

Working Capital Management and Firm's Survival; Evidence from Selected Listed Manufacturing Organisations in Nigeria

By

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ABSTRACT

The study examined the effect of working capital management on the profitability of listed manufacturing companies in Nigeria with emphasis on consumer goods sector. A correlation and ex-post factor research design were used in analyzing the sample of 16 selected consumer goods manufacturing firms. Secondary data for a period of 10 years (2012 – 2021) was used and Ordinary Least Square regression was employed in data analysis. The study indicated that accounts receivable period is positive but insignificantly related to return on assets while there is positive and significant relationship between inventory period and return on assets. It also shows that there is a negative but significant relationship between cash conversion cycle and return on assets while accounts payable period has a negative and insignificant relationship with return on assets of listed manufacturing firms in Nigeria. The study also recommends that firms should be very active in converting cash as good working capital management urges for quick reinvestment in short-term securities in so as to boost return on assets of listed manufacturing firms in Nigeria.

Key words: Return on Assets, Accounts Receivable, Accounts Payable, Cash Conversion Cycle, Inventory Period

Background to the study

Working capital management plays a vital role in the success of businesses because of its effect on profitability and liquidity. Working capital, the money needed for day-to-day operations of a firm, is described as an investment of the firm's capital in current assets and the use of current liabilities to fund part of the investment (Charito, Elfan, & Lois, 2010; Erasmus, 2010; Nazir & Afza, 2009). Management of these current assets and current liabilities is important in creating value for shareholders. If a firm can minimize its investment tied up in current assets, the resulting funds can be invested in value-creating projects, thereby increasing the firm's growth opportunities and shareholders' return.

However, management is often confronted with liquidity problems due to underinvestment in working capital (Nazir & Afza, 2009). The ability of financial managers to effectively manage receivables, inventories, and payables has a significant effect on the success of the business (Nazir & Afza, 2009). If capital invested in cash, trade receivables, or inventories is not sufficient, the firm may have difficulty in carrying out its daily business operations. This may

result in declining sales and, in the end, a reduction in profitability (Eramus, 2010). Smith (1980) cited in Kulkanya (2012) emphasizes the trade-off between liquidity and profitability when he argues that working capital management can play an essential role not only in firms' profitability and risk, but also in its value. Decisions regarding an increase in profitability are likely to involve increased risk, and risk-reducing decisions are likely to result in a reduction in profitability (Garcia-Teruel & Martinez-Solono, 2007).

An accepted measure of working capital management is the cash conversion cycle (Abuzayed, 2015; Garcia-Teruel & Martinez-Solono, 2007; Lazaridis & Tryfonidis, 2006) which represents the average number of days between the day the firm begins paying its suppliers and the day it starts to receive cash for products sold (Deloof, 2003). Longer cash conversion cycles mean more time between cash expenditure and cash retrieval. Charitou, Elfani, and Lois (2010), Deloof (2003), Garcia-Teruel and Martinez-Solono (2007), Lazaridis, Tryfonidis; Raheman & Nasir (2007) and Abuzayed (2012) use cash conversion cycle as a measure of working capital management to analyze whether reducing the time allowed for this cycle has positive or negative effects on corporate profitability.

On the whole, empirical evidence related to working capital management and profitability has substantiated the fact that managers can create value for shareholders by shortening the cash conversion cycle to the shortest rational amount of time (Banos-Caballero, Garcia-Teruel & Martinez-Solono, 2010; Deloof, 2003; Lazaridis & Tryfonidis, 2006; Nazir & Afza, 2009; Raheman & Nasir, 2007).

An ideal business needs sufficient resources to ensure that its operations are going smoothly and ensures that such resources are maximally utilized to enhance its profitability and overall performance. It has however been discovered that some methods that managers use in practice to make working capital decisions do not reflect the global principles of finance, rather they use imprecise rules of thumb or poorly constructed models.

Again, some managers do neglect the organization's operating cycle thereby having longer debtors' collection period and shorter creditors' payment period. All these constitute the problem of the investigation, hence, the need to study the impact of working capital management on the profitability of listed manufacturing companies in Nigeria.

