IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF MANUFACTURING BUSINESS: EVIDENCE FROM NIGERIA

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Abstract
The study investigated the impact of Working Capital Management (WCM) on the profitability of business using Ashaka cement Plc. as a case study. The aim was to examine the importance of WCM to manufacturing firms. Data for the study were obtained from published financial statements of the company from 2015 – 2019. The explanatory variable of the study is WCM proxied by Inventory Conversion Period (ICP), Debtors' Collection Period (DCP), Creditors' Payment Period (CPP) and Cash Conversion Cycle (CCC) while the dependent variable is profitability proxied by Return on Assets (ROA). Results of regression analysis revealed that while ICP and CCC have a significant impact on ROA, DCP and CPP have a negative impact. The result of the multicollinearity test indicated that there exists a high/ severe and impairing correlation between all pair of the explanatory variables implying non-significance and inability of the variables (endogenous factors) to predict future likely changes in ROA. The study recommended in addition to the implementation of an effective Working Capital Cycle (WCC) by manufacturing firms particularly ICP and CCC, the government should aid the profitability of the sector through the creation of a business-friendly environment particularly improved security and infrastructure.
Keywords: Return on Total Assets, Working Capital Management, Inventory Conversion Period, Debtors' Collection Period, Creditors' Payment Period and Cash Conversion Cycle

Introduction

The amount of Working Capital (WC) available to an enterprise is one of the key indices to measure its success in business as the capital represents the total liquid asset available for operations. WC reflects a firm's ability to meet day–to–day operating expenses and is a good indicator of a firm short financial health and stability. Management decisions relating to its WC therefore, are decisions on short term financing aimed at ensuring that the firm has sufficient cash flow to meet its short term obligations and operating expenses (Pandey, 2004). A firm having the required cash to meet its obligations as they fall due is a good omen of ability to continue in business and achieving a proper tradeoff between profitability and liquidity necessary to maximize shareholders' wealth.

Working capital comprises four (4) statements of financial position items usually referred to as the short term areas of the statement of financial position (Delofta & Ann 2011) these are (i) Stock which includes raw material, work in progress and finished

goods (ii) Debtors and prepayments (iii) creditors and accruals and (iv) cash which includes physical cash balances available in the company, cash balances in the banks, short terms investments in form of bank deposits, quoted investments and other cash equivalents that could be turned into cash within the shortest possible time. Working Capital Management (WCM) deals with how to effectively manage each of these components of WC by managers of enterprises. The overall objective of WCM is to maximize profit and reducing the risk of not being able to satisfy maturing short term obligations (debt). A firm that is not able to effectively make its WC or is poorly managing its WC is an indication that such a business is either undercapitalized or doing over-trading. The ultimate negative effect of undercapitalization and over–trading is a decrease in Return on Capital Employed (ROCE) with large sums of funds tied up and a fall in profit margin.

The manufacturing industry is a key sector in any economy particularly the developing ones like Nigeria where the application of WCM is critical for profitability. The growth of the sector in Nigeria is of interest to the people and government for the tremendous contribution of the sector to the Gross Domestic Product (GDP), employment creation and poverty reduction in the society in the 1960s to the early part of the 80s. Unfortunately, the growth and profitability prospect of the sector started dwindling in the 1990s due to factors that are within and outside the control of the players in the industry. One of the major endogenous factors responsible for the falling performance and collapse of the manufacturing sector of the Nigerian economy is poor management of the WC by managers of these firms (Galis & Enemah, 2010, Edem & Ebaiai 2016).

Utsha (2019) remarked that the problem of WCM is so severe in the sector of the Nigerian economy that most manufacturing enterprises cannot measure with certainty, the period it takes for their investment in materials and merchandise will turnover into cash. The most worrisome disadvantage of poor and inadequate WCM is the ability of firms to keep abreast of technical improvements and the loss of opportunity to grow and make a profit (Utsha, 2020). The multiplier ugly effect of poor WCM in most manufacturing firms is a slim employment opportunity that has further worsen poverty in Nigerian society (Edem & Ebiai, 2016; Utsha, 2019).

