



WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE OF MANUFACTURING FIRM IN SOUTHEAST NIGERIA

Nwachukwu, Basilia Chiamaka¹ and Prof. Oliver Inyiama²

Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria¹²

Abstract

The study examined the effect of working capital management and financial performance of manufacturing Firm in Southeast Nigeria. The study adopts short term investments and account payables as the independent variable while turnover serve as dependent variable. The study used an ex-post facto research approach as its methodology. Secondary source of data was adopted for the study. The data was obtained from audited annual financial account and reporting of the manufacturing firm listed in the Nigeria Stock Exchange LTD. The data were analysed using Pearson's correlation coefficient. Short-term investment has a weak (28%) positive relationship with financial performance (proxied by turnover). While Account Payables have a moderately strong (58%) positive relationship with financial performance (proxied by turnover) of quoted industrial goods firms in Nigeria. We concluded that working capital management has significant positive effect on the financial performance of manufacturing firm in Southeast Nigeria. We recommended that, the manufacturing firm in sought east Nigeria should endeavour to effectively manage their working capital very well since it has significant positive effect on the financial performance of the firm.

Keywords Working Capital Management; Financial Performance; Manufacturing Firm

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Introduction

Short-term finance constitutes the working capital (WC) of the company directly connected to trade-off between liquidity and performance. Working capital management (WCM) augments the free cash flow of the firm, which in turn enhances the firms' intensification prospects and value to shareholders (Chowdhary, & Amin, 2007). WC is a significant aspect in sustaining the continuity, solvency, liquidity, and productivity of the firm (Akoto, Vitor, & Angmor, 2013). Holding high levels of current assets in form of account receivables and inventory may render the firm incapable of paying its short-term obligation when they fall due. Also, high levels of short liabilities increase chances of bankruptcy. Thus, efficient management of WC entails attaining best possible level of working capital that exploits growth opportunities (Ailemen, & Folashade, 2014). Padachi (2006) points out that a great number of businesses collapse due to the incapacity to plan and organize appropriately current assets and liabilities of firms.

In order to free up funds to meet short-term financial requirements, it is imperative for companies to focus more on working capital management efficiency. Strategic management of the current assets and liabilities results to shorter cash conversion cycle, which generates sufficient funds to firms and boosts the cash holding levels. Nonetheless, this exposes the firms to the risks of stock out situations, default by customers, and risk of trade credit from suppliers. Too little working capital might result in the firm's incapability to take care of its financial obligations. On the other hand, locking up a great amount resources in working capital minimizes the return on capital employed. Therefore, firm can reduce risk, plan for uncertainties, and build a stand by cash reserve to assist in hard times in order to advance financial performance of firms (Njeru, Njeru, Memba, & Tirimba, 2015).

Financial performance exists at different levels of the organization. Traditionally, financial performance measures are split into the following categories: profitability, liquidity/working capital, gearing and investor ratios. Most of the empirical studies regarding the relationship between current asset management and financial performance support the traditional belief that reducing current assets proportion in total assets to reduce current asset investment, would positively affect the profitability of the firm.

Statement of the Problem

A crucial component of the operational strategies of many organizations is now the management of liquid assets. Improved firm financial performance is frequently associated with a company's liquid asset policies, which control working capital in the form of inventory holdings, cash receivables from customers, and idle cash on hand or in the bank. Although the industry has adopted effective liquid asset management as a strategy for performance enhancement, the vast majority of academic studies on the relationship between liquid assets and performance look at the problem from a static perspective of working capital management. According to popular working capital management theory, businesses can manipulate their liquid assets to increase liquidity and, as a result, their competitive positioning. Additionally, a company's capacity to turn materials into money through sales is a good indicator of how well it can make money off of its investments. A firm's liquidity is influenced by three factors: cash from accounts receivables is unavailable to businesses while they wait for payment from customers for goods delivered; inventory cash is locked up and unavailable; and cash may become available to a business if it chooses to postpone paying suppliers for goods or services rendered.

