LOGISTICS COST AND FINANCIAL PERFORMANCE OF SELECTED QUOTED MANUFACTURING FIRMS IN NIGERIA

[1]Darlington Osaremwinda OGBEIDE, Ph.D
[2]Ruth Esohe ISOKPAN
[1&2]Department of Business Administration, Faculty of Management Sciences,
University of Benin, Benin city, Edo State.
E-mail: darlington.ogbeide@uniben.edu

Abstract

The study examined the impact of logistics cost on the financial performance of quoted manufacturing firms in Nigeria using panel secondary data from the year 2015 to 2019. Specifically, the study investigates how the cost of ordering raw material, cost of processing orders, cost of holding inventory (warehouse) and cost of delivery orders (finished products) influence the performance of quoted manufacturing firms in Nigeria. In doing this, the longitudinal research design was adopted. Data were collected from 10 (ten) of the sample quoted manufacturing firms within the period of the year 2015 to 2019 financial year, making 50 observations. The data were subjected to a panel regression method with fixed and random effects. From the analysis, it was discovered that the cost of ordering raw material and cost of holding inventory (warehouse) had significant negative relationship with the performance of quoted manufacturing firms in Nigeria, while the cost of processing orders and cost of delivery orders had no significant relationship with the performance of quoted manufacturing firms in Nigeria. Based on the findings, the study recommended that management of the concerned manufacturing firms should comprehensively address costs of ordering raw materials and costs of holding inventory (warehouse) by sourcing raw material in local market except such raw materials are not available locally (Nigeria), use cost-effective means to transport raw material as well as ensure finished products are delivered directly to wholesalers without holding them.

Keywords: Delivery orders, Holding inventory, Logistics costs, Ordering raw materials, Processing orders.

Introduction

Logistics costs comprise a significant and relevant proportion of business costs, often exceeding 10 percent of company turnover (Engblom, Solakivi, Toyli & Ojala, 2012). The global logistics costs in the year 2002 were estimated at $6.732 billion, and corresponded to 13.8 percent of the world's GDP in 2002 (Bowersox, Rodrigues & Calantone, 2005). On account of the complex supply chains and globalization, the cost of logistics operations could comprise as much as half the value of general commodities. The level of logistics costs is heavily dependent on the industry, but in general tends to be high in logistics-intensive operations such as food, metal, chemical and paper manufacturing (Memedovic, Ojala, Rodrigue, & Naula, 2008; Farahani,

Asgari & Davarzani, 2009). Given the significant cut back in manufacturing and labour costs, reducing logistics costs has become an increasingly important task for managers. However, technological development offers new cost cutting opportunities (Dianwei 2006).

Many studies on logistics have consistently mentioned the need to meets customer preferences in terms of service, cost, quality, and flexibility to be prime reasons for designing the supply chain (Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2009; Somuyiwa, Adebayo & Akanbi, 2011; Oisamoje & Areloegbe, 2014). They opined that effective supply facilitates quick identification of requirement, tendering process, payment and contract management which may result in effective work flows, lower prices, lower information and transactional costs, better compliance and speedy processing and delivery.

More so, several studies have also looked at logistics costs from inventory holding cost, materials holding cost, transportation cost, order processing cost, backorder cost, packaging cost, wastage cost (obsolete losses, transit losses, pilfering losses) and total mark-up cost (which is the amount added to the cost price to get the selling price) (Chen, 1997; Byrne & Heavey, 2006; Li, *et al*. 2009; Njoku & Kalu, 2015). They observed that total logistics costs vary from 5 percent to 6 percent of annual revenues of firms, and that the cost associated with the delivery, ordering and holding material and products reduce with improvement in supply chains. Though Njoku and Kalu (2015) concluded that reduction in ordering, holding, processing and delivery cost may provide opportunities at lower production price and offer products to customers at a competitive price, but how they have affected the financial performance of quoted firms in Nigeria is yet to gain much empirical studies.

