STRATEGIC COST MANAGEMENT AND ACCURACY OF COST INFORMATION IN SELECTED MANUFACTURING FIRMS IN LAGOS AND OGUN STATES, NIGERIA

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Abstract

The use of distorted cost information in manufacturing firms in Nigeria is affecting their survival because they are unable to manage their costs effectively. New costing strategies are required to be used for achieving undistorted cost information. Hence, the objectives of this study were to: assess the effect of Activity-Based Management (ABM) on accuracy of cost information; evaluate the influence of life cycle costing (LCC) on accuracy of cost information; and examine the impact of Target Costing (TC) on accuracy of cost information. Survey research design was employed. The population of the study consisted of three hundred and eighty - five respondents in seventy - seven listed manufacturing firms in Lagos and Ogun States. The sample of the study consisted of three hundred and twenty- five respondents in sixty - five randomly selected manufacturing firms. Primary data used were collected through questionnaire administration. Data analysis was done using Partial Least Squares Structural Equation Modeling (PLS -SEM). The study found that: ABM has positive effect on accuracy of cost information ($\beta = 0.493$, $p < 0.01$); LCC has no influence on accuracy of cost information ($\beta = 0.043$, $p > 0.10$); and TC has positive impact on accuracy of cost information ($\beta = 0.272$, $p < 0.01$). The study concluded that strategic cost management practices are relevant for accessing accurate cost information. The study recommended that manufacturing firms should implement strategic cost management practices to achieve accuracy of cost information.

Keywords: Strategic cost management, Accuracy of cost information, Activity based management, Life cycle costing, Target costing.

Introduction

Background to the Study

The contemporary business environment of today requires that manufacturing firms deploy sophisticated cost management systems that will enable them cope with the challenges of cost management occasioned by the competitive and dynamic nature of the industry. Companies need to continually introduce new measures for generating cost information that will be relevant for managing their costs in order to remain competitive. The business environment of today is characterised by the globalisation of business, intense competition, changes in customers' demand and expectation, and shortening product life cycles (Abdel – Kader & Luther, 2008).

Besides the stiff competition in the business environment, the orientation of the market has also changed as the customers now dictate what happens in the market. In the contemporary market,

customers are more sophisticated than in the past. They demand products that meet their specifications and expect high quality products at cheaper prices. This will require that manufacturing firms focus on accurate determination of the cost of their products. Hence, there is need for the implementation of effective cost management techniques to achieve accurate cost information, product cost reduction and high efficiency while not sacrificing product quality, functionality, and lead time (Omar, Sulaiman, Hui, AbdullRahman & Hamood, 2015).

Statement of the Problem

The traditional cost management practices such as budgetary control and standard costing systems being used by manufacturing firms cannot allow them to manage their rising costs effectively due to inaccurate cost information (Drury, 2012). These practices are fraught with limitations. First, information from these traditional cost management practices is not usually complete as such information does not capture non-financial information and it is normally distorted (Egbunike, Ogbodo & Onyali, 2014). In a competitive environment, companies will not risk taking decisions based on faulty cost information. Secondly, budgetary control and standard costing systems do not focus attention on buyers and stake holders outside the firm in order to strategically determine relevant costs that can be traced to these stakeholders (Shuah, Malik & Malik, 2011)

Due to the fact that firms are not able to take a strategic approach to accessing accurate cost information for the effective management of their costs, there is need for an effective cost management system that will provide management with information that is complete and that can be use in gaining competitive advantage and performance enhancement. With increasing competition, there is need for accurate determination of product cost in the firm. To obtain a product's true costs, the costs incurred throughout its life span have to be known. This calls for the implementation of an integrated systems of: activity - based management, target costing and life cycle costing techniques to generate the true product cost information (Pazarceviren, 2015).

There appears to be dearth of empirical works on the role of: activity - based management, target costing and life cycle costing practices in enhancing accurate cost information generation in Nigerian manufacturing firms and where such studies have been carried out, only one technique of strategic cost management is usually examined at a time. Imeokparia (2013) for example, examined only activity-based costing impact on performance and Idowu (2014) studied only target costing impact on competitive position of selected firms. Imeokparia and Adebisi (2014) studied target costing impact on performance of manufacturing firms. There is therefore need to explore in greater details life cycle costing, target costing, activity –based management and accurate cost information

Objectives of the study

The objectives of study are to:

i. examine the effect of activity- based management on accuracy of cost information;
ii. evaluate the influence of life cycle costing on accuracy of cost information; and
iii. assess the influence of target costing on accuracy of cost information.

The following null hypotheses were formulated based on the research objectives:

Ho1:Activity- based management has no significant influence on accuracy of cost information.
Ho2: Life cycle costing has no significant effect on accuracy of cost information.
Ho3:Target costing has no significant impact on accuracy of cost information.

This study focused on the role of activity- based management, life cycle costing and target costing in enhancing accurate cost techniques in the sampled manufacturing firms which have their head offices or factories located in Lagos and Ogun states.

The remaining part of this paper covered the review of literature, the methodology adopted, data analysis and presentation of results, and conclusion and recommendation.

Literature Review

Conceptual Review

Strategic Cost Management

Strategic cost management idea was developed by Shank (1989, p. 50) who described it as a paradigm shift and defined it as "managerial use of cost information explicitly directed at one or more of the four stages of the strategic management cycle: formulating strategies, communication of the strategies throughout the organization, developing and carrying out tactics to implement the strategies, and developing and implementing controls to monitor the success of the objectives." Shank (1989) noted that the explicit attention to the strategic nature distinguished strategic cost management from management accounting. According to him, strategic cost management is a product of the blending of three themes drawn from strategic management. These three themes are: (i)Value chain analysis, (ii) Strategic positioning analysis, and (iii) Cost driver analysis. Strategic cost management is built on these themes.