Objectives of the Study

The main objective of this is to examine the effect of Working Capital Management and Financial Performance of Manufacturing Firm in Southeast Nigeria. The specific objectives tend to;

- i. Evaluate the relationship between short term investments and turnover of quoted industrial and consumer goods sectors in Nigeria's.
- ii. Determine the relationship between account payables 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. Short term investments do not connect with turnover of quoted industrial and consumer goods sectors in Nigeria.
- ii. Account payables does not meaningfully relate with turnover of quoted industrial and consumer goods sectors in Nigeria.

Review of Related Literature

Conceptual Review

Working Capital Management

Working capital is divided into two categories: quantitative and qualitative. Quantitatively speaking, the term "working capital" refers to the total of current assets. In this approach, gross working capital is referred to as current assets. A notion of the source of financing money is provided by the qualitative concept. Working capital is defined as "excess of current assets over current liabilities" in terms of qualitative concepts. Working capital is "the portion of a firm's current assets that are financed from long-term funds," according to Guthmann. 'Net working capital' is the difference between current assets and current liabilities. The amount of current assets that would be left over after all current liabilities have been paid is what is meant by "Net Working Capital" in this idea. Working capital can be thought of in two different ways, both with important differences. The 'Gross concept' is useful if the goals are to quantify the size and extent to which current assets are being utilised; however, the 'Net concept' becomes relevant and advantageous when the goals are to assess the liquidity situation of an undertaking. Working capital was defined by Nurein (2014) as the difference between current assets and current liabilities. The fundamental concepts of working capital (current assets and current liabilities) were really combined in this definition. The concept of working capital, according to experts, is a sum of money that can be used to pay the organization's short-term debt obligations. The excess of current assets over current obligations determines whether this short-term resource is available. Although working capital is defined the same by scholars, it is how well businesses manage their working capital that sets them unique.

Short Term Investment

According to Raheman, Qayyum, & Afza, (2011), the breakdown of outcomes that affect current assets and current liabilities is the main focus of short-term investing. The management of account payables and receivables, the cash conversion cycle, the preservation of a specific level of stock, and the investment of available cash are only a few of the essential outcomes it involves (Deloof, 2003). The simultaneous financing of short-term investments in both current assets and current liabilities is typically related with the results of working capital management (Danuletiu, 2010). Therefore, working capital management is a fair term to use most of the time when referring to short term financial management (Farris, & Hutchison, 2003). Working capital performance offers a critical indicator of the status of a company's financial position (Financial Executives International Canada, 2013). By effectively managing working capital, businesses can reduce their reliance on external financing and use the free cash flow for additional investments, increasing their financial flexibility (Arshad, & Gondal, 2013).

Most financial institutions need a company to maintain a specific amount of net working capital in order to qualify for debt financing (Morara, & Athenia, 2021). According to Financial Executives International Canada (2013), working capital performance provides a crucial indicator of the state of a company's financial position. Businesses can increase their financial flexibility by managing working capital well, decreasing their dependency on external funding and using the free cash flow for new investments. To be eligible for debt financing, a business must typically maintain a certain level of net working capital (Morara, & Athenia, 2021). Benefits and expenses are associated with the working capital components. For instance, keeping inventory lowers stock-out situations but increases carrying

expenses. On the other hand, having too little inventory could result in lost revenues, goodwill from clients, and production pauses (Ross et al., 2008).

Account Payable

Accounts payable is one of the major sources of secured short-term financing. Utilizing the value of relationship with payee is a sound objective that should be highlighted as important as having the optimal level of preventions. As a consequence, strong alliance between company and its suppliers will strategically improve production lines and strengthen credit record for future expansion. Creditor is a vital part of effective cash positive purchasing initiates cash outflows and over-zealous purchasing function can create liquidity problems. Accounts payable represents the rates of payable of firms to their suppliers. They are also called suppliers whose invoice for goods or services has been processed but who have not yet been paid. The higher the value, the longer firms take to settle their payment commitment to their suppliers. Inadequate management of companies' payables can cause problem which may bring disaster to the company (Morara, & Athenia, 2021).

