is being applied?	12	.48	8	.32	3	.12	2	.08	0	0	No prior knowledge
Does your organization apply ABC in allocating costs?	0	0	2	.08	15	0.6	6	.24	2	.08	Positive but negligible
It is very possible for your organization to apply ABC	9	.36	4	.16	5	.20	4	.16	3	.12	Not very possible
Having compatibility between cost drivers and activities will not be a constraints to your organization	3	.12	4	.16	5	.20	6	.24	7	.28	Matching drivers with activities might not be a constraint
It is possible to update the ABC on a continuous basis	3	.12	5	.20	3	.13	10	.40	4	.16	It is possible to update

Source: Field Survey, 2010

Testing Hypothesis: Manufacturing Companies in Zaria do not Apply ABC

	X	**Y**	**XY**	**X^2**	**Y^2**
Options	**Points**	**Responses**			
Strongly Agree	5	2	10	25	4
Agree	4	6	24	16	36
Neutral	3	15	45	9	225
Disagree	2	2	4	4	4
Strongly Disagree	1	0	1	1	0
Total	**15**	**25**	**84**	**55**	**269**

Source: Field Survey, 2010

used in the data collection, a 12 item questionnaire was administered to the conveniently selected respondents of the manufacturing companies in Zaria city. Descriptive statistics was used in analyzing the responses while correlation co-efficient is used in testing the hypothesis. A five point likert scale is used in the study ranging from 1 (strongly Disagree) to 5 (strongly agreed). Variable X represented the points while Variable Y the responses of

the respondents to the questions asked

DISCUSSION OF RESULTS

From the data gathered it was crystal clear that there was no personal appreciation of ABC from the part of the employees of the selected organization. The responses showed that 80% of the respondents did not have an in depth understanding of the concepts and its works. On whether it was due the high cost of switching from the old approach to the new one which posed serious threat to most organizations; the responses showed 68% do not have an idea on the cost of switching. 80% of the respondents showed that they do not how ABC will be applied in their respective organization. Another 60% showed that their organizations do no applied ABC, but 34% stressed that it was being applied in their organization. However, it might not be feasible to apply the ABC. Literature has shown that one major constraint in the implementation of ABC by most institutions is inability to get good and capable hands that will manage its implementation. In other words, it could not be unconnected with the fact most of the organizations do not have people with requisite knowledge to handle their section as well as the fear of not loosing much on something which is not certain.

$$r = 0.24$$

From the above it could be seen that there is a positive relationship between ABC and its application. However, the relationship is but a mild one. In order to test the hypothesis, the test of significance will be employed.

$$T_{cal} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Decision

Reject H_o if T_{cal} is > t_{tab}

And accept H_o if T_{cal} is > t_{tab}

= 0.43

t_{tab} = n – 2, ∞ 0.05 = 5 – 2, ∞ 0.05 = 3 ∞ 0.05

$$t_{tab} = 2.35$$

The null hypothesis is accepted because the T tab is greater than the T cal

CONCLUSION AND RECOMMENDATIONS

From the afore-going; it is right to conclude that majority of the manufacturing companies do not appreciate the concept of ABC and how it works as well as the employees of the institutions. Hence there is no way someone would use what he does not know. The few accountants, who know about it, can only gave the perception on how they thing it works but could not put it into practice at all. They companies have not made attempt to determine with precision how much it will cost them to switch to ABC which is very important because it forms part of the planning stage to the implementation of the new method. There was an insignificant impact of ABC applicability on the companies under review. Most organizations used the traditional costing system but cannot depend it. Perhaps, it is because it is simple to use, since it has no standard base as such organizations have no choice than to dance to such tune and fashion. Based on the aforementioned issues the following are recommended: Since it has been certified that ABC is by far better than the traditional system in virtually all quarters, measures should be devised to ensure its general acceptability as well as applicability by all the manufacturing companies as well as their employees. This, if done would add value to the accounting information and subsequently the reliability of the stakeholders on accounting information would be confirmed the more. There should be the urgent need to arrange on how to start a solid based for planning on how appreciate ABC and how it works. This could be possible by organizing workshops on the relevance of ABC in this stiff competitive environment. Emphases should be put on new identified accounting fields, the like of ABC, JIT, ABA, Green Accounting, Forensic Accounting etc in schools of higher learning. They should be taken as area of specialization so that students would perfect in them. This will actually reduce the problems of assimilation of new invented issues as well as its applicability outside the fold of schools.

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