

COST MANAGEMENT AND OPERATIONAL EFFICIENCY OF QUOTED FIRMS IN NIGERIA**ADEREMI, ADETUNJI ABDUL-AZEEZ****Department of Accounting,
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This study examined cost management and operational efficiency of quoted firms in Nigeria. Specifically the study analysed effect of distribution cost, administrative cost and factory overhead cost on operational efficiency. A total number of ten quoted firms were sampled at random in the study and data were collected from annual report of the sampled firms over the period of 10 years spanning from 2010 to 2019. Data were analysed using panel based estimation techniques including pooled OLS, fixed effect and random effect estimation. Evaluation of estimators for consistency and efficiency was done via restricted F-test and Hausman test. Result showed that distribution cost has insignificant negative effect on operational efficiency $-0.1390755(p > 0.05)$. Administrative cost also exert insignificant negative effect of operational efficiency $-0.0087021(p > 0.05)$, while factory overhead cost has insignificant positive effect on operational efficiency $0.089898(p > 0.05)$. This study thus concluded that focusing on the management of distribution cost, administrative cost as well as factory overhead cost in the same period does not culminate into significantly improvement in operational efficiency of quoted firms Nigeria. Hence, quoted firms in Nigeria should redress their cost management strategies to further harness a wider scope of cost management that can engender significant improvement in operational efficiency looking forward

Keyword: Cost Management, operation efficiency, quoted Firms, Nigeria.

Introduction

Cost management is one of the key business factors that influence operational performance of manufacturing firm's world over. As relayed by Zengrin and Ada (2010), cost management is the most important tool employed by managers to reduce the problem of a decreasing efficiency, profitability and performance of firm. Cost management involves cost cutting relative to the revenue in such a way that the price offered to the customers remains unchanged while firm achieved higher level of profitability and returns to investors (Kumar and Shafabi, 2011). For adequate profit to be recorded from a business there is a need for adequate control of cost (Oyerogba, Olaleye and Solomon, 2014). Also, customer satisfaction is achieved through proper cost planning and implementation as customers demand products that meet their specification and expect high quality products at cheaper prices (Ezekiel and Olubunmi, 2019). This requires that firm focus on the determination of the cost of their products cost

management ensures an increase in business competitive potential as executives have to consider and collect detailed information of occurred cost as well as cutting down unnecessary expenses to reduce manufacturing cost (Kanthana, 2018). Furthermore, cost management helps management to support decision making as well as improve their competitive advantage which results in a better resource allocation.

Cost management is a process of resource allocation effort to add more value to products by emphasizing effective use of manufacturing cost. According to Hussin (2013) cost management means correct cost estimation enables firm to control stocked products administration effectively and helps to reduce operational risk as well as negotiate price with customers to create sustainable profit. Cost management helps to finish the task with the spending of limited allocated resources and makes valuable to firms such as working capital invested reduction, lower cost per unit, and better quality of the process and product. Also, Henri, Boiral and Roy (2016) considered cost management as a long-term strategy to improve supply chain systems and manufacturing of different cost structure for improved firm activities. Therefore, cost management is crucial issue that executives should pay attention to it in order to obtain accurate cost information that can be used for administration, decision-making, and effective internal control to achieve the highest organizational goals.

Every businesses either product or service provider seek to enhance operational efficiency. According to FunsoKolapo (2006), a firm that is not operationally efficient would fail to achieve satisfactory return on investor's money and find it difficult to survive adverse economic conditions. According to Funso and Kolapo (2006), a firm that is not operationally efficient would fail to achieve satisfactory return on owners' equity and find it difficult to survive adverse economic conditions. Operational efficiency occurs when level of output is maintained after cost of reduction or higher level of output when cost is maintained with no loss in the value of the product produced. It represents the measure of the ability of the firm to transform inputs into products and services at a lower cost relative to revenue generated from operation. In order to survive and prosper, firms have to produce their output from input efficiently. Producing more output from unchanged input, consuming less input for unchanged output, reducing operating costs without damaging the corporation, reducing the days in the cash conversion cycle, improving operating cash flows, increasing total asset turnover, and effecting reductions in operating risk are all signs of relative operational efficiency (Amarjit, Manjeet, Neil and Harvinder, 2014).

Manufacturing firms in Nigeria find it difficult to achieve higher efficiency in their operation which has shifted local demands for products to majorly imported products. One the fundamental reasons observed to be responsible for this is the poor level of cost management among quoted manufacturing firms in the country (Oyewo, 2013). As observed by Egbunike, Ogbodo and Onyali, (2014), cost management practice among Nigerian manufacturing firms has not be satisfactory with the inherent deficiency in completeness of cost information captured during financial reporting. As relayed by Drury (2012) cost management system adopted by most Nigeria manufacturing has hither-to been hampered the possibility of sustained level of efficiency among players in the manufacturing industry of the country.