Objective:

Manufacturing industries in most economies are not really doing very well; some have closed down, while some are struggling to survive, some are even relocating outside their home countries. One school of thought; Nazir & Afza, (2009), noted that the ability of financial managers to effectively and efficiently manage working capital has a significant effect on the success of the business while another; Eramus, (2010), observed that if capital invested in cash, trade receivables, or inventories is not sufficient for the business to carrying out its daily business operations, that it may result in declining sales and, in the end, a reduction in profitability. The objective of this study is to examine the effect of working capital management on the profitability of listed manufacturing companies in Nigeria with particular interest on the effect of accounts receivables period, inventory turnover period, cash conversion cycle and accounts payable period on the return on assets which is used as proxy for survival for listed manufacturing companies in Nigeria. Return on assets is measured as the ratio of profit before interest and taxes over total assets. This ratio is expected to be high and positively associated with global indicators. In Nigeria which is the study environment, the return on assets is not reflecting the expectations of the global world. Here the multiple regression was used to analyze the effect of working capital management on the profitability of listed manufacturing companies in Nigeria. Yearly data generated from annual reports and accounts of the listed manufacturing companies on the Nigeria Exchange Group between 2011 and 2020.

Conceptual Framework

Concept of Return on Assets

Return on Assets (ROA) expresses the net income earned by a company as percentage of the total assets available for use by that company. ROA measures management ability to earn a return on the firm's resources (assets). The income amount used in this computation is income before the deduction of interest expense, since interest is the return to creditors for the resources that they provide to the firm. The resulting adjusted income amount is thereby the income before any distribution to those who provided funds to the company. ROA is computed by dividing net income plus interest expense by the company's average investment in assets during the year (Pandey, 2005)

Concept of Working Capital Management:

Average Accounts Receivable Period

This is the average time taken by credit customers to pay-up or settle their accounts. Van Horne & Wachowicz (2004) state that, since the purpose of offering credit is to minimize profitability, the costs of debt collection should not be allowed to exceed the amount recovered. Raheman, Qayyum and Afza (2011) also added that managerial efficiency in granting and controlling credit could be ascertained on the basis of receivables turnover in days. If the firm takes longer time in collecting receivables, the profitability of the firm declines. According to Padachi, (2006), to make a sensible decision about whether to trade with a company or not, information about the business is needed. The risk of bad debts can be minimized if the creditworthiness of new customers is carefully assessed before credit is granted and if the creditworthiness of existing customers is reviewed on a regular basis. Relevant information can be obtained from a variety of sources. New customers can be asked to provide bank references to confirm their financial standing and trade references to indicate satisfactory conduct of business affairs.

Inventory Turnover Period

Inventory turnover is another important component of working capital management. This according to Raheman, Qayyum & Afza (2011), is also called as inventory conversion period. This is the average time required to convert material into finished goods and then to sell those goods (Raheman, Qayyum & Afza 2011). When the turnover period in days is short it literally means there is a good inventory management policy in place.

Cash Conversion Cycle

Cash conversion cycle according to Wang, (2002), is used to measure cash management, and it represents the interaction between the components of working capital and the flow of cash within a company. This is the period of time between the outlay of cash on raw materials and the inflow of cash from the sale of finished goods, and represents the number of days of operation for which financing is needed. Uyar (2009) opine that the longer the cash conversion cycle, the greater the amount of investment required in working capital.

The purpose of cash management is to determine the optimal level of cash needed for the nature of the business operation cycle. The challenge of cash management is to balance the appropriate level of cash and marketable securities that will reduce the risk of insufficient funds for operations and opportunity cost of holding excessively high level of these resources (Filbeck, Krueger & Preece, 2007).

Accounts Payable Period

Accounts payables period according to Uyar, (2009), is the time taken by a company to pay its trade payables, i.e. its suppliers. Current liabilities include all obligations, which mature within a

year such as creditors, bills payable, accrued expenses, short-term bank loan, income tax liability and long-term debt excluding bank overdraft, all of which quickly mature in the current year. The account payable period is computed by dividing account payables by net purchases multiplied by 365 days (Raheman, Qayyum, & Afza 2011).

