



Working Capital Management and Profitability of Listed Manufacturing Firms in Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

This study observed the link amid working capital management and profitability of quoted manufacturing firms in Nigeria. Using panel methodology, this study discovered a significant influence of working capital management (ITID, CPP & ACP) on profitability of listed manufacturing firms in Nigeria. Although, creditors payment period shows a significant impact on profitability while inventory turnover days and account receivables period were insignificant. This study recommends that well managed CPP over time would be a plus for manufacturing entities, to enhance their financial performance.

Keywords: Profitability; liquidity; working capital management; turnover; stability.

1. INTRODUCTION

Profit expansion is seen as a key objective of a business entity because corporate sustainability greatly relies on it as well as it is an accepted benchmark to measure success, efficiency in addition to growth of the entity. It is a major requirement for long-term survival and success of a firm while it is a necessity for the achievement of other financial goals [1]. Consequently, liquidity is similarly significant for

proper operational function of the organization (Kajola, Nwaobia & Adedeji, 2017). An entity embodying liquidity issues will face problems in meeting short-term financial commitments in daily operations, creditor's demands, and so on. Hence, the main objective and goal of the system of inventory management is to keep the required inventory necessary for production, as it enhances a smooth production without interruption [2].

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This proposes that an entity ought to be managed efficiently as well as profitably by sustaining a balance amid liquidity and profitability perpetually. In reality, it is very difficult to achieve. If there is a disparity amid liquidity and profitability, an entity might be profitable during the short run but there may be a risk of its continuous existence as an entity over the long run (Kajola, Nwaobia & Adedeji, 2017).

Working Capital Management (WCM) is an essential corporate decision because it significantly influences the profitability of the entity. WCM is related to the complications that occur in aiming to manage current assets, current liabilities as well as the inter-relationship that subsists amid them. The main objective of WCM is regulating existing financial assets of an entity to ensure that equilibrium is fashioned amid Profitability as well as risk linked with profitability [3].

Also, efficient WCM is an essential element of the overall approach directed at growing the market value (Howorth & Westhead, 2003; Deloof [4]; Afza & Nazir, 2007). An optimum level of working capital has a sense of balance amid risk as well as efficiency. It entails unceasing monitoring to preserve the optimal level of numerous variables of WCM, for instance cash receivables, inventory as well as payables (Afza & Nazir, 2009). Even though profit maximization is the foremost intention of every entity, sustaining liquidity of an entity is vital. Growing profit at the price of liquidity could create severe complications to an entity, therefore, an entity must implement a stratagem where a balance will be sustained amid these two objectives, and this creates a contest in WCM [5]. WCM is regarded as one of the vital determinants while making liquidity and profitability assessments amid firms [6].

Disproportionate amount of current assets might create a negative impact on corporate profitability although, a small quantity of current assets might cause lower level of liquidity as well as stock-out causing problems in sustaining proper operations (Van-Horne & Wachowicz, 2004). Stabilizing liquidity as well as profitability of an entity is a key corporate goal as growing profit at the detriment of liquidity might cause grave corporate problems and vice-versa.

The plausibility of WCM and its implications have been deliberated by numerous scholars [7] Chowdhary & Amin [8]; Deloof [4]; Lazaridis & Tryfonidis [3]; Padachi, 2006; Deloof [4]; Wang,

2002) and there exists mixed findings. Ikpefan, Agwu, Owolabi, and Adetula [9] investigated the link amid working capital and profitability and found a negative association in line with studies such as Aondona and Alematu (2014); Samiloglu and Demirgunes (2008) in turkey; Akindele and Odunsina [10] in Nigeria. Shahid and Alnefaee [11] discovered no significant link amid the examined variables. Hoang [12] found a positive link amid WCM and profitability of organizations likewise studies such as Wanguu and Sitienei [13]; Aggarwal and Rahul [14]; Wilson, Okwo and Okelue (2011); Necdet and Kagitci (2016) in turkey; Asaduzaman and Chowdhury [15] in Bangladesh. Due to continuous inconsistency in literature, there is a need for re-evaluation.