Statement of the Problem

In spite of the fact that most manufacturing firms in Nigeria heavily depend on foreign raw materials, technologies, equipment to operate at full capacity, the quality of logistics management in Nigeria, which is far below global standard has accentuated the difficulties in optimizing and coordinating the flow of goods at point of origin to the point of consumption, which supply chain entails. The inefficiency of customs clearance process, quality of transport-related infrastructure, ease of arranging competitively priced shipments, quality of logistic services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time, cargo theft and excessive port-related charges linking poor customs performance and corruption have over the years trigger

significant time delays and cost of managing supply chain (Somuyiwa & Ogundele, 2015). These challenges are compounded with the power failures in Nigeria, which has been associated with incessant breakdown of work in progress with resultant effect on delay and high cost of managing supply chains. In addition, insecurity in Nigeria occasioned by the incessant high way armed robbers, kidnappings, ethnic violence and terrorism has caused untold delay, losses and high cost in transporting finished products. It has been associated with high cost of managing warehouse or inventory as most firms incur additional cost when they pay security personnel to safeguard their raw material, work in progress and finished goods. This coupled with the road network condition in Nigeria, which has been associated with the breakdown of freights of transporting finished goods and raw material, have resulted in delay and high cost of delivery order.

While the challenges associated with supply chain management have received empirical attentions. But the extent to which costs of logistics, which they trigger, have affected the performance of manufacturing firms have received little empirical studies. In addition, the few studies on how the cost of supply chains have impacted the performance of firms have also been conflicting as evident from empirical work of Njoku and Kalu (2015) showed that huge investment in supply chain components does not reflect significantly in firm profitability while Dehning, Richardson and Zmud (2011) found that it does. Moreso, while Njoku and Kalu (2015) appears to be the only study in Nigeria to the best of knowledge that employed time series data to examine the relationship between supply chain and firm financial performance in Nigeria with specific focused on only Nigeria Flower Mills. Hence, there is a need to examine the impact of logistics costs on financial performance of manufacturing firms using a larger sample size or different firms. This forms another identified gap in the literature which this study sought to fill.

Empirical Review

Lwiki, Ojera, Mugenda and Wachira (2013) examined inventory management practices on financial performance of sugar manufacturing firms in Kenya using primary data collected through structured and semi-structured questionnaire from sugar manufacturing firms from the period 2002-2007 as well as secondary data obtained from annual financial performance statements available in the year book sugar statistics. Employing correlation analysis, the study found that inventory management proxy by raw materials comprising of local and imported raw materials, storage costs, maintenance

repairs and operating supplies cost (addition of engineering spares and sundry materials) significantly affect financial performance proxy by net profit margins, return on assets, returns on investment, overall competitive position, general profitability at 5% level of significant.

Somuyiwa and Adebayo (2014) investigate the impact of reverse logistics on economic performance of firms in barrage subsector in Nigeria using data collected from both primary and secondary sources of data on food and beverages companies. The results from the inferential statistical analysis employed showed that the companies have been effective in using reverse logistics to reduce total logistic cost, improve customer satisfaction, enhance competitive advantage and in minimizing the environmental impact of returns as well as recovery of materials for re-use.

Muslimin (2015) examined the influence of logistic cost, flexibility, reliability, security, service quality on financial performance using 120 sampled SMEs in Indonesia and found that logistics cost and service quality have positive relationship to SMEs' financial performance in Indonesia, while flexibility, reliability and security have negative correlation to SMEs' financial performance.

Oyedokun and Owolabi (2019) examined the effect of cost control on the profitability of selected manufacturing companies in Nigeria. A sample frame of 23 companies listed on the consumer goods sector was selected out of which five companies were considered for a period of 10 years (2005 – 2017). Data were obtained from the audited finance`al statement, and the accounts of the sampled firms. The study revealed that there is a significant negative relationship between the cost of raw materials (CORM) and profit before tax of manufacturing companies in Nigeria.

Hoang and Nguyen (2019) examined the effect of the logistics service on firm financial performance in textile industry of Da Nang city, Viet Nam. A questionnaire was developed to survey several critical factors in the logistics services. Factor analysis method was applied to find some major configurations for each influential factor, and multi-regression method was employed to analyze the influence of critical factor on the firm financial performance. The results showed that internal logistics, inbound logistics, outbound logistics, support activities, and cost of logistics have significantly positive relationship with the firm financial performance. in addition, among the five factors of logistics service, the cost of logistics (transport cost, cost of raw materials, cost of product inventory, cost of order processing, cost of

delivery, cost of warehousing) was the main factor affecting the firm financial performance in the textile industry.