Strategic cost management is the application of cost management techniques so that they simultaneously improve the strategic position of a firm and reduce costs (Cooper & Slagmulder, 1998)
Strategic cost management system is composed of techniques that have been developed over the years, most of them outside the traditional management accounting to ensure that the firm is able to manage and reduce its cost strategically, enhance value and performance and secure competitive position in the market place. The strategic cost management techniques examined in this study include: Activity –based management, target costing and life cycle costing and these are examined in details hereafter.

Activity - based management

Activity – based management is an integral part of activity based costing which was originally meant to provide management with a product cost information (Drury, 2012). Activity Based Management (ABM) focuses on the effective management of activities that are the causes of a product's cost.
When the causes of the costs of a product are adequately managed, then costs can be effectively managed too.

In activity based management, the firm is seen as being made –up of activities that are linked together with the primary purpose of adding value to the customer. ABM is based on the understanding that activities are the real factors that influence costs, hence, to effectively manage costs at the long run, these activities must first be managed. Managing activities requires the understanding of the reasons for performing activities and what makes the cost of activity to increase or reduce (Drury, 2012). Activity based management enables a firm determine the true information relating to activities performed, activities cost, reasons for performing activities, as well as the efficiency of performing the activities (Soin, Seal and Cullen (2002).

The steps involved in implementing activity-based management system are: analysis of activities by determining those activities that are adding value and those not having value; cost driver analysis by identifying the root causes of activity costs through the detail assessment of the impact of factors that drive cost; and lastly, performance measurement analysis that classifying measures of performance into finance and non – finance related and which are meant to impact on cost management efforts (Gupta & Galloway, 2003).

Target Costing

Target costing is a strategic cost management system that focuses attention on managing and attaining cost reduction right from the product design stage of a product. It is believed that when cost is properly managed at the product design stage, achieving cost reduction at the production stage will be possible. With target costing, accurate cost information can be obtained for cost management purposes.

The basic principles of target costing technique as noted by Ansari and Bell (1997) are: target selling price information is obtained from the market; satisfaction of customer desires is the target; emphasis is laid on cost management at the product design stage; the technique is multifunctional tasking; it involves managing cost through - the value chain; and it is life cycle oriented.

The process involved in target costing according to Ellram (2006) are: Identification of desired product/service characters which involves the identification of products' quality, specification and functionality desired through market survey (Zengin & Ada, 2010); obtaining the target selling price from the market through pricing research, customers' views surveys, and reviews of competitors pricing (Gopalakrishnan, Samuels & Swenson, 2007); determination of the product target cost by deducting the profit expected from the selling price (Hamood, Omar & Suleiman, 2013); disaggregation of the expected cost into functional units through allocation of target cost to each of the products and functions (Gopalakrishnan et al., 2007); realising the target cost through cost management activities such as : value engineering/analysis, Quality Function Deployment (QFD), etc. to achieve continuous cost reduction; and continuous monitoring, reviewing and repeating the entire process involved in target costing.

Life – Cycle Costing

This is a technique of estimating and accumulation of the total monetary cost of a product throughout its entire life from the beginning to the end of the life span of the particular product with the aim of minimizing the combined costs (Testa, Iraldo, Frey & O'Connor, 2011). Horngren, Foster and Datar (2000) have referred to life cycle costing as “cradle – to – grave costing” since the entire costs to be incurred throughout the life time of the product are captured. Life – cycle costing ensures that the total cost determined for each of a product life stages - introduction, growth, maturity, and decline are accurate.

Information obtained from life cycle costing system can assist in cost management decisions. In cost management, it is possible to classify costs of a product life cycle into relevant classes (Bengu & Kara, 2010). Spickova and Myskova (2015) have noted that accurate cost information from life cycle costing can helps in optimising the costs incurred throughout a product life time.

Accurate cost information

The effective implementation of strategic cost management techniques in a firm will result in the generation of accurate cost information for product pricing and marketing (Egbunike, Ogbodo & Onyali, 2014). The implementation of activity –based management, target costing or life cycle costing in a firm can deliver accurate cost information (Noordin, Zainudin, Mail, Mail & Sariman, 2015; Pazarceviren, 2015.

Cost information relevant for taking strategic decisions must be complete in its entirety, be broad, forward looking, outward looking and market focused. With accurate cost information, performance of a firm can be enhanced.

Empirical Review

Fridh and Borgenas (2003) studied the implementation of target costing in Swedish companies using a sample of 250 firms. Primary data used were collected using questionnaire. The study revealed that 16.5% of the sampled companies in Sweden implemented target costing. This shows that target costing was not largely implemented in Sweden.

Tontiset and Usshawanitchakit (2009) conducted a study on the role of strategic cost management in generating information that is accurate for taking decisions relating to competitiveness and firm performance using the theory of contingency and the resources - based view. The study revealed that effective cost management can deliver true information relevant for taking quality decision which can improve the competitive position of the firm and enhance its performance.

Juhmani (2010) examined the implementation of target costing in Bahraini manufacturing firms.
The study found that firms using target costing performed better than those firms that are not implementing the technique. It also found that target costing practice leads to cost reduction, realisation of quality and customer satisfaction.

