



Liquid Assets and Operational Performance of Industrial and Consumer Goods Sectors in Nigeria

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This study assessed the relationship between liquid assets and operational performance of industrial and consumer goods sectors in Nigeria. The liquid assets variables studied comprises: Inventory (INV), Cash\Bank Balances (CBB) while the Operational Performance variable studied is Turnover (TNV). Secondary data were sourced from the annual reports of the firms under review. Five Hypotheses were estimated with the use of Random Effect Panel Multi Regression Analyses. The findings of the study show that: Inventory (INV) have positive and significant relationship on the Turnover (TNV) of the industrial goods sectors in Nigeria and have a moderate and very weak positive on consumer goods sector similarly, Cash\Bank Balances (CBB) has a weak positive relationship on turnover of the consumer goods sector. This implies that organization without adequate liquid asset is bound to suffer set back (difficult to meet short term obligation). Based on the findings of the study, the researcher conclude that a well-managed inventory will lead to improvement of operational performance in Industrial goods sectors, while in the consumer goods sector, only inventory among the explanatory variables can predict operational performance effectively. The researcher recommend that management should put more attention on their liquid assets in order to maintain an adequate performance in the sectors because the result of the study has empirically proved that the higher the liquid asset the more the turnover of industrial and consumer goods sector in Nigeria will increase.

ABSTRACT

Keywords: Liquid Assets; Consumer Goods Sectors; Industrial Goods; Operational Performance

Introduction

An asset is liquid if it can be converted into cash quickly and at a low cost (Awunya, & Herick, 2018). This definition applies both to real assets and to financial assets. Gopalan, Kadan, and Pevzner (2012) argued that the statement of financial position equivalence between the value of assets and liabilities/equity may not carry over to their respective liquidities. They formalized this point in a model that showed how managerial investment decisions can affect stock liquidity by converting liquid assets into illiquid ones. Further, they noted that a firm has assets composed of cash, an illiquid project, and a growth option and the manager decides on the optimal allocation of cash between investment in the growth option and payment of dividends. A more productive growth option implies more investment, but firm financial constraints may limit the amount of investment. Reflecting frictions associated with raising external capital. It is assumed that the returns to investment are higher when financed with internal cash. Managerial investment decisions affect the uncertainty of future cash flows, and consequently asset liquidity (Akinyomi, 2014; Thevaruban, 2016). The corporate financial management literature conventionally focused on the study of long-term financial resources where a few studies have analyzed the topics related to capital structure, investments, dividends and firm valuation (Adam, Edward, & Seyram, 2017). However, the short-term investments of a firm with maturity less than a year in the form of current assets also represent a major share of total assets on the statement of financial position of the firms. The management of these short terms assets falls in current asset management (CAM). Current assets could represent a significant component of firm's total assets. Current asset was described as the life blood of every firm by Flanagan (2005), who also emphasized that the primary task of every manager is to keep current assets flowing and use the cash flows to generate profits. Current asset management is the handling of the current assets of a firm. Any asset that a firm has that is the equivalent of cash or can be liquidated into cash in the period of a year is considered a current asset. Typically, current assets are the inventory a company has, as well as the accounts receivables and any current investments it has in place. The main principle in current asset management is to keep the proper flow of income in balance. Managing current assets also considers the non-current investments of a firm, but current asset is important in determining the liquidity of a firm. The measure of liquidity is really the measure of how well and how fast a firm can raise enough cash to pay off its debts. Current assets management is the primary goals of working capital management (Jain, Singh, & Yadav, 2013).

Statement of the Problem

Management of liquid assets has become a critical element of many firms' operational strategies. A firm's liquid asset policies, which manage working capital in the form of cash receivables from customers, inventory holdings, and idle cash at hand or in the bank, are widely linked to improved firm financial performance. While industry has broadly accepted effective liquid asset management as a performance improvement mechanism, the great number of academic investigations into the link between liquid assets and performance examines the issue from a static view of working capital management. Prevalent working capital management theory advocates that firms can improve liquidity, and hence their competitive positioning by manipulating their liquid assets. Further, a firm's ability to convert materials into cash from sales reflects the firm's ability to generate returns effectively from its investments. Three factors directly influence a firm's liquidity: cash from accounts receivables is not available to firms while they are awaiting customer payments for goods delivered, cash invested in inventories is tied up and not available; and cash may be made available to a firm if it chooses to delay payment to suppliers for goods or services rendered.

Objectives of the Study

The study examined the relationship between liquid assets and operational performance of quoted industrial and consumer goods sectors in Nigeria. The specific objectives tend to;

- I. Ascertain the relationship between inventory and turnover of quoted industrial and consumer goods sectors in Nigeria.
- II. Determine the relationship between cash and bank balances and turnover of quoted industrial and consumer goods sectors in Nigeria

Statement of Hypotheses

The following null hypotheses guided the direction of the study.

- I. Inventories do not significantly associate with turnover of quoted industrial and consumer goods sectors in Nigeria.
- II. Cash and bank balances are not related to turnover of quoted industrial and consumer goods sectors in Nigeria.