This research aims at evaluating the effect of working capital management on the profitability of listed manufacturing companies in Nigeria

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Concept of working capital

Effective management of inventories, payables, receivables as well as cash, is categorized under WCM. For proper understanding, Working Capital depicts the amount of liquidity available to realize short-term commitment as a result of operational activities [16].

Working Capital characterizes the current assets of an entity which covers the percentage of financial assets of entities that is easily converted from one form of assets to another throughout the day-to-day effecting of business activities [1]. Current assets subsists cash, prepaid expenses, short-term investments, receivable, inventory as well as other current assets When an entity implements decisions pertaining its current assets as well as current liabilities, this can be labelled as WCM. WCM is a class of financial management that pursues appropriate strategies for handling current assets, liabilities for exploiting the profits from WCM. The simple aim of WCM is regulating our existing financial assets in such a manner that equilibrium is fashioned amid profitability and risk accompanying with the profitability of an entity (Ricci & Vito, 2000).

Inventory management refers to maintaining stocks of a company at a level where the firm will only incur the least cost consistent with other management's set objectives or targets [17]. As defined by Eneje et al. [18], inventory

management involves ensuring that all input materials or resources of production which are available to the firm are maintained at an optimal level where production is not interrupted also ensuring that operational cost is minimized without affecting the efficiency of the operations. Inventory management encompasses planning, organizing, controlling and directing inventory activities.

2.2 Theoretical Review

2.2.1 Cash conversion cycle theory

The cash conversion cycle (CCC), depicts the relations amid the constituents of working capital. The movement of cash in an entity can be studied to regulate the volume of cash essential for any sales level (Correa et al., 2007). Gitman (1974) promulgated CCC as fragment of operating cycle. Its emphasis is on the amount of time amid the procurement of inventory as well as other inputs and the inflows of cash via the sale of finished goods. It likewise signifies the amount of days of operation for which financing is required (Harris, 2005). The shorter the CCC, the fewer the funds needed by the company. Consequently, the longer the cycle, the higher the investment in working capital. The CCC hypothesis stipulates that it serves as a complete measurement of working capital because it reveals the time interval amid outflow for the acquisition of raw materials as well as the inflow from sales of finished goods (Padachi, 2006). This theory proclaims that day-to-day managing of an entity's short term assets and liabilities covers an essential function in the achievements of the entity provided that organizations with increasing long term forecasts as well as strong profit flow cannot stay alive devoid of proper liquidity management strategy [19]. This theory is significant to this research as it pursues to describe how the three variables of working capital management (accounts receivables, inventory and accounts payables) interrelate to impact corporate liquidity as well as profitability.

2.3 Empirical Review of Literature

Ikpefan, Agwu, Owolabi, and Adetula [9] investigated the link amid working capital and profitability and found a negative association in line with studies such as Aondona and Alematu (2014); Samiloglu and Demirgunes (2008) in turkey; Akindede and Odunsina [10] in Nigeria. Shahid and Alnefae [11] discovered no significant link amid the examined variables.

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Kwadwo [17] in his study on the impact of efficient inventory management on profitability from some selected manufacturing firms in Ghana made use of a multiple regression model and found that there is a significantly positive strong degree of relationship between raw materials, inventory management and profitability of manufacturing firms in Ghana. Nguyen, Pham, & Nguyen [20] revealed findings in their research that an entity can improve profitability via appropriate management of corporate working capital that is, immediate collection from the entity's debtors, holding, as well as little payments made to the payables account.

Shah et al. [11] discovered an insignificant association amid WCM and return on equity in pharmaceutical entities. They recommended managing appropriately the mechanisms of working capital that is, inventories, marketable corporate securities, receivables, as well as payables to boost profitability.