Succinctly, the need to for effective cost management system that will provide management with information that is complete and that can be used in gaining higher efficiency and competitive advantage among quoted firms in the country has continue to

occupy the interest of scholars and stakeholders in recent time, However, despite the importance given to the subject matter of cost management by scholars, little attempt has been geared to assess cost management and operational efficiency in Nigeria. Most of the previous studies focused on the impact of cost management on firm's performance, while other studies that capture the interrelationship between cost management and operational efficiency focus largely on the financial service sector for instance studies by Olanrewaju and Obalade, (2015); Oyewo, (2013) to mention but few. In addition other studies on the subject matter of cost management and operational efficiency of quoted firms were carried out with little or no attention given to the uniqueness across firms for some studies that employed panel analysis. Hence, using updated dataset and giving consideration to the uniqueness across firms, this study specifically examined the:

- (i) effect Distribution Cost on operational efficiency of quoted firms in Nigeria
- (ii) effect of administrative cost on operational efficiency of quoted firms in Nigeria
- (iii) effect of factory overhead cost on operational efficiency of quoted firms in Nigeria

Literature Review

Cost Management

Drury (2005) defines cost as expenses, which have been consumed in earning revenue. It can be divided into two types, direct and indirect cost. Direct cost involve cost incurred on factors which directly used in the factory for production while indirect cost are cost incurred on factors that aid the distribution of product such as overhead cost and selling and central expenses. Horngren, Datar, Foster, Rajan and Ittner, (2009), added that costs are defined as variable or fixed with respect to a specific cost object and for a given time. Oyerogba, Obaleye and Solomon (2014) also identified two dimensions of cost which are controllable cost and uncontrollable cost. Management on the other hand, entails mainly planning and controlling of resources.

Cost management is the process of planning and controlling the cost incurred by a business in carrying out their normal business operations (Henri, Boiral and Roy,. 2016). According to Anand, Sahay and Saha (2005) cost management can be described as process of reducing operating cost or production expenses in order to provide less expensive product or services to consumer. Zengin (2010), defined cost management as the means through which management of manufacturing firm analyse it's production and streamline its operations to keep costs low and manage expenses in the future.

Drury (2005), explained that cost management is the main focus of managerial accounting that helps a firm forecast future expenses in an effort to reach budgeting goals. Under managerial accounting, the process of cost management is typically divided into three phases which are planning implementation and financial analysis (Zhou, Yuchen, Hao and Xiaobo, 2018). In the planning phase, expected cost are projected and approved by higher management. Once the plan has been approved, the implementation phase monitors and records the cost, making sure that they keep in line with budgeting. After the production is finished, actual and planned costs are compared and variances are investigated in the financial analysis. If the company did not meet the planned line number, management might consider switching production materials, change plant process, or product design in an effort to lower cost (Huang and Zong, 2013)

Operational efficiency

The word 'operations' means work on several elements which includes transforming of resource into desired goods, services or results and create deliver value to customer. According to Business Dictionary, operation means work or tasks consisting of one or more constituent or subtasks performed typically in one direction. Operations transforms resources into preferred goals, services or results and creates and convey worth to customers related to any operational activity form a process. The concept of efficiency pertains to the cost of input for the output produced. It represents how well a relevant action is performed. It relates with selecting the best course of action. Efficiency is a measure of whether the right amount of resources has been used to deliver a process, service or activity (Ayadi, 2013). Efficiency is not only reducing cost, increasing profit, diversifying business and fulfilling other business objective but it also includes maintaining quality, providing services and retaining customers. It referred to how efficiently various business operations are carried out.

Olarewaju and Obalade (2015) described operational efficiency of any form of firm as the ability of such firms to deliver their products and services effectively without sacrificing quality. With operational efficiency, firms can produce and distribute their defined products and services with minimum cost possible without losing the quality identity of the product. It measures the extent to which products and services have been produced, held and distributed at the minimum cost possible coupled with increased revenue with no loss in product and service quality. Operational efficiency arises when the firm employed the same level of inputs in production goods and service as before but now at relatively lower cost value while the quality and standard of the product and services is maintained. In light of this, described operational efficiency as the measure of the extent to which a firm is able to transform inputs into products and services at a lower cost relative to revenue generated from operation.

