EFFECT OF WORKING CAPITAL MANAGEMENT PRACTICE ON THE FINANCIAL PERFORMANCE OF MANUFACTURING FIRMS IN NIGERIA

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Abstract
This research investigates the effect of working capital management (WCM) on the financial performance (FP) of manufacturing companies in Nigeria. Effective WCM promotes liquidity, solvency, profitability, and overall operational efficiency, making it a critical aspect of organisational financial strategy. It plays a key role in enhancing firm performance, supporting industrial expansion, and driving economic growth. The objective of this study is to explore the link between WCM practices and financial performance indicators. Manufacturing firms, as vital drivers of Nigeria's economic advancement, often face challenges in managing their working capital efficiently. The study focuses on Nigerian manufacturing companies listed on the Nigerian Exchange Group over ten years (2014-2023). Using panel data and panel multiple regression analysis, the study examines how key WCM components like accounts payable, accounts receivable, and cash conversion cycle relate to financial performance measure such as return on assets (ROA). Findings reveal that all components of working capital management significantly influence financial performance. This research contributes to the existing body of knowledge by offering sector-specific evidence on the role of WCM in enhancing financial performance in Nigeria's manufacturing sector. The study recommends that manufacturing companies strengthen liquidity management through effective coordination of receivables, payables, and cash conversion cycle. The findings have implications for financial managers, policymakers, and investors aiming to promote efficiency and sustainability in Nigeria's manufacturing industry.

Keywords: Financial performance, manufacturing firms, working capital management practice.

1.0 Introduction

Over recent decades, the efficient and effective management of working capital has become a central factor influencing corporate financial performance, especially in capital-intensive sectors such as manufacturing. Working capital management (WCM) is the strategic coordination of short-term assets and liabilities to ensure that firms maintain adequate liquidity to meet immediate obligations while maximizing profitability (Deloof, 2003; Afeef, 2020). Although long-term investment and profitability decisions are often emphasized in financial performance analysis, the ability to maintain optimal working capital levels is equally essential to daily operations and to reducing insolvency risks (Enqvist et al, 2021). This issue is particularly critical in developing economies like Nigeria, where limited access to credit, persistent inflation, and market volatility create additional financial pressures for firms.

Nigeria's manufacturing sector represents a cornerstone of industrialization and economic diversification but continues to face structural and financial constraints such as restricted financing opportunities, macroeconomic instability, rising production costs, and weak internal control systems (Akinlo & Asaolu, 2012). These challenges often result in inefficient working capital structures that diminish profitability and firm value (Olowookere & Balogun, 2020). Despite numerous policy interventions intended to stimulate the sector, many manufacturing companies still struggle to optimize their WCM practices, negatively affecting their financial outcomes. Therefore, effective working capital strategies are indispensable for sustaining liquidity and promoting long-term growth in the Nigerian manufacturing industry.

Previous empirical studies have reported inconsistent results regarding the link between WCM and firm performance. For example, Raheman and Nasr (2007) and Ogundipe et al, (2022)

observed a significant negative relationship between the cash conversion cycle and profitability, indicating that efficient WCM improves firm performance. In contrast, other researchers argue that overly aggressive working capital policies can heighten financial risk and hinder growth (Inegbedion et al, 2019). These conflicting results highlight the need for more context-specific analyses that reflect Nigeria's evolving business environment. Consequently, this study seeks to provide updated empirical evidence on how WCM influences the financial performance of listed manufacturing firms in Nigeria. It examines the relationship between WCM components inventory turnover, receivables collection period, payables deferral period, and cash conversion cycle and performance indicators such as ROA and ROE. The findings aim to guide financial managers, investors, and policymakers in enhancing the financial and operational sustainability of the country's manufacturing sector.

Nigeria's manufacturing sector operates in a challenging macroeconomic climate marked by persistent inflation, unstable exchange rates, high production expenses, and limited access to financing. These economic constraints pose serious challenges to the management of working capital, a vital aspect of financial administration that directly affects liquidity and profitability. Although efficient working capital management (WCM) is essential for maintaining operational continuity and financial stability, many manufacturing firms in Nigeria continue to face inefficiencies in managing their inventories, receivables, and payables. Such inefficiencies often result in declining profitability and, in extreme cases, business failure.

