Business Education Journal 10 (2024)

journal homepage: https://bej.cbe.ac.tz

The Influence of Working Capital Management on the Financial Performance of the Listed Manufacturing Firms in Tanzania

Mwila Joseph Mulenga[a,*] Ramadhani Khalid Mndeme[b]

[a]Department of Accounting and Finance, The Institute of Finance Management
[b]Department of Banking and Financial Services, The Institute of Finance Management
*Corresponding author
Email address: mwila.mulenga@ifm.ac.tz

Abstract

This study examines the impact of working capital management (WCM) on the financial performance of manufacturing firms listed on Dar es salaam Stock Exchange (DSE) in Tanzania from 2003-2021 using the Generalized Method of Moment (GMM) estimation method for analysis. WCM measures include accounts receivable (AR), accounts payable (AP), cash conversion cycle (CCC), inventory turnover (INV), working capital investing policy (WCIP), and working capital financing policy (WCFP) while financial performance is gauged through operating profit margin (OPM); return on assets (ROA); return on capital employed (ROCE) and return on equity (ROE). The study shows that most working capital management (WCM) measures significantly influence manufacturing firms' financial performance, except for WCIP and WCFP. Notably, AR and INV negatively affect OPM and ROA due to inefficiencies in cash conversion, but they enhance ROCE. Extending AP improves ROA but harms ROCE, while CCC positively impacts OPM and ROA but negatively affects ROCE. Practical implications highlight the need to balance accounts payable periods to avoid negative impacts on ROCE and efficiently manage AR and INV to improve cash flow without hurting operational efficiency and asset utilization. Regularly adjusting the CCC is essential to maintain positive impacts on OPM and ROA while minimizing adverse effects on ROCE. The study provides valuable insights for manufacturing firms, financial managers, policymakers, and experts, offering a nuanced understanding of WCM's impact on financial performance in the Tanzanian context.

***Keywords**: Working capital management, Financial performance, Manufacturing firms, Generalized Method of Moments*

1.0 Introduction

Over the years, insufficient working capital management has been critical in business insolvency, bankruptcy, and ultimate failures (Deloof, 2003). Working capital management's increasing attention has been received because of the global financial crisis and the collapse of massive organisations such as General Motors, Lehman Brothers, and Bear Stearns (Charitou, Elfani, and Lois, 2010). It is highly

documented that efficient working capital management is essential and much needed in every business operation for survival and to enhance profitability and firm value (Yahaya, 2016). It is widely cited that if a company experiences an insufficient level of working capital, it might accelerate problems with the day-to-day operations, such as an increase in the company's expenses and a decrease in its value (Horne and Wachowicz, 2000).

The working capital management concept is explained with multiple terminologies, but certain key features are used to define the word itself. Eljelly (2004) and Mohamad and Saad (2010) have described working management as planning, organizing, and controlling current assets and liabilities to eliminate the risk of the firm failing to meet its financial obligation. Moreover, Harris (2005) pointed out that working capital management is a simple and straightforward concept that aims to ensure that firms can fund the difference between short-term assets and liabilities. The key features of each definition explain the idea of working capital management as an important aspect of financial management aimed at managing current assets and liabilities to maximize benefits (Afza and Nazir, 2007).

The issue of WCM has been widely studied, but the emphasis of previous studies seems to investigate the effect of working capital management on firm performance (Aldubhani et al, 2022; Wassie, 2021; Amponsah-Kwatiah and Asiamah, 2020; Akey, 2019; Prempeh and Peprah Amankona, 2019; Ebenezer and Asiedu, 2013; Akoto et al., 2013; Rehman and Anjum, 2013) on firm value (Amarasekara et al., 2021; Arachchi, Perera and Vijayakumaran, 2017 and Lai, 2012) on shareholder's wealth creation (Panigrahi, Al Farsi, Kumaraswamy, Khan and Rana, 2022). However, most of these studies have emphasized the four constructs of working capital management practices: cash management practices, inventory management practices, receivables management practices, and management of current liabilities. Few cited researchers like Pouraghajan and Emamgholipourarchi (2012) examined working capital management using the current ratio, current assets to total assets ratio, current liabilities to total assets ratio, and cash conversion cycle. This clearly indicates that little attention has been given to working capital management policies and firm value. Not only that, but other studies have focused on working capital management in supermarkets (Mtani and Masanja, 2018). In existing studies, manufacturing firms have received limited attention (Kwatiah and Asiamah, 2023; Aldubhani et al., 2022; Amarasekera et al., 2021). Research on these firms offers unique insights due to their complex inventory management, distinct production cycles, and specific cost structures, all of which can influence working capital management differently than other sectors (Mourtzis, 2016).

Therefore, this study's particular attention was given to working capital management policies. We investigated the impact of working capital management with special attention on working capital management policies concerning the firm's financial performance. The study considered all profitability aspects as performance measures (including operating profit margin, return on assets, return on capital employed, and return on equity. The study chooses these variables due to the following reasons; (i) to make the study results more accurate, which is what was limited in previous studies; (ii) to provide companies with multiple criteria for evaluating working capital, more robust recommendations for working capital management and identify shortcomings that could affect their firm's profitability (Tarurhor and Osazevbaru, 2021).

The paper differs from previous studies in two aspects. (i) This study provides unique empirical evidence by focusing on working capital management policies and other components of working capital management, including the number of days' accounts payable, number of days' accounts receivable, cash conversion cycle, and number of days' inventory. (ii) contributing to a substantial methodological improvement in the Tanzanian context by using advanced methodological approaches, namely, the dynamic generalized method of moments (i.e., system GMM) to overcome the econometric/ statistical issues including the endogeneity issue (Al Faroque et al., 2019). (iii) Focused on listed manufacturing firms in Tanzania because WCM is considered vital for manufacturing firms because most assets are current assets (Horne and Wachowitz, 2000; Rahman and Nasr, 2007). (iv) To our best knowledge, previous studies in Tanzania did not use WCM components and WCM policies to as proxies for working capital management; (v) Our study incorporated a variety of financial performance measures to offer comprehensive insights into the impact of WCM on the performance of manufacturing firms.

The rest of the paper is organized as follows: Section 2 presents the review of literature and results achieved in the previous research; Section 3 describes the research methodology and empirical testing of hypotheses; Section 4 discusses the empirical results, and the final section provides the conclusions, limitations of the study and policy implication.

