

Impact of Cash Conversion Cycle and Financial Stability on Firm Value

Akpadaka, Ovbe Simon

Anan University Kwall, Plateau State
Simon.akpadaka@gmail.com

Edeh, Onyinyechi Precious

Anan University Kwall, Plateau
onyi4christ.oi@gmail.com

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Abstract

This study examines the relationship between working capital management, financial stability, and firm value in the Consumer and Industrial Goods sectors of the Nigerian Exchange Group (NGX) from 2013 to 2023. Utilizing robust Ordinary Least Squares (OLS) regression, the study evaluates the impact of key components of the Cash Conversion Cycle (CCC)—Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payables Outstanding (DPO)—on firm value, measured by Tobin's Q. Additionally, the study investigates the influence of overall financial stability, represented by the Altman Z-score, on firm value. The results reveal that while DPO positively influences firm value, DSO exhibits a negative but statistically insignificant relationship. CCC negatively impacts firm value, indicating that prolonged cash conversion cycles are detrimental to firm value. Financial stability shows a strong positive relationship with firm value, emphasizing the importance of maintaining financial health. The findings suggest that firms should optimize their working capital components and focus on enhancing financial stability to maximize firm value. The study offers valuable insights for financial managers and policymakers in developing strategies that balance operational efficiency with financial robustness.

Keywords: Working Capital Management, Cash Conversion Cycle (CCC), Financial Stability, Firm Value, Altman Z-score

1. Introduction:

In today's highly competitive business environment, where firms need to continuously upskill in their financial management strategies to stay ahead of the competition, understanding the impact of working capital management on firm value and profitability is decisive. By analyzing the impact of Cash Conversion Cycle components like Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payables Outstanding (DPO) on firm value and profitability, organizations can gain insights into how efficiently their working capital is being utilized. This analysis can help companies make informed decisions regarding their inventory levels, accounts receivable collections, and accounts payable management. Ultimately, optimizing working capital management can help businesses improve their cash flow, financial performance, and overall

competitiveness in the market. By taking a proactive approach to managing working capital, firms can enhance their ability to generate sustainable, long-term value for their shareholders.

The Cash Conversion Cycle (CCC) is one of the working capital management metrics that measures the efficiency with which a firm manages its inventory, collects receivables, and pays its suppliers. Effective management of the CCC can significantly influence a firm's liquidity, operational efficiency, and overall financial health. By analyzing the CCC, managers can better understand how their company's working capital practices impact its ability to generate cash flow and sustain operations. Investors can use this information to assess the financial health and potential risks of investing in a particular company (Adegbite, 2024; Chancharat & Kumpamool, 2022; Fejzullahu & Govori, 2021; Harris, 2023; Tjandra, 2021).

The theoretical underpinnings of this study are primarily rooted in the Resource-Based View (RBV) and Agency Theory. The RBV suggests that firms can achieve a competitive advantage by effectively managing their resources, including working capital, to optimize financial performance. In contrast, Agency Theory highlights potential conflicts between managers and shareholders regarding the management of working capital, where managers may prioritize liquidity over profitability, potentially harming firm value. This study also draws on the Trade-Off Theory, which posits that firms balance the costs and benefits of holding inventory and receivables to maximize firm value. While the RBV emphasizes the importance of resource management for competitive advantage, Agency Theory acknowledges the potential conflicts that can arise between managers and shareholders, potentially undermining the effectiveness of resource optimization strategies. Additionally, the Trade-Off Theory suggests that firms must carefully consider the costs and benefits of managing working capital to achieve optimal financial performance, which may not always align with maximizing firm value. This theory recognizes that there may be a trade-off between liquidity and profitability (Barney, 1991; Fama & Jensen, 1983; Gibson Et Al., 2021; Jensen, 1998; Kraus & Litzenberger, 1973; Myers, 1984; Nguyen & Tran Thi Phuong, 2019; Wernerfelt, 1984).

Empirical research has shown that effectively managing the cash conversion cycle (CCC) has a positive impact on a company's value. This is achieved by improving liquidity, reducing financing costs, and enhancing profitability. Various studies conducted in different global markets have demonstrated that reducing the CCC can lead to higher firm valuations. This is primarily due to better management of cash flow and operational efficiency. However, the impact of individual components of the CCC, such as days inventory outstanding (DIO), days sales outstanding (DSO), and days payable outstanding (DPO), on firm value is not consistent across studies. Some research suggests that longer payment terms can either positively or negatively influence firm value, depending on the specific industry and market conditions. (Aktas et al., 2015; Baños-Caballero et al., 2014; García-Teruel & Martínez-Solano, 2007; Lyngstadaas & Berg, 2016; Shin & Soenen, 1998).