Review of Related Literature

Conceptual Review

Liquid Assets

Liquid assets are a crucial component for the day-to-day operations of every company. It provides the firm with liquidity and it facilitates the payment of various types of obligations. Kroes, & Manikas, (2014). Cash equivalents are current assets, which can be converted into cash in a very short term and are thus characterized by a high degree of liquidity. They include for instance U.S. treasury bills, certificates of deposits, banker's acceptances and further money market instruments. Those securities have a low-risk, low- return profile. If there were perfect capital markets, firms would not feel the need to hold liquid assets, but they would be easily able to raise external capital. As this is not the case in the real world, it is to assume that financial frictions are responsible for causing such ambiguous predictions with respect to holding cash (Kroes, & Manikas, 2014). There are indeed several benefits related with holding cash, but there are also disadvantages and costs that firms have to incur when they hold cash. In fact, there might be a large variety of reasons, which justifies the holding of cash, but from the literature one can identify two dominant motives, which presuppose certain behaviours related with the use of cash. The first one is the transaction cost motive and the second one is the precautionary motive. According to the transaction cost motive there are fixed and variable costs related with raising external capital, which gives rise to the assumption of an optimal level of cash holdings and prompts firms to hold cash as a buffer (Kroes, & Manikas, 2014). In contrast there is the precautionary motive, which stresses the presence of asymmetric information, agency costs and the opportunity costs of forgone investments. Here, the notion is that if the costs of adverse selection of external finance are excessively high, firms tend to accumulate cash or other liquid assets as prevention mechanism in order to hedge against future shortfalls in cash and being forced to pass on positive net present value investments. So, from those two motives one can derive three main categories with distinct underlying theoretical assumptions. The first category represents the transaction cost model, the second deals with information asymmetries and the agency cost of debt and the third category comprises agency costs related to managerial discretion. Although, former papers also dealt with those theoretical models, there is no clear consensus on the way the models are related to their respective theoretical foundations. This may be due to the fact that the theories overlap to a certain extent with regard to their model explanations. For instance, Flanagan, (2005) assume a clear-cut distinction between three theoretical models: the trade-off model, the pecking order theory and the free cash flow theory. In contrast, Flanagan, (2005) categorize their theoretical section based on the factors: transaction costs, information asymmetries, agency costs and financing hierarchy, without explicitly allocating them to their respective theories. Moreover, Kroes, & Manikas, 2014) and Jain et al. (2009) apply yet another categorization. Thus, the absence of a clear taxonomy regarding the theories impedes the comparability between the findings about the determinants of cash holdings by different authors.

Inventory

Inventory is an asset, in that firms typically must carry it to provide consumer goods sector to their customers in a timely fashion, which means that reductions in inventory may lead to reductions in customer service (Kroes and Manikas 2014). However, by holding inventory, cash invested in inventory is unavailable, and the firm is forced to incur carrying costs; hence, inventory reductions may reduce holding costs and free up cash that can be reinvested to increase sales (Kroes and Manikas 2014). Additionally, changes in the inventory levels of a firm have been linked to an increase in the magnitude of the bullwhip effect experienced by partners upstream in a supply chain (Tangsucheeva & Prabhu, 2013). Although inventory reductions have the potential to both damage and improve firm performance. Further, it has been shown that excessive inventory levels are related to poor operational and financial

performance (Singhal, 2005). Although lowering inventory conceptually may seem to expose a firm to a greater risk of stock-outs, in practice, firms often are able to reduce inventories without sacrificing service through methods including Lean/Just-In-Time management programs, automated replenishment systems, Vendor Managed Inventory (VMI) programs, and consignment inventory programs (Achabal, McIntyre, Smith & Kalyanam, 2000; Myers, Daugherty & Autry 2000). These types of programs successfully lower inventory levels by substituting additional inventory with better information, which has been shown to reduce inventory levels effectively without damaging performance. According to Omesa (2013) defined inventory as another sensitive part of current assets and, without any doubt, forms an integral component of working capital management. Good Inventory Management is essential since it is responsible for proper control over inventory right from the raw material stage to the finished goods stage. Inventory Management begins with inventory control and involves the timely purchase, proper storage, and efficient utilization to maintain even and orderly flow of finished goods to meet timely commitment by the business and at the same time avoid excess working capital in holding of inventory as that will result in a delay in cash conversion cycle and also increase the risk of obsolescence and increase working capital requirement which adversely impacts the profitability of the business (Bans-Caballero et al, 2012).