Shawk (2008) defined operational efficiency as a situation in which right combination of people, process and technology come together to enhance the productivity and value of the business operation while driving down the cost of routine operations to a desired level. Operational efficiency has to do with desired result of firm in terms of profit maximization, increased customer service deliver and customer satisfaction that arises through efficient use of the resources - labour, capital and human resources. This could be in form of producing more goods and services with no greater use of resources or maintaining the same level of production using fewer resources. Operational efficiency is the efficient utilization of human and material resources or the efficient use of people, machine tools and materials funds (Obafemi, Ayodele and Ebong, 2013). Better utilization of any or a combination of these three, can increase output of goods and services and reduce costs. Operational efficiency is the tactical planning of an organization to maintain a safe balance between cost and productivity. It identifies the wasteful processes that contribute to loss of resources and organizational profits. It deals with minimizing waste and maximizing the benefits of resource to provide better services to the customers.

Theoretical Review

Kaizen costing system

Kaizen a term with Japanese origin was launched by Masaaki Imai (Sani & Allahverdizadeh, 2012). The concept is a coinage of two Japanese words: KAI (Change) and ZEN

(for better) (Rof, 2012). Thereafter, Yashuhiro Monden from Japan developed Kaizen Costing as the costing counterpart to the Kaizen approach. This concept refers to the process of continuous improvement. Kaizen aims for improvements in productivity, effectiveness, safety, and waste reduction, and those who follow the approach often find a whole lot more in return. The principle behind Kaizen Costing application is on achieving small, gradual but continuous improvements in the production process at minimal cost. Kaizen Costing ensures that products meets or exceeds customer demands for 'quality, functionality, and prices' in order to sustain the product's competitiveness.

This according to Rof (2012) can be achieved through a sequential elimination of all the processes that would increase the product's cost of production without a corresponding increase in value. Its approach is found in many different process improvement methods ranging from Total Quality Management (TQM), to the use of employee suggestion boxes. Under kaizen, all employees are responsible for identifying the gaps and inefficiencies and everyone, at every level in the organization, suggests where improvement can take place. This technique has made tremendous changes in management policies not only in Japan, but all over the world (Ogundele 2004). Blocher, Chen and Lin (1999), define Kaizen costing technique as the application of continuous improvement specifically to reduce costs; it focuses on making production and service delivery processes more efficient. Kaizen costing is used for making improvement to a process through small incremental amounts, rather than through large innovations. Unlike target costing, Kaizen costing is applied during the production stage of the product life cycle. Adeniji (2011) asserted that Kaizen costing is the process of continuous improvement, encouraging constant reductions by tightening the 'standard'.

Efficiency Structure Theory

The efficiency structure hypothesis states that firms earn high profits because they are more efficient than others. There are two distinct approaches within the efficiency structure; the X-efficiency and scale-efficiency hypothesis. According to the X-efficiency approach, more efficient firms are more profitable since they have lower costs. Such firms tend to gain larger market shares, which may manifest in higher levels on market concentration, but without any causal relationship from concentration to profitability (Athanasoglou et al., 2006). The scale approach emphasizes economies of scale rather than differences in management or production technology. Larger firms can obtain lower unit cost and higher profits through economies of scale. This enables large firms to acquire market share, which may manifest in higher concentration and then profitability. As proposed by Demsetz (1973), the efficient structure hypothesis (hereafter the ES hypothesis) predicts that under the pressure of market competition, efficient firms win the competition and grow, so that they become larger, obtain greater market share, and earn higher profits. As a result, the market becomes more concentrated. Under this hypothesis, a market becomes more efficient as it becomes more concentrated, so that anti-concentration measures cause unnecessary distortion in the economy.

Empirical review

Lawrence and Sanusi (2014) analyzed target costing and performance of manufacturing industry in southwestern Nigeria. The study specifically examined extent of target costing system adoption and implementation by manufacturing industry in South-Western Nigeria and

their impact on performance. The study employed data collected through questionnaire from 282 firms in southwest Nigeria. The study analysed data using ordinary least square and t-test methods. The study showed a strong positive relationship between adoptions of Target costing and improvement in Return on Investment and reduction of cost. However, the study revealed that the level of adoption and application of target costing by manufacturing industry in South Western Nigeria is low.

Stella, Jeffery and Azuka (2019) examined inventory management and operational performance of manufacturing firms in Southwest Nigeria. The study particularly investigated the relationship between inventory cost and the operational performance; relationship between just in time approach and the operational performance; relationship between material requirement planning and the operational performance; relationship between strategic supply partnership and the operational performance of quoted manufacturing firms in southwest Nigeria. The study employed primary data collected from 100 staff of the four selected industries in southwest Nigeria. The study analysed data using descriptive and regression analysis. Then, the study revealed that inventory cost, just in time approach, material requirement planning and strategic supply partnership have no significant relationship with operational performance.