Yazdifar and Askarany (2011) carried out a comparative study of target costing adoption in the UK, Australia and New Zealand by examining what contributes to the implementation of the technique. Questionnaire instrument was used for data collection from (CIMA) members in manufacturing and service companies; 1175 members in Australia, 366 members in New Zealand and 500 members from UK. These selected countries constitute the study sample. Data collected were analysed descriptively. The results of the analysis revealed that the rate of target costing implementation in manufacturing firms among the sampled countries was higher than the rate of the implementation of the technique among service firms across the countries.

Tontiset and Choojan (2012) studied strategic cost management success in electrical manufacturing businesses in Thailand. The study examined the results of the implementation of strategic cost management in the sampled electronic manufacturing firms using the resources - based view and contingency theory. Data were collected with the use of questionnaire from a sample of 120 manufacturing firms in Thailand. Regression analysis was used in analyzing the data collected. It was found that the implementation of strategic cost management can enhance firm performance positively.

Ramljak and Rogošić (2012) studied potency of strategic management accounting in generating relevance and timely information for used by managers. Large-sized Croatian companies were

sampled for the study and data were collected using questionnaire. The data collected were analysed using ANOVA and Mann Withney statistics. The study found that the fundamental purpose of strategic management accounting of providing accurate information was fulfilled.

Furthermore, Chaikainbang, Ussahawanitchakit and Boonlua (2012) examined the impact of strategic cost management on performance of companies in food business in Thailand. Questionnaire survey instrument was used in collecting data collection from 168 respondents' firms. Data collected were analysed with the use of t - test statistic and factor analysis. It was found that strategic cost management implementation can lead to operational excellence and achievement of accurate cost information in the firm.

Mijoč, Starčević, and Mijoč, (2014) examined how target costing, activity-based costing and total quality management as contemporary cost management techniques can improve firm performance. The study sampled 172 Croatian limited liability companies and collected relevant data using questionnaire. Data analysis was done by using correlation analysis. The study found that financial performance is significantly positively associated with contemporary cost management technique such as TQM. But ABC and target costing did not show positive impact on the financial performance of the companies studied.

Alsoboa, Al-Ghazzawi and Joudeh (2015) examined how performance can be influenced by the implementation of strategic costing techniques in manufacturing firms. The study examined activity-based costing, target costing, life-cycle costing, value chain costing and quality costing. These techniques are also regarded as strategic cost management techniques. The study sampled 91 listed manufacturing companies in Jordan and data were collected using questionnaire administration. Descriptive statistics and multiple regression were employed in data analysis. The results revealed that activity –based costing, target costing and quality costing have significant positive effect on overall performance. While life-cycle costing and value chain costing do not positively influence firm performance.

Chaikainbang (2016) investigated the outcomes of strategic cost management implementation. Transportation businesses in Thailand was the focus of this study and it examined the influence of strategic cost management implementation on operational efficiency. Data were collected from 105 sampled firms using questionnaire. Data collected were analysed using the ordinary least square (OLS) regression. The study found that strategic cost management has a significant positive effect on operational efficiency.

In Nigeria, Oyewo (2013) studied strategic cost management practices in Nigerian manufacturing firms and banks. The study examined the extent of usage of strategic cost management in sampled firms with the intent of identifying the factors influencing the adoption of strategic cost management techniques. The study sampled 40 companies, comprising of 26 manufacturing companies and 14 financial service companies (banks). The study revealed that strategic cost management techniques are being practiced in Nigeria, but that these techniques were more applicable in manufacturing companies than financial service companies. An in-depth study of the strategic cost management practices was not carried out to determine their applicability in Nigerian manufacturing companies. This current study is set out to fill the missing gap.

Idowu (2014) investigated how target costing can be used to attain competitive advantage in selected Nigerian manufacturing firms. The study sampled 10 quoted manufacturing companies and the study administered questionnaire to collect data from the respondents in these firms. Analysis of Variance (ANOVA) and regression analysis were used in analyzing the data collected. The test results showed that target costing has a significant positive impact on competitive advantage in the sampled manufacturing firms. However, this study did not examine the role of target costing in the provision of accurate cost information that can led to the attainment of cost advantage.

Imeokparia and Adebisi (2014) carried out a study on target costing and performance of manufacturing companies in South Western Nigeria. The study sampled 282 manufacturing firms and questionnaire instrument was employed in collecting data. Data analysis was done using regression and t-test. The study found that the implementation of target costing among the sampled firms was low and that there is a positive relationship between the adoption of target costing and return on investment and cost reduction.

Methodology

The cross - sectional survey research design was employed in this study as it allows for the examination of statistical associations at any particular point in time, and large sample could be drawn from the study population. The area of the study covered quoted manufacturing firms located in Lagos and Ogun states of Nigeria as majority of manufacturing firms in Nigeria either have their head offices or factories located in these states.

The population of the study consisted of 77 quoted manufacturing firms (385 respondents) having their head offices or factories located in the study area. The listed companies were extracted from Nigerian Stock Exchange Fact book, 2015/2016. The sample size of 65 quoted manufacturing companies (325 respondents) was determined statistically using Taro Yamane formula (Imeokparia, 2013). The specific firms used were then selected randomly.

Primary data for the study were collected via questionnaire instrument. The questionnaire was structured to cover questions on personal information about the respondents; information on the respondent's company; assessment of activity - based management capability, life - cycle costing orientation, and target costing implementation; and assessment of consequence of strategic cost management practices - accurate cost information.

