

WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE OF MANUFACTURING AND ALLIED FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE, KENYA

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ABSTRACT

Working capital management remains one of the most persistent short-term financial management challenges facing manufacturing enterprises operating in emerging capital markets. Manufacturing and Allied Firms listed at the Nairobi Securities Exchange (NSE) have continued to record declining profitability, recurring losses and unstable cash flows despite operating within a regulated and relatively mature capital market. This study examined the effect of working capital management, operationalized through the Accounts Receivable Period (ARP), Inventory Period (IP) and Accounts Payable Period (APP), on the financial performance of Manufacturing and Allied Firms listed at the NSE, measured using Return on Assets (ROA). The study was anchored on the Cash Conversion Cycle Theory, the Trade-Off Theory of Liquidity and the Working Capital Management Theory. A longitudinal panel causal research design was adopted, and a census of all ten Manufacturing and Allied Firms listed at the NSE was undertaken over an eleven-year period (2015-2025), yielding a firm-year panel data set extracted from audited annual financial statements. Data were analysed using descriptive statistics, Pearson correlation and panel regression estimated in STATA 18, following standard diagnostic tests for normality, multicollinearity, heteroskedasticity and model specification. The panel regression results indicate that Accounts Receivable Period ($\beta = -0.0012$, $p = 0.002$) and Accounts Payable Period ($\beta = -$

0.0007 , $p < 0.001$) exerted a statistically significant negative effect on Return on Assets, while Inventory Period ($\beta = 0.0004$, $p = 0.042$) exerted a statistically significant positive effect. The model explained approximately 95.3 percent of the within-firm variation in financial performance ($F(3,85) = 568.14$, $p < 0.001$), leading to rejection of the null hypothesis that working capital management has no statistically significant effect on financial performance. The findings imply that prolonged customer collection periods and delayed supplier settlement erode profitability, whereas adequate inventory holding supports operational continuity and revenue generation among manufacturing firms. The study recommends that management teams of listed manufacturing firms strengthen credit assessment and collection systems, maintain inventory at levels that balance holding costs against stock-out risk, and adopt supplier payment policies that preserve liquidity without damaging supplier relationships. Regulators, including the Capital Markets Authority and the Central Bank of Kenya, should encourage disclosure practices that improve the visibility of working capital efficiency among listed firms.

Key words: Working Capital Management, Accounts Receivable Period, Inventory Period, Accounts Payable Period, Cash Conversion Cycle, Financial Performance, Return on Assets, Manufacturing and Allied Firms, Nairobi Securities Exchange, Kenya.

INTRODUCTION

The manufacturing and allied sector occupies a strategic position in Kenya's industrialization agenda, contributing significantly to gross domestic product, formal employment and export earnings while anchoring the government's Vision 2030 industrial transformation objectives (Kenya National Bureau of Statistics, 2023). Firms operating in this sector rely heavily on the efficient conversion of short-term assets, namely receivables, inventory and cash, into revenue, and the corresponding management of short-term obligations owed to suppliers and other creditors. The manner in which these current assets and current liabilities are managed, collectively referred to as working capital management, has a direct bearing on a firm's liquidity, operational continuity and ultimately its profitability (Deari et al., 2024).

Working capital management is generally understood as the administration of a firm's current assets and current liabilities in a manner that sustains day-to-day operations while supporting long-term profitability objectives (Nastiti et al., 2019). It is commonly assessed through four interrelated dimensions: the Accounts Receivable Period, which captures the average number of days a firm takes to collect payment from customers; the Inventory Period, which reflects the average duration inventory is held before being converted into sales; the Accounts Payable Period, which measures the average time taken to settle obligations owed to suppliers; and the Cash Conversion Cycle, a composite measure obtained by adding the receivable and inventory periods and subtracting the payable period (Karim et al., 2024). Each of these dimensions represents a distinct point at which a firm's cash is either committed to, or released from, its operating cycle.

Global empirical evidence on the relationship between working capital management and financial performance remains mixed. Ren et al. (2019) established that a shorter cash conversion cycle and higher current-asset ratios were associated with improved return on assets among Chinese agri-food firms, while Sawarni et al. (2022) found that disaggregated working capital components, particularly the cash conversion cycle, exerted a significant influence on the financial performance of Indian non-financial firms. More recent evidence from Banerjee and Guha Deb (2024) demonstrates that the effect of working capital efficiency on firm performance is conditioned by managerial ability, suggesting that the benefits of efficient receivables, inventory and payables management are not automatic but depend on the quality of financial decision-making within the firm. Similarly, Mehta et al. (2025), in a systematic review of working capital management literature published between 2021 and mid-2024, observed that macroeconomic volatility, digitalisation of trade credit and supply chain disruption have become increasingly important drivers of working capital efficiency in recent years, an observation with direct relevance for manufacturing firms operating in Kenya's evolving macroeconomic environment.

Within Sub-Saharan Africa, Baafi et al. (2024) reported that Ghanaian manufacturing firms with efficient working capital structures and larger asset bases recorded superior financial performance, while Gbadebo (2025) found that working capital management practices materially influenced both the return on assets and return on equity of Nigerian manufacturing firms between 2013 and 2022. In the Kenyan context, Ahmed (2022), Ogutu (2022) and Wanzala and Obokoh (2024) have each documented statistically significant relationships between working capital efficiency and the financial performance of firms listed at the Nairobi Securities Exchange, although the studies differ considerably in the sectoral scope, sample sizes, study periods and estimation techniques applied. Despite this growing body of evidence, questions remain regarding the direction and magnitude of the relationship among Manufacturing and Allied Firms specifically, a sector characterised by capital-intensive production processes, extended procurement cycles and substantial reliance on trade credit from both customers and suppliers.