Empirical studies have shown that sound WCM practices can improve organizational performance (Enqvist et al., 2021; Ogundipe et al., 2022). However, a large number of Nigerian manufacturing firms still exhibit weak working capital structures due to inadequate financial management systems, inconsistent implementation of financial policies, and poor access to affordable credit facilities. These shortcomings frequently lead to liquidity shortages that restrict firms from meeting short-term obligations or seizing potential market opportunities.

While numerous international researchers have investigated the link between WCM and firm performance, there remains a shortage of recent, country-specific studies that focus exclusively on Nigeria's manufacturing sector. Most existing research either generalizes across industries or utilizes outdated data, which fails to reflect the present realities and unique structural difficulties confronting Nigerian manufacturers (Inegbedion et al., 2019). This gap in empirical evidence limits the ability of managers and policymakers to make contextually informed decisions.

Consequently, this study seeks to fill that gap by examining how key components of WCM affect the financial performance of listed manufacturing firms in Nigeria. The ultimate goal is to provide evidence-based insights that can guide strategic decision-making and enhance the sector's overall financial health and sustainability.

2.0 Literature Review and Hypotheses Development

Financial performance (FP) reflects a firm's ability to generate returns and maintain profitability within a given period. It is commonly assessed through indicators such as profitability ratios, liquidity levels, market share growth, return on equity (ROE), and return on assets (ROA). According to Yahaya (2020), financial performance captures the outcomes of a firm's financial activities as presented in its income statements, balance sheets, and cash flow reports. Ayon and Oyedokun (2022) describe FP as a key determinant of business success and a means to assess whether an organization's financial policies achieve their intended results. Similarly, Alas and Harisa (2023) define FP as an overall assessment of a firm's financial well-being over a specified timeframe. In essence, financial performance represents a company's capacity to utilize its assets and resources efficiently to generate income, usually measured through profitability and liquidity

indicators. In this study, financial performance is measured using return on assets and net profit margin.

$$ROA = \frac{\text{Net income}}{\text{Assets in total}} \times \frac{100}{1}$$

The higher the ROA, the more efficient the asset is.

Working Capital Management (WCM)

Working capital management (WCM) refers to the administration of short-term assets and liabilities required to sustain daily business operations (Olowe, 2014). It is widely recognized as a significant driver of profitability, particularly in industries such as manufacturing that require substantial investment in inventory and cash flow. Akinsulire (2015) describes working capital as the set of resources necessary for the daily production and sale of goods, while Loth (2016) defines it as the difference between current assets and current liabilities, representing the liquidity available for business expansion. Effective WCM entails managing key components inventory, accounts receivable, and accounts payable to ensure adequate liquidity while optimizing profitability (Enqvist et al., 2021).

WCM efficiency is typically measured using ratios such as inventory turnover, receivable collection period, payable deferral period, and the cash conversion cycle (CCC) as used in the work. A positive working capital indicates that a firm's current assets exceed its current liabilities, while a negative working capital position signals potential liquidity issues. The variables are further explained below:

The Cash Conversion Cycle (CCC)

The cash conversion cycle (CCC) is a widely used indicator that measures the time span between the purchase of inventory and the collection of cash from customers. A shorter CCC suggests efficient working capital management, which generally enhances profitability (Ogundipe et al., 2022). Enqvist et al. (2021) observed a negative correlation between CCC and firm profitability, indicating that companies with shorter cycles often achieve better performance outcomes. However, the strength and direction of this relationship may differ across sectors and depend on individual firm characteristics.

Accounts Receivable Period (ARP)

The accounts receivable period (ARP) reflects the average duration required for a company to collect payments from its customers. Longer collection periods can create liquidity challenges, while prompt receivables management tends to improve cash flow and profitability. Afeef (2020) found that firms with efficient collection systems often record stronger ROA and ROE performance. Conversely, manufacturing firms that take extended periods to recover receivables may experience operational disruptions due to cash shortages. Raheman and Nasr (2007) similarly noted that prolonged ARP negatively affects profitability, emphasizing the importance of maintaining optimal credit and collection policies.