Kasozi (2017) defines accounts payable as the supplier whose payment for goods or services has been processed but who has not yet been paid. Accounts payable includes trade credit and accrued expenses which together provide finance to the operations of a business on an on-going basis. Firms would rather sell for cash than on credit, but competitive pressure forces most companies to offer trade credits. Unlike credit from financial institutions, trade credit does not rely on formal collateral but on trust and reputation (Falope, & Ajilore, 2009). In order to measure the impact of accounts payable to firm performance in this study, the ratios used included Accounts Payable Turnover ratio, Payables to Net Profit Margin ratio and Payables to Assets ratio.

The Accounts Payable Turnover Ratio measures the number of times Accounts Payable is turned over during a time period. The accounts payables to net profit margin ratio measures account payables relative to profit margin, while accounts payables to assets ratio analyses the proportion of assets financed by accounts payable. The formula to measure Accounts Payable Turnover Ratio is given by Cost of Goods Sold divided by Inventory (Morara, & Athenia, 2021). To calculate the Accounts Payable Days the formula is 365 days divided by Accounts Payable Turnover Ratio. The accounts payable turnover ratio is a liquidity ratio that shows a company's ability to pay off its accounts payable by comparing net credit purchases to the average accounts payable during a period. In this research, Payables turnover ratio was measured by dividing cost of goods sold by average inventory at the end of the financial year. Payables to net profit margin ratio was measured by dividing average payables amount by the net profit after tax while Payables to assets ratio was measured by dividing average payables with total assets (Morara, & Athenia, 2021).

Financial Performance

Financial performance is the state of the company's finances over a specific time period, including the amount of money received and spent, as determined by a number of measures, including the capital adequacy ratio, liquidity, leverage, solvency, and profitability. The competence of the business to manage and control its resources is reflected in its financial success (IAI, 2016). The financial statements include records of cash flows, balance sheets, profit and loss, and capital changes. Corporate managers use this data to determine the company's financial strategy. The financial statements, which include a balance sheet with a profit-and-loss calculation and other financial data including cash flows and retained earnings, show the state of a company's finances (Kasozi, 2017). A fundamental analysis is one that is based on the prospectus, financial profile, and financial statements of the company. Technical analysis highlights the rise and fall in supply and demand based on statistical data from the market that has been documented by an organization. Understanding financial management, financial reporting, and financial decisions is the goal of learning finance (Brealey & Myers, 1991).

Theoretical Framework

Peckings Order Theory

Peckings theory was propounded by Donaldson (1961) and modified by Myers and Majluf (1984) presented the peckings order theory which helps to understand the importance of internally maintained liquid assets. The pecking order theory describes the need of cash holdings for performance enhancement. According to the theory, firms first prefer retained earnings (available liquid assets), being the easiest to obtain as a source of finance for investments, next the debt, and finally the equity financing (Copeland, Weston & Shastri, 2005). Principally, the focus of this theory is on the use of internal resources or least expensive resources of the firm. Pecking order theory is based on the idea that the order of resources prevails over their size. Hence, firms prefer internal financing (if it proves sufficient); resort to borrowing (if internal financing proves insufficient) and as a last option resort to external financing through equity. However, a new pecking order theory has been designed for developed countries which is characterized by a reassessment of the financing preference thus; retained earnings, equity and lastly long-term debt.

In a nutshell, Tradeoff and pecking order theories center the importance of the thought of liquid assets. Trade-off advocates an inverse relationship between liquidity and profitability that center the cost and benefit of every decision. Whereas, pecking order advocate the positive relationship between liquid assets and performance (Ismail, 2016). Lastly, agency theory explains the relationship between shareholders (principals) and managers (agents) where the agents are expected to act in the interest of the principals but seek several personal benefits at the expense of the owners

Empirical Reviews

Olatunji, & Tajudeen, (2014) examined the relationship between working capital management and profitability and focused on the quoted food and beverages manufacturing firms in Nigeria. Working capital management was measured by aggressive investment policy, account collection policy, cash conversion cycle and net operating profit was employed to measure profitability. The study made use of primary data and the results of the analysis revealed that working capital management had significant positive relationship with profitability.