2.0 Literature Review

2.1. Theoretical background

Several theories relating to working capital management include the agency, pecking order, and cash conversion theories (Kwatiah and Asiamah 2020). However, the review indicates that cash conversion cycle theory is directly linked with studying working capital management on firms' performance. Hence, we have considered the cash conversion cycle theory for this study. Richards and Laughhin (1980) developed the cash conversion theory to explain how cash is tied to accounts receivables and inventory. This theory is one of the core theories in working capital management. It describes working capital management in terms of inventory turnover period, accounts receivables, accounts payables, and cash components (Ebenezer and Asiedu, 2013). It explains how a firm can efficiently manage its working capital (Richards and Laughhin, 1980). Further, it posits a shorter operations cycle reduces the implication of poor working capital and increases a firm's profitability and liquidity (Smith, 1980).

According to the theory, the firms should attempt to lower the cash conversion duration by shortening the inventory turnover period and accounts receivables collection period and slow payments to trade creditors (Kabuye, Kato, Akugizibwe, and Bugambiro, 2019). A lower accounts receivable collection period means that the firms get the receivables quickly and can invest the money in profitable ventures to generate more profits (Kiyamaz, Haque, and Choudhury,2024). Several studies tested the efficacy of the cash conversion cycle on a firm's performance (Le Roux,2008; Smith and Fletcher,2009; Erasmus,2010; Chirume,2013; Kwenda and Holden,2013). Their findings can be classified into two broad categories: i) they reported a significant relationship where such a relationship increases profitability, and ii) they reported no significant relationship where such a relationship decreases profitability.

Besides this, the theory is relevant to the study as it seeks to explain how accounts receivables, cash conversion cycle, inventory turnover period and accounts payables interact to influence a firm's

performance. Further, manufacturing firms listed on the Dar es Salaam stock exchange need to shorten the cash conversion cycle to increase shareholder wealth and improve firm performance (Aminu and Zainudin, 2016). This is because a longer cash conversion cycle lowers the returns as a result, a longer time will take to generate cash (Karim, Mamun, and Kamruzzaman, 2024) and may increase the cost of external financing (Moss and Stine, 1993).

2.2. Working capital management

Working capital management is considered an essential part of financial management in all business operations (Wassie,2021). Over the years, poor working capital management has been critical in business insolvency, bankruptcy, and ultimate failures (Eljelly, 2004). Researchers worldwide have extensively studied the effect of working capital management on firm profitability. Even though they explain the concept of working capital management with multiple terminologies, according to Harris (2005), it is a simple and straightforward concept ensuring the firm can fund the difference between short-term assets and short-term liabilities.

Similarly, Paramasivan and Subramanian (2009) and Mohamad and Saad (2010) defined the concept of working management as an act of planning, organizing, and controlling current assets and current liabilities in such a way that the risk of the firms failed to meet its financial obligation are eliminated. Researchers have intensely discussed working capital management's impact on firm profitability. Emphasis was explicitly placed on the four constructs of working capital management practices, including cash management, inventory management, receivables management, and management of current liabilities practices (Kiymaz et al., 2024; Kwatiah and Asiamah, 2021; Akey, 2019; Prempeh and Peprah-Amankona, 2018; Akinyomi and Olagunju, 2013). The working capital management cycle may encompass converting raw materials to finished goods, selling goods, and managing cash collection and payments (Kiymaz et al., 2024). Effective management of this cycle is crucial to maintaining daily operations and liquidity and ultimately influences the firm's financial health (Kiymaz et al., 2024).

Moreover, there are two opposite views related to the impact of WCM on firms' financial performance; one view supports the extension of the cash conversion period, while others oppose the higher working capital because additional working capital requires more financing and opportunity costs (Kiymaz et al., 2024). So, having excessive working capital may adversely affect firms' performance.

2.3 Firm's profitability

In literature, profitability is the primary measure of firm performance (Lazaridis and Tryfonidis, 2006); different forms such as return on equity, return on assets, net operating profit, gross operating profit, and return on capital are used (Raheman and Nasr, 2007; Vishnani and Shah, 2007). In this study, operating profit margin (OPM), return on assets (ROA), return on capital employed (ROCE), and return on equity (ROE) were used as profitability measures, following Kwatiah and Asiamah (2023); Aldubhani et al. (2022) and Amarasekera et al., (2021). The reason behind using four profitability measures is (i) to make the study results more accurate, this is what was limited in previous studies; (ii) to provide companies with multiple criteria for evaluating working capital, more robust recommendations for working capital management and identify shortcomings that could affect their firm's profitability (Tarurhor and Osazevbaru, 2021).

2.4 Working capital management policies

One of the essential guidelines for managing current assets and liabilities without increasing uncertain situations is working capital management policies (Nazir and Afza, 2009). The finance literature saw working capital management policy from investment and financing perspectives. The investment part is related to determining the level of current assets, whereas the financing part relates to determining the current liabilities level (Pestonji and Wichitsathian, 2019). Moreover, these two categories, the investment and financing WCM policy, may further be sub-categorized as aggressive and conservative WCM policy (Nazir and Afza, 2009).

2.4.1 Working capital investment policy

The finance literature categorized WCIP into aggressive WCIP and conservative WCIP. An aggressive WCIP means that a firm invests its money more in fixed assets than in current assets (Nazir and Afza, 2009), while a conservative WCIP implies that a firm spends a tremendous amount of capital on current assets compared to its fixed asset investments (Panda and Nanda, 2018; Weinraub and Visscher, 1998). The firm needs to choose appropriate WCIP, especially for manufacturing firms that tend to have many current assets such as inventories and receivables, which need a high inventory level to maintain their business operations (Mengesa, 2014). WCIP is measured by the level of total current assets to total assets (CA/TA), and the results from previous researchers like Amarasekara et al. (2021) found that WCIP is not a factor that influences firm value, which is supported by Vahid et al. (2012).

2.4.2. Working capital financing policy

Working capital financing policy is a way of financing a firm's temporary and permanent current assets from long-term or short-term financing sources (Baker et al., 2017) and is measured by the level of current liabilities to total assets ratio (Farhan et al., 2021; Mohamad, 2018; Sudiyatno et al., 2017; Shan et al., 2015; Nazir and Afza, 2009). CL/TA significantly affects firms' profitability and value; however, the influence of WCFP on firms' profitability, based on previous empirical studies, is inconclusive. Some studies have shown that the relationship between CL/TA and firms' profitability was significantly positive and was better to be adopted (Ng et al., 2017).On the other hand, Shan et al. (2015) found a negative and significant relationship between CL/TA and ROA, but, at the same time, CL/TA did not affect firm value. Nazir and Afza (2009) found that WCFP could improve ROA but, at the same time, could destroy market value measured by Tobin's Q. Thus, it can be concluded that decisions related to WCFP can sometimes increase the profitability of firms, but they can also destroy their market value, while some decisions can increase the profitability of firms with no effect on their market value. These kinds of findings might have been attributed to the fact that it is challenging to measure WCFP due to the complexity of financial metrics and the multifaceted nature of working capital components; hence, different studies may use various metrics and methodologies, leading to inconsistent results (Pestonji and Wichitsathian, 2019).