Phuong and Hung [21] discovered a negative association amid elements of WCM and corporate profitability. Ofoegbu and Onodugo [22] posit that receivable damages corporate profitability, Gupta [23] supported the mild as well as moderate association, Joshi [24] discovered an insignificant association while Bhunia and Das [25] found no relationship.

3. METHODOLOGY

3.1 Research Model

The general form of the model used for this study is as follows:

$$ROA_{it} = a + \beta_1 ACP_{it} + \beta_2 CPP_{it} + \beta_3 ITID_{it} + \beta_4 SIZE_{it} + \mu$$

ROA = Return on Assets

ACP = Average Collection Period

CPP= Creditors Payment Period

ITID = Inventory Turnover

SIZE = Firm size

a = Intercept

β (1 to 4) = Coefficient of independent variables

μ = the Error Term

3.2 Sources and Measurement of Variable

Table 1. Sources and measurement of variables

Abbreviation	Variable	Source	Measurement
ROA	Return on assets	Annual report	Earnings After Tax divided Total assets
APC	Average Collection Period	Annual report	Account receivables divided by credit sales multiplied by number of days in a period.
CPP	Creditor Payment Period	Annual report	Average creditors divide by cost of sales X 365 days
ITID	Inventory turnover	Annual report	Cost of sales over average stock
SIZE	Firm size	Annual report	Natural logarithm of total assets.

3.3 Method of Data Analysis

The study employed panel data regression technique to inspect the connection amid WCM on the profitability of ten selected quoted manufacturing entities in the Nigerian stock exchange.

3.4 Source of Data

This study made use of secondary data and sample period range from 2008 to 2017. Data were sourced from the statements of 10 listed manufacturing entities in the Nigeria stock exchange as at 2020.

vital to evaluate the association amid selected independent variables. Table 2 shows the correlation matrix for all the research variables in the regression models and reveals that the highest correlation is amid CPP and ACP with 69%(0.69). on the other hand all the remaining variables do not have a high correlation with each other therefore the variables are proper for the panel regression analysis. Also according to Gujarati (2004); Okere, Imeokparia, Ogunlowore and Isiaka [26] 80% is used as a benchmark to check for multicollinearity of variables and none of the correlation of variables exceeds that.

4. DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents the details of data used in this study. It also discusses the correlation matrix, Hausman test, trend analysis and the empirical results of the panel regression for relationship amid WCM and financial performance of listed manufacturing firms sampled.

To cross-check the validity of instruments chosen, and to determine what kind of effect model to apply, a Hausman test is carried out. Since the "chi2 is non-significant at 5% level, the null hypothesis is accepted. This confirms the argument in favour of adopting the either fixed or random effect model. In sum, the regression analysis shows the fixed effect model is superior to any other models in handling available data.

4.2 Descriptive Analysis

With the aim of detecting multicollinearity issues that may occur amid the variables, therefore, it is

4.3 Regression Analysis

Objective: To evaluate the relationship amid working capital management and profitability of listed manufacturing companies in Nigeria.

Table 2. Correlation matrix

	ROA	ACP	CPP	ITID	SIZE
ROA	1.0000	-0.052343	-0.066515	-0.051867	-0.127515
ACP	-0.052343	1.0000	0.694144	0.479480	-0.132518
CPP	-0.066515	0.694144	1.0000	0.529702	0.052752
ITID	-0.051867	0.479480	0.529702	1.0000	0.010856
SIZE	-0.127515	-0.132518	0.052752	0.010856	1.0000

Source: Authors Computation (2020)