Oyerogba, Olaleye and Solomon (2014) examined cost management practices and firm performance of manufacturing organization. Specifically, the study assessed relationship between cost management practices and firm performance of manufacturing organization. The study employed panel data collected over the period of 2003-2012 for 40 manufacturing firms quoted manufacturing companies. The study evaluated data using descriptive and regression analysis, including analysis of variance. The study revealed positive significant relationship between cost management practices and firm's performance in the manufacturing organization.

Olanrewaju and Obalade (2015) investigated the operational efficiency of deposit money banks with a view to identify its major determinants in Nigeria. Particularly, the study examined the effect of price of labour, price of consumption, price of deposit, total investment, total loan and total deposit on operational efficiency of money deposit banks in Nigeria. The study employed data collated over the period 2004-2013 for 6 deposit money banks. The study analysed data using regression analysis. The study revealed that price of labour, total loan and total deposit has negative influence on banks operational efficiency.

Oyewo (2013) assessed the strategic cost management as a recession survival tool in the manufacturing and financial service industries. The study specifically evaluated the significant difference in the strategic cost management as a recession survival tool in the manufacturing and financial service industries. The study employed primary data collected from 40 manufacturing companies and 24 quoted bank financial service company. The study analyzed data using Mann Whitney test. The study showed significant difference in the strategic cost management technique adopted by the manufacturing and financial service industry. The study concluded that despite the negative effects that the global melt down imposed on companies globally, the effects are not entirely negative. The recession has forced companies to look inward to craft cost management strategies that will ensure their survival and continued relevance in the business environment.

Henry and Yellowe (2016) investigated the dividend policy and the profitability of selected quoted manufacturing firms in Nigeria. The study specifically examined the relationship between dividend policy and profitability of the selected quoted manufacturing firms in Nigeria. The study used two models in which net profit margin and return on investment are used as measure of profitability and dividend payout ratio, retention ratio, dividend yield and earning per share as explanatory variables. The study employed data over the period 1981-2014 for 15 quoted manufacturing firms in Nigeria. The study analyzed data using multiple regression analysis. The study revealed that all the independent variables have positive relationship with the dependent variables except dividend yield. The study recommends that operational efficiency of Nigerian financial market should be deepened and management should strengthen its effort for effective dividend policy that will increase the profitability of the quoted manufacturing firms Nigeria.

Ejike and Nnabuanyi (2019) analysed the impact of inventory control on operating profit of manufacturing firms in Nigeria. Particularly, the study examined the effect of inventory turnover ratio on operating profit of quoted manufacturing firms in Nigeria. The study employed data collected over the period 2003-2016 for ten quoted manufacturing firms in Nigeria. The study analysed data using descriptive and regression analysis. The study revealed that inventory turnover ratio has significant effect on operating profit of the selected firms. Therefore, the study concluded that inventory control has positive impact on operating profit of manufacturing firms in Nigeria. Thus, the study recommended that firms should maintain high level of inventory control, leading to increased operational efficiency.

Damilola, Johnson and Simon (2016) examined cost management and performance of manufacturing firms. The study specifically analyzed the effect cost management has on performance of listed manufacturing. The study used direct material cost, direct labour cost, production overhead cost and administrative overhead cost as explanatory variables while profitability as dependent variable. The study analyzed data using regression analysis. The study revealed positive relationship between cost management and performance of manufacturing firms in Nigeria. The study recommended that companies should embark on several cost management reduction strategy in relation to administrative overhead and production overhead cost.

Ben-Caleb, Otekunrin, Rasak, Adeware, Oladipo and Eshua (2019) assessed cost reduction strategies and the growth of selected manufacturing companies in Nigeria. The study particularly investigated the relationship between cost reduction strategies and the growth of manufacturing companies in Nigeria. The study employed data collected over the period 2012-2016 for 40 manufacturing companies quoted on the Nigeria Stock Exchange. The study analyzed data using regression analysis. The study revealed positive significant relationship between cost reduction strategies and growth of manufacturing companies in Nigeria. The study recommends that manufacturing companies should implement value analysis in order to reduce material costs and the implementation of cost reduction strategies in all manufacturing companies in Nigeria.

Onwurah (2013) examined the effect of standard costing on the profitability of manufacturing companies. Specifically, the study assessed the effect of standard costing technique on profitability; relationship between standard costing and profitability. The study employed data collected from 52 respondents of the staff of Nigeria brewery plc through

questionnaire. The study analyzed data using chi-square. The study showed that standard costing has positive significant relationship with profitability. The study therefore concluded that standard costing is widely used in Nigerian manufacturing companies and that standard costing enhances adequate planning, control and decision making processes in the company.