The general guidelines for optimizing the management of account payables involve the timing of payments. Firms should try to prolong the time for payment. The producing firms, for example, need time to convert their purchased raw materials into products they can sell and get cash in return (Maness & Zietlow, 2005). Some suppliers offer their customers discount rates as an attempt to get them to pay their receivables before maturity date which may sound tempting, but this is not always the most profitable option.

Theoretical Framework

This work is anchored on two theories; Theory of Trade-off Model and Agency Cost of Free Cash Flow Theory

Theory of Trade-off Model

Trade-off model demonstrates that firms decide their optimal level of cash holding by comparing the marginal cost and benefits of holding cash. According to Raheman & Nasir, (2007), large investment in current assets under certainty would mean low rate of return on assets (ROA) of the firm, as excess investments in current assets will not earn enough return while a smaller investment in current assets, on the other hand, would mean interrupted production and sales because of frequent stock-outs and inability to pay to its creditors in time due to restrictive policy. The ultimate objective of any firm is to maximize profit; preserving liquidity of the firm is an important objective too. 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 a firm does not care about profit, it cannot survive for a longer period. On the other hand, if a firm does not care about liquidity, it may face the problem of insolvency or bankruptcy. It may follow a conservative risk-return trade-off. The rank correlation of liquidity and profitability are said to be inversely related to each other. It implies that as the liquidity increases and profitability decreases, more capital is invested in fixed assets. More aggressive working capital approaches are associated with higher return and higher risk, while conservative working capital approaches are concerned with lower risk and lower return (Pandey, 2010).

Agency Cost of Free Cash Flow Theory

Agency cost of free cash flow theory brings out the fact that organizations suffer agency costs as a result of free cash flow. The theory argues that managers are always tempted to pickle up cash under their controls and make investment decisions which might not be in the best interest of shareholders. Corporate managers are the agents of shareholders, a relationship fraught weighed down by conflicting interests. Free cash flow is cash in excess of that required to fund all projects that have positive net present values when discounted at relevant cost of capital. Efficient working capital management is essential in order to avoid situations whereby managers mismanage the resources of the organization for their own interest (Jeng-Ren & Han-Wen, 2006). This theory is relevant to this study as it explains why the shareholders of a firm may opt to adopt conservative approach or aggressive working capital management approach bearing in mind the agency costs that they are likely to face.

Empirical Review

In view of the significance of working capital management in realizing optimal working capital position capable of striking a trade-off between liquidity and profitability, several empirical studies have been conducted in different countries using different industries.

Hoque, Mia and Rakibul (2015) examine the profitability and working capital position of selected 6 cement industries in Bangladesh, correlation between them and whether the profitability is affected by working capital management. They use ratio analysis to show profitability position and working capital position; correlation matrix is used to show correlation between them and regression analysis is also used to show the impact of working capital management on profitability.

Their result reveals that profitability position and working capital position over the study period is not satisfactory. They also find that there is significantly positive correlation between profitability and working capital components as well as impact of day sales outstanding on profitability ratios is negatively significant.

Osundina (2014) investigates the relationship between working capital management and profitability of 12 food and beverages manufacturing firms listed on the Nigerian Stock Exchange. Working capital is measured by cash conversion cycle (CCC), account collection period (ACP), inventory conversion period (ICP) and accounts payable period (APP), while profitability is measured by Net Operating Profit (NOP). Survey research design is adopted for the study. The study uses secondary data of 120 firm year observations from the period of 2002-2011, and the data are analyzed using Descriptive Statistics, Correlation Analysis and Multiple Regression Analysis.

The study finds that a positive but insignificant relationship exists between CCC and NOP. Also, ACP has significant negative relationship with NOP, while ICP and APP have insignificant negative relationship with NOP of the sampled firms. The study recommended that the sampled cement industries should reduce their day sales outstanding (DSO) for improving their profitability position.