Five (5) copies of the questionnaire were distributed to each of the sampled sixty - five (65) companies (325 respondents). The questionnaire was targeted at the various category of accountants and the chief internal auditors of the manufacturing companies under study. These officers of the firms were considered knowledgeable to fill the questionnaire appropriately (Singh, 2013). After several visits made to the sampled companies, two hundred and forty – four (244) copies of the administered questionnaire were retrieved out of which eleven (11) were unusable due to improper filling by the respondents. The valid copies of the questionnaire instruments used for analysis were two hundred and thirty - three (233) from 57 manufacturing firms, which represents 71.7% success rate of return.

Variable Measurement

The following variables used in this study were measured as follows:

Activity Based Management Capability (ABMC)
Activity Based Management Capability (ABMC) was used as a proxy for Activity based management and described in the questionnaire using six items developed from literature and the items were measured using seven–point Likert scale.

Life Cycle Costing Orientation (LCCO)
Life Cycle Costing Orientation (LCCO) was used as a proxy for Life Cycle Costing and described in the questionnaire using six items developed from the literature and measured using seven–point Likert scale.

Target Costing Implementation (TCI)
Target Costing Implementation (TCI) was used as a proxy for Target costing and described in the questionnaire using six items developed from literature and these items were measured using seven–point Likert scale.

Accurate Cost Information (ACI)
Accurate Cost Information (ACI) was described in the questionnaire using four items developed from the literature and the items measured using seven–point Likert scale.

Method of analysis

Structural Equation Modeling (SEM) was used in analyzing the data collected and testing of hypotheses formulated in the study. The specific version of the SEM used was the Partial Least Squares (PLS). SEM is a second generation regression analytical method and it is an alternative to ordinary least squares regression. SEM was used because it makes it possible to determine several measures of reliability and validity tests (Baines & Langfield-Smith 2003; Homburg 1992); and particularly, the PLS version of SEM allows for smaller sample and does not require data normality for its use.

Model Specification
The Partial Least Square (PLS -SEM), was used to identify the impacts of Activity –based management, target costing and life cycle costing techniques on accuracy of cost information. To be able to appreciate the relationships in this study a model was developed for achieving the three objectives of the study. The statement of the model in equation form is not necessary in PLS-SEM modeling as the software normally use in the analysis only understands models depicted in pictorial as shown in Figure 1. From the figure, the independent variables known as the exogenous variables are: Activity Based Management Capability, (ABMC), Life Cycle Costing Orientation (LCCO) and Target Costing Implementation (TCI), and while the dependent variable or endogenous variable is Accurate Cost Information (ACI). The independent and dependent variables which are in blue oval shapes are also referred to as the latent variables. The arrows linking the independent latent variables to the dependent latent variable show the relationship between the two variables. While the arrows from each of the latent variables leads to the rectangular - yellow shapes known as manifest (measurement) variables.

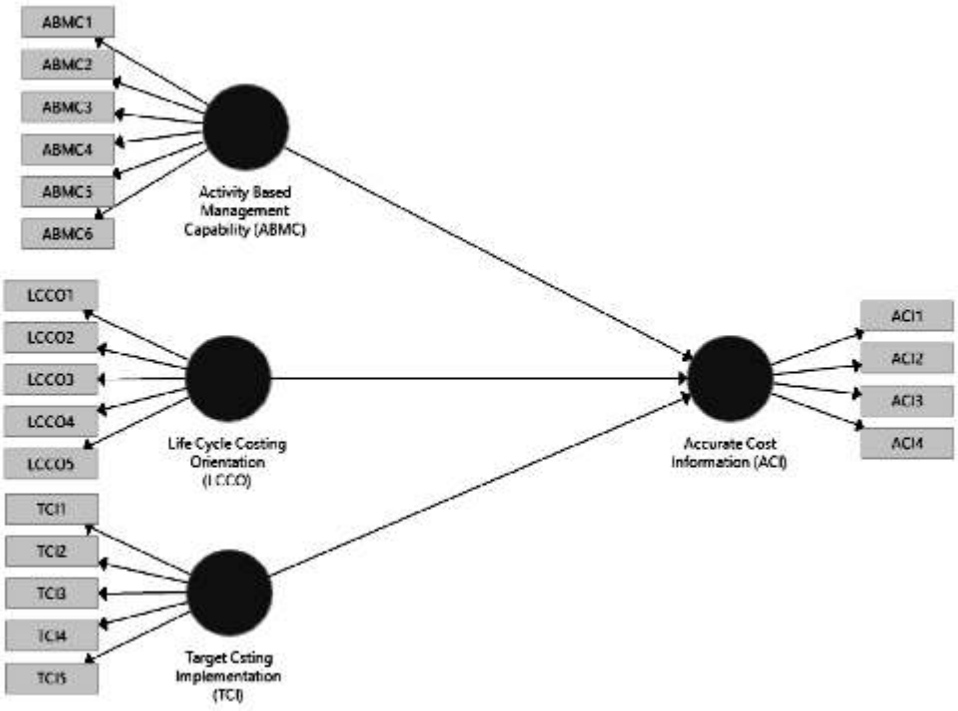

Figure 1: Author's PLS – SEM Model of the study (2018)

The model stated in a pictorial form as seen in Figure 1 can be specified in equation form as:

$ACI = \beta_0 + \beta_1 ABMC + \beta_2 TCI + \beta_3 LCCO + \varepsilon$

Where:

$\beta 0$ = Intercept
$\beta_1 - \beta_3$ = Parameter of estimate
ε = Error term
ACI = Accurate cost Information
ABMC = Activity –based Management Capability
TCI = Target Costing Implementation
LCCO = Life cycle costing orientation

Analysis and Discussion of Results

PLS - SEM Analysis and Testing of Hypotheses

PLS – SEM analysis was done using two steps: Firstly, the evaluation of the measurement model which defines the relationships between the construct variables and their manifest variables. This evaluation constitutes preliminary tests in SEM analysis. Secondly, the evaluation of the structural model that defines the relationships among the construct variables and hypotheses testing was carried out.