2.5. Empirical studies

Empirically, Kwatiah and Asiamah (2020) examined the impact of working capital management on the performance of some selected listed manufacturing companies in Ghana based on a sample of 20 listed manufacturing firms on the Ghana Stock Exchange for the period 2015–2019. The study reveals that inventory management, account receivables, account payables, cash conversion cycle, current asset, current ratio, and firm size have positive and significant relationships with effects on return on assets (ROA) and return on return on equity (ROE) while leverage affects them negatively.

Akey (2019) aimed to observe variables essential to a firm's profitability by managing working capital. Ten listed manufacturing firms in Ghana were chosen as a sample for 8 years from 2009 to 2017. The study found that the average collection period and cash conversion cycle had a negative and significant relationship with ROA, while liquidity had a positive and significant relationship with ROA. Further, the study found that the average collection period and net trading cycle significantly influence return on equity, while business size had a negative and significant relationship.

Amarasekara et al. (2021) studied the impact of working capital management on a firm's profitability and value in Sri Lanka. They found that the cash conversion cycle accounts payable days and working capital financing policy significantly negatively impact the return on assets. Meanwhile, a significant positive effect between accounts receivable days and return on investments is found.

Aldubhani et al. (2022) examined the impact of working capital management on the profitability of selected listed manufacturing firms in the Qatar Stock Exchange based on a sample of ten firms for 2015 and 2019. The study found that companies with shorter receivables collection periods and cash conversion cycles are more profitable. Also, the study found that the more extended inventory turnover periods and accounts payable payment periods are related to higher profitability of the firms.

Ebenezer and Asiedu (2013) studied the relationship between profitability and working capital management of manufacturing companies in Accra Metropolis listed on the Ghana Stock Exchange (GSE) from 2007–2011. It was found that the cash conversion cycle, inventory days, and accounts payable significantly impacted manufacturing companies' profitability. The study suggested that companies should adopt a good policy for properly managing working capital.

Akoto et al. (2013) examined the relationship between working capital management practices and profitability of listed manufacturing firms in Ghana using secondary data collected from all the 13 listed manufacturing firms in Ghana covering the period 2005–2009. After employing panel data methodology, the study found a significant negative relationship between profitability and accounts receivable days. However, the cash conversion cycle, current asset ratio, firm size, and current asset turnover substantially and positively affect a firm's profitability.

Wassie (2021) found that the account receivables period, cash conversion cycle, and accounts payable period have a statistically significant and positive correlation with the performance of exporting firms in Ethiopia, measured by both return on assets and return on investment. However, the inventory conversion period has a statistically significant and positive impact on return on investment. Still, it has an insignificant effect on the performance (return on assets) of sampled export firms in Ethiopia.

Prempeh and Peprah-Amankona (2018) determined the impacts of working capital management and firms' profitability in developing economies. Here, 11 manufacturing firms were selected from the Ghana Stock Exchange, and the data was taken from 2011-2017. The data was analyzed through a dynamic panel regression technique, and the results showed a significant positive linear relationship between working capital management and firms' profitability.

Rehman and Anjum (2013) investigated the impact of working capital management assets management on a firm's profitability in the case of Pakistani cement companies. Their results indicated a negative and positive connection between working capital management components and firm performance.

Bukwimba and Ngata (2022) analyzed the effect of working capital management on a firm's performance in Tanzania. Seven companies selected from the manufacturing sector listed in the DSE from 2011 to 2020. The results concluded that the average collection period and inventory turnover in a day's negative and insignificant relation with the performance of manufacturing firms in Tanzania.

The review indicates that previous studies on working capital management and corporate performance have found conflicting results. However, the majority of the studies concluded that there is positive significant relationship between working capital management and firm's profitability (Kwatiah and Asiamah,2020; Akey,2019; Amarasekara et al., 2021; Aldubhani et al., 2022; Ebenezer and Asiedu, 2013; Akoto et al., 2013; Wassie, 2021; Prempeh and Peprah-Amankona,2018; Rehman and Anjum,2013). Moreover, studies such as Amarasekara et al. (2021) and Kwatiah and Asiamah (2020) found that firms improve their profitability through efficient working capital management, and that would be useful to consider in maintaining optimal working capital management components such as accounts receivable, account payable, cash conversion cycle and inventory turnover. Few studies also reported no statistically significant relationship between working capital management and corporate performance (Bukwimba and Ngata, 2022).

Moreover, prior studies addressed the issue of working capital management and firm performance. However, little attention has been given to the manufacturing sector, especially in Tanzania. Among the few studies related to WCM in Tanzania, the study of Bukwimba and Ngata (2022) is the only study that has focused on the impact of WCM on the profitability of manufacturing firms in Tanzania. The following research gap was identified. (i) This study provides unique empirical evidence by focusing on working capital management policies and other components of working capital management. (ii) To our best knowledge, previous studies in Tanzania did not use other WCM components and WCM policies to measure working capital management; (iii) our study considers all aspects of profitability as performance measures.

Based on the above discussion, the following hypotheses have been formulated:

H_o: *There is no significant relationship between working capital management and the financial performance of the listed manufacturing companies on the Dar es Salaam Stock Exchange.*

H_a: *There is a significant relationship between working capital management and the financial performance of listed manufacturing companies on the Dar es Salaam Stock Exchange.*

3.0 Methodology

3.1 Sample

The main objective of our study is to examine how WCM impacts a firm's profitability. Our sample comprises listed manufacturing firms on the DSE. However, some manufacturing firms listed miss some relevant information for this study. As of 2021, there are eight manufacturing companies: two in brewing, two in cement, one in tea packing, one in oxygen, one in cigarette production, and one in agriculture. The final sample of our study comprises 7 manufacturing spanning the period from 2003 to 2021. The constituents of the study are given in Table 1.