Theoretical Framework

This study is based on transaction cost theory developed by Coase in 1937 and popularized by Williamson in 1985. The theory posits that costs of performing exchange or cost associated with the performance of transaction, especially the one involves the outsourcing of operations of upstream manufacturing to a downstream manufacturing increase with increase in complexity and uncertainty of external environment. The theory which originated from institutional economics theory, believes that when the institutional environment is characterized with corruptions, poor regulation, weak legal systems and insecurity, the cost of searching (finding potential suppliers), initiating (selecting supplier), negotiating, executing, adapting and controlling (monitoring of delivery due dates and quality control) in vertical integration, which supply chain also increase. In this regard, the theory suggested costs in exchange relationships can be manage by engaging in in-house manufacturing rather than outsourcing which may increase the transaction risks as other parties may break an engagement agreed upon without proper sanctioning.

In this way, the transaction costs including costs of transporting raw material, transforming the raw material, delivery finished products may also increase when the delivery lead time increase from one week to an expected value of five weeks. The lead time of five weeks, which may be trigger by regulatory uncertainty and unpredictable suppliers is related to subsequent capital lockup costs for higher safety stocks and increased value of goods-in transit (Muslimin, 2015).

Methodology

Research Design

This study adopted longitudinal research design to examine the types of association that exists between logistics costs and performance of quoted firms in Nigeria. The choice of the design is based on the fact that the variables under consideration are historical in nature and therefore the researcher lacks the ability to manipulate the variables due to the fact that they have already occurred. In this regard, time series data (secondary data)

covering the period of 2015 to 2019 for ten (10) firms, making fifty (50) observations was used.

Population and Sampling

The research population of this study comprises of all the quoted or listed manufacturing firms under the industrial and consumer goods sector of the Nigerian Stock Exchange as at 31st of March, 2019. The total number of these quoted (listed) manufacturing firms was 56 (NSE Fact Book, 2019). This study adopted purposive sampling approach to select the ten (10) of the fifty-six (56) firms quoted manufacturing firms under the industrial and consumer goods sector of the Nigerian Stock Exchange as at 31st of March, 2019. The firms include: Unilever Nigeria Plc, Flour Mills, Cadbury, Berger Paints Plc, Nigerian Brewery, Meyer Plc, Lafarge Africa Plc, Guinness Nigeria Plc, P Z Cussons Nigeria Plc, and Nestle Nigeria Plc.

Model Specification

The general form of the model may be specified as:

$$PQMF = f(LGC) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (1)$$

From equation 1, we break down LGC (logistics costs) into cost of ordering of raw material, cost of processing order, cost of holding inventory and cost of delivery order.

$$PQMF = f(CORM, COPO, COHI, CODO) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (2)$$

From equations (2), the panel multiple regression models with an error term (μ_t) is specified in econometric model below:

$$PQMF_{it} = \beta_0 + \beta_1 CORM_{it} + \beta_2 COPO_{it} + \beta_3 COHI_{it} + \beta_4 CODO_{it} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots.. \ (3)$$

Where:

PQMF = Performance of quoted manufacturing firms (measured by profit after tax)

LGC = Logistics Costs

CORM = Cost of ordering raw material (Proxy by Raw Material Cost)

COPO = Cost of processing order (Proxy by Maintenance Cost)

COHI = Cost of holding inventory (Proxy by Warehouse Cost)

CODO= Cost of delivery order (Proxy by Distribution Cost)

μ_t = Stochastic Disturbance or error term

β_0 = the general intercept of the equation

$\beta_1 - \beta_4$ = the parameter estimates or coefficients of variables to be estimated.

i = the individual sampled firm
t = time
The apriori expectations of the model are that $\beta_1, \beta_2, \beta_3, \beta_4 < 0$, hence each of the logistics costs is expected to have a negative relationship with the performance of quoted firms in Nigeria.