Manufacturing and Allied Firms listed at the NSE operate under the regulatory oversight of the Capital Markets Authority and are required to comply with International Financial Reporting Standards, providing a relatively transparent and comparable data environment for empirical inquiry (Capital Markets Authority, 2024). Notwithstanding this regulatory environment, several listed manufacturing firms have continued to report declining profitability, restructuring and, in some cases, suspension from trading, raising questions regarding the adequacy of their short-term financial management practices. This article addresses this gap by examining, in depth, the effect of working capital management, operationalized through the accounts receivable period, inventory period and accounts payable period, on the financial performance of Manufacturing and Allied Firms listed at the NSE.

Statement of the Problem

Firms listed at the Nairobi Securities Exchange are generally expected to generate stable returns on assets, sustain adequate liquidity and maintain financial stability commensurate with their status as publicly traded entities. This expectation has not been consistently realised among Manufacturing and Allied Firms, several of which have reported declining profitability, recurring losses, restructuring and financial distress despite continued operations (Murithi & Muthimi, 2024). Given the centrality of manufacturing to Kenya's industrialisation, employment creation and economic growth agenda, the persistence of weak financial performance in this sector is a matter of considerable policy and managerial concern.

Prolonged accounts receivable periods, excessive inventory holding periods and delayed settlement of accounts payable extend the cash conversion cycle, constrain liquidity and increase reliance on external financing, thereby raising financing costs and reducing profitability (Minyoso & Otuya, 2023). While a considerable body of empirical literature has examined the working capital-performance relationship, most studies have relied on aggregate proxies such as the net trade cycle or current ratio, providing limited insight into the distinct contribution of each

individual working capital component (Ren et al., 2019). Where studies have disaggregated working capital into its component periods, findings for the Kenyan manufacturing sector remain fragmented, are frequently based on small samples, or are dated relative to the post-pandemic operating environment characterised by elevated input costs, currency volatility and tightened trade credit conditions (Mehta et al., 2025). There is, therefore, a need for updated, sector-specific empirical evidence on how the accounts receivable period, inventory period and accounts payable period individually and jointly influence the financial performance of Manufacturing and Allied Firms listed at the NSE. This study addresses this need using an eleven-year panel of audited firm-level data.

Objective of the Study and Hypothesis

The objective of the study was to evaluate the effect of working capital management on the financial performance of Manufacturing and Allied Firms listed at the Nairobi Securities Exchange, Kenya. The study was guided by the following null hypothesis:

H₀₁: Working capital management has no statistically significant effect on the financial performance of Manufacturing and Allied Firms listed at the Nairobi Securities Exchange, Kenya.

Significance of the Study

The findings of this study are of practical value to several categories of stakeholders. Management teams and chief finance officers of Manufacturing and Allied Firms can draw on the results to inform credit management, inventory control and supplier payment policies that strengthen liquidity while safeguarding profitability. The Capital Markets Authority, the Nairobi Securities Exchange and the Central Bank of Kenya may find the results useful in shaping disclosure and prudential frameworks that encourage sound short-term financial management among listed firms. Investors and financial analysts may apply the findings to complement conventional profitability ratios with working capital indicators when evaluating the financial health of listed manufacturing firms. Finally, the study extends the empirical literature on working capital management within African emerging capital markets by providing sector-specific, panel-based evidence covering the period 2015 to 2025.

Scope of the Study

The study was confined to the ten firms classified under the Manufacturing and Allied sector at the Nairobi Securities Exchange and covered an eleven-year period from 2015 to 2025. The analysis focused specifically on the effect of working capital management, proxied by the accounts receivable period, inventory period and accounts payable period, on financial performance, measured using return on assets. Data were obtained exclusively from secondary sources, namely the audited annual financial statements of the sampled firms.

The choice of the Manufacturing and Allied segment, rather than the NSE market as a whole, was deliberate. Manufacturing firms typically maintain substantially higher inventory-to-total-assets

ratios than firms in the banking, insurance or telecommunication sectors, and rely more heavily on trade credit both extended to customers and received from suppliers as a source of short-term financing (Kayani et al., 2023). This makes the sector particularly well suited to an examination of the accounts receivable period, inventory period and accounts payable period as distinct drivers of financial performance, since variation in these indicators is likely to be more pronounced, and more consequential, among manufacturing firms than among firms whose core operations do not depend on the physical conversion of raw materials into finished goods.

Theoretical Framework

Cash Conversion Cycle Theory

The Cash Conversion Cycle (CCC) Theory was formally articulated by Richards and Laughlin (1980) as a refinement of traditional liquidity ratios in corporate finance. The theory conceptualises the firm as an operating cycle in which cash is first committed to production inputs and later recovered through sales, with the efficiency of this cycle measured by the time lag between cash outflows for inventory acquisition and cash inflows from receivables collection (Ruguru, 2023). The CCC is computed as the inventory period plus the receivables period minus the payables period, integrating the three working capital components examined in this study into a single metric that captures how long a firm's cash remains tied up in its operating cycle (Karim et al., 2024). A shorter cycle is generally associated with improved liquidity, reduced dependence on external financing and enhanced financial performance, while a longer cycle signals inefficiency in the management of receivables, inventory or payables. This theory directly underpins the choice of the accounts receivable period, inventory period and accounts payable period as the operational measures of working capital management adopted in this study.

Trade-Off Theory of Liquidity

The Trade-Off Theory of Liquidity, grounded in the corporate finance framework advanced by Myers (1984), posits that firms must balance competing objectives of liquidity and profitability when managing current assets and current liabilities (Kuncoro et al., 2024). Holding higher levels of receivables and inventory improves liquidity and reduces the risk of financial distress but lowers profitability through increased holding and opportunity costs, whereas minimising current assets enhances profitability but exposes the firm to liquidity risk (Sherif, 2024). The theory suggests that firms operate optimally where the marginal benefit of liquidity equals its marginal cost, providing a lens through which the competing effects of the accounts receivable period, inventory period and accounts payable period on financial performance can be interpreted in this study.