Table 3. Hausman test*Equation: Untitled**Test cross-section random effects*

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.687933	4	0.1037

*Source: Authors Computation (2020)***Table 4. Dependent Variable: ROA**

Method: Panel				
Variable	Co-efficient	Std. error	T-Statistics	Prob.
ACP	0.026375	0.048821	0.540226	0.5904
CPP	-0.092100	0.033353	-2.761359	0.0070
ITID	-0.084732	0.098048	-0.864190	0.3899
FSIZE	-0.165925	0.035097	-4.727587	0.0000
C	1.465617	0.277586	5.279868	0.0000
R-squared	0.677330		Mean dependent var	0.223364
Adjusted R-squared	0.628555		S.D. dependent var	0.177672
S.E. of regression	0.106777		Sum squared resid	0.980520
F-statistic	13.88666		Durbin-Watson stat	1.266650
Prob(F-statistic)	0.000000			

Source: Authors Computation (2020)

5. DISCUSSION OF RESULTS

To test and achieve objective, the empirical analysis depended on a panel data analysis for 10 manufacturing firms quoted on the Nigerian stock exchange for the period from 2008-2017, the regression models consist of a fixed effect model and the dependent variable is returns on asset (ROA) used to measure performance, while the independent variables are average collection period (ACP), creditors payment period (CPP) and inventory turnover (ITID) used to measure working capital management while firm size (FSIZE) was used as a control variable. The power of model is explained by R, which shows the overall influence of independent variables on the dependent variables. In our results, the R-squared is 0.68 (68%) while the adjusted R-squared is 0.63 (63%). This shows that 63% of dependent variable is influenced and explained by independent variables. The Durbin Watson is 1.27 which falls within acceptable levels and shows presence of low autocorrelation which is usually present in time series data.

Also, the F statistics is positive (13.8867) and significant at 1%, 5% and 10% levels. This shows statistical significance of the model and shows that there is a significant impact of working capital management and profitability of listed manufacturing firms in Nigeria. These findings is in line with the work of Ani, Okwo and Ugwunta (2012), and opposes the results of

Makori and Jagongo (2013), Kruti and Patel (2015).

From the coefficients we can see that there is one significant relationship and two insignificant relationships between dependent and independent variables. They are explained as follows: Average collection period (ACP) has a positive but insignificant effect on returns on assets. It further explains that for every one % increase in average collection period there is a 2.6% increase in performance (ROA) of a firm. This implies that if the period at which our debtors settle their debts reduces, there would be a rise in the financial performance of sampled firms. Also, the correlation results show a negative but significant relationship between creditor's payment period (CPP) and ROA which is the measure for profitability. From the analysis, the correlation between CPP and ROA has a coefficient (r) of -0.092100, indicating a negative correlation between the two variables with a p-value of 0.0070 significant at 5%. It explains that if the time period at which we pay our creditors increases, there is a decrease in the profitability of the sampled firms.

Furthermore, the coefficients show a negative as well as insignificant association amid inventory turnover (ITID) and ROA. ITID has correlation coefficient value of -0.084732. This implies that an increase in ITID will lead to 8.5% decrease in the profitability of the sampled manufacturing firms. Finally, the control variable firm size

(FSIZE) had a negative and significant effect on ROA of the sampled firms.

6. SUMMARY, CONCLUSION AND RECOMMENDATIONS

WCM policies are continually essential in enhancing corporate performance. For this research, we investigated the relationship amid WCM and ROA of listed manufacturing firms in Nigeria. Using panel ordinary least square regression, the findings revealed that certain key components of the Working Capital Management (ITID, ACP, CPP) has a significant impact on profitability of listed manufacturing firms in Nigeria. Consequently, ACP and ITID had an insignificant impact on profitability. Finding also revealed that creditor's payment period exists as a vital constituent of WCM for the profitability of listed manufacturing firms in Nigeria. Hence, this study recommends that well managed CPP over time shall be useful for manufacturing entities, to improve their financial performance.

Consequently, Inventory management techniques such as Economic order quantity, ABC analysis, Just-in-time inventory management, Minimum order quantity should be considered. These techniques have their peculiarity; hence the management of the company should consider the technique that is best suited. Also, extension and comparison between working capital management in different countries would also be an interesting topic to explore with; because, management culture of each country has impact on profitability of the firms.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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