Contrary to Edem & Ebiai (2016) and Utsha, (2019), Diyola and Oke (2020) and Lawal and Aduku (2020) asserted that profitability of manufacturing business in the Nigerian environment is an issue beyond the players in the industry as factors such as poor state of infrastructure, insecurity, the value of Nigerian currency, low purchasing power and demand for locally produced goods etcetera have all marred profitability vision of manufactures. Therefore, though effective WCM can trigger profitability of a manufacturing business in any environment, the existence of negative exogenous factors beyond the control of entrepreneurs can truncate any internal efforts and policies targeted towards profitability (Diyola & Oke, 2020; Lawal & Aduku, 2020). It is against this backdrop of the contradictory arguments that the study empirically

tests the impact or otherwise of WCM (endogenous managerial policy) on the profitability of manufacturing business in Nigeria.

Objectives of the Study

The objective of the study is to investigate the impact of WCM on the profitability of a firm. However, the specific purposes are as follows:

(i) To ascertain the impact of ICP on the profitability of the manufacturing business
(ii) To investigate the impact of DCP on the profitability of the manufacturing business.
(iii) To determine the impact of CPP on the profitability of manufacturing enterprise
(iv) To evaluate the impact of CCC on the profitability of the manufacturing business

Hypotheses of the Study

Drawing from the stated specific objectives, the following null hypotheses are formulated to guide the study:

Ho_1: ICP has no significant impact on the profitability of the manufacturing business
Ho_2: DCP has no significant impact on the profitability of the manufacturing business
Ho_3: CPP has no significant impact on the profitability of the manufacturing business.
Ho_4: CCC has no significant impact on the profitability of the manufacturing business

Literature Review

Conceptual Review

Working Capital Management

Mycithan and Kane (2002) defined WC as excess Current Assets (CA) over Current Liabilities (CL). Examples of current assets of a typical manufacturing enterprise include cash, account receivables (debtors) and inventories and its current liabilities (Obligations) include salaries, wages, creditors (accounts payable) and taxes owed to the government. For a manufacturing firm, WC represents the funds available to it to finance production, inventories and provide credit to customers (Kissitto, 2010; Ola & Mark: 2015). Shortage of WC in a firm or any organization is synonymous with a shortage of cash as such an entity will not be able to meet its obligations (debts) as they fall due. Thus, Rahman (2001) refers to WC as the quantum of funds required to run a business or defray the day-to-day operational expenses of an enterprise. To provide for WC in a business is the same as making provision for the availability of cash as it is the most liquid asset required for daily operational expenses. Thus, Ellen

(2012) summarized the WC of an enterprise as a total of a firm's short term obligations that require effective management.

Defining WCM Diallo and Obotto (2003) viewed that it as a concept involving an effective control mechanism put in place by the management of an enterprise or a firm to monitor the relationship between short term assets and short term liability to improve the liquidity position of the business. The liquidity of a business at all times is important especially to a manufacturing firm. It is a means to meet daily operational expenses also essential for financing of seasonal trade and repayment of loans or other capital projects where these have not been anticipated in loan term plans. The overall essence of WCM is profit maximization. Thus, Garrison (2004) asserted that WCM is a managerial policy of a firm implemented to attain an optimal level in each of the four (4) components of WC namely: stock including raw materials and Work-In-Progress (WIP), finished goods, debtors and cash necessary for profit maximization. It is with the intent of profit maximization that manufacturing enterprises hold cash (liquid) either for speculative motive to finance the purchase of items in advance of price increase expectation or reasonably defer payments to creditors.

Profitability

Profitability is the ability of a firm to sell goods and services above cost and earn a reasonable return (Adeniyi, 2004). It is the difference between the cost of providing goods and services by a firm and the price paid for those goods and services by consumers. Profit (P) will arise if the Selling Price (SP) of an item is higher than its Cost Price (CP) mathematically denoted as SP-CP=P (Fadipe, 2002; Barlaya & Dele, 2007). Profitability is a performance indicator that can be measured by Return on Assets (ROA), a component of Return on capital employed (ROCE) or return on investment (ROI) of a business (Ogonia & Clement 2015). ROA is a performance evaluation criteria using ratios that show the relationship between sales and ROCE. The relationship is a division between sales (numerator) and ROCE (denominator) that could be expressed in terms of percentage or number of times (Adeniyi 2004). The denominator, according to Faloyi and Osman (2005) could be defined in terms of (i) Total Assets of a firm that is Fixed Assets (FA) plus Current Assets (CA) (ii) Net Assets (NA) of a firm that is share capital plus reserves and (iii) Total Assets less current liabilities. Adeniyi (2004) opined that ROA is a measure that shows the efficiency and how profitable a manufacturing enterprise operates in the utilization of assets and investing its financial resources through paying for raw materials at the beginning of the production process, making/ producing the product and recovery at the end through sales and collection of cash (revenue) from debtors.