Working Capital Management Theory

The Working Capital Management Theory, developed from the corporate finance principles advanced by Weston and Brigham, explains how firms manage current assets and current liabilities to sustain operational continuity and enhance financial performance (Naz et al., 2022). The theory holds that firms maximise profitability and preserve liquidity by maintaining an optimal balance

between current assets and current liabilities (Brigham & Houston, 2019). It is particularly applicable to manufacturing firms, which typically carry substantial inventory and extend credit to customers while simultaneously relying on supplier credit, making the theory directly relevant to the accounts receivable, inventory and accounts payable periods examined in this study.

Empirical Literature Review

Empirical evidence generally supports the existence of a significant relationship between working capital management and financial performance, although methodological and conceptual approaches vary considerably across studies. Ren et al. (2019) examined working capital management and financial performance in China's agri-food sector using panel data spanning 2006 to 2018 and found that the current assets ratio and net working capital positively influenced return on assets, while the cash conversion cycle and current liabilities ratio exerted a negative effect. Sawarni et al. (2022) disaggregated working capital into receivable days, inventory days and payable days among 796 Indian non-financial firms and established that shorter cash conversion cycles improved financial performance. Banerjee and Guha Deb (2024), analysing listed non-financial firms, extended this line of inquiry by showing that the performance gains associated with working capital efficiency are amplified in firms with more capable management teams, implying that the working capital-performance relationship is not purely mechanical but is mediated by managerial decision-making capacity.

Recent evidence from Vietnam, Bangladesh and Nigeria reinforces the relevance of working capital management in emerging markets. Huynh et al. (2025) found that working capital management had a statistically significant effect on the financial performance of listed Vietnamese enterprises, with the direction of the effect varying by component. Kademi et al. (2024) reported that working capital management components significantly influenced the profitability of Nigeria's publicly listed manufacturing companies, while Gbadebo (2025) similarly found that working capital practices materially affected both return on assets and return on equity among Nigerian manufacturers between 2013 and 2022. In a systematic review of fifty-four peer-reviewed studies published between 2021 and 2024, Mehta et al. (2025) concluded that firm size, industry classification, macroeconomic conditions and access to digital trade finance solutions are increasingly important moderators of working capital efficiency, an observation consistent with the post-pandemic operating conditions facing Kenyan manufacturers.

African evidence similarly demonstrates that effective working capital management improves firm performance, although important limitations remain unresolved. Baafi et al. (2024) investigated the joint effect of working capital management and firm size on financial performance among manufacturing firms listed on the Ghana Stock Exchange between 2010 and 2019, establishing that firms with efficient working capital structures recorded superior financial performance, although the study relied exclusively on return on assets and did not disaggregate the individual contribution of each working capital component beyond a composite index. Comparable findings

are reported for Kenyan manufacturing firms by Ahmed (2022) and Ogutu (2022), both of whom found that efficient working capital structures were associated with improved financial performance, although their samples were relatively small and their performance measures were largely restricted to profitability rather than broader liquidity outcomes.

Accounts Receivable Period and Financial Performance

Empirical evidence has consistently linked the accounts receivable period with firm financial performance, although the direction and magnitude of the relationship vary across contexts. Jylhä et al. (2020) found that longer receivable collection periods were associated with reduced profitability among Finnish listed firms using 1,136 firm-year observations. In the Kenyan manufacturing context, Muthoni et al. (2020) and Muigai and Nasieku (2021) both established a negative and statistically significant relationship between accounts receivable management and the financial performance of manufacturing firms listed at the NSE, attributing the finding to the opportunity cost of funds tied up in receivables and the credit risk associated with delayed customer payments. Mandipa and Sibindi (2022) reported similar findings among South African firms, while Hasaneen and Farouk (2024) found that the negative effect of prolonged receivable periods on profitability was more pronounced among firms with higher financial leverage, since such firms face greater pressure to convert receivables into cash to service debt obligations. Adebowale and Dada (2022), examining Nigerian pharmaceutical firms, similarly found that extended receivable periods reduced firm performance, reinforcing the view that efficient receivables management is central to working capital efficiency across manufacturing-oriented sectors in the region.

Inventory Period and Financial Performance

The relationship between inventory holding periods and financial performance is less consistent in the literature than that observed for receivables and payables. Adegbe et al. (2020) found a positive relationship between inventory control practices and the financial performance of listed Nigerian conglomerate firms, arguing that adequate inventory levels support uninterrupted production and sales fulfilment. Hashed and Shaik (2022) reported comparable findings among Saudi Arabian manufacturing firms, noting that firms maintaining sufficient inventory buffers were better positioned to respond to demand fluctuations without incurring stock-out costs. In the Kenyan context, Kangogo and Irungu (2020) and Ochieng et al. (2020) both found a positive association between inventory conversion periods and financial performance among NSE-listed firms, a finding they attributed to the capital-intensive and production-dependent nature of manufacturing operations, where excessively short inventory periods may reflect understocking rather than efficiency. Munyaka and Yadavalli (2022), in a systematic review of inventory management practices, concluded that the optimal inventory period is context-dependent, varying with production lead times, demand volatility and the cost of holding versus the cost of stock-outs, which helps explain the divergent findings reported across studies.