Preliminary Tests

The PLS algorithm was run using SmartPLS 3.0 software to produce the Indicators reliability test, Construct reliability and Validity tests, convergent validity test and discriminant validity tests.

Indicators Reliability Test

This test which specifies which part of an indicator's variance can be explained by the underlying latent variable (construct) was measured by indicators loading and indicators reliability. From Table 1, all the indicators used in this study have loadings above the required threshold of 0.70 (Ringle, 2006). And the indicators reliability values are all above the common threshold criterion of 0.50 (Hair et al, 2014). These results show that all the indicators are reliable and the measurement model is strong.

Table 1: Indicator Reliability

Latent Variable	Indicators	Loadings	Indicator Reliability
Accurate Cost Information (ACI)	ACI1	0.863	0.745
	ACI2	0.896	0.803
	ACI3	0.900	0.810
	ACI4	0.837	0.701
Activity Based Mgt Capability (ABMC)	ABMC1	0.847	0.717
	ABMC2	0.892	0.796
	ABMC3	0.900	0.810
	ABMC4	0.872	0.760
	ABMC5	0.856	0.733
	ABMC6	0.835	0.697
Life Cycle Costing Orientation (LCCO)	LCCO1	0.801	0.642
	LCCO2	0.870	0.757
	LCCO3	0.901	0.812
	LCCO4	0.852	0.726
	LCCO5	0.823	0.677
Target Costing Implementation (TCI)	TCI1	0.880	0.774
	TCI2	0.847	0.717
	TCI3	0.851	0.724
	TCI4	0.882	0.778
	TCI5	0.862	0.743

Source: Author's SmartPLS 3.0 Results (2018)

Construct Internal Consistency Reliability

The construct consistency reliability which indicates how well a set of manifest variables appraises a single latent construct was evaluated by two measures – Cronbach's Alpha and Composite Reliability (CR). From Table 2, the Cronbach Alpha and the composite reliability (CR) values of all the latent variables in the study were above the required value of 0.70. The results therefore show that internal consistency reliability has been demonstrated.

Convergent validity

Convergent validity which shows the amount of variance captured by the latent variable from its relative manifest variables due to measurement errors was tested using Average Variance Extracted (AVE) test (Memon & Rahman, 2014). From Table 2, the AVE values of all the constructs in this model

were greater than 0.5 stipulated by Hair et al., (2011). This result implies that convergent validity was confirmed and the model is adequate.

Table 2: Construct Reliability and Validity

Latent Variable	Cronbach Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Accurate Cost Information (ACI)	0.897	0.928	0.764
Activity Based Management Capability (ABMC)	0.934	0.948	0.752
Life Cycle Costing Orientation (LCCO)	0.904	0.929	0.723
Target Costing Implementation (TCI)	0.916	0.937	0.748

Source: Author's SmartPLS 3.0 Results, (2018)

Discriminant Validity

Discriminant validity test was carried out to confirm that the manifest variable in any construct is relevant to the designated latent variable. Discriminant validity test was measured using Fornell - Larker criterion (Fornell - Larker,1981) and Heterotrait – Monotrait (HTMT) ratio (Henseler, Ringle and Sarstedt (2015). From Table 3 using Fornell - Larker criterion, it will be observed that the square root of AVE which are in the diagonal (in block form) are larger than other correlation values among the latent variables. In this situation, the discriminant validity is achieved when a diagonal value is higher than the value in its row and column. The entire results indicate that there is discriminant validity. From Table 4, the Heterotrait – Monotrait (HTMT) ratios for each pair of latent variables are below the criterion of HTMT0.90 as a cutoff, hence, the results therefore showed that discriminant validity was met in this study using HTMT ratio. The HTMT ratio is a better method of measuring discriminant validity. Overall, all the latent variables or constructs have been appropriately measured and so could be used for further analysis.

Table 3: Fornell – Larcker Criterion for Discriminant Validity Test

Latent Variable	ACI	ABMC	LCCO	TCI
Accurate Cost Information (ACI)	0.874			
Activity Based Mgt Capability (ABMC)	0.712	0.867		
Life Cycle Costing Orientation (LCCO)	0.541	0.591	0.850	
Target Costing Implementation (TCI)	0.657	0.715	0.770	0.865

Source: Author's SmartPLS 3.0 Results (2018)

Table 4:Heterotrait – Monotrait (HTMT)

Latent Variable	ACI	ABMC	LCCO	TCI
Accurate Cost Information (ACI)				
Activity Based Mgt Capability (ABMC)	0.776			
Life Cycle Costing Orientation (LCCO)	0.601	0.587		
Target Costing Implementation (TCI)	0.724	0.738	0.772	

Source: Author's SmartPLS 3.0 Results (2018)

With the preliminary tests producing satisfactory results, it implies that the measurement (manifest) variables are able to measure their constructs correctly and that the constructs were able to measure what they were intended to measure.

Structural Model Assessment

The structural (inner) model of this study, which specifies the relationship between the exogenous (Activity based management capability, Life Cycle Costing Orientation, and Target Costing Implementation) and endogenous latent variable (Accurate Cost Information) can be seen in Figure 1 showing the coefficient of determination (R2) and the path coefficients (β values) in the model. In this study, SmartPLS algorithm was used to obtain the β values and the R2; while Smart PLS bootstrapping process was used to obtain the t – statistic and the p – values.