Gichuki (2014) investigated the effect of cost management strategies on the financial performance of manufacturing companies listed on the Nairobi Stock Exchange. The study specifically assessed the effect of supply chain management, labour management and stock management on financial performance of manufacturing companies. The study used return on asset as measure of performance. The study employed data collected from six manufacturing firms listed on Nairobi Stock Exchange. The study analyzed data using multivariate regression analysis. The study revealed that cost management strategy has significant relationship with return on asset. Therefore, the study recommended that company policy makers and transaction advisors should be keen on making cost management policies to be applied since they greatly impact on financial performance of the company.

Nwaiwu and Oluka (2018) assessed environmental cost disclosure and financial performance of oil and gas in Nigeria. Specifically, the study analysed the effect of environmental cost disclosure and financial performance measures of quoted oil and gas companies in Nigeria. The study employed data over the period 2011-2015. The study analysed data using Pearson product moment correlation coefficient and regression analysis. The study revealed that adequate disclosure on environmental cost, compliance to corporate environmental regulations have positive significant effect on financial performance measures. Thus the study recommended regulatory enforcement for adequate environmental cost disclosure and proper reporting and articulated environmental costing system in order to guarantee a conflict free corporate atmosphere for improved corporate performance.

Okezie, Okezie and Ogbu (2017) evaluated indirect cost and firm performance of quoted firms in Nigeria. The indirect costs were measured by power and electricity, rent charges, and employees' salaries; while firm performance is measured by return on asset. The study specifically analysed the effect of indirect costs on corporate profitability of quoted companies in Nigeria. The study employed data covering the period 2011-2015 for five companies listed on Nigeria stock exchange. The study analysed data using regression analysis. The study revealed that power and electricity has significant impact on return on assets, while rent charges, and employees' salaries have insignificant impact on return on assets of quoted companies studied.

Akinlabi (2017) examined inventory management practices and operational performance of selected flour mill companies in Nigeria. The study specifically assessed the effect of inventory turnover ratio on operational efficiency of selected flour mill companies in Nigeria. The study employed primary data collected through questionnaire from 2237 employees of three flour mill companies in Nigeria, Dangote Flour Mills, Flour Mills of Nigeria Plc, and Honeywell Flour Mill Plc. The study analysed data using descriptive, correlation and regression analysis. The study showed that Inventory turnover had positive and significant effect on the operational efficiency of the selected flour mills companies in Nigeria. Also, the study revealed that inventory shrinkage had a significant negative effect on customers' satisfaction of the selected flour mills companies in Nigeria and inventory investment had positive and significant influence on the competitive advantage of the selected flour mills companies in Nigeria. Therefore, the study concluded that inventory management practices

significantly influenced operational performance of flour mills companies in Nigeria. Thus, the study recommended that the companies should ensure that stocks were sufficient to meet production requirements and customer demands at all times and avoid holding unnecessary surplus stocks that might increase holding costs and thus ensure enhanced customer satisfaction.

Kinyugo (2014) analysed the effect of cost efficiency on financial performance of companies listed on Nairobi Stock exchange. Particularly, the study examined the relationship between cost efficiency and financial performance of firms quoted at Nairobi Securities Exchange in Kenya. The study employed data extracted over the period 2008-2013 for 47 companies listed in Nairobi stock exchange. The study analysed data using Pearson correlation and regression analysis including analysis of variance. The study showed that adherence to cost efficiency policies have a positive impact on company's financial performance. Also, the study revealed a significant positive relationship between return on asset and cost efficiency. Therefore, the study concluded that cost efficiency influences financial performance of Kenya companies. This, the study recommended that company management should take care about the improvement of the scale efficiency as well as pure technical efficiency and the potential improvements that come from the analysis results of this research in order to improve the efficiency the inefficient firms.

Ezekiel (2019) investigated strategic cost management and accuracy of cost information in selected manufacturing firms in Lagos and Ogun state. The study specifically analysed the effect of activity based management, life cycle costing and target costing on accuracy of cost information. The study employed data through questionnaire from three hundred and twenty-five respondents in sixty - five randomly selected manufacturing firms. The study analysed data using partial least square structural equation modelling. The study revealed that activity based management and target costing has positive effect on accuracy of cost information while life cycle costing has no influence on accuracy of cost information. The study concluded that strategic cost management practices are relevant for accessing accurate cost information. Thus, the study recommended that manufacturing firms should implement strategic cost management practices to achieve accuracy of cost information.

