Inventory Management Effect on Profitability of the Food and Beverages Sector of Nigeria

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Abstract:- **This study aims to examine the inventory management effect on profitability of food and beverages sector. A study of nestle and Cadbury. To achieve the objectives of this study, the research adopted expo facto research design. While data were collected from secondary sources. The data generated was presented and analysed using the multiple regression analysis findings showed that goods in transit as measure of inventory management has positive but insignificant effect on profit after tax, finished goods has positive and less important effect on profit after tax and raw and packaging materials establishes positive but irrelevant effect on profit after tax. In the light of the above, the study recommended that managements of Nigerian foods and beverages limited companies to adopt effective inventory management practices like goods in transit, finished goods, and raw and packaging materials. This is because such inventory management practices would improve their profitability, operating cash flows and eventually guarantee the going concern concept of business.**

Keywords:- Inventory management, Profitability, Going concern, Cash flow, Profit after tax, manufacturing company, Finished goods, Materials.

I. INTRODUCTION

Inventory management is part of every manufacturing company. The food and beverages sector is not an exception. Therefore, every company should incorporate the right inventory management approach to avoid large quantities of unsold goods, change of taste and when a rival introduces a new and better product in the market. Chan et al (2002) holds that many companies have come to the realization that important cost saving can be achieved by incorporating inventory management throughout their operation.

The goals of every organization are to minimize without hurting the level of services provided to consumers. Agbuglu (2014) opined that the requirements for short lead times are significant to the food and beverages companies'

operational performance. According to Nsikan, Etim and Ime (2015) hold that various companies have employed the major inventory management techniques and strategies to keep their inventory costs in check. There are different inventory management techniques. They are as follows: Economic Order, quantity model, Just in Times (JIT, Vendor management inventory (VMI). It also include collaborative planning, inventory speculation. Wallin et al (2001) submits that an organization would purchase items and hoard the goods before there is demand from the customers. Some of the advantages of the inventory speculation according to Wallin et al 2006) include the following: quick response of the company to demand, ability of the company to guide against itself against price instability.

Planning and management of inventories are important to the success and achievement of the food and beverages company in Nigeria. Onuoha (2012) is of the opinion that the food and beverages manufacturing industry's environment is not without problems. There are unplanned inventories as a result of lack of patronage, difficulty in accessing credit, high cost of raw materials, imported raw materials, high cost of power generating plants, high exchange rate, bad roads, bottle neck at Nigerian Port, employment of unqualified manpower etc.

Nsikan et al (2015) opine that inventory forms the most important segment of the current asset of the flour milling companies. Large sum of funds are put in to them. It becomes important to manage inventories effectively in order to avoid unnecessary cost. It is also necessary for the management of the food and Beverages Company in Nigeria to maintain an optimum investment because it cost a lot of money to tied down capital in excess inventory which increase operating cost and reduces profit of the organization. On the other hand, when inventories are reduced, their value is converted into cash, which improves cash flow and return to the company.

The studies on inventory management and profitability of the food and beverage sector in Nigeria focuses attention on the techniques of managing inventory and profitability in the food and beverage sector in Nigeria.

The study intend to cover the gap between inventory management and profitability by establishing the gain of efficiency and effective inventory management of the food and beverages organization in Nigeria.It has been observed that the food and beverage companies have recognized the importance of inventory management as a key to the success and achievement of every company. Organizations everywhere have incorporated inventory management into their operations. Regrettably, the performances of the food and beverage firms in Nigeria are below expectation. Njoku and Kalu (2015) are of the opinion that the Nigerian flour milling companies encountered challenges of instability in inventory level, reduced consumers demand and high cost of production as a result of poor inventory management techniques. Olowe (2007) is of the view that if goods are out of stock, costumers will buy them elsewhere. This situation is not favourable for business.

Fagade (2011) noted that industry lacks the ability to manage the store department very well. He also discovered that the food industry has not given the industry the proper place it deserves. Nsikan et al (2015) aslo noted that the food and beverages industry faced the challenge of incorrect forecast because of real time inventory information on consumers demand. Researches have indicated that incorrect inventory record is one of the issues inhibiting goals achievement Obalah et al (2015).

Research findings have indicated that stock management in the food and beverages industries in Nigeria are insufficient. Nsikan et al indicated that traditional methods of inventory control is still invogue in the industry. Owoeye et al (2014) observed that inventory mangers resist innovations and remain in the status quo trap.