Table 3.1. Constituents of the study

S/No	Company name	Company code	Data period
1.	Tanzania Cigarette Company	TCC	2003-2021
2.	Tanga Cement PLC	TCPLC	2003-2021
3.	Tatepa	TTP	2003-2021
4.	Tanzania Portland Cement Public Limited Company	TPCPLC	2003-2021
5.	Tanzania Breweries Limited	TBL	2003-2021
6.	TOL Gases Limited	TOL	2003-2021
7.	East African Breweries Limited	EABL	2003-2021

Source: Generated by the authors from the official website of the Dar es Salaam Stock Exchange (www.dse.co.tz)

3.2 Source of data

The data for this study were extracted primarily from the annual financial reports of manufacturing companies listed on the DSE. Various other sources were utilized to acquire components related to working capital management and variables associated with profitability. These sources included company websites and the DSE website.

3.3 Study variables with measurement

This section explains the variables (independent, dependent, and control variables) used to explore the relationship between firms' performance and working capital management in the Tanzanian Context.

3.3.1 Dependent variables-performance measures

This study uses four standard accounting-based performance measures to evaluate the firm performance, i.e., operating profit margin (OPM), return on assets (ROA), return on capital employed (ROCE), and return on equity (ROE). The reason behind using all four accounting-based measures and not market-based measures are as follows; (i) to make the study results more accurate, this is what was limited in previous studies; (ii) to provide companies with multiple criteria for evaluating working capital, more robust recommendations for working capital management and identify shortcomings that could affect their firm's profitability (Osazevbaru et al., 2021).

3.3.2 Independent variables

Our study chooses the cash conversion cycle (CCC), average collection period (ACP), inventory turnover (INV), and average payment period (APP) as proxies for working capital management. Further, WCIP and WCFP were used to measure working capital management policies (Amarasekara et al., 2021). Those variables are the most suitable proxies for measuring working capital management (Sarwat, Durrani, Liaquat, 2017) and working management policies (Amarasekara, 2021).

3.3.3 Control variables

Based on the previous research, additional variables, including firm size (Laghari and Chengang, 2019; Deloof, 2003; Aldubhani et al., 2022), sales growth (Aldubhani et al. 2022; Jayarathne, 2014; Deloof, 2003), and debt ratio (Laghari and Chengang, 2019; Aldubhani et al. 2022) used as control variables. Those proxies are chosen as control variables because (i) they are inherent characteristics that affect firms' profitability (Shin and Soenen, 1998). (ii) It is also vital to include control variables to avoid biased results that could influence firms when testing research hypotheses (Garcia-Sanchez, 2021). The study of Aldubhani et al. (2022) used the above explanatory and control variables. Table 2 shows the study variables with measurements.

Table 2. Study variables with measurements

Types of Variable	Variable	Calculation method	Sources
1. Dependent	OPM	Profit before interest and tax	Khan and Choudhary (2020); Aldubhani

variables		(PBIT)/Sales	et al. (2022);
	ROA	EBIT/Total assets	Aldubhani et al., (2022);Alvarez et al. (2021); Bukimba and Ngata (2022)
	ROE	Net profit/Total equity	Aldubhani et al., (2022); Alvarez et al. (2021)
	ROCE	EBIT/Capital employed	Aldubhani and Gong (2022); Al Dalayeen (2017)
2.Independent variables	AR	(Average of accounts receivable/Sales) *365	Aldubhani et al., (2022);
	AP	(Average of accounts payable/Cost of goods sold) *365	Aldubhani et al., (2022)
	INV	(Average inventory/Cost of goods sold) * 365	Aldubhani et al., (2022)
	CCC	(AR + INV – AP)	Aldubhani et al., (2022)
	WCIP	(Total current assets/Total Assets) *100	Amarasekera et al (2021)
	WCFP	(Total current liabilities/Total Assets) *100	Amarasekera et al (2021)
3. Control variables	FS	Natural logarithm of total assets (Log A) = ln (asset)	Aldubhani and Gong (2022); Deloof (2003); Leghari and Chengang (2019)
	SG	(Current year sales Previous year sales)/ Previous year sales	Aldubhani and Gong (2022); Jayaratne (2014)
	DR	(Total liabilities/Total assets)	Laghari and Chengang (2019); Aldubhani et al (2022)

Note(s): AP, number of days accounts payable; AR, number of days accounts receivable; CCC, cash conversion cycle; INV, number of days inventory; OPM, operating profit margin; ROA, return on assets; ROCE, return on capital employed; ROE, return on equity; SG, sales growth; DR, debt ratio; FS, firm size, WCIP, working capital investing policy; WCFP, working capital financing policy.

3.4 Multiple regression

To estimate the impact of WCM management on firm profitability, we estimate the following regression equations used in this study adopted by Aldubhani et al. (2022).

$$OPM_{it} = \beta_0 + \beta_1 (AR_{it}) + \beta_2 (INV_{it}) + \beta_3 (AP_{it}) + \beta_4 (CCC_{it}) + \beta_5 (WCIP_{it}) + \beta_6 (WCFP_{it}) + \beta_7 (FS_{it}) + \beta_8 (SG_{it}) + \beta_9 (DR_{it}) + Ɛ\,it \quad (1)$$

$$ROA = \beta_0 + \beta_1 (AR_{it}) + \beta_2 (INV_{it}) + \beta_3 (AP_{it}) + \beta_4 (CCC_{it}) + \beta_5 (WCIP_{it}) + \beta_6 (WCFP_{it}) + \beta_7 (FS_{it}) + \beta_8 (SG_{it}) + \beta_9 (DR_{it}) + Ɛ\,it \quad (2)$$

$$ROE = \beta_0 + \beta_1 (AR_{it}) + \beta_2 (INV_{it}) + \beta_3 (AP_{it}) + \beta_4 (CCC_{it}) + \beta_5 (WCIP_{it}) + \beta_6 (WCFP_{it}) + \beta_7 (FS_{it}) + \beta_8 (SG_{it}) + \beta_9 (DR_{it}) + Ɛ\,it \quad (3)$$

$$ROCE = \beta_0 + \beta_1 (AR_{it}) + \beta_2 (INV_{it}) + \beta_3 (AP_{it}) + \beta_4 (CCC_{it}) + \beta_5 (WCIP_{it}) + \beta_6 (WCFP_{it}) + \beta_7 (FS_{it}) + \beta_8 (SG_{it}) + \beta_9 (DR_{it}) + Ɛ\,it \quad (4)$$

The measurements of the study variables in equations 1 to 4 are illustrated in Table 2.