Method of Data Analysis

Panel data regression analysis was adopted as methods of data analysis. The study intends to adopt panel data regression because it assumes cross-sectional sampled data (firms) and time period (the year 2015-2019). This means that panel data analysis accommodates 'time as well as the heterogeneity' effects of the sampled firms. It takes account of the cross-sectional and time-series characteristics effects of the sample data. Panel data analysis captures the aforementioned characteristics by including the sampled firms' specific effects which is random as well as fixed effects, which is time period as regressors in the model. In this regard, Hausman test of randomness was used to determine the best effects model to be used. Hausman test was used to select the random effect as against fixed effect of the panel estimation techniques. The Ordinary Least Square (OLS) which tend to provides consistent and efficient estimates of the fixed and random effects will be adopted in this study. E-views 8.0 software was used to analyzed the panel data.

Empirical Results and Analysis

Presentation of Descriptive Statistics

Table 1: Descriptive Statistics

	PQMF	CORM	COPO	COHI	CODO
Mean	11312.12	1639.616	1172.807	721.6936	1552.416
Median	6506.020	1229.000	1081.995	761.6700	1231.170
Maximum	60729.70	4871.350	2561.980	1244.670	4244.950
Minimum	296.8200	792.1900	584.1300	157.3300	765.3600
Std. Dev.	13549.87	961.2701	470.0745	271.2662	811.3104
Skewness	1.888325	1.723065	1.194306	0.047538	1.617784
Kurtosis	5.838099	5.123388	3.784511	6.277892	4.849781
Jarque-Bera	46.49560	34.13457	13.16859	36.105165	28.93873
Probability	0.000000	0.000000	0.001382	0.000000	0.000001
Sum	565606.1	81980.78	58640.34	36084.68	77620.81
Sum Sq. Dev.	9.00E+09	45277966	10827533	3605682.	32253000
Observations	50	50	50	50	50

Source: Extracted from E-view 8.0 Output (Authors' Computation, 2021)

Table 1 showed that the average performance (PQMF) proxy by profit after tax of the ten (10) selected manufacturing quoted firms in Nigeria is 11312.12 million naira with maximum (highest) performance of 60729.70 million naira and minimum (lowest) performance value of 296.8200 million naira within the time period with standard deviation of 13549.87. The standard deviation indicates that performance among the ten selected firms varies quite significantly. Table 1 also that the average cost of ordering of raw material (CORM) is 1639.61 million naira with maximum (highest) cost of 4871.350 million naira and a minimum of 792.1900 million naira with standard deviation of 961.2701, which indicates a significant differences (variance) in the cost of ordering of raw material among the selected firms. The average cost of cost of processing order (COPO) is 1172.807 million with maximum (highest) cost of 2561.980 million naira and a minimum of 584.1300 million naira with the standard deviation of 470.0745, which indicates significant differences (variance) in the cost of processing order (COPO) among the selected firms. Table 1 also shows that the average cost of holding inventory (COHI) is 721.6936 million naira with maximum (highest) cost of 1244.670 million naira and a minimum of 157.3300 million naira with a standard deviation of 271.2662, which indicates significant different (variance) in the cost of holding inventory among the selected firms. The average cost of delivery orders (CODO) is 1552.416 million naira with maximum (highest) cost of 4244.950 million naira and a minimum of 765.3600 million naira with a standard deviation of 811.3104, which indicates significant differences (variance) in the cost of delivery orders (CODO) among the selected firms.

Moreover, the Jarque-Bera values for each variable with the probability values of all the variables are less than 5%. This indicates that all the variables under consideration are normally distributed. It was observed in Table 1 that Kurtosis statistics for the performance of the selected quoted manufacturing firms (PQMF) is 5.838099 while that of the explanatory variables, which include COHI, CORM, CODO, and COPO are 6.277892, 5.123388, 4.849781, and 3.784511 respectively. These Kurtosis statistics for all the variables are more than three (3) as the benchmark for normal distribution, which implies that the series of these variables do not possess flat distributions that are relative to normal. Moreso, the value of skewness for performance of the selected quoted manufacturing firms (PQMF) is 1.888325 while that of the explanatory variables, which are COHI, CORM, CODO, and COPO) are 0.047538, 1.723065, 1.617784 and 1.194306 respectively. These values for all the variables are positively skewed. This

means that the performance of the selected quoted manufacturing firms and its explanatory variables have been increasing within the time period.