The WC of a typical manufacturing firm and profitability ratios are depicted in the table below.

Table 1: Working Capital and Profitability Ratios

Ratio	Calculation	Explanation
Inventory Conversion Period (ICP)	Average stock * 365 Cost of sales	ICP is a measure of time in days required to convert inventory into cash.
Debtors' Collection Period (DCP)	Average debtors * 365 Credit sales	DCP indicates the speed of collection. It measures the time in days required to collect cash from debtors.
Creditors' Payment Period (CPP)	Average creditors * 365 Credit purchases	CPP is a measure of the average number of days for which trade creditors remain unpaid.
Cash Conversion Cycle (CCC)	CCC = ICP + DCP – CPP	It is the measure of the length of time between investing in inventory, conversion to finished goods, sales and receipt of cash from debtors.
Return on Assets (ROA) (profitability Ratio)	Sales * 100 Total Assets	It is a measure of the relationship between the revenue of the firm generated through sales and total assets employed to generate the revenue.

Source: Faloyi & Osman (2005): Decision Theory in Business.

Theoretical Framework

The study is anchored on the prescriptive theory of WC propounded by Ans Mcinnes in 1937 (Diallo & Obotto 2003). The theory assumed that if WC is managed to the optimum then, it would be expected that businesses would invest in WC and monitor factors that would influence it. That the essence of a firm's analysing and measuring the influence of cash management, accounts receivables (debtors), inventory, accounts payables (creditors) and cash conversion cycle is for evaluation to ensure that assets are utilized effectively and efficiently for overall attainment of efficiency, profitability and shareholders' wealth maximization. Optimal management of WC for profitability is the key emphasis of the theory. The emphasis of the theory underscores its relevance to the study for the fact that effective WCM is one of the major endogenous policies needed in the Nigerian manufacturing environment for a profitable operation which other factors outside managerial policy (exogenous factor) have been negatively influencing the profitability objective of the firms (Diyola & Oke, 2020; Lawal & Aduku, 2020).

Empirical Review

Studies in Other Economies

Ishmael, Venancio, Isaac and Widin (2018) did a study on working capital management and financial performance in UK listed firms: A contingency approach. The aim was to investigate the effects of WCM on firms' financial performance. Specifically to establish a relationship between WCM and financial performance as affected by firms' environment, resources and management capabilities. Data for the study were collected from 302 firms listed on London Stock Exchange (LSE) from 2004 to 2014. The analysis was done using series of interactive models to estimate the relationship. Findings suggest that the impact of WCM on performance changes reflect several contingency variables such as environmental resources and capability of firms.

Rahimah, Farha, Syahrul and Noraisah (2018) did a study on WCM and its effects on profitability: Empirical evidence from Malaysia capital market. The aim was to examine the effects of WCM on the profitability of firms. Data for 803 listed companies on Bursa Malaysia collected from 2010 to 2014 were analyzed using regression. It was found that WCM determines the profitability of companies.

Farrah Noredi and Othman (2016) conducted a study on working capital management efficiency: A study of Small and Medium Enterprises (SMEs) in Malaysia. The aim was to analyse the efficiency of WCM in selected SMEs in Malaysia. Data for the study were obtained from a database of twenty-four (24) SMEs randomly selected from 2010 – 2013. The results of the analysis of the indexes of the companies namely: Performance Index of WCM (PLWCM), Utilization Index of WCM (ULWCM) and Efficiency Index of WCM (ELWCM) revealed that the SMEs were less efficient in managing their WC with negative effects on profitability of the enterprises.

