



Determinants Of Activity-Based Costing Applications In The Hospitality Industry In Yenagoa, Nigeria

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Abstract:

This research examined determinants of activity-based costing application in the hospitality industry in Yenagoa, Nigeria. Data was obtained via a well-structured questionnaire administered to one hundred and sixty-five (165) respondents in the fifty (50) hotels sampled from the population. The data collected through the questionnaire research instrument were analysed using relevant descriptive statistics and further subjected to econometric tests, such as unit root, granger causality, diagnostic, and ordinary least square. The results suggested a positive relationship between the variables identified and the rate of adoption of ABC in the hospitality industry in Yenagoa. On the basis of the findings, the paper concludes that for ABC adoption to be successful in the hospitality industry, owners and operators should invest on capacity building for employees, acquisition of necessary software and hardware, commitment from all levels of staff.

Keywords: Activity-based costing, determinants, decision usefulness, cost distortion, performance measurement.

1.Introduction

The objective of any cost accounting system is to provide relevant and timely information to management for effective and efficient decision making. According to Adamu and Olotu (2010), this information supports better management of organizational resources in the production of products or provision of services, and improves competitiveness in terms of costs, quality and profitability. Also Ofurun and Ogbonna (2008) stated that managers in every field of human endeavour need information that is relevant, objective and timely for planning, decision making and controlling of business activities in order to achieve the goal of the organization. Appah (2004) opined that cost accounting information is designed to suit particular organization, product, process and personality for organizational decision making. However, the complex nature of business organizations in the 21st century has made traditional costing accounting system ineffective and inefficient. Drury (2004) suggested that over the years the increased opportunity cost information, and the decreased cost of operating more sophisticated cost systems, have increased the demand for more accurate product costs. Elhaman (2012) stated that activity based costing technique has been successfully developed to avoid the deficiencies of the traditional costing techniques of using direct labour to assign indirect cost. It is against this background that activity based costing (ABC) emerged. Therefore, Omoregie (2004) argued that ABC seeks both to allocate overheads to product costs on a more realistic basis other than production volume basis, as well as, showing the correlation between overhead costs and the activities that caused them.

ABC was promoted as a method for reducing the inaccuracies with traditional cost accounting systems that arise from prevalent technology and competition (Dodd and Lavelle, 2002). The perceived deficiency of traditional cost accounting method (absorption costing) is the use of a single cost driver for assigning overhead costs of products. As a result, this costing system fails to account for the changes occurring to cost structures in the modern business environment, where direct labour is no longer accounting for the majority of a products cost (Khana, 2002). Khana (2002) argues that the primary defects of traditional costing systems are the inability to provide useful feedback or understand and allocate overhead costs. Doyle (2002) also argued that traditional systems have the potential inability to account for the size and diversity of products, as a larger or more complex item that may produce more revenue, may also consume a larger than presumed overhead.

Maier, (2005) opined that ABC is a costing method that assigns costs first to activities and then to the products based on each product's use of activities. It is based on the concept that products consume activities and activities consume resources. Lucey (2004) suggested that ABC is a method of charging overheads to cost units on the basis of benefits received from the particular indirect activity. Hilton, Maier and Selton (2000) also argue that ABC traces costs of resources to activities and then to products and services based on the use of activities. Therefore, if managers want their products to be competitive, they must know: the activities that go into making the good or producing the service and the cost of those activities. To reduce a product's costs, managers will likely have to change the activities consumed by the product or service. Therefore, most research in the area of activity based costing concentrates on the manufacturing sector. Thus, the current study examined the determinants of the extent application of activity based costing in the hospitality industry, in handling of their indirect costs, costing of services to their customers, basis of billing their customers. To achieve this objective, the paper was divided into five interconnected sections. The next section presents the literature on activity based costing system. The third section provides the materials and methods. The fourth section presents the results and discussion while the final section presents the conclusion and recommendations.

2.Literature Review

2.1.The nature and Scope of Activity-Based Costing

Dodd and Lavelle (2002); Kiani and Sangaladji (2003) stated that ABC as we know it today grew to become a well known concept in the 1980s when introduced into the Journal of Cost Management by Cooper and Kaplan. This method of costing allocates overhead costs to products based on actions that cause costs to occur (McCabe, McKendrick and Keenan, 2004). In the initial stages, activities that are responsible for overhead cost consumption are established and costs that are consumed by these activities are identified. Following this, cost drivers are established to assign the activity costs to individual products or services. This allows costs to be traced to products depending on the individual activities that they consume (Ittner, Lanen and Larker, 2002). ABC was developed as a result of the evident increasing overhead costs in manufacturing firms, sourcing many of the traditional costing inaccuracies (Hussain and Gunasekaran, 2001; Swenson and Barney, 2001). The majority of literature has explored