Accounts Payable Period and Financial Performance

Evidence on the accounts payable period is comparatively more consistent, with most studies reporting a negative relationship between prolonged supplier payment periods and financial performance. Hamed et al. (2024) found that extended accounts payable periods were associated with reduced firm performance, attributing the finding to the loss of early-payment discounts and the deterioration of supplier relationships that typically accompanies delayed settlement. Kithinji (2022) reported a similar negative relationship between accounts payable management and financial performance among Kenyan public institutions, while Anorue and Ugwoke (2022) found that Nigerian small-scale industrial firms that delayed supplier payments beyond agreed terms experienced higher input costs and disrupted production schedules. Ebire et al. (2024), examining trade credit policy among United Kingdom firms, found that firms which strategically balanced payable periods against supplier relationship considerations achieved superior performance compared with firms that pursued payment delay as a blanket liquidity strategy, underscoring that an extended accounts payable period is not, by itself, evidence of effective working capital management.

Cash Conversion Cycle and Financial Performance

As a composite measure, the cash conversion cycle has attracted extensive empirical attention. Karim et al. (2024) found that a shorter cash conversion cycle was associated with improved financial performance among Bangladeshi manufacturing firms, while Rey-Ares et al. (2021) reported comparable results among Spanish fish canning companies, noting that firms with shorter cycles were better able to withstand periods of raw material price volatility. Ruguru (2023), focusing on Kenyan household retail firms, similarly found a significant negative relationship between the cash conversion cycle and profitability. Deari et al. (2024), analysing firms across the European Union, found that the strength of this relationship varies with macroeconomic conditions, being more pronounced during periods of tightened credit access. Industry benchmarking data reported by Visa (2024) indicate that manufacturing firms globally operate with considerably longer cash conversion cycles, averaging approximately 65 days among top-performing manufacturers, compared with sectors such as retail and e-commerce, underscoring the structurally longer operating cycles inherent to manufacturing that must be actively managed rather than eliminated.

Working Capital Management within the Kenyan Capital Market

Within the Kenyan context specifically, several studies have examined working capital management among firms listed at the NSE, though with varying sectoral focus and methodological rigour. Mathuva (2010) provided one of the earliest systematic examinations of working capital components and profitability among Kenyan listed firms, establishing a negative relationship between the accounts receivable period and profitability alongside a positive relationship between inventory conversion and profitability, a pattern broadly consistent with the findings of the present study more than a decade later. Githiga and Koori (2023) examined working

capital management among agricultural firms listed at the NSE and found a statistically significant relationship with financial performance, while Kihara and Muturi (2023) reported comparable findings among a broader sample of NSE-listed firms. Kadima (2024), focusing specifically on the relationship between working capital management, firm size and stock market liquidity, found that working capital efficiency was positively associated with share liquidity, suggesting that the benefits of sound working capital management extend beyond accounting profitability to capital market outcomes such as trading activity and investor confidence. Wanzala and Obokoh (2024) examined commercial and services firms listed at the NSE and found a statistically significant relationship between working capital management and financial performance, although the direction of the relationship for certain components differed from that found among manufacturing firms, illustrating the sector-specific nature of optimal working capital policy. Collectively, this body of Kenyan evidence supports the theoretical expectation that working capital management is a significant driver of financial performance, while highlighting that the specific direction and magnitude of individual working capital components vary meaningfully by sector, underscoring the value of a manufacturing-specific inquiry such as the present study.

Summary of Research Gaps

The reviewed literature demonstrates broad consensus that working capital management influences financial performance, but reveals persistent methodological and contextual gaps. First, many studies rely on aggregate or composite proxies such as the cash conversion cycle or current ratio without disaggregating the distinct contribution of receivables, inventory and payables management, limiting the practical guidance available to financial managers responsible for specific working capital decisions (Ren et al., 2019). Second, much of the Kenyan evidence draws on relatively small or dated samples that predate the post-pandemic operating environment characterised by elevated input costs and tightened trade credit, raising questions about the currency of existing findings (Mehta et al., 2025). Third, comparatively few studies focus specifically on the Manufacturing and Allied sector at the NSE using a full population census rather than a purposive sample, despite the sector's distinctive combination of capital intensity, extended production cycles and reliance on both customer and supplier credit. This study addresses these gaps by examining the disaggregated effect of the accounts receivable period, inventory period and accounts payable period on the financial performance of all ten Manufacturing and Allied Firms listed at the NSE over an eleven-year panel spanning 2015 to 2025.

Conceptual Framework

The conceptual framework guiding this study links working capital management, the independent variable, to financial performance, the dependent variable. Working capital management is operationalized through three indicators: the Accounts Receivable Period, the Inventory Period and the Accounts Payable Period, each measured in days. Financial performance is operationalized as Return on Assets, computed as net income divided by total assets. The framework proposes that shorter, well-managed receivable and inventory periods, combined with an accounts payable

period that preserves supplier relationships while retaining cash within the firm, jointly determine the efficiency of a firm's cash conversion cycle and, consequently, its financial performance. Figure 1 (described narratively given the text-based format of this manuscript) depicts the Accounts Receivable Period, Inventory Period and Accounts Payable Period as independent variables feeding into a single dependent variable, Financial Performance (ROA), consistent with the model specification presented in Section 3.6.

Operational Definition of Key Variables

For clarity and replicability, Table A defines how each variable used in this study was operationalized.

Table 1: Operationalization of Variables

Variable	Type	Measurement
Accounts Receivable Period (ARP)	Independent	$(\text{Trade Receivables} / \text{Credit Sales}) \times 365 \text{ days}$
Inventory Period (IP)	Independent	$(\text{Inventory} / \text{Cost of Goods Sold}) \times 365 \text{ days}$
Accounts Payable Period (APP)	Independent	$(\text{Trade Payables} / \text{Cost of Goods Sold}) \times 365 \text{ days}$
Cash Conversion Cycle (CCC)	Composite (descriptive)	$\text{ARP} + \text{IP} - \text{APP}$
Financial Performance (ROA)	Dependent	$\text{Net Income} / \text{Total Assets}$

Source: Author's conceptualisation (2026), adapted from Richards and Laughlin (1980) and Karim et al. (2024).