Tan veer, Muhammad, Muhammed and Muhammed (2016) did a study on the impact of WCM on a firm's financial performance evidence from Pakistan. The aim was to empirically explore the impact of WCM on a firm's performance. Using purposive sampling, a random sample of 50 listed non-financial companies on the Pakistan Stock Exchange (PES) were selected. Data obtained from the financial statements of these firms were analyzed using multiple regression. The results indicated that financial performance (FP) proxied by ROA is influenced by WCM. Asghar and Syed (2012) examined Working capital Management and whether it affects the profitability of organizations in Pakistan. The study is exploratory research that investigated the impact of WCM decisions on the profitability of enterprises. It was found from studies that WCM has a positive impact on the profitability of Organizations.

Studies in Nigeria

Akindele and Odusina (2015) studied WCM and firms' profitability: Evidence from Nigeria quoted companies. Data for the study were obtained from audited financial statements of twenty-five (25) Nigerian companies from 2005-2011. The analysis of

the data was carried out using multiple regression. The results showed a negative relationship between WCM and the profitability of firms.

Olayinka (2012) investigated the effect of WCM on the profitability of selected quoted firms in Nigeria. The aim was to examine the relationship between WCM and the profitability of businesses. Data obtained from a sample of 68 Nigerian non-financial firms for the period 1997-2007 were analyzed. Results suggest that a firm's profitability is reduced by lengthening the number of days of account receivable while shortening the CCC improves profitability.

Oladele and Tasie (2011) conducted a study on the effects of WCM on the profitability of Nigerian manufacturing firms. The aim was to provide empirical evidence of the relationship between WCM and profitability of manufacturing firms. Data for the study were obtained from audited annual reports of randomly selected six (6) listed manufacturing firms in Nigeria. Results of the analysis using correlation statistical tool suggest a negative correlation between WCM and profitability of firms.

Methodology

Research Design

The study adopts the ex-post facto research design and made use of secondary data. The data for the study were obtained from the published financial statements of Ashaka Cement Plc. for 2015-2019. The figures of the variables of interest in the statement were empirically analyzed using regression statistically tool.

Model Estimation

The regression analysis revealed the degree of variation of dependent variable caused by the independent variables. The apriori expectation was that $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0 \; and \; \beta_4 > 0$.

Model Specification

In the study, Y (the dependent variable) is presented as the profitability of the firm proxied by ROA. This is mathematically represented in equations as $Y = \; a + \beta_1 X_1 + \beta_2 X_2 + \; \beta_3 X_3 + \beta_4 X_4 + \; \varepsilon$ _ _eq. 1

While, X_1, X_2, X_3, X_4 represents the independent variables decomposed into ICP, DCP, CPP and CCC respectively substituting in equation 1 therefore;

ROA= $a + \; \beta_1 ICP \; + \beta_2 DCP + \beta_3 CCP + \beta_4 CCC + \varepsilon$ _ _ _ _ _ _ _ _ _ _ eq. 2

Where;

ROA = Return on Assets
ICP = Inventory Conversion Period
DCP = Debtors' Collection Period
CPP = Creditors' Payment Period
CCC = Cash Collection Cycle
ε = Error term

Analysis and Results

Table 1: Analysis of variance

Source of variation	DF	SS	MS	F-Test Value	Pr(>F)
ICP	1	6.8306	6.8306	13.870	0.03625
DCP	1	64.1354	64.1354	130.233	-0.0028
CPP	1	114.5109	114.5109	232.525	-0.0051
CCC	1	16. 1945	16. 1945	32.855	0.0064
Residual	1	0.536	0.536		

Source: Computation using R-statistical package

Table 2: Multiple Regression Model (MRM)

	Estimate	Standard Error	t- value	z- test (>/t/)
Intercept	-136.612	8.625	-11.087	0.0423
ICP	10.813	2.214	-0.056	0.0726
DCP	-46.37	3.970	-5.593	-0.0512
CPP	-94.5667	5.0477	-0.004	-0.3115
CCC	35.619	3.658	0.0463	0.007
R^2= 0.3943	Adjusted	R^2=0.2837		

Source: Computation using R-statistical package

Table 3: Multicolinearity Test (using predictor variables)

	ICP	DCP	CPP	CCC
ICP	1.00	0.741	0.934	0.867
DCP	0.741	1.00	0.6s84	0.785
CPP	0.824	0.934	1.00	0.689
CCC	0.867	0.785	0.689	1.00

Source: Computation using R-statistical package

Findings and Discussion

The result of ANOVA indicates that while ICP has a significant impact on ROA at 5% level of significance; that of CCC showed an impact at 1%. Therefore the first and fourth hypotheses of this study are rejected. This result is consistent with that of Olayinka (2012) that shortening CCC improves profitability. However, the DCP and CPP impact are negative and therefore the second and third hypotheses of the study are accepted.