the application of ABC in these environments, and numerous studies have noted that the use of ABC in the manufacturing sector is still predominant (Bidanda et al., 2003; Johnson, 2002; and Sievanen and Tomberg, 2002). ABC is also important in the service sector due to the need to reduce the costs of services for retaining competitive capabilities (Clarke and Mullins, 2001). According to Klein (2003), there is the need for an ABC system to compare benchmarks, measure performances and enhance quality of production of goods and services in contemporary organisations. The applicability of ABC to these areas and to all organizations in general, is attributed to the universal existence of activities (Kennedy and Affleck-Graves, 2001). As a result, ABC has been evident in areas such as database marketing (Doyle, 2002), the financial industry (Dodd and Lavelle, 2002), the healthcare industry (west and west, 1997), telecommunication, transport, wholesale and distribution and information services sectors (Kennedy and Afflecks-Graves, 2001) and hotel industry (Adamu and Olotu, 2010).

Activity-based costing is a two-stage process. In the first stage it assigns all costs of resources to the activities in activity centers based on the resource drivers (Lucey, 2004). The amount paid for a resource and assigned to an activity is called a cost element (Omoriege, 2002). A cost pool is the classification of cost elements associated with one activity. According to Appah (2004), a cost pool does not have to contain only one activity. It can be formed by classifying a large number of activities into a few groups. In the second stage, costs are assigned to cost pools are then assigned to the products based on the products consumption activity and then level of the activity in the activity-based costing hierarchy. However, Drury (2004) argues that the design of activity-based costing involves four stages of identifying the major activities that take place in an organization; creating a cost pool/cost centre for each activity; determining the cost driver for each major activity; and assigning the cost of activities to products according to the product's demand for activities.

2.2. Advantages Of Activity-Based Costing

The use of ABC in manufacturing and non-manufacturing firms is advocated to be advantageous. For example, studies did show that activity-based costing increases the accuracy of cost allocation to products (Clarke and Mullins, 2001), resulting in a more detailed view of the true costs of activities. It is also argued that greater processing of costs information and subsequent realization of accurate and relevant cost measurements are beneficial for making sound decisions and consequently taking appropriate actions

(Hicks, 2005). Arguably the most debated advantage of ABC is whether or not the use of the advanced management technique improves firm performance. Lucey (2004) documents that the main claims made regarding ABC include: more realistic product costs are provided especially in Advanced Manufacturing Technology factories where support overheads are a significant proportion of total costs; more overheads can be traced to product; ABC recognizes that it is activities which cause cost, not products and it is products which consume activities; ABC focuses attention on the real nature of cost behaviour and helps in reducing costs and identifying activities which do not add value to the product; ABC recognizes the complexity and diversity of modern production by the use of multiple cost drivers; ABC provides a reliable indication of long run variable product cost which is relevant to strategic decision making; ABC provides useful financial measures and finally ABC is flexible enough to trace costs to processes, customers, areas of managerial responsibility, as well as product costs.

The advantage of ABC according to Qian and Ben-Arieh (2008) is that ABC is a more accurate cost-estimation method. They argued that ABC helps managers to become aware of original parameters that create demands on indirect resources and keep up resources which can identify and remove non-value adding activities. Ben-Arieh and Qian (2003) and Qian and Ben-Arieh (2008) illustrated that ABC approach had demonstrated to be more accurate than traditional costing system. Singer and Donoso (2008) conducted several test on the validity of ABC cost estimation and they concluded that the accuracy of estimation of costs made by ABC was valid. Activity based costing was more accurate product costing than the traditional volume based methods. These findings were later confirmed by Charles and Hansen (2008).

2.3. Empirical Evidence

There exist several empirical studies on activity-based costing (ABC) on the performance of organizations. These studies document the contributions of ABC adoption to the effective and efficient performance of the various organizations when compared with non-adoption of ABC. Kennedy and Affleck-Graves (2001) examined the link between activity-based costing implementation and creation of shareholder value framework and event study methodology. They got responses from 47 ABC users and 187 non-ABC users. They found that choice of management accounting system such as activity-based costing for a sample of UK firms had a significant impact on firm value

(27% over the three years from the beginning of the year in which activity-based costing was first introduced).