Wasiuzzaman (2015) and Kieschnick et al., (2013) examined the impact of working capital management on financial performance and found that there's a positive correlation between working capital management efficiency and its financial distress status. The firms that are more likely to financially distress the higher the chance they may not obtain external finance and as such the very efficient in managing the working capital they currently have; this results to high-value creation. On the other hand, other researchers have a negative correlation with firms that are already financially constrained more likely not to attempt in managing their working capital efficiently. However, he found that there is actually no correlation between working capital investment and the firm's financial constraints; the reason they are already financially constrained. García- Teruel and Martínez- Solano (2007), found that a significant negative correlation between the ROA and cash conversion cycle meaning that paying suppliers on time, timely credit collection from the customers and reducing inventory stock results to a higher firm's profitability i.e. efficient management of working capital results on firm's profitability.

Padachi (2006) in his study on relationship between working capital management and corporate profitability investigated a sample of 58 manufacturing firms, using panel data analysis for the period 1998-2003, using key variables of accounts receivable, inventories turnover, accounts payable days and cash conversion cycle, the regression result indicated that high investment in accounts receivable and inventories was associated with lower profitability.

Rashvand and Tariverdi (2015) investigate the effect of working capital management on operating cash flow of 184 companies listed on Tehran Stock Exchange during the period 2009–2013. Using the fixed effect regression model to test the hypothesis, the results show that the current ratio has a significant effect on the operating cash flows of the companies. They explain that by increasing liquidity level, the company is able to fulfill its obligations before

third parties, and to expedite the value chain of the company that includes purchasing raw material, transferring raw materials for production, producing, and finally selling productions and receiving cash. This result is in agreement with the results reported by Nobanee (2010). The current study extends the study by Rashvand and Tariverdi (2015) by considering the mediating effect of cash holdings on the relationship between various short-term financing components and financial performance.

Methodology

This study used an ex-post facto research approach as its methodology. This indicates that the events under investigation had already occurred, and data already existed as a result. Three factors played a role in the decision to use this study design. The study relied on historical accounting data; The financial statements and accounts of the companies were used to collect the data. The sampled companies were listed on the Nigeria Stock Exchange, therefore the event under examination had already occurred. All publicly traded consumer and industrial products industries whose stocks are quoted on the Nigerian Exchange group were researched by the researcher. The study, however, concentrated on the industrial and consumer products sectors for the examination. The public financial statements and accounts of sampled companies listed on the Nigeria Stock Exchange were the source of the secondary data. Berger Paint Plc. is the company sampled. The linear correlation between two variables was calculated using Pearson's correlation coefficient. Given that only firm data from firms in Nigeria are used, only factors particular to each firm are examined and tested. Variables with similar qualities are deflated using total assets to lessen the impact of excessive values. The fulfilment of these theoretical foundations is absolutely necessary for the validity and dependability of the models that have been stated.

Model Specification

$$TNV = f(STI + AP)$$

Where,

TNR = Turnover

STI = Short term investment

AR = Account Payable

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

$$TNR_{it} = \beta_0 + \beta_1 STI_{it} + \beta_2 AP_{it}$$

Where,

β_0 is the constant and intercept

β_1 , and β_2 are model parameters to be estimated.

Data Analysis

Industrial Goods Firms

Table 1: Descriptive Statistic of the Industrial Goods Firms

	<i>TNR</i>	<i>STI_PP</i>	<i>AP</i>	<i>TA</i>
<i>Mean</i>	377923.7	167950.9	175649.9	442421.6
<i>Median</i>	145864.0	5187.500	28787.50	58537.50
<i>Maximum</i>	1500112.	2387695.	2951836.	2728698.
<i>Minimum</i>	2901.000	2.000000	158.0000	1124.000
<i>Std. Dev.</i>	468937.9	472067.4	434514.5	711236.6
<i>Skewness</i>	1.089068	3.256872	5.066824	2.116949
<i>Kurtosis</i>	2.769975	13.01295	32.18791	6.727007
<i>Jarque-Bera</i>	10.79368	321.0480	2147.907	71.58707
<i>Probability</i>	0.004531	0.000000	0.000000	0.000000
<i>Sum</i>	20407881	9069347.	9485096.	23890766
<i>Sum Sq. Dev.</i>	1.17E+13	1.18E+13	1.00E+13	2.68E+13
<i>Observations</i>	54	54	54	54