Further, the result of regression analysis showed a similar pattern to that of ANOVA. The impact of ICP on ROA is significant at 5% level of significance as decrease of 5.6% in ICP accounts for 7.26% increase of ROA of the firm. The CCC variable also showed an impact. The variable has a positive coefficient of 35.19 and a P value of 0.007 implying the significance of the variable at 1% level. This further indicates that an increase in the number of days of CCC by 1 day accounts for a decline in ROA by 4.63%. The significance of this variable corroborates with the finding of Olayinka (2012).

Contrary to the impact of ICP and CCC on ROA, the values of -0.028 and -0.0051 for DCP and CPP respectively indicate the negative impact of the variables on ROA and therefore not significant. Further, the apriori expectation of $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0 \; and \; \beta_4 > 0$ were not satisfied caused by the negative values of -46.37 and -94.5667 for DCP and CPP respectively confirming further that variables (DCP and CPP) have no significant impact on ROA.

In terms of the predictive ability of the explanatory variables of the likely changes in ROA caused by the predictors, the low value of the coefficient of determination (R^2) at 0.2943 showed that only 29.43 % of the variation in ROA can be explained by the predictors. This, therefore, implies that a small percentage of changes in ROA of the firm can be explained by the managerial policy of WCM (endogenous factor) while a greater percentage of 70.57% changes in ROA is explained by exogenous factors. This result is consistent with findings of Diyo and Oke (2018) and Lawal & Adeku (2019) that the impact of WCM on a firm's ROA can be limited as exogenous factors such as negative socio-economic business environment can erode any effective managerial policy like WCM in a manufacturing outfit.

The result of multicolinearity test showed that there exists a high correlation (multicolinearity) among the pairs of variables as all the pairs have between 0.6 to 1.00 with 1.00 or 100% being the maximum. Existence multicolinearity severe or impairs the predictive ability of the independent variable of the likely future changes in the dependent variable (Ogonia & Clement, 2015). The existence of multi co-linearity among the independent variables further confirms the limited extent to which effective WCM of enterprise can impact the profitability of firms (Diyo & Oke, 2018: Lawal & Aduku, 2019).

Conclusion and Recommendations

The role of the manufacturing sector in the growth of any economy cannot be overemphasized. In the 70s and early part of the 80s, the sector played key roles in Nigeria in her quest for industrialization, economic growth, expansion, employment generation and poverty reduction in the society. Unfortunately in the 2000s, the fortune of the sector started dwindling due to a myriad of factors beyond the control and imagination of the entrepreneurs and managers in the sector. Prominent among these exogenous negative factors that contributed to the misfortune of the manufacturing sector of the economy are insecurity, poor infrastructure, inflation, low purchasing power, low demand for the output, poverty etcetera. Though, firms in the sector tried to reposition the sector for growth and profitability through effective internal management policies such as WCM, but, the influence of a negative business environment has limited the profitability efforts of entrepreneurs in the sector.

The profitability of the manufacturing business in Nigeria is desirable attainment that requires deliberate efforts of both entrepreneurs, managers of the firms and

government through viable policies. Therefore the following recommendations are put forward:

1. Mangers of manufacturing enterprises in Nigeria should as much as possible manage their Working Capital Cycle (WCC) particularly through quality control necessary for quality output.
2. Deliberate implementation of practical fair pricing policy to induce sales, patronage and profitability (SPP). The three business elements (SPP) are critical to the survival of any enterprise especially manufacturing.
3. Government should create a conducive environment for manufacturers particularly with improved security and infrastructure.

References

Akindele, J. A. & Odusina, A. O (2015). Working capital management and firm's profitability: Evidence from Nigerian quoted companies. *Research Journal of Finance and Accounting, 6*(7), 28-39.