Cagwin and Bouwman (2002) in their survey of 210 internal auditors found that the firms with diverse product portfolio and with high proportion of overheads cost when they adopted activity-based costing along with other strategic initiatives such as JIT and TQM, resulted in substantial improvement in their return on investments. The other enabling conditions for the efficacy of the ABC in the organizations are sophisticated information technology systems, absence of excess capacity and competitive environment.

Ittner, Lanen and Larker (2002) examined the relationship between the extensive use of activity-based costing and plant level operational and financial performance indicators such as cycle time, quality, manufacturing cost improvements and return on assets. The quality variable was captured through finished product first pass quality yield in percentage terms and scraps and rework cost as a percentage of sales. The survey questionnaire was mailed to 25,361 US firms who have subscribed to industry week. They received a response from 2789 firms, resulting in a response rate of 11%. They found 26% of the respondents did use activity-based costing extensively. They found moderate evidence that activity-based costing use is positively associated with the manufacturing performance. They demonstrated through path analysis that activity-based costing use has a positive indirect association with manufacturing cost reduction through improvements in quality and cycle time. No significant association with return on assets of activity-based costing use was observed.

Maelah and Ibrahim (2007) study of ABC adoption in Malaysia found that it is at infancy stage, with 36% adoption rate. The factors that influence ABC adoption are decision usefulness of accounting information, organization support, and internal measures of performance. Rasiah (2011) document that in Malaysia most operations managers believed that their present costs systems were adequate for decision making. Activity based costing systems were evaluated as somewhat more useful, but no relevant literature was found to indicate that either the external and internal environment of the firm was correlated with the choice of cost system.

3. Materials And Methods

The primary data for the study were generated through the administration of questionnaire conducted to evaluate the factors influencing activity based costing

adoption in the hospitality industry in Yenagoa, the capital of Bayelsa State, Nigeria on two hundred and fifty responds (managers and accountants) on fifty (50) hotels (see appendix). The study was conducted between September-December 2010. The study used instruments developed by Maelah and Ibrahim (2007), Adamu and Olotu (2010) and Moll (2005) but modified by the authors for this study. The YaroYamen model was used for the purpose of sample size determination. A total of one hundred and sixty three (163) usable questionnaires were completed and used for the analysis representing sixty five percent (65%). The modified questionnaire was pre-tested using ten (10) hotels in the study. A reliability and internal consistency test was done on the collected data using Cronbach Alpha and Pearson Product Moment Correlation Coefficient model, to explore the consistency of the questionnaire. The result of the reliability test shows that the questionnaire design is highly reliable and consistent at 0.732 and 0.781. Excel software helped us to transform the variables into format suitable for analysis, after which the econometric view (e-view) was utilized for data analysis. The ordinary least square regression, granger causality, unit root and diagnostic tests were adopted for the purpose of data analysis. Asterious and Hall (2007), Wooldridge (2006) documented that the ordinary least square regression analysis shows the direction of cause/effect between the dependent and independent variable. Gujarati and Porter (2009), Brook (2008) suggest that unit root test such as Dickey-Fuller, Augmented Dickey-Fuller, Philips-Perron and Kwiatkowski, Philips, Schmidt and Shin (KPSS) are used to determine the stationarity and nonstationarity of variables. Granger Causality test refers to the ability of one variable to predict (and therefore cause) the other (Kozhan, 2010). Diagnostic tests were also conducted to determine the assumptions of the classical near regression model of multicollinearity, heteroskedasticity, autocorrelation, normality of disturbance. The ordinary least square was guided by the following linear model:

$$Y = f(X) \quad \dots\dots\dots(1)$$

(1)

Where X are the factors that determines ABC adoption

$$Y = f(X_1, X_2, X_3, X_4, X_5) \quad \dots\dots\dots(2)$$

Where X1 = potential cost distortion, X2 = usefulness of accounting information, X3 = Top management support, X4 = Performance management, X5 = Training.

$$ABC = \alpha + \beta_1 COD + \beta_2 UAI + \beta_3 TOM + \beta_4 PEM + \beta_5 TRA + \varepsilon \quad \dots\dots\dots(3)$$

The a priori expectation of the linear model is presented below

$\partial \text{COD} / \partial \text{ABC} > 0$; $\partial \text{UAI} / \partial \text{ABC} > 0$; $\partial \text{TOM} / \partial \text{ABC} > 0$; $\partial \text{PEM} / \partial \text{ABC} > 0$ and $\partial \text{TRA} / \partial \text{ABC} > 0$

Where: ABC = Activity-Based Costing Adoption; COD = potential cost distortion; UAI = usefulness of Accounting Information; TOM = Top management; PEM = Performance measurement; and TRA = Training; $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are the coefficients of the regression, α is the intercept of the regression and ε is the error term capturing other explanatory variables not explicitly included in the model.