Cash and Bank Balances

Cash management is the practice of planning and controlling cash flows into and out of the business, cash flows within the business, and cash balances held by a business at a point in time (Pandey, 2004). Efficient cash management involves the determination of the most favorable cash to hold by considering the trade-off between the opportunity cost of holding too much cash and the trading cost of holding too little (Nyabwanga, Ojera, Lumumba, Alphonse, & Otieno, 2011). Cash management is fundamental to every business that desires to meet up with its short-term financial obligations. Cash management consists of taking the necessary actions to maintain adequate levels of cash to meet operational and capital requirements and to obtain the maximum yield on short-term investments (Akinyomi, 2014). Uwuigbe, Uwalomwa and Egbide (2011) observed that cash management assumes more significance than other current assets because cash is the most important asset that a firm holds. Cash, unlike fixed assets or inventories does not produce goods sector for resale, notwithstanding management's considerable time is devoted to managing cash. The importance of managing cash to a manufacturing organization as recognized by Alfred (2007) includes the following: a) Management of cash aids the achievement of liquidity and control. b) It brings about proper planning regarding cash disbursement and receipts over cash positions to keep the firm sufficiently liquid and to use excess cash in some profitable venture c) The management of cash is also significant since we cannot rightly predict accurately cash flow behavior in the future. d) Through cash management, appropriate strategies are developed thereby providing innovation for cash receipts and payments. e) It also aids maintaining adequate control over cash position to keep the firm sufficiently liquid and to use excess of cash in some profitable ventures. Cash is a major component of current asset and cash involves all other liquid securities which can be converted into cash easily. Effective Cash Management goes a long way in keeping the working capital cycle in order and also enhance the business to manage its operating cycle. Also, business efficiency is determined base by the free flow of cash to the firm and how the firm generate the cash. Also, effective utilization of such cash ensures business to garner trade discounts and boost the cash conversion cycle, which is a major commitment to describe the working capital cycle of any business (Altaf & Shah, 2017).

Operational Performance

Although "performance" may appear to be an easy concept, a unique definition in the literature does not exist. Moreover, academics often use special definitions tailored to fit the individual research purposes. . Operational performance is the synergy between various company units and the ability to produce greater output together. Operational performance refers to a firm's ability to generate new resources from day-to-day operations over a given period. It involves enhancing shareholders' wealth and profit making which are among the major objectives of a firm (Pandey, 2005). Shareholder's wealth is mainly influenced by growth in sales, improvement in profit margin, capital investment decisions and capital structure decisions (Arnott and Asness, 2003). Various indicators have been used to measure the operational performance of the firms by various scholars. The study by Okwo, Ugwunta and Nweze (2012) measured the operational performance of firms in brewery sector in terms of operating profit margin. Similarly, a study by Zheng Sheng and NuoZhi (2013) measured the business performance in terms of operating

revenue on an effort determine the optimal allocation of asset structure on financial performance. Olatunji and Tajudeen (2014) used net profit of the commercial banks as the measure of their financial performance. Further, a study by Wamugo, Muathe, & Kosimbei (2014) on the relationship between capital structure and performance of non-financial listed firms, used ROA and ROE as the indicators of firm performance. This approach was also taken by the study on the effects of asset structure on the financial performance of listed consumer goods sector where financial performance of these firms was evaluated in terms of ROA and ROE.

Theoretical Framework

Trade-off Theory

This area is concerned with the conceptual model that establishes a sense of structure that guides this work. According to Onyekwelu (2015), theory in research pinpoints crucial aspect to be investigated and crucial questions to be answered. Therefore, this study shall review the link between the research topic with the Trade-off Theory propounded by Modigliani and Miller (1963). The study adopted trade-off theory from the efficient working capital management perspective, of which liquidity and profitability are the two main purpose of working capital management (Ben-Caleb, Olubukunola and Uwuigbe, 2013), to anchor the variables of the study because the theories establish a logical link between the relationship of liquid assets and firm performance. Trade-off model applied when firms express their optimal reason for holding cash by comparing the marginal cost and benefits of holding cash. Large investment in current assets under certainty would mean low return on assets (ROA) of the firm, as excess investments in current assets will not fetch enough return. The ultimate obligation of any firm is to maximize profit and increase their productivity. At the same time, preserving liquidity of any firm is an important obligation too. The problem is that increasing profits at the cost of liquidity can pose serious challenges to the firm (Makori & Jagongo, 2013). Therefore, there must be a trade-off between these two objectives of firms. One objective should not be fulfilled at the cost of the other since both are important. If we do not care about profit, we cannot survive for a longer period. On the other hand, if we care less about liquidity, the firm might face the problem of insolvency or bankruptcy. The firm must consider the levels of current assets to be established for production, sales and demand condition, operating efficiency is taken into consideration in the policy decision. It may follow a conservative risk-return trade-off. The rank correlation of liquidity and profitability have significant relationship and inversely related on each other. This means that as the liquidity increases and profitability decreases (Altaf et al, 2017).