4.0 Presentation of Empirical Results

Our study gathered data with varying observation counts for each company over time. Consequently, we opted for the Generalized Method of Moments (GMM) due to its adeptness in addressing unbalanced panel datasets. The GMM is cited as strong in handling heterogeneity across entities and time, a common occurrence in unbalanced panel datasets. Therefore, Table 4 presents the GMM estimate results for the four models, from which we used instrument variables in each model that necessitate a test for over-identification restriction, whereby the value of the J-statistic in Table 4 found that the orthogonality condition is satisfied. Hence, it suggests that the chosen moment conditions are functional and that the model is not mis-specified.

Moreover, the study utilized the Arellano-Bond method to assess autocorrelation, testing the null hypothesis of no autocorrelation against differenced residuals. The test results are presented in Table 3, which indicates that the null hypothesis cannot be rejected for the AR (1) process and AR (2) in the first three modules. However, AR (-1) is rejected in the fourth model, not AR (-2). It is noteworthy that this finding in the fourth model is not exceptional. Typically, the test for AR (1) process in first differences rejects the null hypothesis, but the crucial observation lies in the test for AR (2) in first differences, as it identifies autocorrelation in levels. We cannot reject the null hypothesis for AR (-2), even in the fourth model.

Table 3: Arellano-Bond Serial Correlation Test

Model	Test order	m-statistic	rho	SE(rho)	Pro.
	AR (1)	-0.731887	-0.117802	0.160957	0.4642
1	AR (2)	-0.954920	-0.161263	0.168875	03396
2	AR (1)	-0.531079	-0.078353	0.147535	0.5954
	AR (2)	-1.242180	-0.189348	0.152432	0.2142
3	AR (1)	-0.884154	-1.530644	1.731195	0.3766
	AR (2)	-0.171428	-0.369137	2.153312	0.8639
4	AR (1)	-3.354773	-6.517883	1.942868	0.0008
	AR (2)	-2.308482	-3.611061	1.564257	0.0210

The GMM regression results are presented in Table 4; the result indicates that CCC significantly influences three measures of financial performance (OPM, ROA, and ROCE) at a 5% significant level. With other things being equal, the unit change in a CCC increases the firm's OPM and ROA by 0.01 and 0.011, respectively, but it reduces ROCE by 0.025. However, results show that CCC has an insignificant impact on ROE. These findings imply that a shorter cash conversion cycle (CCC) positively influences operating profit margin and return on assets; however, the negative impact of CCC on ROCE suggests that firms should develop a balanced approach in working capital management while focusing on reducing CCC to enhance OPM and ROA, firms should also consider potential trade-off with ROCE.

Moreover, results in Table 4 indicate that AR and AP also significantly influence three measures of financial performance (OPM, ROA, and ROCE) at a 5% significant level but insignificant on ROE. AR seems to have a positive impact on OPM and ROA but a positive impact on ROCE, whereas AP seems to have a negative effect on OPM and ROCE but a positive impact on ROA. Table 4 indicates that a unit change in the AR with other things being equal reduces the firm's OPM and ROA by 0.004 and 0.004, respectively, but increases ROCE by 0.017. Furthermore, a unit change in the AP, with other things being equal, reduces the firm's OPM and ROCE by 0.011 and 0.018, respectively, but it increases ROA by 0.012. These findings imply that higher AR levels are detrimental to operational efficiency and asset utilization, meaning that extending more credit to customers ties up capital and reduces the funds available for other productive uses. However, the strategic extension of credit to customers may boost the overall return on capital employed. Hence, optimal AR is necessary to reduce the negative influence on OPM and ROA while leveraging maximum return on capital. On the other hand, AP's negative impact on OPM might be attributed to increased operation due to late payment penalties or strained supplier relationships.

Furthermore, regression results presented in Table 4 indicate that INV significantly influences three measures of financial performance (OPM, ROA and ROCE) at a 5% significant level but insignificant on ROE. The findings indicate that a unit change in the INV, with other things being equal, reduces the firm's OPM and ROA by 0.012 and 0.013, respectively, but it increases ROCE by 0.028. These findings suggest that higher inventory levels may increase holding costs or indicate inefficiencies, reducing operational profitability and efficiency with which a firm utilizes its assets to generate profit (Banerjee and Deb, 2023; Kamlesh et al., 2023). Besides, the findings suggest that while higher inventory may negatively impact operational efficiency and asset utilization, it positively contributes to the overall return on capital employed, possibly by supporting production processes that lead to higher returns on the capital invested (Charitou et al., 2012).

The results in Table 4 indicate that working capital management policy (WCFP and WCIP) has an insignificant influence on firms' financial performance. This finding aligns with Amarasekara et al. (2021), who found that WCIP is not a factor influencing firm value. However, several factors explained in the literature might contribute to this insignificance, including the capital nature of the manufacturing firms, such that heavy investment in fixed assets might have more impact on financial performance relative to working capital. Moreover, the influence of WCM policy on the financial performance of manufacturing firms might be overshadowed by other factors, such as the firm's financial structure, management focus, and market/overall economic conditions.

Table 4: Multiple regression results using profitability as the dependent variable

	Model 1	Model 2	Mode 3	Model 4
Variables	**OPM**	**ROA**	**ROE**	**ROCE**
AR	-0.004 (0.010) **	-0.004 (0.010) **	-0.008 (0.156)	0.017(0.000) ***
INV	-0.012 (0.013) **	-0.013 (0.010) **	-0.033 (0.050)	0.028(0.001) ***
AP	-0.011(0.013) **	0.012 (0.007) **	0.028 (0.075)	-0.018(0.012) **
CCC	0.010 (0.011) **	0.011(0.008) **	0.027 (0.057)	-0.025 (0.001) ***
WCIP	-0.256 (0.263)	-0.161 (0.474)	-0.596 (0.490)	0.119(0.9074)

WCFP	0.180 (0.269)	0.131 (0.414)	0.556 (0.299)	0.387(0.5461)
FS	-0.240 (0.102)	-0.194 (0.179)	0.347 (0.501)	0.357 (0.3916)
SG	0.435(0.000) ***	0.425 (0.000) ***	0.542 (0.074)	1.029 (0.001) ***
DR	-0.361 (0.073) *	-0.323 (0.103)	1.706 (0.017) **	-0.205 (0.784)
No. of obs.	81	81	81	75

Notes ***, **, and * are significant at the 1, 5, and 10 percent levels, respectively.