Okwo, Ugwunta and Agu (2012) examine the factors that determine the profitability of the Nigerian Beer Brewery Firms for the period 2000-2011 from which 5 world leading Beer Brewery Firms were sampled. The independent variables used are inventories to cost of goods sold, account receivables to sales and general expenses to sales, while the dependent variable is gross profit margin. Multiple regressions are applied to analyze the annual data generated from the annual reports of the sampled Beer Brewery Firms covering a period of 2000 to 2011.

The results show that the ratios of inventory to cost of goods sold, account receivables to sales, and general expenses to sales have significant effect on gross profit margin. The study recommends that, where there is difficulty in accessing finance, firms may have to increase the average days in which debts are collected in order to retain their customers and keep them loyal. This may be one of the reasons why Uremadu, Egbide and Enyi (2012) find a positive relationship between Debtors Collection Period and Profitability. The danger in having long debtors' collection period is that it leads to high bad debts. The study also recommends that, as much as possible, high bad debts should not be allowed in the management of working capital management because it may lead to liquidity problems which may lead to the total collapse of the business.

Uremadu, Egbide and Enyi (2012) study the effect of working capital management and liquidity on corporate profits among Nigerian firms using 25 manufacturing companies for the period of two years. Their research expands the horizon of knowledge in this area by shedding more light on working capital management measured by the cash conversion cycle (CCC) and how the individual components of the CCC influence the profitability of world leading beer brewery firms. Multiple regression equations were applied to a cross sectional time series data of five world leading beer brewery firms after ensuring that the data are stationary and co-integrated.

The study finds that there is a significant positive relationship between liquidity and corporate profitability in the firms studied. As the outcome of the analysis clearly pinpoint that working capital management as represented by the cash conversion cycle, sales growth and lesser debtors' collection period impacts on beer brewery firms' profitability.

Abdulrasheed, Khadijat, Sulu and Olanrewaju (2011) assess inventory management in selected small businesses. The study investigate the effect of working capital management on the profitability of 16 listed consumer goods firms in Nigeria for a period of seven years in Kwara State, from 2010-2016. Regression model is employed to explain the effect of inventory value on performance proxy by profit.

The result indicates a strong positive relationship between inventory and profitability of small businesses. The study concludes that small businesses are likely to generate higher profit if an effective inventory management is put in place. The study concludes that small businesses are likely to generate higher profits if an effective inventory management is put in place. The study also recommends that financial managers should shorter credit period for the firms to be more liquid. Secondly, managers should re-negotiate with their suppliers for increases in the number of days account payables period are due for payment in order to have more cash to avoid liquidity problem. Thirdly, the management should continuously monitor the inventory levels with a view to reducing the number of days inventory are held before they are sold.

Melita, Maria and Petros (2010) investigate the effect of working capital management on financial performance of firms of all the 43 firms listed on the Cyprus Stock Exchange for the period of 1998-2007. They used ROA as the dependent variable and cash conversion cycle, debtors' collection period and creditors' payment period as independent variables. Multivariate regression analysis is adopted to analyze data.

The results indicate that the cash conversion cycle and all its major components namely Days in inventory, Days' sales outstanding and Creditors' payment period are associated with the profitability of the sampled firms. In this study they empirically investigated the effect of working capital management on firm's financial performance in an emerging market. They therefore hypothesized that working capital management leads to improved profitability. Secondly, the cash conversion cycle and all its major components namely, days in inventory, days sales outstanding and creditors payment period are associated with firm's profitability. Also, that efficient utilization of the firm's resources leads to increased profitability and reduces volatility, which leads to the reduction in default risk and thus improve the firm's value.

On the contrary Padachi, Falope and Ajilore (2009) conducted a research on working capital management and corporate profitability, evidence from panel data analysis of selected quoted companies in Nigeria. The study was aimed to provide empirical evidence about the working capital management on profitability performance for a panel made up of a sample of Nigerian quoted non-financial firms for the period 1996-2005. The study utilizes panel data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. The study found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for a sample of 50 Nigerian firms listed on the Nigerian Stock Exchange.