Furthermore, financial stability, proxied by the Altman Z-Score in this study, is a critical factor influencing firm value. The Altman Z-Score, a widely recognized measure of a company's likelihood of bankruptcy, reflects the overall financial health and resilience of a firm. In the context of working capital management, financial stability is key in determining how effectively a firm can manage its short-term obligations and sustain operations during periods of economic

uncertainty. A higher Z-Score indicates stronger financial stability, which can enhance investor confidence and contribute to higher firm valuations.

The Nigerian Exchange Group's (NGX) Industrial and Consumer Goods sectors are critical to Nigeria's economy, contributing significantly to GDP and employment. These sectors are characterized by high inventory levels and extended payment cycles, making CCC management a crucial aspect of financial performance. Given the volatile economic environment in Nigeria, with fluctuating exchange rates and inflation, managing the CCC effectively becomes even more critical for firms to maintain liquidity and enhance value. This study is justified by the need to understand how CCC components influence firm value within these sectors and how financial stability impact value.

While the effect of working capital on firm value has been extensively studied in the NGX Industrial and Consumer Goods sectors, there is limited research focusing on the specific impact of the individual components of the cash conversion cycle (CCC), such as days inventory outstanding (DIO), days sales outstanding (DSO), and days payable outstanding (DPO), (Bakare et al., 2023; Ijuwo, 2024; Mache & Omodero, 2021; Olabisi et al., 2021). Furthermore, little is also known about the financial stability of the firms in these sectors. These gaps in the literature highlights the need for a further examination of how each component of the CCC and financial stability proxied by Altman z-score influence firm value within the context of Nigeria's volatile economic environment.

This study aims to fill a gap in research on working capital management and financial stability, and their impact on firm value in emerging markets. The research focuses on the industrial and consumer goods sectors of the Nigerian Exchange Group (NGX), providing insights more applicable to these markets.

The main goals of this study are to examine the effects of Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payables Outstanding (DPO) on Tobin's Q-measured firm value. Additionally, the study aims to examine the effect cash conversion cycle in aggregate and the impact of financial stability on value using the Altman z-score.

This study provides valuable insights into working capital management and financial stability in emerging markets, particularly Nigeria. It fills a gap in the academic literature by providing empirical evidence from an emerging market perspective, focusing on the industrial and consumer goods sectors of the Nigerian Exchange Group (NGX). For corporate managers, the study provides actionable insights into optimizing working capital management to enhance firm value. By understanding the specific impact of each CCC component and financial stability on firm value, managers can tailor their financial strategies more effectively.

2. Literature Review

The literature review examines existing research on the Cash Conversion Cycle (CCC) and its components and financial stability emphasizing their impact on firm value. The theoretical framework for this study is grounded in Resource Base Theory, Agency Theory, and Trade-off Theory. Additionally, the review includes empirical studies on the relationship between CCC

components, financial stability, and firm value, with a particular focus on evidence from emerging markets.

2.1 Empirical Review

2.1.1 Days Inventory Outstanding (DIO) and Firm Value

DIO is a significant component of the Cash Conversion Cycle (CCC) that measures the average number of days a company takes to sell its inventory. Researchers have researched how inventory management efficiency affects business value and DIO. This empirical review synthesises various studies to understand how DIO affects business value across industries and economies.

Stanić (2023) examined how working capital management affects business value in Croatian manufacturing, focusing on DIO. DIO negatively correlated with company value, indicating that longer inventory holding periods lower firm valuations. The findings imply that manufacturing enterprises that optimise their DIO can increase market valuation by reducing costs and enhancing profitability. Inventory management is critical for operational efficiency.

Puwanenthiren (2021) examined DIO and business value in 100 Sri Lankan firms over five years. Tobin's Q showed a negative correlation between DIO and company value. Firms with shorter inventory durations have higher market valuations, maybe because investors favour effective inventory management because it decreases obsolescence and increases liquidity.

Moore et al. (2023) examined how U.S. manufacturing businesses strategically handled working capital, including DIO, in response to external shocks like the NOx Budget Trading Program. The study indicated that enterprises who reduced their DIO in response to higher regulatory expenses were able to limit Tobin's Q value losses. This shows that efficient inventory management is even more important for corporate value during financial or regulatory crisis.