Empirical Reviews

Malik, Waseem and Kifayat (2011) carried out an investigation on working capital management and profitability in the textile industry of Pakistan. The population of the study was the textile industry of Pakistan. The study was based on secondary data collected from listed firms in Karachi stock exchange for the period of 2001-2006. The effect of working capital management on profitability was tested using panel data methodology. Data analysis was conducted using correlation and regression analysis. The results of the study revealed that there a strong positive relationship existed between profitability and inventory while there a negative relationship was reported between profitability and accounts payable. Malik, Waseem and Kifayat (2011) carried out an investigation on working capital management and profitability in the textile industry of Pakistan. The population of the study was the textile industry of Pakistan. The study was based on secondary data collected from listed firms in Karachi stock exchange for the period of 2001-2006. The effect of working capital management on profitability was tested using panel data methodology. Data analysis was conducted using correlation and regression analysis. The results of the study revealed that there a strong positive relationship existed between profitability and inventory while there a negative relationship was reported between profitability and accounts payable. Thevaruban (2016) examined the impact of cash management on the financial performance of Sri Lankan manufacturing companies. The independent variable of the study was cash management with the proxies of cash ratio and cash turnover ratio. The dependent variable of the study was financial performance with the proxies of Return on Equity (ROE) and Return on Assets (ROA). The study used secondary data and applied the correlation and regression analysis. The findings revealed that cash ratio has negative impact on return on equity and return on assets. However, cash turnover ratio did not have any influence on return on equity and return on assets of the Sri Lankan Manufacturing companies. John (2014) carried

out research on effect of cash management on profitability of Nigerian manufacturing companies. Cash conversion cycle considered as the independent variable with the proxies of cash ratio (CR), debt ratio (DR) and sales growth (SG); dependent variable is profitability with the proxies of Return on Assets (ROA) and Return on Equity (ROE). Correlation and regression analysis were carried out. The results revealed a positive and significant relationship between Cash Conversion Cycle (CCC) and ROE, on the other hand non-significant negative relationship between cash conversion cycle and ROA.

Methodology

The research design adopted for this research is the *ex-post facto* research design. This means that the events that was investigated had already taken place and thus data already exist. The adoption of this research design hinged on three (3) reasons. (1) that the study relied on historic accounting data; (2) that the data was obtained from the financial statements and accounts of firms; (3) that the sampled firms were quoted on the Nigeria Stock Exchange, and as such the event under investigation had already taken place. The researcher studied all public industrial good sectors and consumer goods sectors that their stocks are quoted on the Nigerian Exchange group. However, for the analysis, the study focused on the industrial and consumer goods sectors. The secondary data was sourced from the published financial statements and accounts of sampled firms quoted on the Nigeria Stock Exchange. The firm sampled is Berger Paint Plc. Pearson's correlation coefficient was used to measure the linear correlation between two variables. Only firm specific factors are analyzed and tested given that only firm data from firms in Nigeria are used. To reduce the effect of extreme values, variables with such characteristics are deflated using total assets. The reliability and validity of the stated models depends wholly on the satisfaction of these theoretical underpinnings.

Model Specification

The model that was adapted from Nwaogwugwu (2005) in his analysis of the influence of fiscal deficit on the performance of the Nigeria economy and it was modified to suite this research work as this.

$$TNV = f (INT + CBB)$$

Were,

TNR = Turnover

INV = Inventory

CBB = Cash and Bank Balances

Expressing the above functional relationship with control variable in a linear regression model, we have

$$TNR_{it} = \beta_0 + \beta_1 INV_{it} + \beta_2 CBB_{it}$$

Were,

β_0 is the constant and intercept

β_1 , and β_2 are model parameters to be estimated.

These are the regression parameters or coefficient of Inventory, Cash and Bank Balance.

Data Presentation

Raw data in Appendix I are figures in millions of naira; extracted from the audited financial statements of the 18 manufacturing firms (consumer goods firms and industrial goods firms studied. The variables thus represented facilitated the computation of the main variables in the five stated hypotheses and control variables (Appendix II). Company by company data are pooled to arrive at the number of observations for most of the variables.

Data Analysis

Industrial Goods Firms

Table 1: Descriptive Statistic of the Industrial Goods Firms

	TNR	INV	CCE
Mean	377923.7	50734.11	129736.1
Median	145864.0	19104.50	11580.00
Maximum	1500112.	342020.0	2388588.
Minimum	2901.000	514.0000	62.00000
Std. Dev.	468937.9	73562.86	415749.7
Skewness	1.089068	2.039561	4.226078
Kurtosis	2.769975	6.951679	20.54551
Jarque-Bera	10.79368	72.57376	853.3884
Probability	0.004531	0.000000	0.000000
Sum	20407881	2739642.	7005749.
Sum Sq. Dev.	1.17E+13	2.87E+11	9.16E+12
Observations	54	54	54

Source: Computed by Researcher Using Reviews 10.0 Statistical Software

The normality of the distribution of the data series is shown by the coefficients of Skewness, Kurtosis, and the probability values of the Jarque-Bera test for normality. From the Table 1, the probability of the Jarque-Bera statistics for all the variables (dependent and independent) have significant p-values. They are as follows Turnover (0.004531), Inventory (0.00000), Cash and Bank Balances (0.00000). The significance of p-values depicts a non-normal distribution for both the focal and explanatory variables. This was further confirmed by the skewness coefficients which are all greater than one for all the variables. The kurtosis coefficient provides a second level of confirmation that all the variables have a non-normal distribution with the Kurtosis coefficients exceeding three.