Correlation Matrix

The background behavioral patterns in the data generated for the study are examined using Bivariate Pearson correlation coefficients which are conducted on the data for all the variables in the study. The correlation matrix for all the variables in the study is reported in Table 2.

Table 2: Correlation Matrix

	PMQF	COHI	CORM	CODO	COPO
PQMF	1				
COHI	-0.3133	1			
CORM	-0.9607	-0.0436	1		
CODO	-0.9474	-0.0054	0.9983	1	0.9807
COPO	-0.8684	0.1839	0.9700	0.9807	1

Source: Extracted from E-view 8.0 Output (Authors' Computation, 2021)

Table 2 shows that the cost of ordering of raw material (CORM), cost of delivery order (CODO), and cost of processing order (COPO) significantly and negatively correlate to the performance of the selected quoted manufacturing firms (PQMF). However, cost of holding inventory (COHI) is negatively correlated to the performance of the selected quoted manufacturing firms (PQMF)

Result of Panel Estimation Technique

The Hausman test statistic is employed to test for endogeneity of the unobserved error component. The test is necessary because the random effect needs to be uncorrelated with the explanatory variables, otherwise there is endogeneity problem and the random effect estimator will be inconsistent. The null hypothesis for the Hausman test is: $H_o = \beta_{RE}$ and $\beta_{FE.}$ Where β_{RE} and β_{FE} are coefficients of the time varying explanatory variables excluding the time variables. If the hypothesis is rejected, it would be concluded that Random effect (RE) model is inconsistent and the fixed effect (FE) model will be preferred.

Table 3: Correlated Random Effects - Hausman Test
Test cross-section and period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

Source: Extracted from E-view 8.0 Output (Authors' Computation, 2021).

From the table above, the Hausman test Chi-square statistics is 0.00 with a probability of 1.0000 (P<5%) which clearly indicates significant differences. Thus the null hypothesis is rejected and the conclusion here is the fixed effect estimator will be preferable for analysis and interpretation.

4.4 Fixed Effect Model Estimation

Table 4: Time (fixed) effect results
Dependent Variable: PQMF

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2060.930	636.5246	-3.237785	0.0028
COPO	-8.329642	11.14353	-0.747487	0.4602
CORM	-16.59022	7.628312	-2.174823	0.0371
CODO	-8.168499	15.01348	-0.544078	0.5902
COHI	-15.12649	2.868461	-5.273381	0.0000

R-squared	0.999246	Mean dependent var	11312.12
Adjusted R-squared	0.998845	S.D. dependent var	13549.87
S.E. of regression	460.5413	Akaike info criterion	15.37640
Sum squared resid	6787147.	Schwarz criterion	16.06472
Log likelihood	-366.4099	Hannan-Quinn criter.	15.63851
F-statistic	2493.173	Durbin-Watson stat	1.958127

Source: Extracted from E-view 8.0 Output (Authors' Computation, 2021)

The estimation results reveal the R-squared value of 0.999246. This value indicates the strength of a model. It suggested that logistics costs (cost of ordering of raw material (CORM), cost of delivery orders (CODO), cost of processing orders (COPO), and cost of holding inventory (COHI) in the period robustly considered or jointly explained 99.9% variation on the performance of the selected quoted manufacturing firms. After the model has been adjusted for the degree of freedom, the following elements in the model cost of ordering of raw material (CORM), cost of delivery order (CODO), cost of processing order (COPO), and cost of holding inventory (COHI) jointly explained 99.9% systematic variable on the performance of the selected quoted manufacturing firms.

F-statistic of the regression model has a value of 2493.173. Because the F-statistics is greater than the critical value of 2, the value is significant, which implies overall goodness of fit of the estimated model as well as existence of significant linear relationships between the performance of the selected quoted manufacturing firms, and logistics costs (cost of ordering of raw material (CORM), cost of delivery order (CODO), cost of processing order (COPO), and cost of holding inventory (COHI) in the period robustly considered or when grouped together. Prob (F-statistic) value of 0.000000 which is less than 5%, further confirmed that cost of ordering of raw material (CORM), cost of delivery order (CODO), cost of processing order (COPO), and cost of holding inventory (COHI) jointly and significantly influence the performance of the selected quoted manufacturing firms.