Evaluation of Coefficient of Determination (R^2)

PLS – SEM has no proper overall goodness of fit measures (Hulland, 1999) and so does not use goodness of fit (GOF) index; instead, the R2, and the path coefficients, particularly their significances are used in deciding which paths to leave in the model and which to discard (Henseler & Sarstedt, 2013). The R2 is the overall effect size measure for the structural model. A higher R2 indicates a higher predictive ability. In SEM, the R2 can be evaluated based on the threshold of 0.75, 0.50, and 0.25 as large, moderate, and weak, respectively (Hair et al., 2011).

On the examination of Figure 2 and Table 5 the endogenous constructs' predictive power shows that Accurate Cost Information (ACI) has R2 values of 0.554, which shows that the model predictive capacity is good. Thus, ABMC, LCCO and TCI are able to predict Accurate Cost Information (ACI) reasonably.

Table 5: Coefficient of Determination (R^2)

	R Square (R^2)	R Square Adjusted
Accurate Cost Information (ACI)	0.554	0.548

Independent Variables: ABMC, LCCO and TCI
Source: Author's SmartPLS 3.0 Results (2018)

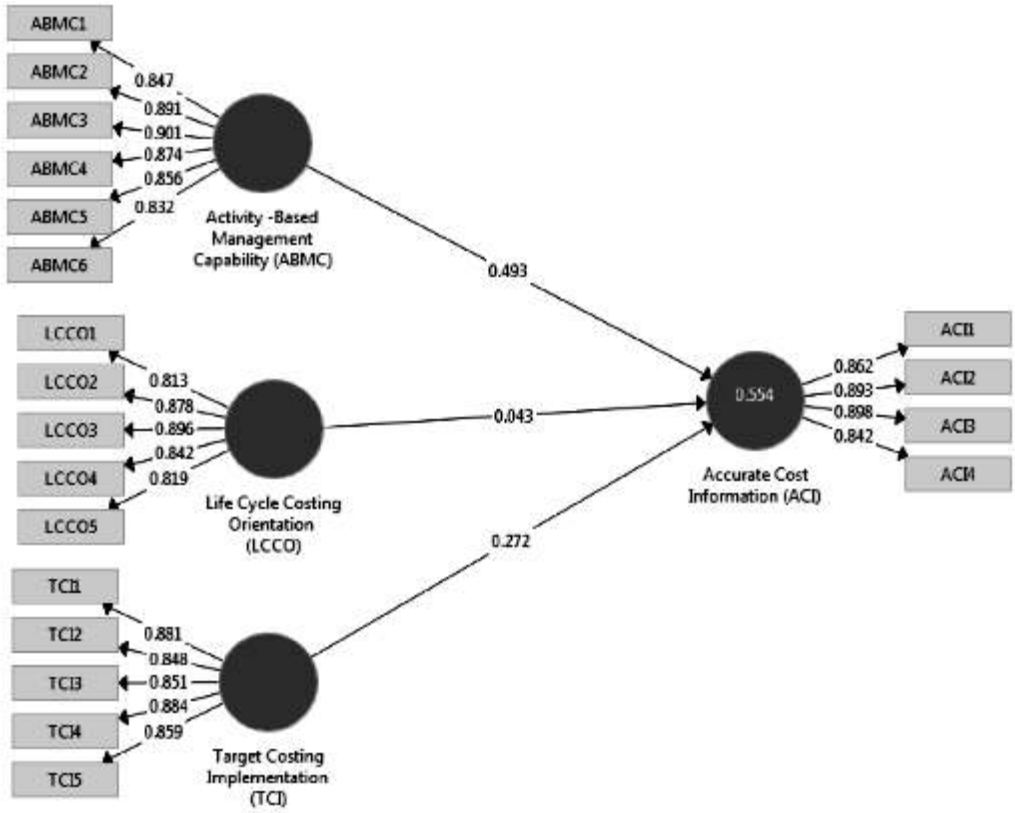

Figure 2: (Author's SmartPLS 3.0 Results, 2018)

Assessment of Path Coefficient and Test of Hypotheses

The significance of the relationships between constructs in PLS – SEM can be determined by examining their paths coefficients obtained from PLS-SEM algorithm and their related t- statistics and p- values obtained from the bootstrapping procedure of PLS - SEM analysis. In this study, the bootstrapping procedure was carried using 2,000 samples to produce the t- statistics and p- values of the coefficients.

The results of the bootstrapping process shown in Figure 3 under Appendices II and also presented in Table 6. All the path coefficients show a positive effect as can be seen in Table 6.

Test of Hypotheses

Ho1:Activity- Based Management (ABM) has no significant influence on accuracy of cost information.

The above hypothesis defines the relationship between ABM and ACI. From Table 6 Activity Based Management Capability (ABM) shows a significant influence on Accuracy of cost information (ACI) ($\beta = 0.493$, $p < 0.01$). This indicates that Accuracy of cost information changes in direct proportion to Activity based management capability with a coefficient of 0.493 signaling a positive relationship between ABMC and ACI. From these result, the hypothesis that activity -based management does not significantly influence accuracy of cost information is not accepted.

Ho2: Life Cycle Costing (LCC) has no significant effect on Accuracy of Cost Information (ACI)

This hypothesis defines the relationship between LCC and ACI. From Table 6, it can be seen that Life cycle costing has a positive non - significant impact on Accuracy of cost information ($\beta = 0.043$, $p > 0.10$). This result thus indicated that there is no significant impact of LCCO on ACI, and hence, the hypothesis stating that Life Cycle Costing does not significantly influence Accuracy of cost Information is accepted.