Furthermore, the study found no significant variations in the effect of working capital management between large and small firms. These results suggest that managers can create value for their shareholders if the firms manage their working capital in more efficient ways by reducing the number of days accounts receivables and inventories to a reasonable minimum.

Methodology

The research design employed for this research is correlational and ex-post facto designs. The design for the study is appropriate because it assists in examining the effect of working capital management on the profitability of listed manufacturing companies in Nigeria The general objective in this correlational and ex-post facto research designs is to gain an insight and generate new idea. The ex-post facto research design was used because the events have already occurred and variables not manipulated. Multiple Regression technique was also adopted as the tool of analysis as it is most appropriate for the study and because of its ability to use multiple

independent variables to estimate their effect on a single dependent variable. The OLS method adopted in this study is a parametric statistical test that is based on a number of assumptions, the violation of which could affect the reliability of the results. The regression model was used because it assumed linearity and normality and it ascertains the impact of the independent variables on the dependent variable. Yearly data were generated from the Audited Annual Report and accounts of the listed manufacturing companies on the Nigeria Exchange Group and the Central Bank of Nigeria statistical bulletin between 2011 and 2020.

The model is therefore specified as:

$$ROA_{it} = \beta_0 + \beta_1 ARP_{it} + \beta_2 INVP_{it} + \beta_3 CCC_{it} + \beta_4 APP_{it} + e_{it}$$

Where:

ROA_{it} = Return on Assets

APR_{it} = Accounts Receivable Period

APP_{it} = Accounts Payable Period

CCC_{it} = Cash Conversion Cycle

INVP_{it} = Inventory Period

β₀ = Intercept

β₁₋₄ = Coefficient of the independent variables

e_{it} = Error term

Results:

Descriptive Statistics

Table 1: Summary of Descriptive Statistics

Variable	Mean	Std. Deviation	Minimum	Maximum
ROA	00.17	00.18	0.04	0.88
ARP	72.78	101.10	0.01	680
INVP	63.04	31.43	3.00	170
CCC	56.58	36.55	92.00	147
APP	69.60	52.01	-11.00	408

Source: SPSS Version 23 output.

The above table shows that the ROA has a mean value of 17% and a standard deviation of 18%. The minimum and maximum values are 0.04 and 0.88 respectively. The result for the ARP shows that on the average it takes the sampled firms approximately 73 days to recover their debts from customers. The INVP has a mean of 63.04 days and fluctuates with a standard deviation of 31.43 days. The minimum and maximum values are 3 days and 170 days respectively. The result shows that it will take the selected companies an average of 63 days to hold their stock in the store before being sold. The CCC has a mean value of 56.58 days and fluctuates with a value of 36.55. The minimum and maximum values are 92 days and 147 days respectively. However, the CCC indicates that the sampled firms take up to 57 days from when they purchase inventories to when they settle their creditors. APP has a mean value of 69.60 days and a standard deviation of 52.01 days. The minimum and maximum values are -11 days and 408 days respectively. The APP implies that the company pays their creditors on the average for the ten years under study, after 70 days.

Correlation Matrix

Table 2: Correlation Matrix.

Variables	ROA	ARP	INVP	CCC	APP
ROA	1.000				
ARP	0.007	1.000			

INVP	0.076	0.034	1.000		
CCC	0.100	-0.013	0.059	1.000	
APP	-0.057	-0.005	0.036	-0.353	1.000

Source: SPSS Version 23 output.

The above result on table 2 presents the association between the dependent and independent variables of the study. The ROA correlates positively with ARP ($r = 0.007$), INVP ($r = 0.076$) and CCC ($r = 0.100$). However, ROA correlates negatively with APP ($r = -0.057$). The table further shows the association among the regressors in the study model. The result shows that none of the correlation coefficients is greater than 0.8 (rule of the thumb), suggesting that there is no problem of multicollinearity in the explanatory variables.