Accounts Payable Period (APP)

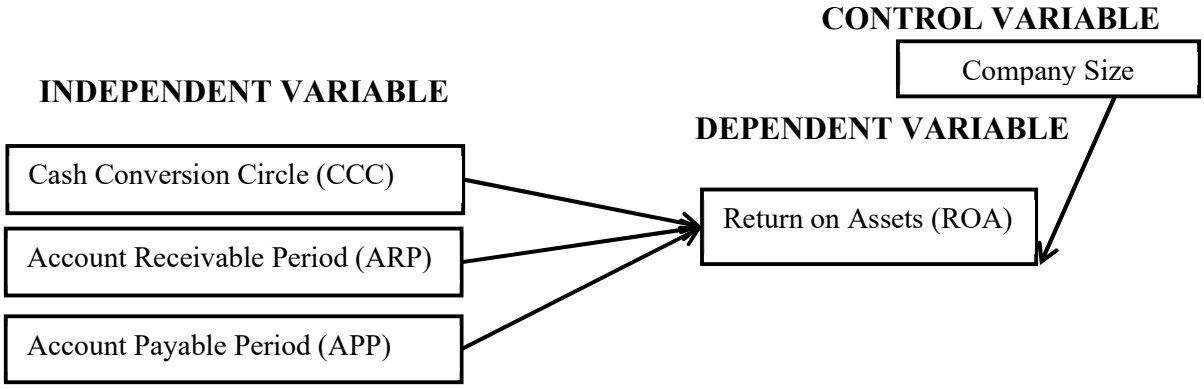
The accounts payable period (APP) measures how long it takes a company to pay its suppliers. Extending payment time can help conserve cash and strengthen liquidity, though excessive delays may harm supplier trust or credit ratings (Ilyas et al., 2022). Efficient management of payables therefore requires maintaining a balance between holding cash for operations and sustaining good supplier relationships. Anader (2022) examined the link between APP and profitability, finding that prolonged settlement periods can have both positive and negative consequences—short-term liquidity improvement but potential long-term damage to profitability. Likewise, Ganesan (2007)

reported that while delaying payments may temporarily improve liquidity, it can strain supplier relations and reduce operational efficiency. Hence, firms must pursue a balanced payables policy that supports both liquidity and business continuity.

In Nigeria, high interest rates, limited access to external credit, and irregular supply chains make efficient WCM even more essential. Although numerous international studies confirm the association between WCM and performance, there remains a shortage of research centered specifically on the Nigerian manufacturing context. This study addresses that deficiency by empirically analysing how WCM components influence the financial performance of publicly listed manufacturing firms in the country. Based on the preceding literature, the conceptual framework below illustrates the relationship between the independent and dependent variables investigated in this study.

Fig 1: Conceptual framework

The model demonstrates: Independent Variables (IVs) → Dependent Variable (DV).



The conceptual framework in Figure 1 serves as a guide for the study's analysis, highlighting how working capital management directly and indirectly influence the financial outcomes of manufacturing companies, with firm size playing a pivotal controlling role.

Empirical Review

Cash Conversion Circle and Financial Performance

Deari and Palomba (2024) worked on 'Does the cash conversion cycle affects firms' profitability? Evidence from listed firms in North Macedonia. The population was 120 listed firm in North Macedonia. The researchers use panel regression (fixed effects) with the findings that CCC has a negative and significant effect on profitability. This makes the relationship non-linear. Again, Tobazaa and Gatsi (2025) looked at cash conversion cycle and profitability: empirical evidence from the energy sector in Ghana. The researchers used ROA and ROE as there depended variables with 10 energy firms as population and sampled size. Panel least square was used as method for analyses that result to CCC having a negative and significant effect on both ROA and ROE. Putri and Zulvia (2023) studied effect of cash conversion cycle, leverage, sales growth, and firm size on profitability of Customer Goods Firms using ROA as DV. Panel regression was used with the findings that CCC has a negative but insignificant effect on profitability. From the literatures reviewed, most studies support that shorter CCC improves financial performance, but the strength varies by sectors and firm size.

Account Receivable Period and Financial Performance

Yahaya (2018) worked on working capital management practice and firm performance in Nigerian FMCG firms. The researcher used account payable and ROA as IDV and DV. The result shows a

strong negative effect on profitability. Also, Sugathadasa (2023) who worked on the impact of working capital management and profitability in Sri Lankan manufacturing firms. The researcher use account receivable period and ROE, ROE as his IDV and DV. The population of the study is 20 listed manufacturing firms in Sri Lanka to generate data. Correlation and panel regression was used that the result turned to be significant but negatively affect profitability. Tobazaa and Gatsi (2025) also looked at cash conversion cycle and profitability in Ghana energy sector. The researchers used ROA as there depended variables with 10 energy firms as population and sampled size. Panel least square was used as method for analyses that result to CCC having a negative and significant effect on ROA.