Ho3:Target Costing (TC) has no significant impact on Accuracy of Cost Information (ACI)

The above hypothesized the relationship between TC and ACI and from Table 6, the result indicated that Target costing has a direct significant positive impact on Accurate cost information ($\beta = 0.272$, $p < 0.01$). This means that Accuracy of Cost of Information changes in direct proportion to Target costing. Hence, the hypothesis stating that Target Costing does not significantly influence Accuracy of Cost Information is not accepted.

Table 6: Path Coefficients with Significance Values

Paths	Hypothesis	Coefficient ( )	Standard Deviation	T-Statistics (/ STDEV)	P - Values	Significant ?
ABMC -> ACI	1	0.493	0.090	5.461	0.000*	Yes
LCCO -> ACI	2	0.043	0.082	0.525	0.600	No
TCI -> ACI	3	0.272	0.098	2.772	0.006*	Yes

Note: * $p < 0.01$

Source: Author's Smart PLS 3.0 Results (2018)

Discussion of Results

The finding of this study is discussion here.

Effect of Activity- based management on Accuracy of cost information

From the result of the testing of hypothesis (HO1), activity- based management significantly influences accuracy of cost information. This attests to the fact that activity - based management practice can enhance the accuracy cost information generation in a firm, especially, through activities and cost drivers analyses. This finding supports the study of Gupta and Galloway (2003), who found that activity - based management system could enhance the provision of accurate cost information that are relevant for cost management. With the implementation of activity - based management, undistorted information can be reported to the management for making informed decisions.

Influence of life cycle costing on accuracy of cost information.

The result of the testing of hypothesis (HO2) shows that there is a positive relationship between life cycle costing and accuracy of cost information but not significant. Hence, the study found that life cycle costing technique does not significantly influence accuracy of cost information. This study thus indicates that the implementation of life cycle costing as a technique of strategic cost management, may not lead to the generation of accurate cost information in a firm. This finding is contrary to the study

of Petrova and Zarudnev (2013) who found that accurate cost information can be generated from life - cycle costing system at each stage of a product life cycle. The reason for the variance could be the result of lack of effective implementation of life cycle costing in the sampled companies as poor implementation of this technique of strategic cost management may not deliver the expected results.

The impact of target costing on accuracy of cost information

To achieve the above objective, hypothesis (HO3) was tested and the result implies that target costing implementation significantly influenced the accuracy of cost information. The finding shows that there is a positive relationship between target costing and accuracy of cost information. It also indicates that the usage of target costing technique can enable a firm generate undistorted cost information for effective cost management decisions. The outcome of this study is consistent with the study of Mehdi, Vahid and Mohammadreza (2012), who argued that target costing generates accurate information for value – based pricing decisions.

Conclusion and Recommendations

This study investigated the impact of: activity – based management, life cycle costing, and target costing techniques on the accuracy of cost information in the sampled manufacturing firms. The study found that activity – based management and target costing practices can enhance the generation of accurate cost information in manufacturing firm. This however is not true with life cycle costing practice as it shows no evidence that it can enhance the production of accurate cost information in manufacturing firms. This may further need re- examination in future research.

The following recommendations are made based on the findings of this study:

To improve the provision of accurate cost information in manufacturing firms, ABM and target costing techniques are recommended for adoption to be used my companies that are yet to do so.

Manufacturing firms implementing life cycle costing technique should ensure it is properly implemented to achieve the desired result of accurate cost information relating to the life cycle cost of their products as improper implementation of this technique will not produce good results.

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APPENDIX
Appendix I
Demographic Data of the Respondents

Variables	Frequency	Percentage (%)
Position in the Firm		
Cost Accountant	55	23.6
Management Accountant	51	21.9
Financial Accountant	88	37.8
Chief Accountant / Finance Controller	29	12.4
Chief Internal Auditor	10	4.3
Total	233	100
Working Experience		
5 Years and Below	82	35.2
6 - 10 Years	92	39.5
11 - 15 Years	39	16.7
Above 15 Years	20	8.6
Total	233	100
Qualifications		
Diploma/ NCE	22	9.4
B.Sc./BA/HND	139	59.7
M.Sc./M.A.	32	13.7
Ph. D.	3	1.3
ACA/ACCA & B.Sc. HND/M.sc/MA/Ph.d.	32	13.7
ACA/ACCA/FCA	5	2.2
Total	233	100
Gender		
Male	190	81.5
Female	43	18.5
Total	233	100

Age		
Under 25	5	2.1
25 30 Years	80	34.3
31 40 Years	110	47.3
41 50 Years	30	12.9
51 and Above	8	3.4
Total	233	100