Table 3: Regression Results

Variable	Coefficients	t-ratio	p-value
ARP	6.685	2.002	0.050
INVP	2.300	2.030	0.045
CCC	-4.077	-0.083	0.014
APP	-0.500	-1.087	0.279

Source: SPSS Version 23 output.

From the result on table 3, accounts receivable period has a coefficient of 6.685. This means that a unit increase in accounts receivable period leads to an increase in return on assets of approximately 6.69%. The result also shows that accounts receivable period has a t-ratio of 2.00 and a p-value of 0.050, which therefore indicates that there is no significant relationship between accounts receivable period and return on assets within the period of study. Therefore, the relationship between accounts receivable period and return on assets is positive but insignificant. This finding is not consistent with the studies of Hoque, Mia & Rakibul (2015), Okwo, Ugwunta & Agu (2012), Uremadu, Egbide & Enyi (2012), and Melita, Maria & Petros (2010), who found that there is a significant positive relationship between accounts receivable period and return on assets within their respective study periods.

Also inventory period coefficient is 2.300, which means that a unit increase in inventory period leads to 2.3% increase in return on assets. The result also shows that inventory period has a t-ratio of 2.03 and a p-value of 0.045, indicating that there is significant relationship between inventory period and return on assets within the period of study. This shows that there is positive and significant relationship between inventory period and return on assets. This result is consistent with the findings of Hoque, Mia & Rakibul (2015), Okwo, Ugwunta & Agu (2012), Uremadu, Egbide & Enyi (2012), Abdulrasheed, Khadijat, Sulu & Olanrewaju (2011), Melita, Maria & Petros (2010), who also find a positive relationship between inventory period and return on assets within their respective study periods but contradicts the findings of Akinlo (2011) who found a negative relationship between inventory period policy and return on assets.

On the other hand, cash conversion cycle has a coefficient of -4.077, which means a unit increase in cash conversion cycle leads to approximately 4.08% decrease in return on assets. The result also shows that cash conversion cycle has a t-ratio of -0.083 and a p-value of 0.014, which therefore indicates that there is significant relationship between cash conversion cycle and return on assets. This shows that there is a negative but significant relationship between cash conversion cycle and return on assets within the period of study. The finding is consistent with the studies of Hoque, Mia & Rakibul (2015), Okwo, Ugwunta & Agu (2012), Uremadu, Egbide & Enyi (2012), Abdulrasheed, Khadijat, Sulu & Olanrewaju (2011), Melita, Maria & Petros (2010), who also found that cash conversion cycle is negatively and significantly related to

return on assets but contradicts the findings of Falope and Ajilore (2009) who establish a positive relationship between cash conversion cycle and return on assets.

Also, accounts payable period has a coefficient of -0.500 which implies that a unit increase in accounts payable period leads to 0.5% decrease in return on assets. The result also shows that accounts payable period has a t-ratio of -1.087 and a p-value of 0.279, which therefore indicates that there is no significant relationship between accounts payable period and return on assets. Accounts payable period has a negative and insignificant relationship with return on assets within the period of study. The finding is not consistent with the findings of Hoque, Mia & Rakibul (2015), Okwo, Ugwunta & Agu (2012), Uremadu, Egbide & Enyi (2012), Abdulrasheed, Khadijat, Sulu & Olanrewaju (2011), Melita, Maria and Petros (2010), who found positive and significant relationship between accounts payable period and return on assets.

Conclusion:

The study examined the effect of working capital management on the profitability of listed manufacturing companies in Nigeria with particular interest on the effect of accounts receivables period, inventory turnover period, cash conversion cycle and accounts payable period on the return on assets which is used as proxy for survival for listed manufacturing companies in Nigeria. The study has indicated that accounts receivable period is positive but insignificantly related to return on assets while there is positive and significant relationship between inventory period and return on assets. It also shows that there is a negative but significant relationship between cash conversion cycle and return on assets within the period of study while accounts payable period has a negative and insignificant relationship with return on assets within the period of study.

However, the study has been able to establish empirical links between working capital management and profitability while also recommending that firms should be very active in converting cash as good working capital management urges for quick reinvestment in short-term securities in order to boost return on assets.

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