4.Results And Discussion

	ABC	COD	UAI	TOM	PEM	TRA
Mean	12.76364 6.745455	13.09091	12.97576	12.57576	12.41818	
Median	12.00000 12.00000	12.00000	12.00000	12.0000	12.00000	
Maximum	24.00000 22.00000	23.00000	22.0000	21.0000	20.00000	
Minimum	8.00000 7.00000	10.00000	8.00000	9.00000	9.00000	
Std. dev.	2.969132 4.773727	2.413929	2.544606	2.247360	1.925670	
Skewness	1.625906 1.086914	1.064531	1.165301	1.086730	1.034649	
Kurtosis	5.662649 4.187321	4.493633	4.731323	4.657091	4.722467	
Jarque-Bera	121.4398 42.17991	46.50144	57.95064	51.35538	49.83611	
Probability	0.00000 0.00000	0.00000	0.00000	0.00000	0.00000	
Observation	165	165	165	165	165	

Table 1: Descriptive statistics

Source: e-view output

The table above shows the descriptive statistics for the dependent variable (ABC) and independent variables (COD, UAI, TOM PEM and TRA) for the mean, median, maximum, minimum, standard deviation, kurtosis, skewness and Jarque-Bera. The results indicate ABC of 12.763664, 12.0000, 24.00000, 8.00000, 2.969132, 1.625906, 5.662649 and 121.4398; COD of 13.09091, 12.00000, 23.00000, 10.00000, 2.413929, 1.064531, 4.493633 and 46.50144; UAI of 12.97576, 12.00000, 22.00000, 8.00000, 2.544606, 1.165301, 4.731323 and 57.95064; TOM of 12.57576, 12.00000, 21.00000, 9.00000, 2.247360, 1.086730, 4.657091 and 51.35538; PEM of 12.41818, 12.00000, 20.00000, 9.00000, 1.925670, 1.034649, 4.722467 and 49.83611 and TRA of 6.745455, 12.00000, 22.00000, 7.00000, 4.773727, 1.0869.

Dependent Variable: ABC				
Method: Least Squares				
Date: 12/13/11 Time: 14:13				
Sample: 1 165				
Included observations: 165				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.601174	2.037506	2.258238	0.0253
COD	0.328328	0.093452	3.513332	0.0006
UAI	0.266254	0.089345	2.980057	0.0033
TOM	0.293073	0.102981	2.845894	0.0275
PEM	0.236823	0.115680	2.047225	0.0307
TRA	0.245022	0.103634	2.364301	0.0458
R-squared	0.504108	Mean dependent var	12.76364	
Adjusted R-squared	0.425622	S.D. dependent var	2.969132	
S.E. of regression	2.750458	Akaike info criterion	4.897098	
Sum squared resid	1202.838	Schwarz criterion	5.010042	
Log likelihood	-398.0106	F-statistic	6.422807	
Durbin-Watson stat	1.925425	Prob(F-statistic)	0.000018	

Table 2: Ordinary Least Square Multiple Regression

Source: e-view output

Table 2 above presents the multiple regression result and the results indicate that ABC is significantly related to COD, UAI, TOM, PEM and TRA (i.e. 0.0006, 0.0033, 0.0275, 0.0307 and 0.0458 is greater than the critical value of 0.05). This implies the acceptance of the alternative hypothesis that potential cost distortion, usefulness of accounting information, top management support, performance measurement and training of employees are significantly related to the level of adoption of ABC technique in the hospitality industry.

This result is consistent with the study of Moll (2005), Maelah and Ibrahim (2007), Adamu and Olotu (2010) that the factors that influence ABC adoption are decision usefulness of accounting information, organization support, and internal measures of performance. The R² and adjusted R² of about 50% and 43% shows that the model explains 50% and 43% of the variability of the dependent variable (ABC) while the balance are outside the model, that is 50% and 57% respectively.

F-statistic	8.269744	Probability	0.230385
Obs*R-squared	15.72562	Probability	0.370385

Table 3: Breusch-Godfrey Serial Correlation LM Test

Source: e-view output

The table above presents the Breusch-Godfrey serial correlation LM test. The result indicates that there is no autocorrelation because the probability of 0.230385 is greater than the critical value of 0.05.

F-statistic	1.418153	Probability	0.176969
Obs*R-squared	13.91325	Probability	0.176985

Table 4: White Heteroskedasticity Test

Source: e-view output

Table 4 above shows the White Heteroskedasticity test and the result indicates that there is no evidence of heteroskedasticity. That is, 0.176969 is greater than 0.05.