Source: Computed by Researcher Using Eviews 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 Jaque-Bera test for normality. From the Table 1, the probability of the Jaque-Bera statistics for all the variables (dependent and independent) have significant p-values. They are as follows Turnover (0.004531), Short-term Investments (0.00000) and Account Payables (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	STI_PP	AP	LNTA
With Constant	t-Statistic	0.4873	0.1661	0.6603	0.5166
	Prob.	0.2268	0.6404	0.0903	0.4004
With Constant & Trend	t-Statistic	0.8251	0.2711	0.9824	0.9106
	Prob.	0.5455	0.3943	0.0597	0.7407
Without Constant & Trend	t-Statistic	0.5632	0.3023	0.6322	0.9514
	Prob.	0.4281	0.3706	0.0572	0.4298
With Constant	t-Statistic	0.0729	0.0335	0.8518	0.1403
	Prob.	0.0104	0.0245	0.0314	0.0489
With Constant & Trend	t-Statistic	0.1172	0.1145	0.0049	0.1492
	Prob.	0.0227	0.1763	0.1164	0.1088
Without Constant & Trend	t-Statistic	0.0053	0.0022	0.4390	0.0370
	Prob.	0.0004	0.0020	0.0141	0.0037

Source: Eviews 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, Short-term Investments and Account Payables are stationary at first difference without constant and trends.

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

Residual Variance	HAC Variance	ADF
71.94358	70.01962	t-statistic
		-9.941809
		Probability
		0.0000

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

Ho: 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 Short-term Investments and Account Payables, and as such, a regression analysis can be conducted on them.

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

Variable	Coefficient	Standard Error	t-Stat	p-Value
C	-0.026888	5.848369	-0.004598	0.9964
STI_PP	0.027598	0.093892	0.293932	0.7701
AP	-1.432006	0.099134	-14.44516	0.0000
LNTA	0.010431	0.492315	0.021187	0.9832
R² = 0.996, Adjusted R² = 0.995, F-Stat = 1973.12, Prob(F-stat) = 0.00000 Durbin Watson = 2.88				

Source: Eviews 10.0 Output, 2022

Table 4 reveals that Short-term Investments on the other hand have a non-significant positive effect on turnover with a p-value of 0.7701 and a t-statistic of -0.293932. The Short-term Investments and Natural Logarithm of Total Assets increased Turnover by 12.4 units, 0.46 units, 0.03 units, and 0.01 units respectively. Account Payables decreased Turnover by 3.67 and 1.43 respectively. The multiple coefficient 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

Correlating Variables	Correlation	t-Statistic	P-Value	Observation
Short Term Investment & Turnover	0.283171	2.129124	0.0380	54
Account Payables & Turnover	0.584143	5.189817	0.0000	54

Source: Eviews 10.0 Output, 2022

Table 5 reveals that Short-term Investment share a strong relationship with Turnover with correlation coefficient of 28%. Account Payables have a weak relationship with Turnover of industrial goods firms in Nigeria with correlation coefficient of 58%.

Consumer Goods Firms

Table 6: Descriptive Statistic of the consumer Goods Firms

	TNR	STI_PP	AP	TA
Mean	164013.0	25627.16	36158.15	179408.5
Median	89469.00	901.0000	14090.00	82957.00
Maximum	993399.0	916553.0	223384.0	2582298.
Minimum	36.09400	-337.0000	-26290.00	1124.000
Std. Dev.	212636.7	112050.5	48749.04	326904.5
Skewness	1.898528	5.934844	1.675057	4.811648
Kurtosis	6.512077	40.29146	5.483881	31.89857
Jarque-Bera	150.4818	8614.927	97.83521	5218.510
Probability	0.000000	0.000000	0.000000	0.000000
Sum	22141750	3459667.	4881350.	24220150
Sum Sq. Dev.	6.06E+12	1.68E+12	3.18E+11	1.43E+13
Observations	135	135	135	135