Table 2: Result of Panel Unit Root Tests (ADF-Type Unit Root Tests)

Null Hypothesis: the variable has a unit root		TNR	INV	CCE
<u>At Level</u>				
With Constant	t-Statistic	0.4873	0.3309	0.0935
	Prob.	0.2268	0.3728	0.6373
With Constant & Trend	t-Statistic	0.8251	0.7245	0.3100
	Prob.	0.5455	0.7034	0.4222
Without Constant & Trend	t-Statistic	0.5632	0.5172	0.1771
	Prob.	0.4281	0.2966	0.3803
<u>At First Difference</u>				
With Constant	t-Statistic	0.0729	0.0891	0.0063
	Prob.	0.0104	0.0717	0.0249
With Constant & Trend	t-Statistic	0.1172	0.1488	0.0487
	Prob.	0.0227	0.1792	0.1893
Without Constant & Trend	t-Statistic	0.0053	0.0076	0.0002
	Prob.	0.0004	0.0050	0.0019

Source: Reviews 10.0 Output, 2022

Table 2 above is a representation of the stationarity test of the variables used in this study. This test is necessary to determine if a variable has a unit root, i.e., if the variable is non-stationary. For the sake of the current study, and to obtain a result that is robust enough for prediction and forecast, these variables must not have a unit root, which is to say that they should be stationary. The test has a null hypothesis, which is that a variable has unit root or that the variable is non-stationary. The null hypotheses are rejected or not rejected depending on the probability value of

the ADF unit root tests. A probability value less than 0.05 means that the null hypothesis will be rejected, meaning that the variable does not have a unit root, i.e., the variable is stationary over time. Subsequently, the variables in the table above show varying levels of stationarity. From the table, the ADF probability value of less than 5% revealed that all the variables do not have a unit root at first difference without constant and trends. This implies that Turnover, Inventory, Cash and Bank Balances, are stationary at first difference without constant and trends.

Table 3: Results of Kao (Engle-Granger based) Co-Integration Test

<i>Residual Variance</i>	<i>HAC Variance</i>	<i>ADF</i>
71.94358	70.01962	t-statistic
		Probability
		-9.941809
		0.0000

Source: Computed by Researcher Using E-views 10.0 Statistical Software

H₀: There is no co-integration

Decision Rule: Reject the null hypothesis if the p-value of ADF is less than 0.05.

Decision: The result of the Kao (Engle-Granger based) Co-integration test in Table 3 shows that there is a stable long-run relationship between the focal and explanatory variables. This is because the probability value of the ADF is less than 0.05. In other words, the variables are co-integrated. This means that the dependent variable, Turnover, share a long-run relationship with Inventory, Cash and Bank Balances, and as such, a regression analysis can be conducted on them.

Table 4: Panel Regression Analysis (Dependent Variable: Turnover)

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Stat</i>	<i>p-Value</i>
C	-0.026888	5.848369	-0.004598	0.9964
INV	12.41281	0.485399	25.57237	0.0000
CCE	0.464343	0.212259	2.187622	0.0337

$R^2 = 0.996$, Adjusted $R^2 = 0.995$, $F\text{-Stat} = 1973.12$, $Prob(F\text{-stat}) = 0.00000$ Durbin Watson = 2.88

Source: E-views 10.0 Output, 2022

Table 4 reveals that the inventory has a significant positive effect on turnover, with a p-value of 0.0000 and a t-statistic of 25.57237. Also, Cash and Bank Balances have a significant positive effect on turnover, with a p-value of 0.0337 and a t-statistic of 2.187622. However, and a t-statistic of -0.293932. Table 4 further depicts that a unit increase in Inventory, Cash and Bank Balances and Natural Logarithm of Total Assets increased Turnover by 12.4 units, 0.46 units, 0.03 units, and 0.01 units respectively. The multiple coefficients of determination, R-squared, is 99.6% indicating that 99.6% of change / movement of Turnover of industrial goods firms is caused by these determinants. F-Statistic depicts that the combined influence of all the explanatory variables including the control variables on Turnover of industrial goods firms is statistically significant. In other words, the entered explanatory variables exerted strong effect on Turnover of industrial goods firms.

Table 5: Correlation Analysis Result Using Covariance Output

<i>Correlating Variables</i>	<i>Correlation</i>	<i>t-Statistic</i>	<i>P-Value</i>	<i>Observation</i>
Inventory & Turnover	0.937031	19.34741	0.0000	54
Cash and Bank Balances & Turnover	0.419935	3.336656	0.0016	54

Source: Reviews 10.0 Output, 2022

Table 5 reveals that Inventory and Turnover have a very strong relationship at 94%. Cash and Bank Balances share a weak relationship with Turnover with correlation coefficient of 41%.

