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Cash Management and Financial Performance of NCR Nigeria Plc: Evidence from 2014 To 2023

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Abstract: *Cash management determines whether a profitable firm can remain liquid, yet evidence on its effect on profitability is inconclusive and rarely examines individual firms in volatile economies. This study examined the effect of cash management on the financial performance of NCR Nigeria Plc from 2014 to 2023, focusing on the cash conversion cycle, cash payment period, and cash conversion efficiency as determinants of return on assets. An ex post facto, longitudinal case study design was adopted, and secondary data were drawn from the firm's audited annual reports. Data were analyzed using descriptive statistics, Pearson correlation, and Ordinary Least Squares regression, supported by standard diagnostic tests. The three measures jointly explained about three-quarters of the variation in return on assets, and the model was significant overall. The cash conversion cycle had no significant effect on return on assets, while the cash payment period had a positive effect significant only at the 10 percent level. Cash conversion efficiency had a significant negative effect when estimated alone, but this effect disappeared once the other measures were controlled, reflecting a gap between reported profit and operating cash. The results were shaped by the extreme observations of 2022 and 2023. The study concludes that cash management shapes profitability as a connected system, and that evidence from inventory-heavy firms does not transfer to a Nigerian technology firm. It recommends that management avoid sharp lengthening of the operating cycle during currency shocks, use supplier credit prudently, and strengthen the conversion of reported earnings into operating cash.*

Keywords: *cash conversion cycle, cash payment period, cash conversion efficiency, return on assets, NCR Nigeria Plc*

INTRODUCTION

A company can report a profit and still collapse because it has run out of cash. This paradox lies at the heart of cash management, which concerns how quickly a firm turns its investment in

inventory and receivables back into cash, how long it holds on to cash before paying its suppliers, and how much of each naira of sales it actually collects as operating cash. Across many economies, evidence shows that the way firms manage this cycle shapes their profitability. Studies of manufacturing firms in Bangladesh (Karim et al., 2023), listed firms in Turkey (Doğan & Kevser, 2020), and retailers in South Africa (Mandipa & Sibindi, 2022) report that firms that take longer to convert operations into cash earn lower returns on their assets. The effect appears stronger in emerging economies, where longer inventory, collection and payment periods are associated with weaker performance (Huynh et al., 2025), and during economic crises, which Kukeli et al. (2025) found to raise the marginal effect of the cash conversion cycle on profitability almost fourfold across 6,072 European firms. These findings carry particular weight for Nigeria. Between 2014 and 2023, Nigerian firms operated through the collapse of oil prices, the 2016 recession, foreign exchange scarcity, repeated naira devaluations, the COVID-19 disruption, and persistently high inflation, all of which lengthen collection periods, raise the cost of holding inventory, and tighten supplier credit. NCR Nigeria Plc is especially exposed to these pressures. If the firm cannot convert its operations into cash quickly and efficiently, its return on assets is likely to suffer. Understanding how its cash conversion cycle, cash payment period and cash conversion efficiency relate to its profitability is therefore a pressing practical problem for the firm and its investors.

Despite the volume of research on cash management, the evidence remains inconclusive and leaves firms such as NCR Nigeria Plc unexamined. On the cash conversion cycle, the dominant finding is a significant negative effect on return on assets (Doğan & Kevser, 2020; Karim et al., 2023; Mandipa & Sibindi, 2022), yet evidence from Nigeria departs from this pattern. Efeeloo et al. (2025) found a positive but insignificant effect of the cash conversion cycle on the return on assets of listed consumer goods firms, while Edomobi et al. (2024) found that it affected the return on assets of Nigerian manufacturing firms only in the long run. Other studies reject a simple linear relationship altogether, reporting an inverted U-shape (Kukeli et al., 2025) or a decreasing convex pattern (Deari & Palomba, 2024). Findings on the payment period are equally divided. Anser (2013) argued that firms can raise profitability by extending the time they take to pay suppliers, whereas Hossain (2020) found the payment period to be negatively related to returns. Huynh et al. (2025) found that delaying payments reduces profitability. Cash conversion efficiency has received far less attention, and the few studies that include it disagree; Edomobi et al. (2024), for example, found no significant short-run or long-run effect of this strategy on the return on assets of Nigerian manufacturing firms. These conflicts point to a deeper contextual problem. Most of these studies pool data across many firms in manufacturing, consumer goods, retail, or oil and gas, and many are drawn from Asia and Europe, where operating conditions differ sharply from those in Nigeria. Pooling hides the experience of individual firms, and none of these studies examines a technology-based company that imports its equipment and sells on credit to the banking sector. Few also test the cash conversion cycle, the cash payment period, and cash conversion efficiency together in one model, or cover a period that includes both the 2016 recession and the COVID-19 pandemic. As a result, it remains unknown whether, and in what direction, these three measures of cash management affect the return on assets of NCR Nigeria Plc.