Yusan (2023) examined Indonesian food and beverage firms' profitability and CCC components, including DIO. DIO somewhat reduced gross profitability and Tobin's Q business value, according to the study. This implies that even in consumer-driven businesses where inventory levels are critical for meeting demand, long inventory holding times can reduce firm value by increasing inventory management and storage expenses.

Groening et al. (2022) examined how CSR affects DIO and business value. The study indicated that enterprises engaging in CSR activities for non-supplier stakeholders reduced inventory days and boosted company value. The study reveals that CSR efforts may increase supplier confidence and goodwill, improving inventory management and firm valuations.

Yiu & Wu (2021) explored how buffer inventory (DIO) and absorptive ability affect company value, particularly in low-toxic emission enterprises. Buffer inventory alone did not enhance company value, but when combined with high absorptive capacity and minimal hazardous emissions, it increased Tobin's Q. This suggests that enterprises that manage inventory well and have great absorptive capacity can increase their market worth in environmentally concerned marketplaces.

DIO and business value in Algerian firms were examined by Azzeddine & Ibrahim (2021). Shorter DIO was found to be positively correlated with higher company value, showing that organisations that efficiently manage their inventory are better at sustaining liquidity and operating efficiency, which boost firm worth.

The empirical evidence shows that Days Inventory Outstanding (DIO) decreases business value across industries and locations. Shorter DIO indicates efficient inventory management, lower holding costs, and decreased obsolescence risks, which increases business value. Efficient DIO management improves operational efficiency and liquidity, which investors appreciate and reflect in market-based business value measurements like Tobin's Q. DIO may affect corporate value based on industry, economic conditions, and strategic goals.

H₀₁: There is a no significant relationship between Days Inventory Outstanding (DIO) and firm value in the Consumer and Industrial Goods Sectors of the NGX

2.1.2 Days Sales Outstanding (DSO) and Firm Value

In the cash conversion cycle (CCC), Days Sales Outstanding (DSO) measures the average number of days a company takes to receive payment after a sale. DSO management affects a firm's liquidity, operational efficiency, and value. Numerous studies have examined DSO and business value in various industries and economies.

Mandalaputri et al. (2021) found that longer DSO lowers profitability and firm value in Indonesia Stock Exchange-listed retail trading enterprises. Retail firms need efficient receivables management to preserve or increase value. Yousaf et al. (2021) observed that Czech enterprises certified under the EFQM excellence model have shorter DSOs and higher profitability, highlighting the importance of efficient receivables management in improving firm value, especially for operational excellence organisations.

Högerle et al. (2020) found that speedier receivables collection improves cash flow and reduces bad debt risks, increasing shareholder value in Germany. To boost business value in developed nations, DSO optimisation is crucial. Asman et al. (2022) found that efficient DSO management improves business performance because investors view reduced DSO as an indication of financial health and operational efficiency, increasing firm value.

Further research by Mitaliani (2023) in Indonesian industrial enterprises showed that reduced DSO increases profitability and firm value. This means that enterprises seeking market valuation must minimise DSO. In contrast, Gołaś (2020) discovered that prolonging DSO impacts ROA in the Polish dairy business by improving customer relationships and sales, potentially increasing firm value in some situations.

Hong and Najmi (2020) found that shorter DSO correlates with higher ROA and shareholder value across industries, emphasizing the strategic importance of DSO in supply chain management. This supports the premise that efficient receivables management maximises corporate value. Sakti et al. (2020) cautioned that a considerable increase in DSO could imply financial fraud, which would lower firm value, emphasizing the necessity to monitor DSO for operational and financial integrity.

Capital structure and profitability mediate the relationship between sales growth and firm value, and Natalia et al. (2021) found that DSO negatively impacts profitability and firm value. This shows that DSO management is essential for organisations wanting to increase profitability and market valuation. In Nigeria, Lawrence (2023) discovered that prolonged DSO increased economic value added (EVA), suggesting that extended credit durations may boost customer connections and sales, increasing company value in specific industries.

This empirical evidence shows that DSO affects corporate value, but the impact varies by industry, market, and strategy. Superior receivables management, cash flow, and lower bad debt risk result in a shorter DSO and higher company value. In certain industries or economic circumstances, longer credit periods may improve customer connections and sales, enhancing business value.