Methodology

Model Specification

This study adapted the model used by Oyerogba, Olaleye and Solomon (2014) in their investigation of the relationship between cost management practices and firms performance of manufacturing organization. Their model specified profitability as a function of direct material cost (DMC), direct labour cost (DLC), Factory overhead (FOC) and administrative overhead cost (AOC). The model used by Oyerogba et al (2014) is presented in equation (i).

$$Y_{it} = \delta_0 + \delta_1 DMC_{it} + \delta_2 DLC_{it} + \delta_3 FOC_{it} + \delta_4 AOC_{it} + \mu_{it} \quad (i)$$

However since this study focused on the relationship between cost management and operational efficiency, model presented in equation (i) was modified. The model for this study specified operational efficiency (OPE) as a function of cost management variables including Distribution cost (DC), administrative Cost (ADC) and factory overhead(FOC). Thus the model for this stud is presented in equation (ii).

$$OPEFF_{it} = \delta_0 + \delta_1 DC_{it} + \delta_2 ADC_{it} + \delta_3 FOC_{it} + \delta_4 FZ_{it} + \mu_{it} \quad (ii)$$

Where:

OPEFF is operational efficiency measured in term of ratio of operating income to operating expenses, DC is Distribution cost, ADC is administrative Cost, FOC is factory overhead cost and FZ represents firms Size,

Source(s) of Data and Method Data Analysis

Data used in the study were sourced from the statement of financial position, and statement of comprehensive income of 10 quoted firms in Nigeria: sampled firms include Dangote Flour Mill Plc, Dangote Sugar Refinery, Flour Mill Plc, Guinness Plc, Honeywell Plc, Nascon Allied Plc Nestle Plc, PZ Cusson, Unilever Plc, and Vita foam Plc, over a period of 10 years (2009-2019). Collated data were analysed using panel estimation techniques including Pooled OLS estimation, Fixed effect estimation, Random effect estimations alongside post estimation test such as restricted F-test and Hausman test to evaluate for the most consistent and efficient estimation Result.

Result**Correlation Analysis****Table 1: Correlation Matrix**

	OPEFF	DC	ADC	FOC	FZ
OPEFF	1.00000				
DC	-0.0432	1.00000			
ADC	-0.0885	0.9066	1.00000		
FOC	-0.0037	0.2602	0.1680	1.00000	
FZ	-0.1177	0.1502	0.0794	0.7342	1.0000

Source: Author's Computation (2021)

Table 1 revealed that there is negative correlation between operational efficiency and distribution cost, administrative cost, and factory overhead, which connote that over the period covered in the study across the selected firms, operational efficiency and cost variables moves in opposite direction, meaning higher cost incurred in the process of operation in terms of distribution cost, administrative cost, and factory overhead is accompanied predominantly by a fall in measure of operational efficiency.

Table 2: Estimation Result

Coefficient	Pooled	Prob	Fixed	Prob	Random	Prob
C	195.5532	0.002	153.1078	0.031	168.3222	0.009
DC	0.0870089	0.389	-0.1390755	0.265	-0.055038	0.619
ADC	-0.0732685	0.230	-0.0087021	0.883	-0.033200	0.554
FOC	0.1716687	0.241	0.089898	0.620	0.1409828	0.381
FZ	-6.382181	0.084	-4.042853	0.321	-4.65219	0.223
	R-square=0.3463 Adj R-square=0.3061 F-statistics=11.15 Prob(F-stat)=0.0000		R-square=0.5697 Adj R-square=0.5544 F-statistics=3.88 Prob(F-stat)=0.0001		R-square=0.5194 Wald chi2(5)=6.79 Prob> chi2 =0.0075	
	Restricted F-test=4.90(p=0.0000< 0.05)					

			Hausman Test =12.48(P=0.0084< 0.05)
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NOTE: * connote significance at 5% level of significance.

Source: Authors' Computation, (2021)

Table 2 showed results of estimations conducted in the study using pooled OLS, fixed effect and random effect techniques, alongside restricted F-test and the Hausman test. Evaluating the result for consistency and efficiency, it was established that for all the models estimated in the study the most consistent and efficient estimation result is the fixed estimation given the fact the Hausman test is statistically significant. As such the discussion of the study will be based on fixed effect estimation result. Result showed that distribution cost has insignificant negative impact on operational efficiency with reported coefficient estimate of -0.1390755 ($p > 0.05$). Administrative cost also exert insignificant negative effect of operational efficiency of the selected firms with reported coefficient estimate of -0.0087021 ($p > 0.05$), while factory overhead cost has insignificant positive effect on operational efficiency of firms, with coefficient estimate of 0.089898 ($p > 0.05$). In clear terms result showed that 1 billion naira increase in the distribution cost on the average will lead to about 0.13% decline in operational efficiency.