This study addresses that gap by providing firm-specific evidence on the effect of cash management on the financial performance of NCR Nigeria Plc from 2014 to 2023. A single-firm, time-series approach suits this purpose because it captures how one company's cash management responds to changing economic conditions, which pooled studies cannot show. The study adopts an ex post facto research design and draws secondary data from the audited annual reports of NCR Nigeria Plc published on the Nigerian Exchange Group. Return on assets measures financial performance, while cash management is measured by the cash conversion cycle, the cash payment period, and cash conversion efficiency. The data are analyzed using descriptive statistics, correlation analysis, and multiple regression by Ordinary Least Squares, supported by tests for stationarity, multicollinearity, serial correlation, heteroskedasticity, and normality. The study is anchored on the Pecking Order Theory, which holds that firms prefer to finance their operations from internally generated funds before turning to debt or equity, a rationale that Efeeloo et al. (2025) applied to explain why efficient cash generation should strengthen performance. Testing the three cash management measures together allows the study to show which matters most for the firm's profitability, and whether the patterns reported elsewhere hold for a Nigerian technology firm operating through recession, currency crises, and a pandemic. The findings are expected to help the management of NCR Nigeria Plc decide whether to shorten its cash conversion cycle, adjust the time it takes to pay suppliers, or improve how it converts sales into cash. They will also give investors and analysts a clearer basis for assessing the firm, and they add fresh evidence to a debate that earlier studies have left unresolved. Accordingly, the study examines the effect of the cash conversion cycle, determines the effect of the cash payment period and assesses the effect of cash conversion efficiency on the return on assets of NCR Nigeria Plc.

METHODOLOGY

This section reviews methods used in earlier studies of cash management and firm performance and, on that basis, sets out the research design, data, variables, model, and estimation procedure adopted for this study. The aim is to show that the chosen approach answers the three specific objectives and avoids the main weaknesses of earlier work.

Review of Methodological Approaches in Prior Studies

Empirical work on cash management and profitability has relied mostly on panel data drawn from many listed firms. Studies of manufacturing firms in Bangladesh (Karim et al., 2023), listed firms in Turkey (Doğan & Kevser, 2020), retail firms in South Africa (Mandipa & Sibindi, 2022) and listed enterprises in Vietnam (Huynh et al., 2025) estimate the effect of the cash conversion cycle and its components on return on assets across a cross-section of companies. In Nigeria, Efeeloo et al. (2025) examined listed consumer goods firms, while Edomobi et al. (2024) applied an Autoregressive Distributed Lag (ARDL) approach to manufacturing firms to separate short-run from long-run effects. A further strand tests non-linear specifications: Kukeli et al. (2025) estimated an inverted U-shaped relationship across 6,072 European firms, and Deari and Palomba (2024) reported a decreasing convex relationship for listed firms in North Macedonia.

Two weaknesses follow from this review. First, pooled and panel designs estimate an average effect across firms and so conceal how a single company responds to changes in its own cash management. Second, few studies combine the cash conversion cycle, the payment period and cash conversion efficiency in one model. This study therefore adopts a single-firm, time-series design that places all three measures in one equation.

Table 1: Summary of methodological approaches in selected prior studies

Study	Context	Approach and main finding on ROA
Doğan and Kevser (2020).	Listed firms, Turkey	Multi-firm regression; CCC negatively related to performance
Karim et al. (2023).	Manufacturing firms, Bangladesh	Multi-firm regression; CCC negatively related to performance
Mandipa and Sibindi (2022).	Retail firms, South Africa	Multi-firm regression; CCC negatively related to profitability
Huynh et al. (2025)	Listed enterprises, Vietnam	Multi-firm regression with endogeneity checks; longer cycle periods linked to weaker performance
Edomobi et al. (2024).	Manufacturing firms, Nigeria	ARDL; CCC affects ROA in the long run only; no significant CCE effect
Efeeloo et al. (2025).	Consumer goods firms, Nigeria	Multi-firm regression; positive but insignificant CCC effect
Kukeli et al. (2025).	6,072 firms, Europe	Non-linear model; inverted U-shaped CCC–profitability relationship
Deari and Palomba (2024).	Listed firms, North Macedonia	Non-linear model; decreasing convex relationship

Source: Compiled by the researcher from the cited studies.