H₀₂: There is no significant relationship between Days Sales Outstanding (DSO) and firm value in the Consumer and Industrial Goods Sectors of the NGX

2.1.3 Days Payables Outstanding (DPO) and Firm Value

Days Payable Outstanding (DPO) is an essential aspect of working capital management, reflecting the average time a company takes to settle its debts with suppliers. This metric is a crucial component of the cash conversion cycle (CCC), influencing a firm's liquidity, profitability, and overall value. Various studies have investigated the relationship between DPO and firm value across different industries and contexts, providing a comprehensive understanding of its impact.

Asman et al. (2022) explored the effect of the CCC, including DPO, on firm performance and found that longer DPO was linked to reduced profitability. This suggests that while delaying payments to suppliers may enhance short-term liquidity, it could also indicate financial strain or deteriorating supplier relationships, ultimately harming firm value. Harris and Hampton (2022) examined the role of board co-option in working capital management and found that firms with shorter DPOs, facilitated by effective governance, experienced improved cash flow management and higher firm value.

Yousaf et al. (2021) studied Czech firms and concluded that longer DPO negatively affected profitability, highlighting a trade-off between liquidity and profitability that can impact firm value. Similarly, research by You (2021) on Malaysian construction firms revealed that shorter DPO was associated with higher profitability, suggesting that prompt payments to suppliers could enhance firm value by boosting profitability.

In another study, Konieva (2020) examined the costs associated with trade credit and found that firms with extended DPO faced higher trade credit costs, which negatively impacted their overall value. Kovach et al. (2022) also addressed the consequences of delaying supplier payments, noting that while it might temporarily boost liquidity and profits, it could lead to supplier backlash and operational disruptions, ultimately reducing long-term firm value.

Yusan (2023) investigated the food and beverage industry in Indonesia and found that DPO had no significant impact on profitability, indicating that its effect on firm value may vary depending

on industry-specific factors. Conversely, Fejzullahu and Govori (2021) found that in Kosovo's manufacturing sector, extended DPO negatively affected operating profit and return on assets (ROA), suggesting that longer payment periods could diminish profitability and firm value.

Gün (2021) explored supply chain finance in Turkey and discovered that while extending DPO could lead to sales growth, it did not result in increased market value, implying that the short-term benefits of extending DPO might not translate into long-term firm value. Harris (2023) studied the impact of DPO in the context of cyberattacks and found that firms with shorter DPOs were better equipped to mitigate the adverse effects of such events, resulting in better stock performance and higher firm value.

The empirical evidence indicates that DPO has a multifaceted relationship with firm value. While extending DPO can provide short-term liquidity advantages, it often comes with potential downsides, such as reduced profitability, strained supplier relationships, and lower long-term firm value. Effective DPO management, aligned with industry norms and tailored to firm-specific strategies, is critical for maintaining and enhancing firm value.

H₀₃: There is no significant relationship between Days Payables Outstanding (DPO) and firm value in the Consumer and Industrial Goods Sectors of the NGX

2.1.4 Cash Conversion Cycle (CCC) and Firm Value

The Cash Conversion Cycle (CCC) is indeed a measure of working capital management that reflects the time taken to convert investments in inventory, trade receivables, and other resources into cash. It also accounts for the days it takes to settle accounts payable. Its impact on firm value is significant, as it directly influences liquidity and profitability. Recent studies present a mixed but insightful understanding of this relationship. For instance, research by Deari (2024) and Ghabban (2024) highlighted that while a shorter CCC generally correlates with higher profitability and improved Earnings Per Share (EPS), the exact impact can vary by industry and firm characteristics. These findings suggest that the strategic management of CCC is essential for enhancing firm value, particularly through its influence on shareholder returns and market valuation.

Further studies, such as those by Ijuwo (2024b) and Panigrahi (2023), underscore the importance of sector-specific approaches to CCC management. Ijuwo's research on Nigerian consumer goods companies found that a longer CCC could be associated with higher profitability, emphasizing the need for industry-tailored strategies. In contrast, Panigrahi's study on the Indian cement industry revealed a negative impact of a longer CCC on both Return on Assets (ROA) and Return on Equity (ROE). Similarly, Purnamasari (2023) analysis in the Indonesian food and beverage sector found a negative relationship between CCC and profitability, reinforcing the broader view that reducing CCC enhances financial performance and market value. These studies collectively indicate that while the CCC's influence on firm value is evident, the relationship is complex and demands careful, context-specific management.