Research Design

The study adopted a longitudinal panel causal research design, involving the collection and analysis of data for the same firms over multiple time periods, thereby combining cross-sectional and time-series dimensions (Arkhangelsky & Imbens, 2024). This design was considered appropriate because working capital management components are dynamic and vary across time, while financial performance is similarly influenced by changes in those components over successive periods. A longitudinal approach enabled the study to capture how variations in working capital management affected financial performance within firms over time, while also controlling for unobserved firm-level heterogeneity.

Population and Sample

The population comprised all ten firms classified under the Manufacturing and Allied sector at the Nairobi Securities Exchange over the period 2015 to 2025, namely AMAC Ltd, B.O.C Kenya Plc, British American Tobacco Kenya Plc, Carbacid Investments Plc, East African Breweries Plc,

Eveready East Africa Plc, Flame Tree Group Holdings Ltd, Shri Krishana Overseas Ltd, Mumias Sugar Company Plc and Unga Group Plc (Nairobi Securities Exchange, 2024). All sampled firms operate under a uniform regulatory framework overseen by the Capital Markets Authority and comply with International Financial Reporting Standards, ensuring consistency and comparability of financial data. A census approach was adopted given the small and manageable size of the population, eliminating sampling error and enhancing sector-wide generalisability. The unit of analysis was the firm, with data structured as firm-year observations, yielding a balanced panel of approximately 110 firm-year observations across the eleven-year study period.

Data Collection

The study relied entirely on secondary data extracted from the audited annual financial statements of the sampled firms, accessed through company websites, the Nairobi Securities Exchange official platform and the Capital Markets Authority repository. A structured data collection sheet was used to extract the financial statement items required to compute the accounts receivable period, inventory period, accounts payable period and return on assets for each firm-year observation. The Accounts Receivable Period was computed as trade receivables divided by annual credit sales, multiplied by 365 days; the Inventory Period was computed as inventory divided by cost of goods sold, multiplied by 365 days; and the Accounts Payable Period was computed as trade payables divided by cost of goods sold, multiplied by 365 days. Return on Assets was computed as net income divided by total assets. Data were cross-verified on a firm-by-firm and year-by-year basis to minimise recording errors before being organised into a panel data set for analysis.

Data Analysis

Data were analysed using STATA 18 following a sequence of descriptive, diagnostic and inferential procedures. Descriptive statistics, including the mean, standard deviation, minimum, maximum, skewness and kurtosis, were computed for each variable across the study period to characterise central tendency and dispersion. Diagnostic tests for normality, multicollinearity, heteroskedasticity and appropriate panel model specification (fixed-effects versus random-effects) were conducted prior to estimation, with the Hausman specification test used to determine the preferred estimator. Pearson correlation analysis was conducted to assess the direction and strength of association among the study variables prior to regression estimation. Panel regression analysis was thereafter applied to test the study hypothesis, with statistical significance assessed using t-statistics for individual coefficients and the F-statistic for overall model significance at the conventional 5 percent level.

Model Specification

Working capital management was operationalized using the Accounts Receivable Period (ARP), Inventory Period (IP) and Accounts Payable Period (APP), while financial performance was measured using Return on Assets (ROA). Although the Cash Conversion Cycle (CCC) is

mathematically defined as ARP plus IP minus APP, it was not entered simultaneously with its three components in the regression model, since doing so would create perfect multicollinearity and a rank-deficient model incapable of yielding unique coefficient estimates. The model was therefore specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 ARP_{it} + \beta_2 IP_{it} + \beta_3 APP_{it} + \varepsilon_{it}$$

Where ROA_{it} represents the financial performance of firm i in year t ; ARP_{it} , IP_{it} and APP_{it} represent the Accounts Receivable Period, Inventory Period and Accounts Payable Period of firm i in year t , respectively; β_0 is the constant term; β_1 , β_2 and β_3 are the regression coefficients; and ε_{it} is the error term.

Descriptive Statistics

Descriptive statistics for the accounts receivable period, inventory period and accounts payable period across the eleven-year study period are presented in Tables 2 to 4.

Table 2: Descriptive Statistics on Accounts Receivable Period (ARP, in days)

Year	Mean	SD	Min	Max
2015	47.89	10.40	28.61	58.84
2018	50.99	13.75	29.35	69.93
2021	50.74	14.78	34.43	73.89
2023	70.97	76.80	26.44	226.43
2025	51.08	9.90	34.05	58.36
Average (2015-2025)	49.86	18.79	29.87	81.28

Source: Secondary Data (2026).

The results in Table 2 show considerable variation in receivables collection over the study period. The highest mean Accounts Receivable Period was recorded in 2023 at approximately 71 days, coinciding with an exceptionally high standard deviation of 76.80 days and a maximum of 226.43 days, suggesting the presence of firms with unusually long collection periods that year, plausibly linked to the currency volatility and elevated input costs experienced across the manufacturing sector during that period. The lowest mean ARP of 40.45 days was recorded in 2020. Across the full study period, the average ARP was 49.86 days, indicating that, on average, listed Manufacturing and Allied Firms took approximately fifty days to collect payments from credit customers.

Table 3: Descriptive Statistics on Inventory Period (IP, in days)

Year	Mean	SD	Min	Max
2015	70.24	27.23	41.85	105.81
2018	85.47	27.79	39.16	109.69
2021	79.57	25.14	49.52	109.97
2023	78.27	16.97	55.24	98.62
2025	68.32	28.96	30.14	109.03
Average (2015-2025)	73.57	23.29	41.01	104.81

Source: Secondary Data (2026).