Research Design

The study adopts an ex post facto research design. This design suits studies that rely on events that have already taken place and on data that the researcher cannot manipulate, such as figures reported in audited financial statements. The study is also a longitudinal case study because it follows one firm, NCR Nigeria Plc, over ten financial years from 2014 to 2023.

Population, Sample and Scope

The population of the study is NCR Nigeria Plc, which is listed on the Nigerian Exchange Group (NGX). Because the study focuses on a single firm, no sampling technique is required; the firm itself is the unit of analysis. The scope covers the ten financial years from 2014 to 2023, a period

that includes the oil price collapse, the 2016 recession, foreign exchange scarcity, the COVID-19 pandemic, and repeated naira devaluations.

Sources and Method of Data Collection

The study uses secondary data extracted from the audited annual reports and accounts of NCR Nigeria Plc for 2014 to 2023, obtained from the company's website and the NGX. The relevant figures are profit after tax, total assets, inventory, trade receivables, trade payables, revenue, cost of sales, and net cash flow from operating activities. Using audited figures improves the reliability of the data.

Description and Measurement of Variables

Return on assets is the dependent variable and measures financial performance. The cash conversion cycle, cash payment period, and cash conversion efficiency are the independent variables and serve as measures of cash management. Table 2 defines each variable and how it is measured.

Table 2: Description and measurement of variables

Variable	Type	Measurement	Source
Return on assets (ROA)	Dependent	Profit after tax ÷ total assets × 100	Karim et al. (2023); Mandipa and Sibindi (2022)
Cash conversion cycle (CCC)	Independent	Inventory days + receivables collection days − payables payment days, where inventory days = (inventory ÷ cost of sales) × 365 and receivables days = (trade receivables ÷ revenue) × 365	Deloof (2003); Karim et al. (2023)
Cash payment period (CPP)	Independent	(Trade payables ÷ cost of sales) × 365	Deloof (2003); Hossain (2020)
Cash conversion efficiency (CCE)	Independent	Net cash flow from operating activities ÷ revenue	Edomobi et al. (2024)

Source: Compiled by the researcher.

Theoretical Basis of the Model

The model is anchored on the Pecking Order Theory (Myers & Majluf, 1984), which holds that firms prefer to finance their activities from internally generated funds before turning to debt and, last, to equity. Under this theory, a firm that converts its operations into cash quickly and efficiently relies less on costly external finance, which should raise its return on assets. Efeeloo et al. (2025)

used the same theory to explain the link between cash conversion and the performance of Nigerian firms.

Model Specification

Following the general form used in earlier studies (Deloof, 2003; Karim et al., 2023), the study specifies financial performance as a function of the three cash management measures. In functional form:

$ROA = f(CCC, CPP, CCE)$ (1)

Expressed in explicit econometric form, the multiple regression model is:

$ROA_t = \beta_0 + \beta_1 CCC_t + \beta_2 CPP_t + \beta_3 CCE_t + \mu_t$(2)

To address each specific objective on its own, the study also estimates three simple regression models:

Objective 1: $ROA_t = \alpha_0 + \alpha_1 CCC_t + \mu_{1t}$ (3)

Objective 2: $ROA_t = \gamma_0 + \gamma_1 CPP_t + \mu_{2t}$ (4)

Objective 3: $ROA_t = \delta_0 + \delta_1 CCE_t + \mu_{3t}$ (5)

Where:

- **ROA** = return on assets of NCR Nigeria Plc in year t
- **CCC** = cash conversion cycle (days)
- **CPP** = cash payment period (days)
- **CCE** = cash conversion efficiency (ratio)
- **β_0, α_0, γ_0, δ_0** = constant (intercept) terms
- **β_1–β_3, α_1, γ_1, δ_1** = coefficients of the explanatory variables
- **μ** = stochastic error term
- **t** = time period, 2014 to 2023

A Priori Expectations

Based on working capital theory and earlier evidence, the study expects $\beta_1 < 0$, $\beta_2 > 0$ and $\beta_3 > 0$. Table 3 explains each expectation.