Account Payable Period and Financial Performance

Ghofir (2024) looked at the role of CCC component in determining profitability using ROA as DV. 14 firms were analyse using regression. The study finds that APP has a positive effect on profitability. Also, Sugathadasa (2023) who worked on working capital management and profitability in Sri Lankan manufacturing firms. The researcher use account payable period and ROE as his IDV and DV. The result shows a negative but insignificant effect on profitability that mean, it shows the inability of the firms to negotiate trade credit. Again, yahaya (2018) worked on working capital management practice and firm performance in Nigerian FMCG firms. The researcher used account payable and ROA as IDV and DV. The result shows a positive but insignificant effect that means average credit terms do not affect returns significantly. Tobazaa and Gatsi (2025) also looked at cash conversion cycle and profitability in Ghana energy sector. The researchers used ROA and ROE as there depended variables with 10 energy firms as population and sampled size. Panel least square was used as method for analyses that result to CCC having a negative and significant effect on both ROA and ROE. From the literatures reviewed, APP results are mixed. Some have positive effect when delaying payments to improve liquidity, others has negative effects when supply continuity are sensitive while in most cases, results are statistically insignificant.

Theoretical Framework and Hypotheses Development

This study anchored on the trade-off theory, which explains how organisations make financing and liquidity decision simpler balancing the cost associated with different levels of working capital. Originally applied to capital structure, the theory has been extended to working capital management, recognising that short term financing and liquidity decisions also require organisation to Trade-off between risk and profitability. Trade-off Theory aim to maintain an optimal level of working capital that minimise financial distress costs while maximising return. Deviation from this optimal point either excessive liquidity or insufficient liquidity can weaken the organisations' financial performance.

Within the context of working capital management, the theory suggests that firms must carefully manage the cash conversion cycle, account receivable period and account payable period to achieve this optimal balance. A longer cash conversion cycle may support smooth operations and prevent stock out, but it also increases the cost of holding inventory and delays cash inflows. Conversely, a shorter cycle improves liquidity and reduce financing cost but may constrain operational flexibility. Therefore, the trade-off theory predicts that organisation that maintain an efficient or optimal cash conversion cycle will experience superior financial performance.

Similarly, the management of the accounts receivable period involves a Trade-off between stimulating sales and maintaining liquidity. Extending credit to customers can increase revenue and market share; however, longer receivable periods tie up cash in credit sales, increase the risk of bad debts, and potentially reduce profitability by contrast, overly restrictive credit terms may safeguard liquidity but at the cost of losing customers. Thurs, based on the Trade-off Theory,

organisations must identify a credit policy that balances these opposing forces, implying that the accounts receivable period will significantly influence performance.

The account payable period also reflects a critical trade off in working capital management. Delaying payment to suppliers provide a source of short term financing that enhances liquidity and can improve performance. However, delaying payment excessively may damage supplier relationship, lead to lost discounts, or result in supply chain disruptions. Paying too quickly, on the other hand, may protect suppliers' goodwill but strain internal cash flow. Therefore, the trade-off theory suggests that organisations benefit from maintaining an optimal account payable period that supports liquidity without incurring relational or financial penalties, ultimately affecting financial performance.
Drawing on insights from the reviewed literatures and theory, the study proposes the following null hypotheses:

i. **H_1:** There is no significant relationship between the cash conversion cycle and the financial performance of manufacturing firms in Nigeria.
ii. **H_2:** The accounts receivable period has no significant effect on the financial performance of manufacturing firms in Nigeria.
iii. **H_3:** The accounts payable period has no significant effect on the financial performance of manufacturing firms in Nigeria.

3.0 Research Methodology.
To assess how working capital management affects the financial performance of manufacturing companies, the study adopted a survey research design, which allows for determining relationships between independent and dependent variables (Trimman, 2023). The study population comprised all manufacturing firms listed on the Nigerian Exchange Group (NGX) as of December 31, 2023. Using a purposive sampling approach, 65 manufacturing firms were selected for analysis. Secondary data were sourced from audited annual financial statements of the selected firms covering a ten-year period (2014-2023), ensuring coverage across various economic cycles and policy regimes.