Source: Computed by Researcher Using Eviews 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 Jaque-Bera test for normality. From the Table 6, the probability of the Jaque-Bera statistics for all the variables (dependent and independent) have significant p-values. They are as follows Turnover (0.00000), Short-term Investments (0.00000) and Account Payables (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	STI_PP	AP	LNTA
With Constant	t-Statistic	0.1219	0.1494	0.0710	0.9519
	Prob.	0.0167	0.5000	0.7242	0.8095
With Constant & Trend	t-Statistic	0.0184	0.4148	0.1609	0.5408
	Prob.	0.0686	0.2829	0.2320	0.3170
Without Constant & Trend	t-Statistic	0.2282	0.4034	0.0175	0.9390
	Prob.	0.2669	0.8792	0.1451	0.9831
With Constant	t-Statistic	0.0016	0.1574	0.0108	0.0446
	Prob.	0.0024	0.0057	0.0495	0.0242
With Constant & Trend	t-Statistic	0.0107	0.4209	0.0482	0.3148
	Prob.	0.0179	0.2392	0.0885	0.0702
Without Constant & Trend	t-Statistic	0.0001	0.0150	0.0004	0.0124
	Prob.	0.0001	0.0003	0.0023	0.0084

Source: Eviews 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 Account Receivables (0.0062), Short-term Investments (0.0003) and Account Payables (0.0023) do not have a unit root at first difference without constant and trends. This implies that Short-term Investments and Account Payables are stationary at first difference without constant and trends.

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

Residual Variance	HAC Variance	ADF	
0.450760	0.372585	t-statistic	Probability
		-7.484369	0.0000

Source: Eviews 10.0 Output, 2022

Ho: 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 Short-term Investments and Account Payables 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)

Variable	Coefficient	Standard Error	t-Stat	p-Value
C	-0.105109	0.067183	-1.564524	0.1204
STI_PP	0.375369	0.201249	1.865199	0.0647
AP	1.154552	0.197610	5.842566	0.0000
TA	0.455660	0.145114	3.140021	0.0021
R² = 0.99, Adjusted R² = 0.99, F-Stat = 75560.38, Prob(F-stat) = 0.00000 Durbin Watson = 2.31				

Source: Eviews 10.0 Output, 2022

Table 9 reveals that the Short-term Investments on the other hand have a non-significant positive effect on turnover with a p-value of 0.0647 and a t-statistic of 1.865199.

Short-term Investments, Account Payables and Natural Logarithm of Total Assets increased Turnover by 6.40 units, 1.10 units, 0.38 units, 1.15 units, and 0.46 units respectively. The multiple coefficient 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

Correlating Variables	Correlation	t-Statistic	P-Value	Observation
Short Term Investment & Turnover	0.081939	0.962303	0.3376	139
Account Payables & Turnover	0.104493	1.229794	0.2209	139

Source: Eviews 10.0 Output, 2022

Table 10 reveals that Short-term Investment share a very weak relationship with Turnover with correlation coefficient of 8.1%. Account Payables have a very weak relationship with Turnover of consumer goods firms in Nigeria with correlation coefficient of 10.4%.

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).

Range of Correlation	Interpretation
0.8 to 1.0 (or -0.8 to -1.0)	Very high positive (negative) correlation
0.6 to 0.8 (or -0.6 to -0.8)	High positive (negative) correlation
0.4 to 0.6 (or -0.4 to -0.6)	Moderate positive (negative) correlation
0.2 to 0.4 (or -0.2 to -0.4)	Low positive (negative) correlation
0 to 0.2 (or 0 to -0.2)	Negligible correlation

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

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.

Hypotheses (Ho)	Predictor Variable (X)	Response Variable (Y)
Null Hypothesis one	Short-term Investment	Turnover
Null Hypothesis two	Account Payables	Turnover

Source: Author's Arrangement, 2022

Test of Hypothesis one

Statement of Hypothesis one:

H₀: Short Term Investment do not have a strong relationship with Turnover of firms in Nigeria.