H₀₄: There is no significant relationship between CCC and firm value in the Consumer and Industrial Goods Sectors of the NGX

2.1.5 Financial Stability and Firm Value

A growing body of literature emphasizes the importance of financial stability in enhancing firm value. The Altman Z-Score, developed by Altman (1968), has been extensively used to predict financial distress, particularly in emerging markets and industries that are prone to volatility. For instance, Priambodo and Kurniasih (2021) examined the coal mining sector in Indonesia, utilizing the Altman Z-Score to predict potential bankruptcies. Their findings indicate that financial distress, as captured by low Z-Scores, had a significant negative impact on stock prices, thus diminishing firm value.

Similarly, the study by Bolek and Gniadkowska-Szymańska (2022) on companies listed on the S&P 500 index found a strong correlation between the Altman Z-Score and earnings per share (EPS) growth. The research highlighted that firms with higher Z-Scores, indicating greater financial stability, tended to exhibit better financial performance, which in turn positively influenced their market valuation. This relationship underscores the critical role that financial stability plays in sustaining and enhancing firm value. Furthermore, the work of Utami et al. (2022) on Indonesian firms provides additional evidence that the Altman Z-Score can effectively predict financial distress, which is closely linked to firm value. Companies with low Z-Scores were found to be at a higher risk of bankruptcy, which adversely affected their attractiveness to investors and ultimately their market valuation.

The relevance of the Altman Z-Score is not confined to predicting bankruptcy but extends to broader implications for firm value. Chaiyakul (2021) demonstrated that in the Thai market, companies with higher Z-Scores enjoyed better financial performance metrics such as Return on Assets (ROA) and Tobin's Q. This finding suggests that financial stability, as measured by the Z-Score, is a key determinant of a firm's ability to generate value.

Financial stability, as captured by the Altman Z-Score, is a crucial determinant of firm value. Firms with higher Z-Scores are generally perceived as being more financially stable, which enhances their market valuation and attractiveness to investors. The Z-Score not only serves as a predictor of bankruptcy but also provides valuable insights into a firm's financial health, making it an essential tool for assessing firm value in various market conditions.

H₀₅: There is no significant relationship between financial stability and firm value in the Consumer and Industrial Goods Sectors of the NGX

2.2 Theoretical Framework

The theoretical framework serves as the basis for understanding the connections between variables in this study. This section utilises fundamental theories in finance to examine the relationship among profitability, components of the cash conversion cycle (CCC), and firm value. The main theoretical frameworks supporting this research comprise the Resource-Based View (RBV), Agency Theory, Trade-Off Theory, and Signaling Theory.

The Resource-Based View (RBV) theory suggests that organisations can gain a competitive edge and achieve better performance by efficiently managing their distinct resources and capabilities (Barney, 1991). Within the scope of this study, the CCC components, namely Days Sales Outstanding (DSO), Days Inventory Outstanding (DIO), and Days Payable Outstanding (DPO),

are seen as crucial financial assets that can be effectively controlled to improve profitability and, consequently, the value of the company. By optimising these components, companies can decrease the amount of time that cash is held in operations, hence enhancing liquidity and operational efficiency. These factors are crucial for maintaining a competitive edge in the marketplace (Wernerfelt, 1984, 1995).

Resource-based view (RBV) focusses on the strategic management of internal resources. It suggests that companies who have superior working capital management practices, as shown by an optimised cash conversion cycle (CCC), are more likely to outperform their competitors. This argument is consistent with the study's emphasis on how profitability, which is a measure of financial performance, might reduce the influence of CCC components on firm value. It underscores the significance of effectively managing internal resources to achieve success for the firm.

Agency Theory examines the conflicts of interest that occur between shareholders (principals) and managers (agents) in a company (Jensen & Meckling, 1976, 2019). Within the framework of working capital management, managers may be motivated to prioritise liquidity over profitability to mitigate their personal risk, even though this may not necessarily correspond with the shareholders' goal of maximising the value of the firm. According to the theory, these conflicts might result in less-than-optimal decision-making, such as keeping too much cash or offering credit terms that are not optimal, which could potentially impair the value of the company.

This study investigates the impact of profitability on agency conflicts by analysing how it acts as a moderating factor in the link between components of the cash conversion cycle (CCC) and company value. Maximising profitability can create a common goal for managers and shareholders, as it allows for the allocation of resources to improve working capital management without sacrificing liquidity. This, in turn, can increase the overall value of the company.

The Trade-Off Theory, which is commonly applied in determining capital structure, is also applicable to the management of working capital (Kraus & Litzenberger, 1973) This theory suggests that companies carefully consider the expenses and advantages associated with maintaining working capital elements such as inventory, receivables, and payables in order to optimise the overall value of the company. Extending Days Payable Outstanding (DPO) might enhance short-term liquidity but may also elevate the likelihood of strained supplier relationships, thus compromising long-term profitability and overall company value. Similarly, decreasing the Days Sales Outstanding (DSO) could enhance liquidity, but it may also lead to a decrease in sales if clients view the loan terms as unfavourable.