The t-statistics of -0.747487, -2.174823, -0.544078, -5.273381 for cost of processing order (COPO), cost of ordering of raw material (CORM), cost of delivery order (CODO), and cost of holding inventory (COHI) respectively confirmed the sign of direction of the significant relationship between performance of the selected quoted manufacturing firms and each of the independent variables. Because the t-statistics of -2.174823 and -5.273381 for the cost of ordering of raw material (CORM) and cost of holding inventory (COHI) respectively are greater than the critical value of 2 and have a negative sign, they negatively and significantly impact the performance of the selected quoted manufacturing firms. This means there is a significant negative relationship between the performance of the selected quoted manufacturing firms, and the cost of ordering of raw material (CORM) and cost of holding inventory (COHI) individually.

However, the t-statistics of -0.747487 and -0.544078 for cost of delivery order (CODO), cost of processing order (COPO) respectively were less than the critical value of 2, which indicated that they do not significantly impact the performance of the selected quoted manufacturing firms during the period considered though have negative signs.

The probabilities of 0.0028, 0.4602, 0.0371, 0.5902, and 0.0000 indicated the test of significance of the individual variables (cost of ordering of raw material (CORM), cost of the delivery order (CODO), cost of processing order (COPO), and cost of holding inventory (COHI)). They indicated that while the cost of ordering of raw material (CORM) and cost of holding inventory (COHI)) probabilities values are less than 5% level of significant but the cost of delivery orders (CODO) and cost of processing order (COPO). Probabilities values are greater than 5% level of significant. This means that cost of

ordering of raw material (CORM) and cost of holding inventory (COHI)) significantly constrained the performance of the selected quoted manufacturing firms under the period considered but the cost of the delivery order (CODO) and cost of processing order (COPO) do not.

The coefficients values of -8.329642, -16.59022, -8.168499, -3.857521 and -15.12649 for cost of processing order (COPO), cost of ordering of raw material (CORM), cost of delivery order (CODO), and cost of holding inventory (COHI) respectively indicated the strength at which each of these individual variables impact the performance of the selected quoted manufacturing firms during the period considered. It showed that by 1% decrease in the cost processing order, cost of ordering of raw material, cost of delivery orders and cost holding inventory will increase the performance of the selected quoted manufacturing firms by 8.3%, 16.6%, 8.2%, 3.9% and 15.1% respectively. This is very important for policy implication. The Durbin-Watson statistic value of 1.95 shows the absence of serial autocorrelation while Akaike info criterio, Schwarz criterion, and Hannan-Quinn criteria all indicate goodness of fit of the model as illustrating and affirming the usefulness of the result for policy implications.

Diagnostic Tests

Under this section, the Breusch- Godfrey Serial Correlation LM Test was further conducted to ensure that the findings of this research are robust to the model specification. The Breusch- Godfrey Serial Correlation LM Test helps to detect the tendency for higher order serial auto-correlation in the residual. The rule is that if the probability Chi-square is greater than 5%, the alternative hypotheses indicating zero correlations is accepted. The result is presented below:

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.929342	Prob. F(2,52)	0.0623
Obs*R-squared	5.974252	Prob. Chi-Square(2)	0.0504

Source: Extracted from E-view 8.0 Output (Authors' Computation, 2020)

Premised on the above, the Lagrange multiplier result, (LM) test for higher serial correlation did not reveal serial correlation problem for the model in that the prob (chi-square) value of 0.0504 is greater than prob. F (2,52) of 0.0623 at 5%. Thus, the problem of serial-autocorrelation in the regressors is unlikely.

Discussion of Findings

The findings derived from this study and their policy implications are discussed. Our findings which showed that, overall, logistics costs significantly and negatively influence the performance of quoted manufacturing firms in Nigeria is in agreement with our apriori expectations derived from theoretical framework.