II. REVIEW OF RELATED EMPIRICAL LITERATURE

Inventory management is the techniques of maintaining stock items. It refers to the integration of information, transportation, acquisition, inspection, materials handling, warehousing, packaging and control of supplies and ensuring securities of inventory (Munyao 2015). Noor-Ajian, Faqih-Anas, Saimon, Fadzlita and Bihlii (2014) opined that inventory management refers to the acquisition of how much stock of materials is needed to buffer against change of state of forecast, customer demands and supply deliveries. It is a term used by companies to take charge of their investment in inventory (Stevenson, 2010). Angel, Gomathi and Chitra (2014) stated that inventory management is the continuing process of planning, organizing and controlling inventory that aims in inventory while balancing supply and demand. Adeyemi and Salami (2010) submitted that inventory management is the process of recording and monitoring the level of stocks, forecasting the future demand and decision on when and how order could be executed. The researchers explained that inventory management involves planning and control. The planning segment deals with looking ahead in terms of determining in advance the following: what quantity of goods to order, how often (should companies order for them to maintain the overall stock coordination in an economic manner. The control means following the procedure, set up at the planning state to achieve the objectives of stock management. Odiri (2015) is of the opinion that inventory management is an application of management tools and techniques with a view to ensuring the required quality of stock is always available at the minimum cost. Inventory management according to Aro-Gordon and Gupte (2016) is the supervision of supply, storage and accessibility of goods in order to ensure an adequate supply without excessive oversupply. Miller (2010) in his submission defines inventory management as all activities put in place to ensure that consumers have the needed product or service. Inventory management involves coordination of purchasing, manufacturing and distribution to meet the marketing needs of customers (Oballah et al 2015).

Berling (2011) in his study claims that the optimum level of inventory is important to a company because excess inventory leads to stock holding such as rental charges, opportunity costs, obsolescence costs breakages) and inadequate inventory like stock outs) is also costly because customers and other competitors are available in the market.

Inventory management according to Sneep, ManteniRishma, Nyrvana, Chanelle and Shanta (2012) is a set of policies, procedures and techniques employed by firms to maintain an optimum number of each inventory item. Olowe opines that inventory management is the efficient management of stocks to achieve an optimum level of stock in the company working capital. Inventory management according to Parang (2009) is an optimum investment in inventories striking a balance between adequate stocks and keeping investment at minimum level of investment in inventories which aids in meeting set objectives. Oladejo&Ajala(2016) asserted that inventory management helps in achieving the inventory level which minimizes the total cost associated with optimal and economic level. This is so because too much inventory occupies physical space, creates financial burden and increases the possibility of damage, spoilage and loss. Again, too little inventory often disrupts organizational operations and reduces the likelihood of poor customer service. A study carried out by Bowersot, et al (2010) on supply chain logistics management, stated that the objective of an inventory management was to achieve desired customer service with minimum inventory commitment. According to Kitheka (2012) the objectives of inventory management include the following: maintaining customer service, maximizing efficiency of purchasing and production and maximizing inventory investment and profit.

III.   METHODOLOGY

This study provides the methodology adapted for the study of inventory management effect on profitability of the food and beverages company in Nigeria. The study involved the use of secondary data from two foods and beverages companies listed in Nigeria Stock exchange and extracted data annual reports of these two companies. It shows the annual panel value of: Raw and Packaging material (RPM),work in progress (WIP), Finished Goods (FG), Engineering spaces (ES), Goods in Transit (GIT), and profit after Tax (PAT) for a period covered from 2009 to 2018.

Pooled regression analysis was adopted to evaluate the effect of inventory management proxies on the dependent variable profitability measure using the two panel of study.