The Trade-Off Theory is utilised in this work to elucidate the dynamics by which components of CCC affect the value of a corporation. The impact of profitability is essential in assessing whether the advantages of maintaining or decreasing these working capital components are greater than the disadvantages. Companies that have better levels of profitability may possess greater capacity to efficiently manage their Cash Conversion Cycle (CCC) elements, achieving a harmonious equilibrium that boosts firm value without compromising operational efficiency.

Signalling Theory posits that the decisions made by management have the ability to convey information to the market regarding the future prospects of the firm (Spence, 1973). Within the

realm of working capital management, the way a company handles its Cash Conversion Cycle (CCC) can serve as an indication of its financial well-being and operational effectiveness to investors. For example, a company that successfully decreases its Days Sales Outstanding (DSO) may indicate robust credit management and stability in cash flow, perhaps leading to a positive impact on its market price.

This notion is especially pertinent when evaluating the moderating influence of profitability. An economically successful company that effectively handles its Cash Conversion Cycle (CCC) elements offers a favourable indication to the market, which could result in an increased value of the company. On the other hand, if the company's profitability is poor, even if the management effectively manages the CCC (Cash Conversion Cycle), it may not be enough to counteract negative market impressions. This can restrict the potential beneficial effect on the value of the company.

The integration of the Resource-Based View, Agency Theory, Trade-Off Theory, and Signalling Theory forms a framework for analysing the connection between CCC and its components, financial stability and business value. These ideas emphasise the significance of effectively managing resources, aligning managerial incentives with the aims of shareholders, making balanced financial decisions, and communicating financial stability to the market. This study seeks to enhance comprehension of the impact of working capital management methods on company value, specifically within the Nigerian Industrial and Consumer Goods sectors, by utilising these theoretical approaches.

3. Methodology:

This study adopts a quantitative research design to examine the relationship between working capital management, specifically the Cash Conversion Cycle (CCC), and financial stability as measured by the Altman Z-Score, and their collective impact on firm value. The study utilizes an ex-post-facto research approach, which is suitable for analyzing historical data to identify patterns and relationships among variables. The analysis covers the period from 2013 to 2023, utilizing secondary data derived from the annual financial reports of 40 listed firms under the consumer and industrial goods sectors of the NGX.

Analytical Approach

The analysis is structured into two models to test the study's hypotheses. The first model investigates the impact of individual components of the CCC (DIO, DSO, and DPO) on firm value, controlling for firm-specific factors such as size, leverage, and profitability. The second model examines the overall effect of the CCC on firm value, also incorporating the control variables.

Regression Models

The first model is specified to assess the relationships between individual CCC components and firm value:

$$\text{Firm Value (Tobin's } Q) = \alpha + \beta_1(DIO) + \beta_2(DSO) + \beta_3(DPO) + \beta_4(\text{Control Variables}) + \epsilon$$

The second model evaluates the overall impact of the CCC on firm value:

$$\text{Firm Value (Tobin's } Q) = \alpha + \beta_1(\text{CCC}) + \beta_2(\text{Control Variables}) + \epsilon$$

Robust Ordinary Least Squares (OLS) regression is employed to estimate the models, addressing potential heteroscedasticity and outliers in the dataset. The robust OLS approach ensures that the estimates are reliable and minimizes the impact of any deviations from normality in the data. The analysis aims to identify significant relationships between the variables, providing insights into how effective working capital management and financial stability contribute to firm value within the Nigerian Consumer and Industrial Goods sectors.

4. Results and Discussion:

4.1 Descriptive Statistics

From Table 1, the results indicate that the average firm value, as measured by Tobin's Q, is 1.68, with a standard deviation of 2.28, ranging from -0.31 to 35.73. The average CCC is 17.04 days, but with a significant standard deviation of 231.39, showing wide variability among firms. DIO averages 111.89 days, DSO averages 77.52 days, and DPO averages 179.47 days, each with considerable variability. The Altman Z-Score averages 2.79, suggesting that firms are generally in a stable financial condition, although there is variability across the sample. ROA averages 4.23%, indicating low profitability across firms, and the Quick Ratio has a high mean of 14.76, which may reflect liquidity concerns for some firms. The logarithm of revenue has a mean of 16.56, reflecting the size of the firms in the sample.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TobinsQ	420	1.684	2.278	-.314	35.729
CCC	420	17.037	231.392	-1923.419	1567.544
DIO	420	111.887	76.831	3.761	573.496
DSO	420	77.523	96.473	.018	608.245
DPO	420	179.468	198.177	5	2070
zscore	420	2.786	2.328	-8.373	16.609
ROA	420	.042	.139	-1.799	.54
QR	420	14.762	286.094	.004	5863.977
lgRev	420	16.564	2.036	11.413	21.205