Asghar, A., & Syed, A. A (2012). Working capital management: Does it really affect the profitability? Evidence from Pakistan. *Global Journal of Management and Business Research, 12*(17), 37-49.

Barlaya, R. O. & Dele, I. N. (2007). *Cost Management Accounting* (2nd Ed.). Ibadan Ifecco publishers.

Delofta, C. L. & Ann, P. K (2011). *Cost Accounting* (2nd Ed.). Ibadan ETK publishers.

Diallo, W. R. & Obotto, A. G (2003). *Financial Management* (1st Ed.). Lagos CTAC publishers.

Diyola, O. O. & Oke, M. C. (2020) criteria for evaluating the performance of manufacturing firms in Nigeria. *Journal of Business Research*, *1*(1), 26-39.

Edem, N. F. & Ebiai, U (2016) Revitalizing measures for ailing textile industry. *Journal of Contemporary Business Studies, 3*(4), 13-25.

Ellen, M. H. (2012) *Cost Accounting for Beginners* (1st Ed.). Ibadan Ifecco publishers.

Fadipe, A. O. (2002) *Cost Accounting Made Simple* (2nd Ed.). Ibadan Ifecco publishers.

Faloyi, K. A. & Osuman, L. A. (2005). *Decision Theory in Business* (1st Ed.). Lagos Fill bond publishers.

Farrah, W. K., Noredi, A. M., & Othman, C. (2016). Working capital management efficiency. A study on the small and medium enterprises in Malaysia. *Procedia Economics and Finance, 35*(1), 297-303.

Gali, U. T., & Enemah, D. A. (2010). The wobbling state of manufacturing sector in Nigerian economy. *Journal of Business Finance, 4*(2), 68-81.

Garrison, N. C. (2004). Managing organizational resources for profitability. *Journal of Financial Studies and Management, 3*(1), 33-45.

Ishmael, T., Venancio T., Isaac, S. D., & Widins, S. (2018). Working capital management and financial performance of UK firm: A contingency approach. *International Journal of Banking, Accounting and Finance, 1*(2), 31-44.

Lawal, K. S., & Aduku, N. R. (2020) Reposition Manufacturing enterprises in Nigeria for growth and profitability. *Journal of Contemporary Studies, 1*(1), 112-124.

Kissto, L. C. (2010). *Introduction to financial accounting* (1st Ed.). Ibadan. Cristal publishers.

Mycithan, O.O & Kane, T. C. (2002). *Principles of Business Finance* (1st Ed.). Ibadan. TCK publisher.

Ogonia, B. I. & Clement, O. S. (2015). Return on assets: A fair analysis of profitability of firms. *Journal of Commerce and Business Management*, *4*(2), 75-87.

Ola, B. S. & Mark, T. O. (2015). Problems and prospects manufacturing business in Nigeria. *Journal of Entrepreneurship and Finance*, *2*(1), 48-59.

Oladele, J. (2011). Effects of working capital management on profitability of Nigerian manufacturing firms. *International Journal of Management and Enterprise Development*, *8*(1), 57-62.

Olayinka, O. A. (2012). Effect of working capital on profitability of selected quoted firms in Nigeria. *Global Business Review*. http://doc.org.10117709721509120130030l

Pandey, I. M. (2004). *Financial Management* (9th Ed.). India Vikas publishing House Ptv Ltd.

Rahimah, M.Y, Farha, A. G., Syahrul, A. A., & Noraisah, S. (2018). Working capital management and its effect on profitability. Empirical evidence from Malaysia capital market. *Insight Journal UITM*, *1*(1), 1-9

Rahman, P. B. (2001) *Financial Management: Theory and Practice* (2nd Ed.). Lagos Veta publishers Ltd

Tanaveer, B., Mohammed, I. N., Mohammed, A. K. & Mohammed, A. K. (2016). The impact of working capital management on firms' financial performance: Evidence from Pakistan. *International Journal of Economics and Financial Issues*, *6*(3), 1097-1105.

Utsha, W. Y. (2019) Profitability issues of manufacturing in Nigerian business environment *Journal of Commerce and Management Research, 1*(2), 76-88.