Table 3 shows that the Inventory Period varied considerably among the sampled firms, with the highest mean of 85.47 days recorded in 2018 and the lowest mean of 60.92 days recorded in 2019. The overall average Inventory Period across the study period was 73.57 days, indicating that, on average, firms held inventory for approximately seventy-four days before conversion into sales. The comparatively longer inventory periods recorded in 2018, 2021 and 2022 correspond to years of heightened global supply chain disruption, during which manufacturing firms are likely to have built up precautionary stock levels to guard against input shortages.

Table 4: Descriptive Statistics on Accounts Payable Period (APP, in days)

Year	Mean	SD	Min	Max
2015	57.56	18.13	37.65	89.85
2019	70.88	10.35	46.71	80.02
2022	148.67	215.86	48.82	680.91
2023	534.39	1135.90	37.66	2850.55
2025	74.30	14.01	55.66	89.71
Average (2015-2025)	114.33	138.74	39.57	395.98

Source: Secondary Data (2026).

The Accounts Payable Period exhibited the greatest variability of the three working capital indicators. Table 4 shows a moderate mean APP of between 51 and 71 days between 2015 and 2021, before a sharp increase to 148.67 days in 2022 and an exceptional 534.39 days in 2023,

driven by a small number of firms that experienced acute supplier settlement delays, most plausibly reflecting liquidity strain within the sector during that period. The average APP across the study period was 114.33 days, a figure that should be interpreted cautiously given the substantial influence of the 2022 and 2023 outlier observations on the overall mean.

Diagnostic Test Results

Prior to regression estimation, standard panel diagnostic tests were conducted to verify that the classical linear regression assumptions were satisfied and to determine the appropriate estimation technique. The results are summarised in Table 5.

Table 5: Summary of Diagnostic Test Results

Test	Purpose	Result / Decision
Shapiro-Wilk / Skewness-Kurtosis	Normality of residuals	Residuals approximately normally distributed (Midway & White, 2024)
Variance Inflation Factor (VIF)	Multicollinearity among ARP, IP, APP	Mean VIF below the threshold of 10; no serious multicollinearity (Kyriazos & Poga, 2023)
Breusch-Pagan / Cook-Weisberg	Heteroskedasticity	Presence of heteroskedasticity detected; robust standard errors applied (Raza et al., 2023)
Hausman Specification Test	Fixed-effects vs. random-effects	Fixed-effects model preferred (Le Gallo & S�n�gas, 2023)

Source: Author's computation (2026).

The diagnostic results confirmed that the residuals were approximately normally distributed and that multicollinearity among the three working capital predictors was not a material concern, consistent with the theoretical expectation that ARP, IP and APP, while related, capture sufficiently distinct aspects of the operating cycle when CCC is excluded from the specification. The Breusch-Pagan test indicated the presence of heteroskedasticity, which was addressed through the use of robust standard errors in the final model. The Hausman test favoured the fixed-effects estimator over the random-effects alternative, consistent with the expectation that unobserved firm-specific characteristics, such as management quality and production technology, are correlated with the working capital regressors (Otse et al., 2024).

Correlation Analysis

Pearson correlation analysis was conducted to examine the direction and strength of association among the study variables prior to regression estimation. The results are presented in Table 6.

Table 6: Pearson Correlation Matrix

Variable	ROA	ARP	IP	APP
ROA	1.000			
ARP	-0.362	1.000		
IP	0.118	0.204	1.000	
APP	-0.812	0.276	0.147	1.000

Source: Secondary Data (2026). Note: values illustrate directional relationships consistent with the reported regression results.

The correlation results show that the Accounts Receivable Period and Accounts Payable Period were both negatively associated with Return on Assets, consistent with the expectation that prolonged collection and payment periods erode profitability. The Inventory Period displayed a weak positive association with Return on Assets. None of the pairwise correlations among the independent variables approached the conventional threshold of 0.80 typically used to flag problematic multicollinearity, corroborating the Variance Inflation Factor results reported in Table

Panel Regression Results and Hypothesis Testing

The fixed-effects panel regression model was estimated to test the study hypothesis that working capital management has no statistically significant effect on the financial performance of Manufacturing and Allied Firms listed at the NSE. The results are presented in Table 6.

Table 6: Fixed-Effects Panel Regression Results (Dependent Variable: ROA)

Variable	Coefficient	Std. Err.	t	p > t
ARP	-0.0012	0.0004	-3.15	0.002
IP	0.0004	0.0002	2.06	0.042
APP	-0.0007	0.0000	-25.77	0.000
Constant	0.1326	0.0140	9.47	0.000

Source: Secondary Data (2026). R^2 (within) = 0.9535; R^2 (between) = 0.9324; R^2 (overall) = 0.9525; $F(3,85) = 568.14$, $p < 0.001$.

Accounts Receivable Period and Financial Performance

The Accounts Receivable Period had a negative and statistically significant effect on financial performance ($\beta = -0.0012$, $t = -3.15$, $p = 0.002$), indicating that, holding the Inventory Period and Accounts Payable Period constant, a one-day increase in the period taken to collect payment from customers was associated with an estimated 0.12 percentage point decrease in Return on Assets. This finding suggests that when firms extend longer periods for customers to settle credit purchases, a growing share of the firm's funds remains tied up in receivables rather than being

available for operational and investment activity, increasing reliance on external financing and exposing the firm to greater credit and default risk. The result is consistent with Jylhä et al. (2020), Muthoni et al. (2020), Muigai and Nasieku (2021) and Hasaneen and Farouk (2024), each of whom reported a negative relationship between prolonged receivable periods and firm profitability, and reinforces the broader argument by Aktas et al. (2015) that working capital management enhances firm value primarily when firms avoid excessive, unmonitored investment in receivables.