Consumer Goods Firms

Table 6: Descriptive Statistic of the consumer Goods Firms

	TNR	INV	CCE
Mean	164013.0	20445.58	15249.70
Median	89469.00	9372.000	5805.000
Maximum	993399.0	146688.0	288832.0
Minimum	36.09400	-147.0000	27.00000
Std. Dev.	212636.7	24903.20	36785.34
Skewness	1.898528	2.122438	5.877625
Kurtosis	6.512077	9.253096	41.54268
Jarque-Bera	150.4818	321.3011	9133.449
Probability	0.000000	0.000000	0.000000
Sum	22141750	2760153.	2058709.
Sum Sq. Dev.	6.06E+12	8.31E+10	1.81E+11
Observations	135	135	135

Source: Computed by Researcher Using E-views 10.0 Statistical Software

The normality of the distribution of the data series is shown by the coefficients of Skewness, Kurtosis, and the probability values of the Jarque-Bera test for normality. From the Table 6, the probability of the Jarque-Bera statistics for all the variables (dependent and independent) have significant p-values. They are as follows Turnover (0.00000), Inventory (0.00000), Cash and Bank Balances (0.00000). The significance of p-values depicts a non-normal distribution for both the focal and explanatory variables. This was further confirmed by the skewness coefficients which are all greater than one for all the variables. The kurtosis coefficient provides a second level of confirmation that all the variables have a non-normal distribution with the Kurtosis coefficients exceeding three.

Table 7: Result of Panel Unit Root Tests (ADF-Type Unit Root Tests)

Null Hypothesis: the variable has a unit root		TNR	INV	CCE
		At Level		
With Constant	t-Statistic	0.1219	0.0778	0.5031
	Prob.	0.0167	0.0130	0.9343
With Constant & Trend	t-Statistic	0.0184	0.0219	0.8370
	Prob.	0.0686	0.0823	0.9991
Without Constant & Trend	t-Statistic	0.2282	0.2997	0.3457
	Prob.	0.2669	0.0111	0.8194
		AT First Difference		
With Constant	t-Statistic	0.0016	0.0197	0.4149
	Prob.	0.0024	0.0262	0.0770
With Constant & Trend	t-Statistic	0.0107	0.1085	0.7524
	Prob.	0.0179	0.1049	0.0408
Without Constant & Trend	t-Statistic	0.0001	0.0016	0.0704
	Prob.	0.0001	0.0019	0.0127

Source: E-views 10.0 Output, 2022

Table 7 above is a representation of the stationarity test of the variables used in this study. This test is necessary to determine if a variable has a unit root, i.e., if the variable is non-stationary. For the sake of the current study, and to obtain a result that is robust enough for prediction and forecast, these variables must not have a unit root, which is to say that they should be stationary. The test has a null hypothesis, which is that a variable has unit root or that the variable is non-stationary. The null hypotheses are rejected or not rejected depending on the probability value of the ADF unit root tests. A probability value less than 0.05 means that the null hypothesis will be rejected, meaning that the variable does not have a unit root, i.e., the variable is stationary over time. The variables in the table above

show varying levels of stationarity. From Table 7, the ADF probability value of less than 5% revealed that Turnover (0.0167) and Inventory (0.0130) are stationary at levels. Cash and Bank Balances (0.0127), do not have a unit root at first difference without constant and trends. This implies that Cash and Bank Balances is stationary at first difference without constant and trends.

Table 8: Results of Kao (Engle-Granger Based) Co-Integration Test

<i>Residual Variance</i>	<i>HAC Variance</i>	<i>ADF</i>	
0.450760	0.372585	t-statistic	Probability
		-7.484369	0.0000

Source: E-views 10.0 Output, 2022

H₀: There is no co-integration

Decision Rule: Reject the null hypothesis if the p-value of ADF is less than 0.05.

Decision: The result of the Kao (Engle-Granger based) Co-integration test in Table 8 shows that there is a stable long-run relationship between the focal and explanatory variables. This is because the probability value of the ADF is less than 0.05. In other words, the variables are co-integrated. This means that the dependent variable, Turnover, share a long-run relationship with Inventory and Cash and Bank Balances of consumer goods firms in Nigeria, and as such, a regression analysis can be conducted on them.

Table 9: Panel Regression Analysis (Dependent Variable: Turnover)

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-Stat</i>	<i>p-Value</i>
C	-0.105109	0.067183	-1.564524	0.1204
INV	6.399608	0.500223	12.79351	0.0000
CCE	1.095773	0.361470	3.031439	0.0030
$R^2 = 0.99$, Adjusted $R^2 = 0.99$, $F\text{-Stat} = 75560.38$, $Prob(F\text{-stat}) = 0.00000$ Durbin Watson = 2.31				

Source: E-views 10.0 Output, 2022

Table 9 reveals that the inventory has a significant positive effect on turnover, with a p-value of 0.0000 and a t-statistic of 12.79351. Also, Cash and Bank Balances have a significant positive effect on turnover, with a p-value of 0.0030 and a t-statistic of 3.031439. Table 9 further depicts that a unit increase in Inventory, Cash and Bank Balances, and Natural Logarithm of Total Assets increased Turnover by 6.40 units, 1.10 units, 0.38 units. The multiple coefficients of determination, R-squared, is 99% indicating that 99% of change / movement of Turnover of industrial goods firms on the long-run is caused by these determinants. F-Statistic (0.00000) depicts that the combined influence of all the explanatory variables including the control variables on Turnover of consumer goods firms is statistically significant. In other words, the entered explanatory variables exerted strong effect on Turnover of consumer goods firms.