Specifically, the finding of this study reveals a significant negative relationship between the cost of ordering raw material and performance of quoted manufacturing firms in Nigeria also confirm our apriori expectations derived from the theoretical framework. It also supports the empirical findings of Lwiki *et al* (2013), Hoang and Nguyen (2019), and Oyedokun and Owolabi (2019). The negative and significant impact of cost associated with ordering and transporting of raw material on the performance of manufacturing firms in Nigeria is not surprising given that sporadic high exchange rate was accompanied with high cost of sourcing and transporting foreign raw materials, technologies, equipment which most manufacturing firms in Nigeria heavenly depend on to operate at full capacity. This challenge in addition to the inefficiency of customs clearance process (time delays), cargo theft and excessive port-related charges linking corruption and increase in custom duties tend to accentuated the difficulties in optimizing and coordinating the flow of goods at point of origin to the point of consumption, with resultant effects on high cost ordering raw material, which in turn contained the performance of manufacturing firms.

The study also reveals that cost of holding inventory (warehouse) negatively and significantly influence the performance of quoted manufacturing firms in Nigeria to confirm our apriori expectations derived from theoretical framework as well as the findings of Lwiki *et al* (2013), Muslimin (2015), and Hoang and Nguyen (2019). The reasons for the negative and significant impact of the cost of holding inventory (warehouse) on the performance of quoted manufacturing firms in Nigeria is that power failures in Nigeria have over the years cause the untold expenditure of buying, fueling and maintaining plants. This form of expenditure in addition to insecurity in Nigeria, which has also made most firms incur an additional cost of paying security personnel to safeguard their warehouse usually increase the cost of managing warehouse/inventory, which is likely to decline the performance of a firm. They also increase costs associated with an incoming stock level, work in progress, holding of finished products, opportunity costs associated with having funds which could be elsewhere but are tied up in inventory as

well as risk costs associated with pilferage, deterioration and damage cost which is associated with scrap and rework. These usually harm the performance of a firm as reveal in our findings.

Furthermore, the study also reveal that cost of processing orders has negative and insignificant influence on the performance of quoted manufacturing firms in Nigeria confirm our apriori expectations derived from theoretical framework. The finding, however, does not collaborates with the empirical position of Hoang and Nguyen (2019).

Lastly, the finding of this study that cost of delivery orders negatively and significantly influences the performance of quoted manufacturing firms in Nigeria though confirm also confirm our apriori expectations derived from the theoretical framework. This is consistent with findings of Somuyiwa and Adebayo (2014).

Conclusion and Recommendations

This study concludes that costs of ordering and cost of holding inventory (warehouse) are key logistics costs harming the performance of manufacturing firm in Nigeria as well as costs of placing orders including transporting raw material in order to command a superior financial performance. Based on findings, the study recommends the following:

1. Management of the concerned manufacturing firms should comprehensively address costs of ordering raw materials, technologies and equipment in order to improve performance. This can be done by averting excessive port-related charges through the sourcing of raw material, equipment and technologies in local market except such raw materials are not available locally (Nigeria). The cost of ordering and transporting raw material can be reduced by taking advantage of rail systems in transported raw material sourced. This method is cost-effective when compared with the use of trucks/trailers which are vulnerable to accident, theft, and breakdown because of bad roads resulting in delay and high costs of orders or freights of transporting finished goods and raw material.
2. Management of the concerned manufacturing firms should also address costs of holding inventory (warehouse). They need to address the costs associated of storage of raw materials, incoming stock level, work in progress, finished products, inventory service costs and risk costs which comprise of cost associated with pilferage, deterioration

and damage cost in order to improve performance. This can be done by ensuring that only needed raw material are source while finished products are deliver directly to wholesalers. The manufacturing firms need to engage in forecasting of demand in order to know the exact quantity of products to produce at time in order to avoid untold losses and high cost of managing warehouse or inventory.

Further Studies

Further studies should use a larger sample size by collecting data from all the fifty-six (56) quoted manufacturing firms in Nigeria to examine the influence of logistics costs on their performance. In doing this, further studies should measure performance of quoted manufacturing firms using return on assets and equity. Further studies should also focus on the influence of logistics costs on the performance of SMEs in manufacturing firms that are not quoted in the Nigerian Stock Exchange.

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