The independent variables (IVs) include the Cash Conversion Cycle, Accounts Receivable Period, and Accounts Payable Period. The dependent variable (DV) is Return on Assets (ROA), while firm size—measured as the logarithm of total assets—serves as a control variable. Data were analyzed using descriptive statistics, correlation analysis, and fixed panel regression models with the aid of STATA 15. Descriptive statistics were used to summarize the data, while regression analysis tested the hypotheses to determine the direction and strength of the relationships among variables.

$$ROA_{it} = \beta_o + \beta_i CCC_{it} + \beta_2 ARP_{it} + \beta_3 APP_{it} + \beta_4 X_{it} + \alpha_i + e_{it}$$

Where:

β_i, β_2, and β_3 = coefficients measuring the effect of CCC, ARP and APP on ROA.
X_{it} = Vector of control variable (firm size)
α_i = removes bias from unobserved time invariant organisation character
E_{it} = Random error term
CCC_{it} = Cash Conversion Cycle
ARP_{it} = Account Receivable Period
APP_{it} = Account Payable Period

4.0Results and Discussion

In this study, the standard deviation was used to summarise, simplify and prepared data for another arithmetical connection. The higher the variance, the worse the normality would be, while the smaller the variance the better the data, and the closer to average the result would be, and hence the data were normally distributed.

Table 1
Descriptive Statistics Result

	N	Minimum	Maximum	Mean	Std. Deviation
Cash Conversion Cycle	65	10.00	95.60	42.19	19.74
Account Receivable Period	65	15.02	145.30	73.42	28.60
Account Payable Period	65	5.00	90.20	33.51	18.02
Return on Assets	65	-2.10	18.45	6.82	4.51
Firm Size	65	13.10	19.20	15.82	1.30
Valid N (listwise)	65				

Source: STATA 23, 2025.

The average CCC is 42.19 indicates companies takes roughly 42 days to covert working capital to cash from customers. The wide range of (10-95.60) shows notable differences in credit policy and collection effectiveness across the sample. For Account receivable period, the mean value is 73.42 days indicating companies takes 73days to collect payment from customers. The minimum value is 15.02 and maximum value is 145.03 implying significant variation in operation efficiency between companies. So also APP has a mean value of 33.51 showing approximately 34 days to pay suppliers with a wide range (5 to 90.20) suggesting large difference in credit terms of suppliers. The mean value for ROA 6.82 with standard deviation of 4.51, the range value of -2.1- to 18.45 indicating that while some companies experience losses, others achieved strong profitability. The dispersion shows moderate variability in profitability across companies. As for the control variable, the mean value is 15.82, standard deviation is 1.30, minimum is 13.10 and the maximum is 19.20 showing that the sample include both medium sized and large companies.

Table 2
Hausman Specification Test

Variable	Coefficient	Coefficient	Var (Diff.)	SE
CCC	-0.031	-0.020	-0.011	0.000020
ARP	-0.018	-0.011	-0.007	0.000012
APP	0.024	0.017	0.007	0.000010
FIRM SIZE	0.842	0.615	00.227	0.091200
Hausman Statistic – Chi-square = 11.84				
Prob>Chi-square = 0.018				

Source: STATA 23, 2025.
ROA = Return on Assets; CCC=Cash conversion circle, ARO= account receivable period, APP= account payable period, Firmsize= firm size.
Test statistic = x2(4) =11.84
p-value =0.018

because p- value = 0.018,0.05, we reject the null hypotheses. That means there is a significant evidence that the companies' specific effect is correlated with both CCC, ARP, APP and Firm size. Therefore, using a random effect model would produce biased estimates. The result confirms that fixed effect panel regression is preferable.

Effect of Working Capital Management on Financial Performance

$ROA_{it} = \beta_o + \beta_i CCC_{it} + \beta_2 ARP_{it} + \beta_3 APP_{it} + \beta_4 X_{it} + \alpha_i + e_{it}$

Table 2

Effect of working capital management on financial performance Result

Independent Variable	Coefficient B	Robust Standard Error	T-value	Probability Value
Cash conversion cycle	-0.031	0.013	-2.57	0.011
Account receivable period	-0.018	0.007	-2.44	0.015
Account payable period	0.024	0.010	2.44	0.016
Firm Size	0.834	0.291	2.87	0.004
Constant	-7.561	2.221	-3.41	0.001
R-square (within)	0.412			
F-statistic	9.87(p<0.001)			
Observation	650(10*65)			

Source: Source: STATA 23, 2025.