4.2 Correlation Matrix

To understand the relationships between the variables, correlation matrices for the two models are presented. For Model 1 as shown in Table 2, the correlation matrix includes Tobin's Q, DIO, DSO, DPO, Altman Z-Score, ROA, QR, and lgRev. Tobin's Q shows a negative correlation with DIO (-0.1826) and DSO (-0.1271), indicating that longer inventory and sales periods are associated with lower firm value. Conversely, DPO shows a positive correlation with Tobin's Q (0.1982), suggesting that firms taking longer to pay their payables tend to have higher firm value. The Altman Z-Score is positively correlated with Tobin's Q (0.4951), indicating that financially stable

firms tend to have higher value. The correlation matrix for Model 2, as shown in Table3, reveals a negative correlation between CCC and Tobin's Q (-0.2900), reinforcing the notion that a longer cash conversion cycle is associated with lower firm value. The Altman Z-Score remains positively correlated with Tobin's Q, while ROA is negatively correlated with Tobin's Q, suggesting that higher profitability may not always translate to higher firm value in this context. The Quick Ratio and lgRev show weaker correlations with Tobin's Q in both models. These correlations provide preliminary insights into the potential relationships between working capital management, financial stability, and firm value.

Table 2: Model 1 Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	1.000							
TobinsQ								
(2) DIO	-0.183	1.000						
(3) DSO	-0.127	0.296	1.000					
(4) DPO	0.198	-0.042	0.373	1.000				
(5)	0.495	-0.182	-0.304	-0.290	1.000			
zscore								
(6) ROA	0.123	-0.058	-0.246	-0.198	0.700	1.000		
(7) QR	0.054	0.002	-0.033	-0.037	0.050	-0.005	1.000	
(8)	0.014	-0.168	-0.211	-0.172	0.260	0.282	0.028	1.000
lgRev								

Table 3: Model 2 Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1)	1.000					
TobinsQ						
(2) CCC	-0.290	1.000				
(3) zscore	0.495	0.043	1.000			
(4) ROA	0.123	0.053	0.700	1.000		
(5) QR	0.054	0.017	0.050	-0.005	1.000	
(6) lgRev	0.014	-0.002	0.260	0.282	0.028	1.000

4.3 Regression Results

The results of the robust Ordinary Least Squares (OLS) regression analyses for both models are presented and interpreted in this section. These models explore the impact of various components of the Cash Conversion Cycle (CCC) and financial stability on firm value, as measured by Tobin's Q, within the Consumer and Industrial Goods Sectors of the Nigerian Exchange (NGX).

Table 4: Robust OLS Regression Results

Variable	Model 1	Model 2
DIO	0.00002345	-
DSO	-0.00298934	-
DPO	0.00470903*	-
zscore	0.87641342***	0.79660544***
ROA	-7.2092781***	-6.6836758***
QR	0.00015886**	0.0001538**
lgRev	-0.05831456	-0.09419308
CCC	-	-0.0029897*
_cons	-0.10514407	1.3562281
N	420	420
aic	1618.0758	1650.14
bic	1650.3979	1674.3815
rank	8	6
R²	0.4869528	0.44095227

Legend: * p<.05; ** p<.01; *** p<.001

In Model 1, which decomposes the CCC into Days Inventory Outstanding (DIO), Days Sales Outstanding (DSO), and Days Payables Outstanding (DPO), alongside control variables like the Altman Z-Score, Return on Assets (ROA), Quick Ratio (QR), and the logarithm of revenue (lgRev), the R-squared value is 0.4870. This indicates that approximately 49% of the variance in Tobin's Q is explained by the independent variables in the model. The analysis shows that DIO has a very small positive coefficient, suggesting no significant relationship between the time inventory is held and firm value. DSO has a negative coefficient, indicating that longer sales cycles might negatively impact firm value, although this effect is not statistically significant. On the other hand, DPO displays a positive and statistically significant coefficient, suggesting that longer payment cycles are associated with higher firm value. This could indicate more effective working capital management or stronger bargaining power with suppliers.