➢ *Model Specification*
The model is specified as follows:
PAT = f(IC)
IC = GIT +FG + RPM + WIP
            equation (1)

Therefore:
PAT = A_0 + B_1GIT + B_2FG + B_3RPM + B_4WIP + U_t
            equation (2)

Where:

PAT	= profit after tax
IC	= inventory control
GIT	=Goods in transit
FG	=Finished goods
RPM	=Raw and packaging materials
WIP	=Work in progress
A_0	=intercept term
B_1-B_4	=Coefficients of independent variables
U_t	=error term

The Model is further rewritten in double log form in equation 3 as:

LogPAT=A_0+B_1logGIT + B_2logFG + B_3logRPM + B_4logWIP + U_t equation (3)

➢ *Data Presentation*
This study out an investigation of two foods and beverage companies listed in Nigeria stock exchange and extracted data annual reports of these two companies. However, the data presented below in table 1 shows the annual panel value of: Raw and Packing Material (RPM), Work in Progress (WIP), Finished Goods (FG), Engineering Spares (ES), Foods in Transit (GIT), and Profit After Tax (PAT) for a period covered from 2009 to 2018.

years	COMPANY	RPM	WIP	FG	GIT	PAT
2018	NESTLE	8,112,500	841,045	6,797,789	3,230,766	43,008,026
2017	NESTLE	10,888,704	1,011,414	8,005,726	93,772	33,723,730
2016	NESTLE	7,834,712	564,668	7,646,120	1,489,100	7,924,968
2015	NESTLE	2,722,782	492,584	4,949,344	569,359	23,736,777
2014	NESTLE	4,151,911	489,579	3,840,033	730,542	22,235,640
2013	NESTLE	4,375,381	331,540	3,363,290	561,919	22,258,279
2012	NESTLE	3,409,921	353,635	3,591,896	459,915	21,137,275
2011	NESTLE	3,833,888	584,860	3,494,175	811,054	16,496,453
2010	NESTLE	4,061,007	383,038	2,224,034	1,074,625	12,602,109
2009	NESTLE	3,505,618	345,055	2,042,980	743,789	9,783,578
2018	CADBURY	1,428,801	2,513,554	774,938	634,656	823,085
2017	CADBURY	1,551,043	2,746,506	992,444	602,157	350,317
2016	CADBURY	2,712,530	39,107	1,808,773	72,241	-296,402
2015	CADBURY	793,930	95,919	714,796	83,835	1,153,295
2014	CADBURY	670,767	50,450	1,480,026	4,838	2,503,661
2013	CADBURY	656,184	262,156	715,468	114,932	6,081,645
2012	CADBURY	812,008	361,906	715,329	229,315	3,461,335
2011	CADBURY	1,115,75	37,878	698,421	59,300	3,783,211
2010	CADBURY	804,372	69,674	590,782	75,092	3,980,981
2009	CADBURY	608,567	46,902	809,553	88,757	2,095,784

Table 1:- Data Presentation
Source: Annual Report and Account (2009-2018)

➤ *Data Analysis*
The study carried out a descriptive summary to evaluate the nature of variables used in the model by presenting mean, median, maximum values, standard deviation and among other.

	LOGPAT	LOGGIT	LOGFG	LOGRPM	LOGWIP
Mean	15.69475	12.56793	14.46075	14.58379	12.67813
Median	15.88553	13.23911	14.52992	14.81716	12.79914
Maximum	17.57690	14.98823	15.89567	16.20324	14.82584
Minimum	12.76659	8.484257	13.28920	13.31886	10.54213
Std. Dev.	1.350011	1.518072	0.925654	0.949342	1.240843
Stkwness	-0.523490	-0.893266	0.177324	0.096568	-0.205735
Kurtosis	2.361865	3.782927	1.525324	1.663702	2.371803
Jarque-Bera	1.190179	3.012032	1.821211	1.443233	0.446451
Probability	0.551513	0.221792	0.402280	0.485973	0.799934
Sum	298.2002	238.7908	274.7542	277.0920	240.8844
Sum Sq.					
Dev.	32.80554	41.48177	15.42303	16.22252	27.71446
Observation	19	19	19	19	19

Table 2:- Descriptive Statistics
Source: Compiled from Eviews 9 output

Table 2 shows the average of profit after Tax (PAT) as 15.69475 indicating that average profitability for most of the foods and beverages is ₦5.69475 and in good. The result also point out an average Raw and Packing Material (RPM) is 14.58379, Work in Progress (WIP) is 12.67813, Finished Goods (FG) is 14. 46075, and Goods in Transit (GIT) as 12.56793. The result further revealed maximum value of 7.57690, 14.98823, 15.89567, 16.20324, 14.82584, and 15.23667 respectively for PAT, GIT, FG, RPM, WIP, and ES and among others.