Also the result showed that 1 billion increases in both administrative cost led to decline of about 0.008% in operational efficiency respectively, while a billion increase in factory overhead led to 0.08% increase in operational efficiency of the sampled firms. These result reflect that all the cost variables do not exert significant effect on operational efficiency, and also two of the variables used to capture cost management established negative effect on the level of operational efficiency of quoted firms sampled in the study.

Table 3: Post Estimation Test

Wald test		
Null hypothesis	Statistics	Probability
<i>Panel homoscedasticity</i>	2.0480	0.2653
Pesaran test		
Null hypothesis	Statistics	Probability
<i>No cross sectional dependence</i>	0.413	0.5366
Wooldridge test		
Null hypothesis	Statistics	Probability
<i>No AR(1)panel autocorrelation</i>	1.1580	0.5631

Source: Author's Computation, (2021)

Result presented in table 3 showed that there is no enough evidence to reject null hypothesis on panel homoscedasticity, null hypothesis of no cross sectional dependence and null hypothesis of no AR (1) panel autocorrelation, given the reported probability statistics of $0.2653 > 0.05$ for Wald test, $0.5366 > 0.05$ for Pesaran test, and $0.5631 > 0.05$ for Wooldridge test. Hence it can be established in the study that assumptions of equal variance of residual terms cross sectional independence and absence of serial autocorrelation for the estimated

panel based model is valid. Discovery made in this study is in congruence with the findings of Stella, Jeffery and Azuka (2019) cost management strategy via just in time approach, material requirement planning and strategic supply partnership have no significant relationship with operational performance. Also discoveries made in the study resonate with the work of Olanrewaju and Obalade (2015) where it was established that management of operational cost in terms of labour, total loan and total deposit has negative influence on banks operational efficiency.

Conclusion and Recommendations

This study established that cost management of quoted firms in Nigeria via management of distribution cost, administrative cost and factory overhead has insignificant effect on the level of operational efficiency of firms other things held constant. As such this study conclude that focusing on the management of distribution cost, administrative cost as well as factory overhead cost in the same period does not culminate into significantly improvement in operational efficiency of quoted firms Nigeria. Hence, quoted firms in Nigeria should redress their cost management strategies to further harness a wider scope of management that can engender significant improvement in operational efficiency looking forward

Reference

- Adeniji, A. A. (2011). Cost Accounting: A Managerial Approach (5st ed.). EL-TODA Ventures
- Akinlabi, B. H. (2017). Inventory management practices and operational performance of selected flour mills companies in Nigeria.(Dissertation). Department of Philosophy Babcock University, Ilishan Remo, Ogun State, Nigeria
- Amarjit, G., Manjeet, S., Neil, M. & Harvinder S. (2014). The impact of operational efficiency on the future performance of indian manufacturing firms. *International Journal of Economics and Finance*, 6(1), 31-52
- Anand, M., Sahay, B. S., & Saha, S. (2005). Cost management practices in Indian: An empirical study. *Journal of Management Accounting Research*, 38(2), 1–16.
- Ayadi .I. (2013). Determinants of Tunisian Bank Efficiency: A DEA Analysis. *International Journal of Financial Research*, 4(4), 23-29.
- Ben-Caleb, E., Otekunrin, A., Rasak, B., & Eshua, R. (2019). Cost reduction strategies and the growth of selected manufacturing companies in Nigeria. *International Journal of Mechanical Engineering and Technology*, 10(3), 305-312
- Blocher, E. J., Chen, K. H., & Lin, T. W. (1999). Cases and readings in strategic cost management for use with cost management, a strategic emphasis. USA: McCraw Hill Company Inc
- Damilola, F. E., Johnson, A. A. & Simon, O. I. (2016). Cost management and performance of manufacturing: A study of listed firms in Nigeria. 28th International Business Information Management Association Conference, Seville, Spain.
- Demsetz, H. (1973). Industry Structure, Market Rivalry, and Public Policy. *Journal of Law and Economics*, 16 (1), 1-9.