The CCC coefficient (-0.031) is negative and significant meaning that any delay in receivable collections reduce profitability. ARP coefficient is -0.018 indicating that a day increase in ARP reduce ROA by 0.018. Also, APP has a coefficient of 0.024 which is positive and significant implying that longer payment period to suppliers' increase ROA. Furthermore, large companies tend to be more profitable due to economic of scale and superior financial strnght since the result shows a positive effect.

Discussion of Findings

The study examined the effect of working capital management using the following measuring tools: CCC, ARP, APP, ROA and firm size as control variable on the financial performance of manufacturing companies for the period of ten years. Fixed effect panel regression was used based on Hausman test which provided consistent and unbiased estimation.

Cash conversion cycle

The findings revealed a negative and significant relationship between CCC and ROA. This indicates that as the CCC lengthens, performance declines. Companies that takes longer time to convert inventory and receivables into cash tend to experience reduction in liquidity and higher financial cost, which negatively impact profit margins. This is in line with the work of Deari and Palomba (2024) and Oseifuh (2016) who reported a negative and significant relationship between the cash conversion cycle and firm performance. However, it is different with the work of Karim, Mamu, and Kamruzzaman (2024), whose study on Bangladeshi manufacturing firms also revealed a positive relationship between CCC and financial performance. This implies that the effect of cash conversion management on profitability extends beyond the Nigerian context and is observable in other economies. Also Kalantonis, Goumas, and Rodosthenous (2019) and Ceylan (2021) identified a positive connection between the cash conversion cycle and profitability within service industries and SMEs. This means that companies must find an optimal level of cash tied up in operation (CCC) in order to avoid trade-off.

Accounts Receivable Period and Financial Performance

The second hypothesis confirmed a negative and statistical significant relationship between the accounts receivable period (ARP) and financial performance. This suggests that firms with longer receivable periods delays customers' payment leading to less performance. It increased risk of bad debt and restrict cash flow. This finding is consistent with Raheman and Nasr (2007), who argued that lengthy receivable periods can weaken operational efficiency by limiting available working capital. Consequently, firms must adopt tighter credit policies and efficient collection procedures to maintain liquidity and improve profitability. It must have a credit granted to customers. Too much or too little of cash collected creates trade-off between liquidity, risk and profitability.

The positive relationship observed between the accounts payable period (APP) and financial performance implies that firms can use trade credit as an effective short-term financing tool. By delaying payments within reasonable limits, companies can retain cash for operations and investments, thereby improving profitability. This finding supports Ganesan (2007), who emphasized that efficient payables management strengthens liquidity and enhances firm performance. Nonetheless, companies must maintain a balance between liquidity preservation and sustaining supplier trust; excessive payment delays can damage supplier relationships and disrupt production.

Firm size was positively and significantly associated with ROA. Large firms tent to be more profitable which may be attributed to economic of scale, improved bargaining power and better management practices. Larger firms may also lower operational risk and also lower operational risk and more diversified revenue stream.

5.0 Conclusion and Recommendation

This study concludes that efficient working capital management (WCM) significantly improves the financial performance of manufacturing firms in Nigeria. The results demonstrate that effective management of the cash conversion cycle, receivables, and payables enhances profitability and operational stability. Managers and policymakers should therefore adopt strategic WCM practices that ensure business liquidity, enhance credit control, optimize payment management, sustainability, and competitiveness in the manufacturing sector. By doing so, firms can increase returns on assets and strengthen their market position. Since working capital serves as the financial backbone of manufacturing operations, well-structured management frameworks are indispensable for long-term performance improvement.

Recommendation

i. The management of manufacturing companies in Nigeria should ensure availability of cash to enhance performance in order to aid efficient operations.
ii. Furthermore, manufacturing companies in Nigeria should prioritise reducing their average collection through strict credit policy and improve collection efficient to boast performance.
iii. Manufacturing companies in Nigeria should strive to maintain a balance between liquidity preservation and sustainability supplier's trust, excessive payment delay which can damage suppliers' relationship and disrupt production, leading to low performance.

Future Direction

Future research could extend this study by examining other dimensions of working capital management such as inventory management efficiency, operating cycle, or liquidity ratios across different sectors, including banking, agriculture, and services. Comparative cross-country analyses could also provide broader insights into how economic environments and institutional structures influence the relationship between WCM and financial performance.

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