➤ *Correlation Analysis*
The study employed Spearman rank-order correlation matrix to determine the relationship among variables, specifically the relationship between the explained variable and the explanatory variables represented by five proxies below

Date: 10/8/19 Time: 10:45
Sample: 2009 2018
Included observation: 19
Balanced sample (list wise missing value deletion)

Correlation	LOGPAT	LOGGIT	LOGFG	LOGRPM	LOGWIP
LOGPAT	1,000000				
LOGGIT	0.408772	1.000000			
LOGFG	0.761404	0.6000000	1.000000		
LOGRPM	0.749123	0.691228	0.817544	1.000000	
LOGWIP	0.263158	0.698246	0.584211	0.631579	1.000000

Table 3:- correlation matrix
Source: Compiled from Eview 9 output

The result on table 3 reveals a positive correlation between profitability index, served as profit after tax, with all the inventory management measures: captured in the analytical model Raw and Packing Material (RPM), Work in Progress (WIP), Finished Goods (FG), Engineering Spares (ES), and Goods in Transit (GIT).

➤ *Pool Regression Analysis*
Pooled regression analysis was adopted to evaluate the effect of inventory management proxies on the dependent variable profitability measure using the two panel of the study. However, from results on table 4.4, the regression result shows a positive but insignificant effect on profit after tax by Raw and Packaging Material (RPM), Finished Goods (FG), and Goods in Transit (GIT); since the

respective coefficients are estimated as: 0.37, 0.94, and 0.17; with low p-values of: 0.5701, 0.1140, and 0.4151 that is less than 5% Contrarily, the effect of the Work in Progress (WIP) is negative and significant with a low probability value less than 5% chosen level of significance. The global statistics of R^2 in the table is 0.726619, indicating that about 27% (1.00-0.726619 or 100-72.6619) variation of the model is caused by other factors which were not include in the model. It further shows a positive coefficient of 9.302636 for F-stat with low p-value of 0.000695, indicating that the jointly effect of all the independent variables representing inventory is significantly. Moreover, the Durbin Watson statistics with value approximated of 2, satisfy the rule of thumb and thus, the model is not suffering from serial correlation.

Dependent Variable: LOGPAT
Method: Panel Least Squares
Sample: 2009 2018
Periods included: 10
Cross-section included: 2
Total panel (unbalanced) observation: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGGIT	0.171413	0.204095	0.839867	0.4151
LOGFG	0.944284	0.560192	1.685645	0.1140
LOGRPM	0.372873	0.641155	0.581564	0.5701
LOGWIP	-0.500660	0.218598	-2.290323	0.0380
C	0.794920	3.107486	0.255808	0.8018
R-squared	0.726619	Mean dependent Var		15.69475
Adjusted R-squared	0.648510	S.D. dependent var		1.350011
S.E. of regression	0.800376	Akaike info criterion		2.613463
Sum of squared resid	8.968419	Schwarz criterion		2.862000
Log likelihood	-19.82790	Hannan-Quinn criter.		2.655526
F-statistic	9.302636	Durbin-Watson Stat		1.948808
Prob. (F-statisfic)	0.000695			

Table 4:- Pool regression model
Source: Compiled from Eview 9 output.

Variables	Coefficient	Standard error	t-stat	Probability
LOGGIT	0.171413	0.204095	0.839867	0.4151
LOGFG	0.944284	0.560192	1.685645	0.1140
LOGRPM	0.372873	0.641155	0.581564	0.5701
LOGWIP	-0.500660	0.218598	-2.290323	0.0380

Table 5:- summary of Pooled Regression Analysis
Source: author's Compilation

R^2	Adjusted R^2	S.E. of Regression	Log likely Hood	Akaike	Schwarz
0.72619	0.648510	0.800376	-19.82790	2.613463	2.862000

Table 6:- summary of global statistics

IV.   CONCLUSIONS

Based on the empirical findings, the study discovers ineffective inventory management in purview of goods in transit, finished goods, and raw and packing materials, since the increase or decrease of this measure could not make meaningful contribution to profit level. Thus, it concludes that management of foods and beverage companies, especially Nestle Nigeria Limited and Cadbury Nigeria limited are not effective in maintaining the best level of goods in transit, finished goods, and raw and packing materials. Conversely, the study find out that increasing the amount of work in progress to manufacturing foods and beverage will reduce the level profit. Thus, it concludes that managing goods in progress is somewhat commendable. In general, the study concludes that effective and efficient inventory management of foods and beverage companies is very important to improving profit level in Nigeria.

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