- Drury, C. (2005). *Management and Cost Accounting* (6th ed.). London: Thomson Learning.
- Egbunike, F. C., Ogbodo, O. C.Y. & Onyali, C. I. (2014). Utilizing strategic management Accounting techniques (SMATs) for sustainability performance measurement. *Research Journal of Finance and Accounting*, 5(13), 140-153.
- Ejike, S. & Nnabuenyi, C. F. (2019). The impact of inventory control on operating profits of manufacturing firms in Nigeria. *European Journal of Accounting, Finance and Investment*, 5(1), 1-7
- Ezekiel, A. & Olubunmi, O. (2019). Strategic cost management and accuracy of cost information in selected manufacturing firms in Lagos and Ogun states, Nigeria. *International Journal of Accounting and Finance*, 8(1), 129-151
- Gichuki, C. W. (2014). Effect of cost management strategies on the financial performance of manufacturing companies listed on the Nairobi securities exchange. (Thesis). University of Nairobi
- Henri, J, Boiral, O. & Roy, M. (2016). Strategic cost management and performance: the case of environment costs. *The British Accounting Review* 48, 269-282
- Henry, W. A. & Yellowe, S. (2016). Dividend policy and the profitability of selected quoted manufacturing firms in Nigeria: An Empirical Analysis. *Journal of Finance and Accounting*, 4(4): 212-224
- Horngrén, C. T., Datar, S. M., Foster, G., Rajan, M., & Ittner, C. (2009). *Cost Accounting: A managerial emphasis* (13th ed.). Pearson Prentice Hall.
- Huang, H. & Zong, C. (2013). Cost management: A case study of a gardening firm project. (Master's thesis). Department of Industrial Development
- Hussin, M.R.A., Alias, R.A., & Ismail, K. (2013). An action research approach for the development of cost management skills training program among the owners of small and medium enterprises (SMES) in Malaysia. *Procedia-Social and Behavioural Sciences* 91, 515-521.
- Kanthana, D. (2018). The effects of cost management quality on the effectiveness of internal control and reliable decision-making: evidence from Thai industrial firms. *Advances in Social Science, Education and Humanities Research*, 2(11), 60-69
- Kinyugo, J. N. (2014). The effect of cost efficiency on financial performance of companies listed on Nairobi securities exchange. (Master's thesis). Business Administration of the University of Nairobi
- Lawrence, I. & Sanusi, A. (2014). Target costing and performance of manufacturing industry in Southwestern Nigeria. *Global Journal of management and Business Research*, 14(10), 50-58
- Nwaiwu, N. J & Oluka, N. O. (2018). Environmental cost disclosure and financial performance of oil and gas in Nigeria. *International Journal of Advanced Academic Research*, 4(2), 1-23

- Obafemi F.N., O.S. Ayodele & F.S. Ebong (2013). The sources of efficiency in the Nigerian banking industry; a two-stage approach. *International Journal of Finance and Banking Studies*, 2(4), 1-9
- Ogundele, O. J. K. (2004). Introduction to Business Organization: A book of Readings. Lagos: Molofin Nominees
- Okezie, R. A., Okezie, B. N. & Ogbu, U. G. (2017). Indirect costs and firm performance of quoted companies in Nigeria. *Funai Journal of Accounting, Business and Finance*, 1(1), 151-160.
- Olanrewaju, O. M. & Obalade, A. A. (2015). Evaluation of the determinants of operational efficiency in Nigerian deposit money banks. *International Journal of Economics, Commerce and Management*, 3(22), 1-13
- Onwurah, V. N. (2013). Effects of standard costing on the profitability of manufacturing companies. (BSC Thesis). Department of Accountancy, Caritas University, Amorji – Nike, Emene, Enugu State
- Oyerogba, E. O., Obaleye, M. O. & Solomon, A. Z. (2014). Cost management practices and firm's performance of manufacturing organizations. *International Journal of Economics and Finance*, 6(6), 234-239
- Oyewo, B. M. (2013). Strategic cost management as a recession survival tool in the Nigerian manufacturing and financial service industries. *Research Journal of Finance and Accounting*, 4(11), 72-83
- Rof, M. L. (2012). Kaizen costing method and its role in the management of an entity. *The Young Economists Journal*, 104–109.
- Sani, A. A., & Allahverdizadeh, M. (2012). Target and Kaizen Costing. Retrieved from <http://www.waset.ac.nz/journals/waset/v62/v62-10.pdf>
- Shawk, (2008). Operational efficiency a brand point management perspective, Access on <http://www.schawk.com>
- Stella, M., Jeffery, O. & O. (2019). Inventory management and operational performance of manufacturing firms in southwest Nigeria. *International Business Research*, 12(7), 76-82
- Zengin, Y. & Ada, E. (2010). Cost Management through product design: Target costing approach. *International Journal of Production Research*, 4(1), 1-7
- Zhou, W., Yuchen, L., Hao, L. & Xiaobo, S. (2018). The cost management on the qualification of responsibility. Retrieved from <https://doi.org/10.1155/2018/1762798>.