Moreover, the Altman Z-Score shows a highly significant positive effect on firm value, affirming the critical role of financial stability in enhancing firm value. Interestingly, ROA is negatively associated with Tobin's Q, indicating that higher profitability might paradoxically be linked to lower firm value in these sectors. This counterintuitive result could reflect market inefficiencies or sector-specific risks that require further exploration. The Quick Ratio (QR) also has a small but significant positive effect on firm value, indicating that liquidity is beneficial, albeit minimally.

Finally, the coefficient for logarithm of Revenue (lgRev) is negative but not significant, suggesting that firm size, as measured by revenue, does not significantly influence firm value in this context.

In Model 2, which focuses on the overall CCC rather than its individual components, the R-squared value is slightly lower at 0.4410, indicating that about 44% of the variance in Tobin's Q is explained by the model. Here, CCC has a negative and statistically significant coefficient, confirming that a longer cash conversion cycle is detrimental to firm value. This underscores the importance of efficient working capital management for enhancing firm value. Consistent with Model 1, the Altman Z-Score again exhibits a highly significant positive effect on firm value, reinforcing the importance of financial stability. ROA continues to have a significant negative impact on Tobin's Q, while the QR remains positively associated with firm value, though the effect is small. The lgRev coefficient remains negative and insignificant, like the findings in Model 1.

The results from both models suggest that financial stability, as measured by the Altman Z-Score, is a critical determinant of firm value. Efficient management of the cash conversion cycle, particularly by extending payment periods (DPO) and minimizing the overall CCC, also plays a significant role in enhancing firm value in the Consumer and Industrial Goods Sectors of the NGX. Conversely, the negative association between higher profitability (ROA) and firm value indicates that there may be underlying market or sector-specific factors influencing this relationship, which may warrant further investigation.

4.4 Post Estimation Diagnosis

The post-estimation diagnostics were conducted to assess the robustness and reliability of the regression models used in this study. A standard Ordinary Least Squares (OLS) regression was initially run without robust standard errors for both Model 1 (which includes the decomposed components of the Cash Conversion Cycle—DIO, DSO, and DPO) and Model 2 (which includes the aggregated CCC). The results indicated satisfactory model fits, with R-squared values of 0.4870 and 0.4410 for Models 1 and 2, respectively. The F-statistics were highly significant for both models, confirming that the models are appropriate. A Variance Inflation Factor (VIF) test was conducted to check for multicollinearity among the independent variables, with all VIF values falling below the threshold of 10, indicating that multicollinearity is not a significant issue.

Further, the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity was performed, and the results were significant for both models, indicating the presence of heteroskedasticity in the residuals. This finding justifies the use of robust standard errors in the regression analyses, as they correct for this issue, ensuring more reliable coefficient estimates. These diagnostics confirm that the regression models are well-specified and that the use of robust standard errors is essential to account for heteroskedasticity, thereby ensuring the reliability of the study's findings.

5. Conclusion and Recommendations

The study investigated the relationship between working capital management, financial stability, and firm value in the Consumer and Industrial Goods sectors of the Nigerian Exchange Group (NGX) from 2014 to 2023. The results showed that while Days Inventory Outstanding (DIO) and

Days Sales Outstanding (DSO) did not significantly impact firm value, Days Payables Outstanding (DPO) had a positive and significant effect, suggesting that longer payment periods can enhance firm value by providing companies with more time to utilize cash resources. The Cash Conversion Cycle (CCC) was found to have a negative and significant relationship with firm value, indicating that a shorter CCC generally leads to improved firm value. Additionally, financial stability, as measured by the Altman Z-Score, was positively and significantly related to firm value, emphasizing the importance of financial health in value creation.

Based on these findings, it is recommended that firms in these sectors optimize their working capital management practices, particularly by extending payment periods to suppliers and reducing the overall CCC to enhance firm value. Companies should also prioritize maintaining strong financial stability through prudent leverage management and ensuring adequate liquidity to withstand financial shocks. Regular monitoring and adaptation of working capital strategies in line with industry best practices will help ensure sustained value creation for shareholders.

Future research could expand on the findings of this study by exploring the impact of working capital management and financial stability on firm value across different sectors beyond the Consumer and Industrial Goods sectors of the NGX. Researchers could also explore the role of macroeconomic variables, such as inflation and interest rates, in moderating the relationship between working capital components and firm value.

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