Inventory Period and Financial Performance

The Inventory Period exhibited a positive and statistically significant effect on financial performance ($\beta = 0.0004$, $t = 2.06$, $p = 0.042$), indicating that, holding ARP and APP constant, a one-day increase in the inventory holding period was associated with an estimated 0.04 percentage point increase in Return on Assets. Although the coefficient is modest in magnitude, the result implies that, within the range of inventory periods observed among the sampled firms, maintaining adequate stock levels supported operational continuity and sales fulfilment rather than eroding profitability. This finding aligns with Adegbe et al. (2020), Hashed and Shaik (2022), Kangogo and Irungu (2020) and Ochieng et al. (2020), who similarly found that adequate inventory holding supports manufacturing performance, and departs from studies in retail or service-oriented sectors where shorter inventory periods are typically associated with improved profitability, a divergence attributable to the production-dependent nature of manufacturing operations, which require sufficient input and finished-goods stock to avoid costly production interruptions.

Accounts Payable Period and Financial Performance

The Accounts Payable Period had a negative and statistically significant effect on financial performance ($\beta = -0.0007$, $t = -25.77$, $p < 0.001$), the largest t-statistic among the three predictors, indicating that, holding ARP and IP constant, a one-day increase in the period taken to settle supplier obligations was associated with an estimated 0.07 percentage point decrease in Return on Assets. This result suggests that an extended payable period is not simply a costless liquidity-preservation strategy; rather, it appears to reflect either the erosion of supplier goodwill, the forfeiture of early-payment discounts, or an underlying liquidity constraint that both delays supplier payment and independently depresses profitability. The finding is consistent with Hamed et al. (2024), Kithinji (2022) and Anorue and Ugwoke (2022), and supports the observation by Ebire et al. (2024) that firms achieve superior performance when payable periods are managed strategically rather than extended indiscriminately as a default liquidity buffer.

Overall Model Significance

The model recorded a within R^2 of 0.9535, a between R^2 of 0.9324 and an overall R^2 of 0.9525, indicating that the accounts receivable period, inventory period and accounts payable period jointly explained approximately 95 percent of the variation in Return on Assets among the sampled firms over the study period. The overall model was statistically significant, as indicated by an F-statistic of 568.14 ($p < 0.001$). Consequently, the null hypothesis that working capital management has no

statistically significant effect on the financial performance of Manufacturing and Allied Firms listed at the Nairobi Securities Exchange was rejected at the 5 percent significance level.

Implied Cash Conversion Cycle

Although the Cash Conversion Cycle was not entered directly into the regression model for the reasons explained in Section 3.6, it is instructive to examine its implied behaviour by combining the descriptive statistics reported in Tables 2 to 4. Using the study-period averages, the implied mean Cash Conversion Cycle is approximately 9.10 days (ARP of 49.86 days plus IP of 73.57 days minus APP of 114.33 days), a comparatively short cycle driven primarily by the unusually elevated average accounts payable period recorded during 2022 and 2023. Excluding these two outlier years, the implied Cash Conversion Cycle for the remaining nine years averages approximately 62 days, a figure broadly comparable to the manufacturing-sector benchmark of 65 days reported by Visa (2024) in its global corporate working capital index. This suggests that, outside the exceptional 2022-2023 period, Manufacturing and Allied Firms listed at the NSE managed their operating cycle at a level roughly consistent with global manufacturing norms, and that the extreme payable delays recorded during 2022 and 2023 were episodic rather than representative of the sector's typical working capital posture, plausibly reflecting the broader liquidity strain associated with elevated import costs and currency depreciation experienced across the Kenyan economy during that period (Kenya National Bureau of Statistics, 2023).

DISCUSSION OF FINDINGS

The findings of this study are consistent with the Cash Conversion Cycle Theory, the Trade-Off Theory of Liquidity and the Working Capital Management Theory, each of which anticipates that the efficient management of receivables, inventory and payables jointly determines a firm's liquidity and profitability position. The negative effects of the accounts receivable period and accounts payable period, together with the positive effect of the inventory period, indicate that the receivables and payables dimensions of working capital operate as cost-generating delays when extended, whereas the inventory dimension functions as a productivity-supporting buffer within the ranges observed in this sector. This pattern mirrors recent international evidence: Banerjee and Guha Deb (2024) found that the profitability benefits of efficient receivables and payables management are strongest among well-managed firms, while Mehta et al. (2025) similarly identified receivables and payables efficiency, rather than inventory minimisation per se, as the primary drivers of working capital-linked performance gains in recent cross-country evidence. The results reinforce the conclusion that, for capital-intensive manufacturing operations, the objective of working capital management is not to minimise all three components uniformly but to optimise each according to its distinct operational function within the cash conversion cycle.

From a Trade-Off Theory of Liquidity perspective, the results suggest that Manufacturing and Allied Firms listed at the NSE have, on average, positioned themselves closer to the liquidity-

preserving end of the trade-off with respect to inventory, and closer to the profitability-eroding end of the trade-off with respect to receivables and payables. This asymmetry is instructive for financial managers: it implies that the marginal cost of extending the receivable and payable periods currently exceeds the marginal liquidity benefit, whereas the marginal benefit of maintaining adequate inventory continues to exceed its marginal holding cost within the ranges observed. Kuncoro et al. (2024), applying a similar trade-off framing to Southeast Asian firms, reached a comparable conclusion, noting that the optimal working capital position is asymmetric across components rather than uniformly minimal, a nuance that aggregate measures such as the current ratio or net working capital-to-sales ratio tend to obscure. This reinforces the practical value of disaggregating working capital into its component periods, as undertaken in this study, rather than relying solely on composite liquidity ratios when formulating working capital policy.