5. Results and Discussion

The regression result indicated that CCC was found statistically significant in influencing three measures of financial performance (OPM, ROA, and ROCE). The results suggest that the extended cash conversion cycle (CCC) negatively impacts the return on the capital employed ROCE). This finding is consistent with the cash conversion cycle theory that a shorter cycle reduces the implication of poor working capital and increases the firm's profitability and liquidity (Smith, 1980). This finding is consistent with Kwatiah and Asiamah, 2020 Prempeh and Peprah, 2018 Haresh, 2012; Quayyum, 2011; Ebenezer and Asiedu, 2013. Furthermore, the AR result was positive and statistically significant at a 1% significant level with a coefficient of 0.017 on ROCE, while OPM and ROA were reported to be negative and significant. The positive significance of accounts receivables implies that extending credit terms to customers increases their profitability. This finding aligns with the view that extended cash conversion duration and a relaxed receivable collection period increase sales and firm performance (Charitou et al. 2012). This finding is supported by other empirical findings from Kwatiah and Asiamah, 2020 Aldubhani and Gong 2022; and Prempeh and Peprah 2018. However, the same findings contradict that of Banerjee and Deb, 2023 Kamlesh et al., 2023 and Bukwimba and Ngata 2022, who argued that increased working capital requires more financing; hence, it increases financing and opportunity costs, as a result, may drag a firm's financial performance.

On accounts payable, the results show that the coefficient is negative and statistically significant on OPM and ROCE but positive on ROA. The negative impact of AP on OPM and ROCE is consistent with Banerjee and Deb, 2023 and Kamlesh et al., 2023 who have argued that excessive working capital may increase financing and opportunity costs, which is detrimental to the firm's financial performance. The positive impact of accounts payable aligns with Charitou et al., 2012. The extended cash conversion cycle may enhance a firm's performance because extending payables might free up resources that can be invested in productive assets, improving asset utilization. This finding is also consistent with the cash conversion theory, as well as the findings from other empirical studies such as that of Kwatiah and Asiamah, 2020), Haresh (2012), and Prempeh and Peprah (2018).

Results for inventory show that the coefficients are statistically significant in OPM, ROA, and ROCE. However, an increase in inventory was found to reduce firms' OPM and ROA, which is in line with the conservative working capital investment policy proponent, who suggests that increasing investment in current assets improves firms' financial performance (Javid and Zita 2014). However, our study found that increased inventory enhances firms' ROCE. The positive significance of inventory on

ROCE implies a well-managed inventory by listed manufacturing firms, leading to an increasing return on capital employed. The results are similar to those of Kwatiah and Asiamah (2020) and Haresh (2012). Interestingly, WCFP and WCIP regression results were found to have an insignificant influence on all measures of firms' financial performance, and this is contrary to several studies, including Sudiyatno, Puspitasari, and Sudarsi (2017) and Javid and Zita (2014). However, the insignificance may imply that WCM policies do not affect a company's profitability; this might be attributed to the fact that if manufacturing firms already have efficient WCM practices, variations in WCM policy might not significantly influence financial performance.

Besides, the control variables, such as sales growth, were positive and statistically significant at 1% significance level OPM, ROA, and ROCE. The significance of sales growth implies that increasing the firm's sales growth increases its profitability, but this is inconsistent with the findings of Aldubhani and Gong (2022). Regarding leverage, the result was positive and statistically significant in ROE, which implies that firms with a high leverage ratio offer more return on equity than firms with a low leverage ratio. However, leverage regression on OPM indicates that financial managers need less debt financing and non-bearing interest funds to increase their profit (Deari, Kukeli, Barbuta-Misu, and Virlanuta, 2022).

Finally, it is interesting to find that firm size coefficients are statistically insignificant, which implies that the firm size does not influence its financial performance. Perhaps this kind of result may be explained by factors such as technology, such as a small firm's adoption of advanced and efficient technology. Another key factor may be the level of efficiency of the management practice. The results contradict many studies, such as Kwatiah and Asiamah (2020), Ebenezer and Asiedu (2013), and Mohamed and Saad (2010); the contradiction might be attributed to the research methodologies used as well as the sectors considered in the study.

6. Conclusion

This paper provides relevant knowledge on the effectiveness of working capital management for increasing the profitability of listed manufacturing in Tanzania, using a wide range of working capital management indicators. Data was collected from the annual reports of all manufacturing companies listed on the DSE from 2003-2021. The generalized Model of Moments (GMM) studies the relationship between working capital management components and profitability. The empirical results of the research showed that: (1) AR was found to be negative and statistically significant on a firm's profitability, which indicates that a shorter period of collecting money from customers is a good indicator for increasing company profitability. (2) INV has a positive and significant effect on ROCE, which implies that higher the level of inventory increases firms' profitability; (3) AP has a positive and significant effect on ROA and ROE, which implies that the companies can attain more profits by taking a long time to pay creditors' bills. (4) CCC has a positive and significant effect on OPM, ROA, and ROE, which denotes the company can increase its profitability by reducing the cash conversion cycle. The study also shows that working capital management policies do not significantly affect the profitability of listed manufacturing firms on DSE in Tanzania.

The research findings contribute to the existing literature in the case of Tanzania as follows: (i) The study contributes to a substantial methodological improvement in the Tanzanian context by using advanced methodological approaches, namely, the dynamic generalized method of moments (i.e., system GMM) to overcome the econometric/ statistical issues including the endogeneity issue (Faroque et al., 2019);(ii) The study also contributes by consider all aspect of profitability as performance measures. (iii) This study also contributes by focusing on working capital management and considering working capital management policies that have not been investigated in the existing literature. The study examined the existing cash conversion cycle theory for working capital management and the performance of manufacturing firms. Practically, the study provides valuable inputs to manufacturing firms, policymakers, and other experts. It shows the importance of proper working capital management for increasing the profitability of manufacturing firms. For managers, the study will help the management of manufacturing firms know the ideal level of inventory and control receivables. Policymakers can recommend proper operating standards and expertise for the working capital management of manufacturing firms.

Even though the study has documented how working capital management significantly affects the performance of listed manufacturing firms in Tanzania, it has some limitations. This study is limited to the sample of listed manufacturing firms in Tanzania, and the data is unavailable. As a result, only 7 manufacturing firms were covered. However, the study's outcome has helpful information and is only generalized to firms like those in our sample. Thus, it is recommended that future researchers increase the number of companies and consider companies from the banking sector, insurance, and other service sectors. In addition, corporate governance plays a significant role when considering working capital management as performance of manufacturing firms. For that matter, future researchers could focus on exploring the relationship between working capital management and corporate governance and the profitability of manufacturing firms.