Table 10: Correlation Analysis Result Using Covariance Output

<i>Correlating Variables</i>	<i>Correlation</i>	<i>t-Statistic</i>	<i>P-Value</i>	<i>Observation</i>
Inventory & Turnover	0.580404	8.342402	0.0000	139
Cash and Bank Balances & Turnover	0.124003	1.462702	0.1458	139

Source: Reviews 10.0 Output, 2022

Table 10 reveals that Inventory and Turnover have a moderate relationship at 58%. Cash and Bank Balances share a very weak relationship with Turnover with correlation coefficient of 12%.

Test of Hypotheses

Pearson's correlation coefficient r is a measure of the linear correlation (dependence) between two variables X and Y , giving a value between $+1$ and -1 inclusive, where 1 is total positive correlation, 0 is no correlation, and -1 is negative correlation. Put differently, correlation quantifies the direction and strength of the relationship between two numeric variables, X and Y , and always lies between -1.0 and 1.0 . The sign of the correlation coefficient depicts the direction of the relationship while the correlation coefficient in percentage (%) shows the strength of the association.

However, calculating a Pearson correlation coefficient requires the assumption that the relationship between the two variables (X and Y) is linear. There is a rule of thumb for interpreting the strength of a relationship based on its r value (use the absolute value of the correlation coefficient to make all values positive):

Absolute Value of r	Strength of The Relationship
$r < 0.3$	None or Very Weak
$0.3 < r < 0.5$	Weak
$0.5 < r < 0.7$	Moderate
$r > 0.7$	Strong

The relationship between two variables is generally considered strong when their r value is larger than 0.7 (Moore, Notz & Flinger, 2013). This rule of thumb is adopted in this research for the test of hypotheses. Jaadi (2019) also demonstrates how to interpret the size (strength) of a correlation coefficient which is very similar to the rule of thumb accentuated by Moore, Notz & Flinger (2013).

Table 11: Correlation Interpretation Table

Size of Correlation	Interpretation
.90 to 1.00 (–.90 to –1.00)	Very high positive (negative) correlation
.70 to .90 (–.70 to –.90)	High positive (negative) correlation
.50 to .70 (–.50 to –.70)	Moderate positive (negative) correlation
.30 to .50 (–.30 to –.50)	Low positive (negative) correlation
.00 to .30 (.00 to –.30)	negligible correlation

Decision Rule:

If $r > 0.7$, $p\text{-Value} < 0.05$, $t\text{-Stat} > 2.0$, Null Hypothesis is Rejected

If $r < 0.7$, $p\text{-Value} > 0.05$, $t\text{-Stat} < 2.0$, Null Hypothesis is Accepted

In this study, X is the Predictor (Independent) Variable while Y is the Response (Dependent) Variable. Consequently, the Predictor (X) and the Response (Y) Variables are represented in each statement of the five hypotheses of the study. However, it is worthy of note that with correlation, the X and Y variables are interchangeable unlike in regression where the results of the analysis will always change if X and Y are swapped.

<i>Hypotheses (H₀)</i>	<i>Predictor Variable (X)</i>	<i>Response Variable (Y)</i>
<i>Null Hypothesis One</i>	Inventory	Turnover
<i>Null Hypothesis Two</i>	Cash and Bank Balances	Turnover

Source: Author's Arrangement, 2022

Test of Hypothesis One

Statement of Hypothesis One:

H₀: Inventory do not have a strong relationship with Turnover of firms in Nigeria.

H₁: There is strong relationship between Inventory and Turnover of firms in Nigeria.

Table 12: Correlation Analysis Result Using Covariance Output for Inventory and Turnover

<i>Sector</i>	<i>Industrial Goods Sector</i>	<i>Consumer Goods Sector</i>
<i>Correlation Coefficient</i>	0.937031	0.580404
<i>Correlation in Percentage (%)</i>	94%	58%
<i>Strength of the Relationship</i>	Very Strong	Moderate
<i>t-Statistics</i>	19.34741	8.342402
<i>Probability Value</i>	0.0000	0.0000
<i>Observations</i>	54	139

Source: E-views 10.0 Output, 2022

Decision Rule:

If $r > 0.7$, $p\text{-Value} < 0.05$, $t\text{-Stat} > 2.0$, Null Hypothesis is Rejected.

If $r < 0.7$, $p\text{-Value} > 0.05$, $t\text{-Stat} < 2.0$, Null Hypothesis is Accepted.