Source: Author's Questionnaire Administration Results, 2018

Appendix II : BOOTSTRAPPING RESULTS

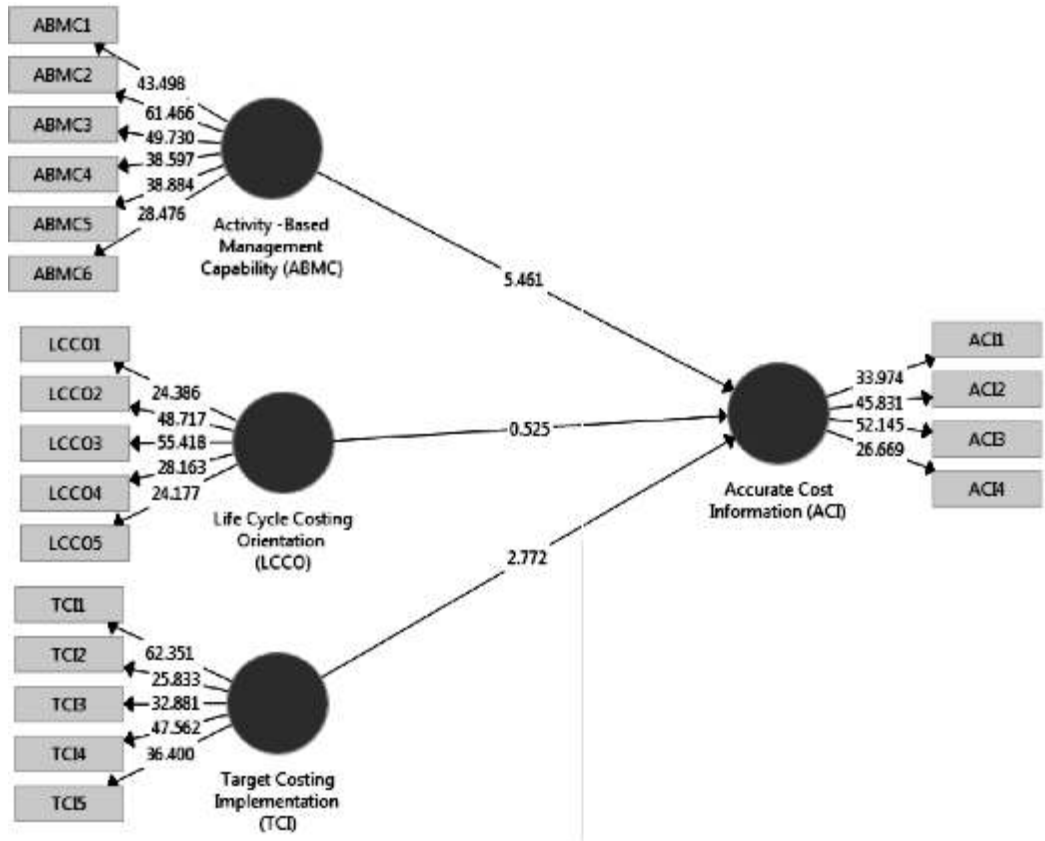

Figure 3: (Author's SmartPLS 3.0 Results, 2018)

Appendix III:

LIST OF QUOTED MANUFACTURING COMPANIES WITHIN THE SAMPLE FRAME

1. 7-up Bottling Co. PLC
2. ABPlast Products PLC
3. ADSwitch PLC
4. African Paints (Nig.) PLC
5. AFRIK Pharmaceuticals PLC
6. Alumaco PLC
7. Aluminum Extrustion Industries PLC
8. ANINO International PLC
9. Ashaka Cement PLC
10. Avon Crowncaps & Containers PLC
11. B.O. G Gases Nigeria PLC
12. Berger Paints Nigeria PLC
13. Cadbury Nigeria PLC
14. Cement Company of Northern Nigeria PLC
15. Champion Breweries PLC
16. Chemical and Allied Products PLC
17. Chevron Oil Nigeria PLC
18. Conoil PLC
19 CUTIX PLC
20. Dangote Cement PLC
21. Dangote Flour PLC
22. Dangote Sugar Refinery PLC
23. DN Meyers PLC
24. Elijah Lakes plc
25. Eterna Oil & Gas PLC
26 Fidson Healthcare PLC
27. First Aluminum Nigeria PLC
28. Flour Mills Nigeria PLC
29. FTN Cocoa Processor PLC
30. GlaxoSmithKline Consumers Nigeria PLC
31. Golden Guinea Breweries PLC
32. Greif Nigeria PLC
33. Honeywell Flour Mill PLC
34 Interlinked technology PLC
35. International Breweries PLC
36. IPWA PLC
37. Jos International Breweries PLC
38. Lafarge WAPCO PLC
39. Livestock Feeds PLC
40 Liz-Olofin and Company PLC
41 May and Baker Nigeria PLC
42 Mobil Oil Nigeria PLC

43 Morrison Industries PLC
44 MRS PLC
45. Multi-Trex Integrated Foods PLC
46. NAMPAK Nigeria PLC
47 .National Salt Company Nigeria PLC
48. Neimeth International Pharmaceuticals PLC
49. Nestle Nigeria PLC
50. Nigeria Breweries PLC
51. Nigeria Enamelware PLC
52. Nigeria Wire and Cables PLC
53. Nigerian Bag Manufacturing Company PLC
54. Nigerian Lamps Industries PLC
55 Nigerian Ropes PLC
56. Nigerian Sewing Machine Manufacturing PLC
57. Nigerian Wire Industries PLC
58. NIYAMCO PLC
60. Northern Nigeria Flour Mills PLC
61 Oando PLC
62. Oluwa Glass Company PLC
63. P.S. Mandrides PLC
64. Paints and Coating Manufacturers PLC
65. Pharma-Deko PLC
66. Poly Products (Nigeria) PLC
67. Portland Paints and Products PLC
68. Premier Breweries PLC
69. Premier Paints PLC
70 Presco PLC
71. Tantalizers PLC
72. The Okumu Oil Palm Company
73 Union Dicon Salts PLC
74. UTC Nigeria PLC
75. Vitafoam Nigeria PLC
76. Vono Products PLC
77 West African Aluminum Products PLC.

Source: Extracts from Nigerian Stock Exchange Facts Book, 2015/2016