F-statistic	1.009835	Probability	0.366633
Log likelihood ratio	2.109047	Probability	0.348358

Table 5: Ramsey RESET Test

Source: e-view output

The table above presents the Ramsey RESET test for model specification and the result indicates that the model is properly modeled.

Variable	ADF	1%	5%	Stage
ABC	-4.071106	-3.4722	-2.8795	Level
COD	-3.547454	-3.4722	-2.8795	Level
UAI	-4.036829	-3.4722	-2.8795	Level
TOM	-3.678941	-3.4722	-2.8795	Level
PEM	-4.539028	-3.4722	-2.8795	Level
TRA	-3.848270	-3.4722	-2.8795	Level

Table 6: Unit Root Test (ADF)

Source: e-view output

Table 6 above presents the Augmented Dickey-Fuller Unit Root test for stationarity of the variables. The results indicate that all the variables are stationary at level data. That is, ABC, COD, UAI, TOM, PEM and TRA of -4.071106, -3.547454, -4.036829, -3.678941, -4.539028 and -3.848270 is greater than the 1% and 5% values of -3.4722 and -2.8795. This implies that all the variables are stationary at level data. The stationarity at level data implies that ordinary least square can be used for analysis (Asterious and Hall, 2007; Brook, 2008).

Date: 12/13/11 Time: 14:57			
Sample: 1 165			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
COD does not Granger Cause ABC	163	1.54590	0.02633
ABC does not Granger Cause COD		2.54603	0.08160
UAI does not Granger Cause ABC	163	1.45180	0.01725
ABC does not Granger Cause UAI		1.68234	0.18925
TOM does not Granger Cause ABC	163	0.38804	0.04903
ABC does not Granger Cause TOM		1.55125	0.21519
PEM does not Granger Cause ABC	163	0.21019	0.03065
ABC does not Granger Cause PEM		4.20803	0.01658
TRA does not Granger Cause ABC	163	0.04156	0.04930
ABC does not Granger Cause TRA		1.69897	0.18620

Table 7: Pairwise Granger Causality Tests

Source: e-view output

The table above shows the pairwise granger causality test for the dependent variable (ABC) and independent variables (COD, UAI, TOM, PEM and TRA). The results indicate that COD granger cause ABC and ABC does not granger cause COD. This is also peculiar to ABC and UAI, TOM, PEM and TRA respectively.

5. Conclusion And Recommendation

The study examined the factors influencing the adoption of activity-based costing in the hospitality industry in Yenagoa the capital of Bayelsa State, Nigeria. To achieve this objective, a well structured questionnaire titled activity-based costing adoption in the hospitality industry (ABCAHI) was administered to one hundred and sixty five (165) respondents mostly accountants and managers of the fifty (50) hotels sampled in the study. The results indicates that the factors of potential cost distortion, usefulness of accounting information, top management support, performance measurement, and training of employees are very important in the adoption of ABC in the hotel business to effectively and efficiently determine the most suitable cost driver to arrive at cost of service in hotels, the basis of billing customers and the handing of indirect costs. The findings suggest that most of the hotels sampled in the study do not adopt activity-based costing. The result also indicates that the adoption of ABC in the hotel business is at the initial stage of implementation. Therefore, the paper concludes that ABC adoption in the hotel business in Yenagoa is very low because most of the sampled hotels were used to the traditional techniques. This invariably has serious implications for proper service cost determination and by extension, profit planning and strategic cost management. As noted by Maelah and Ibrahim (2007) that activity based costing system is a tool to provide management with a more accurate product costing. It provides organizations, to which the hospitality industry is not an exception, with a whole spectrum of decision usefulness costing information. The information gathered from activity-based costing can be used for planning, budgeting, and performance measurement. Therefore, the decision for the hospitality industry to adopt activity-based costing requires the investment of funds for training; software and hardware development, man-power and commitment from all staff in the hospitality industry. On the basis of the conclusion, the following recommendations are provided:

- Hotel owners and operators should be educated on the need to apply activity-based costing in the determination of appropriate overhead cost in the billing system.

- Appropriate and reliable costs drivers should be identified that would provide the basis for costing hotel services.
- Hotel owners and operators should be given the needed seminars and workshops on the merits of activity-based costing compared with the traditional techniques.
- Researchers in the field of cost and management accounting should develop appropriate cost drivers different from those applied in the manufacturing industry that would enable operators in the hospitality industry develop suitable cost drivers for billing and serving their customers.

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