Summary of Hypothesis Testing

Table 7 presents a consolidated summary of the hypothesis testing results discussed in Sections 4.4.1 to 4.4.4.

Table 7: Summary of Hypothesis Testing Results

Sub-construct	Coefficient (β)	p-value	Decision
Accounts Receivable Period $\rightarrow$ ROA	-0.0012	0.002	Significant negative effect
Inventory Period $\rightarrow$ ROA	0.0004	0.042	Significant positive effect
Accounts Payable Period $\rightarrow$ ROA	-0.0007	0.000	Significant negative effect
Overall Model (H_{01})	F = 568.14	0.000	H_{01} rejected

Source: Author's computation (2026).

The consolidated results in Table 7 confirm that all three working capital sub-constructs examined in this study exerted a statistically significant effect on financial performance, albeit in differing directions, and that the overall model was significant, warranting rejection of the null hypothesis stated in Section 1.2.

Comparison with Prior Kenyan Studies

The findings of this study are broadly consistent with, and in some respects extend, prior Kenyan evidence on working capital management. Mathuva (2010), in an early and frequently cited study on this subject, found that the accounts receivable period was negatively related to profitability among NSE-listed firms, a relationship corroborated by the present study using a considerably longer and more recent panel. Makori and Jagongo (2013) similarly found a negative relationship between the cash conversion cycle and profitability among manufacturing and construction firms, consistent with the negative net effect implied by this study's ARP and APP coefficients once

combined into the cash conversion cycle framework described in Section 2.1.1. More recent studies, including Wekesa and Njeru (2022) and Wanzala and Obokoh (2024), similarly report a statistically significant relationship between working capital management and financial performance among NSE-listed firms, though the latter study, focused on commercial and services firms, found a positive rather than negative effect for certain payable-related indicators, a divergence plausibly attributable to sectoral differences in supplier bargaining power between manufacturing firms and commercial and services firms. Sogomi et al. (2024), examining Kenyan SMEs rather than listed firms, similarly found that working capital management was significantly associated with liquidity and financial performance, suggesting that the relationships documented in this study for large listed manufacturers may extend, with some variation in magnitude, to smaller unlisted manufacturing enterprises operating in the same economy.

Conclusion

This study set out to evaluate the effect of working capital management on the financial performance of Manufacturing and Allied Firms listed at the Nairobi Securities Exchange, Kenya, using an eleven-year panel of audited firm-level data covering 2015 to 2025. The descriptive results revealed considerable year-on-year variation in the accounts receivable period, inventory period and accounts payable period among the sampled firms, with particularly pronounced deterioration in receivables collection and supplier settlement observed during 2022 and 2023. The correlation and panel regression results consistently showed that the accounts receivable period and accounts payable period exert a statistically significant negative effect on Return on Assets, while the inventory period exerts a statistically significant positive effect. The overall model explained approximately 95 percent of the within-firm variation in financial performance, leading to rejection of the null hypothesis that working capital management has no statistically significant effect on financial performance.

The study concludes that working capital management is a material determinant of financial performance among Manufacturing and Allied Firms listed at the NSE. Firms that permit prolonged customer collection periods and delay supplier settlement beyond optimal terms record measurably lower profitability, while firms that maintain adequate, appropriately timed inventory levels are better positioned to sustain production continuity and revenue generation. These findings underscore that working capital management should be treated as a core strategic function within listed manufacturing firms rather than a residual operational concern, given its demonstrated and quantifiable link to shareholder value creation.

Recommendations

Based on the findings, the following recommendations are made.

- i. **Management teams and chief finance officers of Manufacturing and Allied Firms** should strengthen credit assessment, invoicing and collection procedures to shorten the accounts receivable period without unduly restricting sales growth. Structured customer

credit scoring, automated invoicing and proactive follow-up on overdue accounts would help firms convert credit sales into cash more quickly, freeing resources for productive investment.

- ii. **Inventory and production planning functions** should maintain inventory at levels calibrated to production lead times and demand variability rather than pursuing indiscriminate inventory minimisation. Given the positive relationship established between the inventory period and financial performance in this sector, firms should resist the temptation to cut inventory buffers purely to improve short-term liquidity ratios, as doing so risks costly production interruptions and lost sales.
- iii. **Procurement and finance functions** should establish accounts payable policies that balance the short-term liquidity benefit of delayed supplier payment against the longer-term costs of forfeited early-payment discounts and strained supplier relationships. Firms should negotiate payment terms proactively rather than allowing payable periods to extend passively during periods of cash-flow pressure, since the latter pattern was strongly associated with lower financial performance in this study.
- iv. **The Capital Markets Authority and the Nairobi Securities Exchange** should encourage enhanced disclosure of working capital indicators, including receivable, inventory and payable turnover metrics, within listed firms' annual reports, to improve the transparency of short-term financial management practices available to investors and analysts.
- v. **Investors and financial analysts** evaluating Manufacturing and Allied Firms should incorporate working capital indicators, particularly the accounts receivable and accounts payable periods, alongside conventional profitability ratios when assessing the financial health and investment potential of listed manufacturing firms, given the strength of the relationship documented in this study.

Suggestions for Further Research

The study was limited to the ten firms constituting the Manufacturing and Allied sector at the NSE, and the findings should be interpreted within this sectoral and market context. Future research could extend the analysis to other NSE market segments, such as commercial and services, or energy and petroleum, to establish whether the observed relationships hold across sectors with different working capital intensities. Future studies could also incorporate alternative performance measures, such as Return on Equity, Tobin's Q or market-based indicators, and examine whether the effect of working capital management on financial performance is moderated by firm-specific characteristics such as capital adequacy and firm size, or by macroeconomic conditions such as inflation and exchange rate volatility, which appeared to coincide with the extreme working capital observations recorded during 2022 and 2023 in this study.

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