H₁: There is strong relationship between Short Term Investment and Turnover of firms in Nigeria.

Correlation Analysis Result Using Covariance Output for Short Term Investment and Turnover

Sector	Industrial Goods Sector	Consumer Goods Sector
Correlation Coefficient	0.283171	0.081939
Correlation in Percentage (%)	28%	8.1%
Strength of the Relationship	Weak	Very Weak
t-Statistics	2.129124	0.962303
Probability Value	0.0380	0.3376
Observations	54	139

Source: Eviews 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 (28%) is less than the benchmark of 70% for industrial goods firms. For consumer goods firms, the Coefficient of Correlation (8.1%) is also less than the benchmark of 70%. Hence, the Null Hypothesis which states that Short Term Investment 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 0.0380 for industrial goods firms provides significant evidence of a linear relationship between Short Term Investment and Turnover of industrial goods firms. The strength of the relationship 28% (industrial goods sector) and 8.1% (consumer goods sector) therefore declared a weak and a very weak relationship respectively.

Test of Hypothesis Two

Statement of Hypothesis Two:

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

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

Correlation Analysis Result Using Covariance Output for Account Payables and Turnover

Sector	Industrial Goods Sector	Consumer Goods Sector
Correlation Coefficient	0.584143	0.104493
Correlation in Percentage (%)	58%	10.4%
Strength of the Relationship	Weak	Very Weak
t-Statistics	5.189817	1.229794
Probability Value	0.0000	0.2209
Observations	54	139

Source: Eviews 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 (58%) is less than the benchmark of 70% for industrial goods firms. For consumer goods firms, the Coefficient of Correlation (10.4%) is also less than the benchmark of 70%. Hence, the Null Hypothesis which states that Account Payables 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 0.0000 for industrial goods firms provides significant evidence of a linear relationship between Account Payables and Turnover of industrial goods firms. The strength of the relationship 58% (industrial goods sector) and 10.4% (consumer goods sector) therefore declared a moderately strong and a very weak relationship respectively.

Summary of Findings

- i. Short-term Investment have a weak (28%) positive relationship with operational performance (proxied by turnover) of quoted industrial goods firms in Nigeria. However, Short-term Investment have a very weak (8.1%) relationship with turnover of consumer goods firms in Nigeria.
- ii. Account Payables have a moderately strong (58%) positive relationship with operational performance (proxied by turnover) of quoted industrial goods firms in Nigeria. However, Account Payables have a very weak (10.4%) relationship with turnover of consumer goods firms in Nigeria.

Conclusion

Based on the study, working capital management and financial performance of manufacturing firm in Southeast Nigeria. Short-term Investment have a weak relationship with turnover in the sector while Account payables share a moderately strong positive relationship with turnover in the sector. The relationship between account payables and turnover is moderately strong in the industrial goods sector, implying that these firms practice slightly strict credit policies. short-term investment, and turnover of industrial goods firms imply that these firms engage in adequate cash management and good investment plan in the industry. We concluded that working capital management has significant positive effect on the financial performance of manufacturing firm in Southeast Nigeria.

Recommendation

We recommended that, the manufacturing firm in sought east Nigeria should endeavour to effectively manage their working capital very well since it has significant positive effect on the financial performance of the firm.

- i. However, comparing the strength of the relationship between short term investment and Inventory in the two sectors shows that short term investment has a weak relationship with turnover in the industrial goods sector and very weak relationship with turnover in the consumer goods sector, firms in both sectors should invest in near liquid assets of lowest risk and positive net present value that are at least above industrial averages. The reason for the disparity in the strength of the relationship between these variables in the different sectors could be attributed to the production pattern in this industry and cash turnover of these firms and management should opt for optimal trade-profitability tradeoff.
- ii. The top management should employ and maintain cash and credit policies that at least optimize, if not maximize sales both in the short run and long run to facilitate shortening the Account payable period to barest minimum.

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