References

Afza, T. & Nazir, M., (2009). Impact of aggressive working capital management policy on firms' profitability. *The IUP Journal of Applied Finance*, 15(8), 20-30.

Akey, Abigail. (2019). The impact of working capital management on the profitability of manufacturing companies listed on the Ghana Stock Exchange. Doctoral dissertation, University of Ghana, Accra, Ghana.

Akinyomi, O. J., & Olagunju, A. (2013). Determinants of capital structure in Nigeria. International *Journal of Innovation and Applied Studies*, 3(4), 999-1005.

Akoto, R.K.I., Vitor, D.A., & Angmor, P.L. (2013). Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms. *Journal of Economics and International Finance*, 5(9), 373-379.DOI: 10.5897/JEIF2013.0539.

Al Farooque, O., Buachoom, W., & Sun, L. (2019). Board, audit committee, ownership and financial performance – emerging trends from Thailand. *Pacific Accounting Review*, 32(1), 54-8.DOI 10.1108/PAR-10-2018-0079.

Aldubhani, M., Wang, & Gong, T. (2022). Impact of working capital management on profitability: evidence from listed companies in Qatar. *Journal of Money and Business*, 2(1), 70-81.DOI:10.1108/JMB-08-2021-003.

Alvarez, T., Sensini, L., & Vazquez, M. (2021). Working capital management and profitability: Evidence from an emergent economy. International *Journal of Advances in Management and Economics*, 11(1), 32-39.

Amarasekara, A.G.D.T., Rathnayake, R.M.S.S., & Pathirawasam, C. (2021). The impact of working capital management on firm profitability and value. *Journal of Business and Technology*. 5(1), 34-47.

Amponsah-Kwatiah, K. & Asiamah, M. (2020). Working capital management and profitability of listed manufacturing firms in Ghana. *International Journal of Productivity Performance Management*, 21(4), 81-89.DOI: 10.1108/IJPPM-02-2020-0043.

Bagchi, B., & Khamrui, B. (2012). Relationship between working capital management and profitability: A study of selected FMCG companies in India. *Business and Economics Journal*.

Banerjee, P., & Deb, G. S. (2023). Working capital management efficiency, managerial ability, and firm performance: New insights. Applied Economics. https://doi.org/ 10.1080/00036846.2023.2208857

Bukwimba, M., & Ngata, C. (2022). The effect of working capital on firm financial performance management in the United Republic of Tanzania. *International Journal of Finance and Accounting*, 1(1), 29-38. https://doi.org/10.37284/ijfa.1.1.909.

Charitou, M.S., Elfani, M., & Lois, P., (2010). The effect of working capital management on firm's profitability: Empirical evidence from an emerging market. *Journal of Business & Economic Research*, 8(12), 1-8. DOI:10.19030/jber.v8i12.782.

Charitou, M., Lois, P., & Santoso, H. B. (2012). The relationship between working capital management and firm's profitability: An empirical investigation for an emerging Asian country. International Business & Economics Research Journal, 11(8), 839–849.

Chirume, T. (2013). An analysis of the impact working capital management on profitability: evidence from South Africa (Doctoral dissertation).

Deari, F., Kukeli, A., Barbuta-Misu, N., & Virlanuta, F. O. (2022). Does working capital management affect firm profitability? Evidence from European Union countries. *Journal of Economic and Administrative Sciences*.

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance Accounting*, 30 (3-4), 573-588.

Ebenezer,B.A., & Asiedu,K.M. (2013).The relationship between working capital management and profitability of listed manufacturing companies in Ghana. *International journal of business and social research*, 3 (2).

Eljelly, A. (2004). Liquidity- profitability trade off: An empirical investigation in an emerging market. *International Journal of Commerce and Management*, 14(2), 48-61.

Erasmus, P. D. (2010). Working capital management and profitability: the relationship between the net trade cycle and return on assets. management dynamics: *Journal of the Southern African Institute for Management Scientists*, 19(1), 2-10.

Fama, E. F., & French, K. R. (1988). Permanent and temporary components of stock prices. *Journal of political Economy*, 96(2), 246-273.

Farhan, N. H. S., Almaqtari, F. A., Al-Matari, E. M., Senan, N. A. M., Alahdal, W. M., & Hazaea, S. A. (2021). Working capital management policies in Indian listed firms: a state-wise analysis. *Sustainability*, 13(8), 1-25.https://doi.org/10.3390/su13084516

García-Sánchez, I. M., Hussain, N., Khan, S. A., & Martínez-Ferrero, J. (2021). Do markets punish or reward corporate social responsibility decoupling? *Business & Society*, 60(6), 1431-1467.https://doi.org/10.1177/0007650319898839.

Haresh, B. (2012). Working capital management and profitability: evidence from India–an empirical study. Ganpat University-Faculty of Management Studies. *Journal of Management and Research*, 5 (2), 1-16.

Harris, A. (2005). Working capital management: difficult but rewarding financial executive. *International Journal of Economics and Financial Issues*, 6(3), 1097-1105.

Horne, J. & Wachowitz, J.M. (2000). Fundamentals of Financial Management. New Jersey: Prentice-Hall International Inc.

Javid, S., & Zita, V. P. (2014). Impact of working capital policy on firm's profitability: A case of Pakistan cement industry. *Research journal of Finance and Accounting*, *5*(5), 182-191.

Jensen, M. C. (1994). The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Applied Corporate Finance*, 6(4), 4-23.

Jensen, M., & Meckling, W. (1976). Theory of the firm: managerial behaviour, agency costs, and capital structure. *Journal of Financial Economics*, 3, 305-360.

Kamlesh, K., Sivasankaran, N., Pransenjit, C., & Giridhar, R. (2023). Working capital management efficiency, cash holdings, and market value of Indian listed firms. International Journal of Business and Economics, 23, 53–83.

Khan, A., & Choudhary, A. (2020). Effect of working capital management on profitability of Bharti Airtel limited. *Asian Journal of Management*, 11(1), 92-96.

Kiymaz, H., Haque, S., & Choudhury, A. A. (2024). Working capital management and firm performance: A comparative analysis of developed and emerging economies. *Borsa Istanbul Review*, *24*(3), 634-642.

Kwenda, F., & Holden, M. (2013). Working capital structure and financing pattern of selected JSE-listed firms. *Mediterranean Journal of Social Sciences*, 4(13), 531.