Decision:

The Coefficient of Correlation (94%) is greater than the benchmark of 70% for industrial goods firms. For consumer goods firms, the Coefficient of Correlation (58%) is less than the benchmark of 70%. Hence, the Null Hypothesis which states that Inventory do not have a strong relationship with Turnover of firms in Nigeria, is rejected for industrial goods firms and accepted for consumer goods firms. The p-Value of 0.0000 for both industrial goods firms and consumer goods firms provides significant evidence of a linear relationship between Inventory and Turnover. The strength of the relationship 94% (industrial goods sector) and 58% (consumer goods sector) therefore declared very strong and moderately strong respectively.

Test of Hypothesis Two

Statement of Hypothesis Two:

H₀: Cash and Bank Balances do not have a strong relationship with Turnover of firms in Nigeria.

H₁: There is strong relationship between Cash and Bank Balances and Turnover of firms in Nigeria.

Table 13: Correlation Analysis Result Using Covariance Output for Cash and Bank Balances and Turnover

<i>Sector</i>	<i>Industrial Goods Sector</i>	<i>Consumer Goods Sector</i>
<i>Correlation Coefficient</i>	0.419935	0.124003
<i>Correlation in Percentage (%)</i>	42%	12%
<i>Strength of the Relationship</i>	Weak	Very Weak
<i>t-Statistics</i>	3.336656	1.462702

Probability Value	0.0016	0.1458
Observations	54	139

Source: E-views 10.0 Output, 2022

Decision Rule:

If $r > 0.7$, p-Value < 0.05 , t-Stat > 2.0 , Null Hypothesis is Rejected.
If $r < 0.7$, p-Value > 0.05 , t-Stat < 2.0 , Null Hypothesis is Accepted.

Decision:

The Coefficient of Correlation (42%) is less than the benchmark of 70% for industrial goods firms. For consumer goods firms, the Coefficient of Correlation (12%) is also less than the benchmark of 70%. Hence, the Null Hypothesis which states that Cash and Bank Balances do not have a strong relationship with Turnover of firms in Nigeria, is accepted for both industrial goods firms and consumer goods firms. The p-Value of 0.0016 for industrial goods firms provides significant evidence of a linear relationship between Cash and Bank Balances and Turnover of industrial goods firms. The strength of the relationship 42% (industrial goods sector) and 12% (consumer goods sector) therefore declared a weak and a very weak respectively.

Summary of Findings

The study carried out an empirical analysis of relationship between liquid assets on operational performance (turnover) of listed industrial and consumer firms in Nigeria for the twelve-year period (2011-2021). The major findings hereunder listed were possible via collation and analysis including diagnostic analyses of relevant data for the said period.

- i) Inventory have a strong (94%) positive relationship with operational performance (proxied by turnover) of quoted industrial goods firms in Nigeria. However, Inventory have a moderately strong (58%) relationship with turnover of consumer goods firms in Nigeria.
- ii) Cash and Bank Balances have a weak (42%) positive relationship with operational performance (proxied by turnover) of quoted industrial goods firms in Nigeria. However, Cash and Bank Balances have a very weak (12%) relationship with turnover of consumer goods firms in Nigeria.

Conclusion

The association between liquid assets and operational performance of quoted industrial and consumer firms in Nigeria was investigated for the twelve-year period (2011 – 2021). The study employed Pearson correlation technique as a consequence of the diagnostic tests carried out. In the industrial goods sector, it construed that some of these predictors and a control variable (liquid assets such as Inventory) have a strong relationship with operational performance of the sampled firms. The study also found that Cash and Bank Balances have a weak relationship with turnover in the sector. However, the findings from the consumer goods sector depict a more diluted strength of relationship between the focal and explanatory variables. The findings in the consumer goods sector show that the strong positive relationship inventory with turnover in industrial goods sector imply that the firms in the industrial goods sector adopt effective and efficient inventory policies aligned to throughput. The weak positive relationship between cash and bank balances, and turnover of industrial goods firms imply that these firms engage in adequate cash management and good investment plan in the industry. However, in the consumer goods sector, the moderately strong positive relationship between inventory and turnover imply that these firms practice effective and efficient inventory management policies. The rest of the explanatory variables exert weak positive relationship with turnover. The study therefore concludes that in the industrial goods firms, inventory is the major determinants of operational performance. While in the consumer goods sector, only inventory among the explanatory variables can predict operational performance effectively.

Recommendations

In line with the findings of the study the following recommendations are proffered:

1. The management of listed consumer goods sector in Nigeria should consolidate on their inventory as the result revealed that the higher the inventory, the higher the turnover of the firms. But there should be more carefulness in handling of inventories. Even though companies should make every effort to have enough inventory so that they would not experience stock-outs, they should as well be mindful of carrying costs.
2. The firms under review should also consolidate on their cash/bank balances because the stronger relationship of CCB with turnover in Industrial goods sector and a weak relationship in consumer goods sector can be attributed to investing them instead of having so much idle cash.

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