Laghari, F., & Chengang, Y. (2019). Investment in working capital and financial constraints: Empirical evidence on corporate performance. *International Journal of Managerial Finance*, 15(2), 164-190.

Lai, L. (2012). The impact of working capital management on firm value: evidence from Airland industry (Doctoral dissertation, Thesis, Tilburg University).

Lamberson, M. (1995). Changes in working capital of small firms in relation to changes in economic activity. *Mid-American Journal of Business*, 10 (2), 45-50.

Lazaridis, I., & Tryfonidis, D. (2006). Relationship between working capital management and profitability of listed companies in the Athens stock exchange. *Journal of financial management and analysis*, 19(1).

Le Roux, M. T. S. (2008). Company value: working capital and the cash conversion cycle investigated (Doctoral dissertation, North-West University).

Mengesha, W. (2014). Impact of working capital management on firms' performance: The case of selected metal manufacturing companies in Addis Ababa,Ethiopia (Doctoral dissertation, Jimma University).

Mohamad, N. E. A. (2018). Does working capital relevant in enhancing the Malaysia's Government Linked Company (GLC) value? *Global Business and Management Research*, 10(3), 418.

Mohamad, N. E. A. B., & Saad, N. B. M. (2010). Working Capital Management: the effect of market valuation and profitability in Malaysia. *International Journal of Business and Management*, 5, 140-147. https://doi.org/10.5539/ijbm.v5n11p140.

Mourtzis, D. (2016). Challenges and future perspectives for the life cycle of manufacturing networks in the mass customisation era. *Logistics Research*, *9*, 1-20.

Myers S. C & Majluf N. (1984).Corporate financing and investment decisions when firms have information that investors do not have". *Journal of Financial Economics*, 13,187-221.

Myers, SC. (1984).The capital structure puzzle. *Journal of Finance*, 39, 572 592. http://dx.doi.org/10.1111/j.1540-6261.1984.tb03646.x.

Nazir, M. S., & Afza, T. (2009). Impact of aggressive working capital management policy on firms' profitability. *IUP Journal of Applied Finance*, 15(8).

Ongore, V. O. & Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237-252.

Oseifuah, E. K., & Gyekye, A. (2017). Working capital management and shareholders' wealth creation: Evidence from non-financial firms listed on the Johannesburg Stock Exchange. *Investment Management and Financial Innovations*, 14(1), 80-88.

Panda, A. K., & Nanda, S. (2018). Working capital financing and corporate profitability of Indian manufacturing firms. *Management Decision*, 56(2), 441-457.

Paramasivan & T. Subramanian (2009). Financial Management. New Delhi: New Age International Ltd,

Pestonji, C., & Wichitsathian, S. (2019). The impacts of working capital policy on firms' performances: An empirical study on Thai listed companies in production sector. In *Asia-Pacific contemporary finance and development* (Vol. 26, pp. 39-51). Emerald Publishing Limited.

Pouraghajan, A., & Emamgholipourarchi, M. (2012). Impact of working capital management on profitability and market evaluation: Evidence from Tehran Stock Exchange. *International Journal of Business and Social Science*, 3 (10), 311-318.

Prempeh K, Peprah-Amankona, E. (2020).Does working capital management affect Profitability of Ghanaian manufacturing firms?.*Zagreb International Review of Economics & Business*, 23 (1), 1-18. DOI: 10.2478/zireb-2020-0001.

Quayyum, S. T. (2011). Effects of working capital management and liquidity: Evidence from the cement industry of Bangladesh. *Journal of Business and Technology (Dhaka)*, 6 (1), 37-47.

Raheman, A. & Nasr, M, (2007).Working capital management and profitability –case of Pakistani firms. *International Review of Business Research Papers*, 3 (2), 275-296.

readings on the management of working capital, West Publishing Company, St. Paul, New York.

Rehman, M.U., & Anjum, N. (2013).Determination of the impact of working Capital management on profitability: an empirical study from the cement sector in Pakistan. *Asian Economic and Financial Review*, 3, 319-332.

Richards, V. D., & Laughhin, E. J. (1980). A cash conversion cycle approach to liquidity analysis. *Financial Management*, 9(1), 32–38. DOI: 10.2307/3665310.

Sarwat, S., Iqbal, D., Durrani, B. A., Shaikh, K. H., & Liaquat, F. (2017). Impact of working capital management on the profitability of firms: case of Pakistan's cement sector. *Journal of Advanced Management Science*, 5(3), 238-244.

Shan, L. H., Onn, Y. T., Yee, L. S., & Chuan, S. K. (2015). Working capital management effect on the performance of wholesale and property industry in Malaysia. *Journal of Economics and Behavioural Studies*, 7(5), 19-28.

Shin, H. H., & Soenen, L. (1998). Efficiency of working capital management and corporate profitability. *Financial practice and education*, 8(2), 37-45.

Smith, K. (1980).Profitability versus liquidity trade-offs in working capital management, in

Smith, M. B., & Fletcher, L. (2009). Factors influencing working capital management in South Africa. Management Dynamics: *Journal of the Southern African Institute for Management Scientists*, 18(3), 15-24.

Sudiyatno, B., Puspitasari, E., & Sudarsi, S. (2017). Working capital, firm performance, and firm value: An empirical study in manufacturing industry on Indonesia stock exchange. *Economics World*, 5(5), 444-450.

Tarurhor, E. M., & Osazevbaru, H. O. (2021). Inventory management and customer's satisfaction in the public health sector in Delta State, Nigeria: marketing analysis. *Innovative Marketing*, 17 (2), 69.

Vahid, T. K., Elham, G., Khosroshahi Mohsen, A., & Mohammadreza, E. (2012). Working capital management and corporate performance: evidence from Iranian companies. *Procedia-Social and Behavioural Sciences*, 62, 1313-1318.

Vishnani, S., & Shah, B. K. (2007). Impact of working capital management policies on corporate performance—an empirical study. *Global business review*, *8*(2), 267-281.

Wassie, F.A. (2021). Working capital management and its impact on firms' performance: an empirical analysis on Ethiopian Exporters. *Education Research International*, 2021(1). https://doi.org/10.1155/2021/6681572.

Weinraub H.J. & Visscher, S. (1998). Industry practice relating to aggressive conservative working capital policies. *Journal of Financial and Strategic Decision*, 11(2), 11-18.

Yahya (2016). Effects of working capital management on the financial performance of the pharmaceutical firms in Nigeria. *International Journal of Economics, Commerce and Management*, 4 (4), 349-367.