Table 3: A priori expectations

Variable	Expected sign	Justification
CCC	Negative (−)	A longer cycle ties up cash in inventory and receivables and lowers returns (Karim et al., 2023; Doğan & Kevser, 2020).
CPP	Positive (+)	A longer payment period lets the firm use supplier credit as short-term finance (Anser, 2013), although some studies find the opposite (Hossain, 2020; Huynh et al., 2025).
CCE	Positive (+)	Converting more of revenue into operating cash reduces reliance on external finance and should raise ROA (Myers & Majluf, 1984).

Source: Compiled by the researcher.

Method of Data Analysis

The data are analyzed in three stages using E-Views (or STATA).

- **Descriptive statistics.** The mean, standard deviation, minimum, maximum, skewness, and kurtosis describe the behavior of each variable over the period.
- **Correlation analysis.** A Pearson correlation matrix shows the strength and direction of association between the variables and gives an early signal of multicollinearity.
- **Regression analysis.** Equations 2 to 5 are estimated by Ordinary Least Squares (OLS), which gives best linear unbiased estimates when its classical assumptions hold (Gujarati & Porter, 2009).

To confirm that these assumptions hold, the study carries out the following tests (Gujarati & Porter, 2009):

Table 4: Diagnostic tests

Test	Purpose	Decision
Augmented Dickey-Fuller (ADF)	Checks that each series is stationary, to avoid spurious regression	Stationary if p-value < 0.05
Variance inflation factor (VIF)	Checks for multicollinearity among the independent variables	No serious multicollinearity if VIF < 10
Breusch-Godfrey LM test	Checks for serial correlation in the residuals	No serial correlation if p-value > 0.05
Breusch-Pagan-Godfrey test	Checks for heteroskedasticity	Homoskedastic if p-value > 0.05
Jarque-Bera test	Checks that the residuals are normally distributed	Normal if p-value > 0.05
Ramsey RESET test	Checks that the linear functional form is correctly specified	Correct specification if p-value > 0.05

Source: Compiled by the researcher.

Decision Rule

Each hypothesis is tested at the 5% level of significance. The null hypothesis is rejected when the p-value of the t-statistic for the relevant coefficient is less than 0.05, and accepted otherwise. The overall significance of the multiple regression model is judged by the F-statistic and its p-value, and its explanatory power by the coefficient of determination (R^2) and adjusted R^2.

Methodological Limitations

Annual data for one firm over ten years yields only ten observations. With three explanatory variables, the multiple regression model has few degrees of freedom, which weakens the power of the significance and stationarity tests. For this reason, the study does not add control variables such as firm size and leverage, which earlier multi-firm studies have used (Doğan & Kevser, 2020; Karim et al., 2023). Where the company's interim reports are available on the NGX, quarterly data can raise the number of observations to forty and strengthen the estimates. The results should also be read as evidence on NCR Nigeria Plc and not generalized to all Nigerian firms.

RESULTS AND DISCUSSION

This section presents and discusses the results of the analysis of the effect of cash management on the financial performance of NCR Nigeria Plc from 2014 to 2023. The section moves from the behavior of the variables over time, through the descriptive statistics, correlation and diagnostic tests, to the regression estimates and the test of each hypothesis.

Trend of the Study Variables, 2014–2023

Table 5 presents the data used in the analysis, as extracted from the audited annual reports of NCR Nigeria Plc and transformed by the researcher in Microsoft Excel. Figure 1 plots each series over the ten years.

Table 5: Cash management and return on assets of NCR Nigeria Plc, 2014–2023

Year	CCC (days)	CPP	CCE	ROA
2014	128.4118	0.001016	6.312682	0.090451
2015	251.1190	0.002308	6.378543	0.079691
2016	−9.5213	0.001626	6.217169	0.028553
2017	−134.1900	0.002294	6.622735	0.027834
2018	−1.8590	0.001814	6.613898	0.069190
2019	−95.0541	0.000877	6.608612	0.007163
2020	−89.7148	0.000891	6.536408	0.006705
2021	−80.3382	0.000850	6.411232	0.031089
2022	2,374.7810	0.012788	6.431495	0.061906
2023	13.5118	0.010308	5.356471	0.186054

Source: Annual reports of NCR Nigeria Plc (2014–2023), transformed by the researcher in Microsoft Excel.

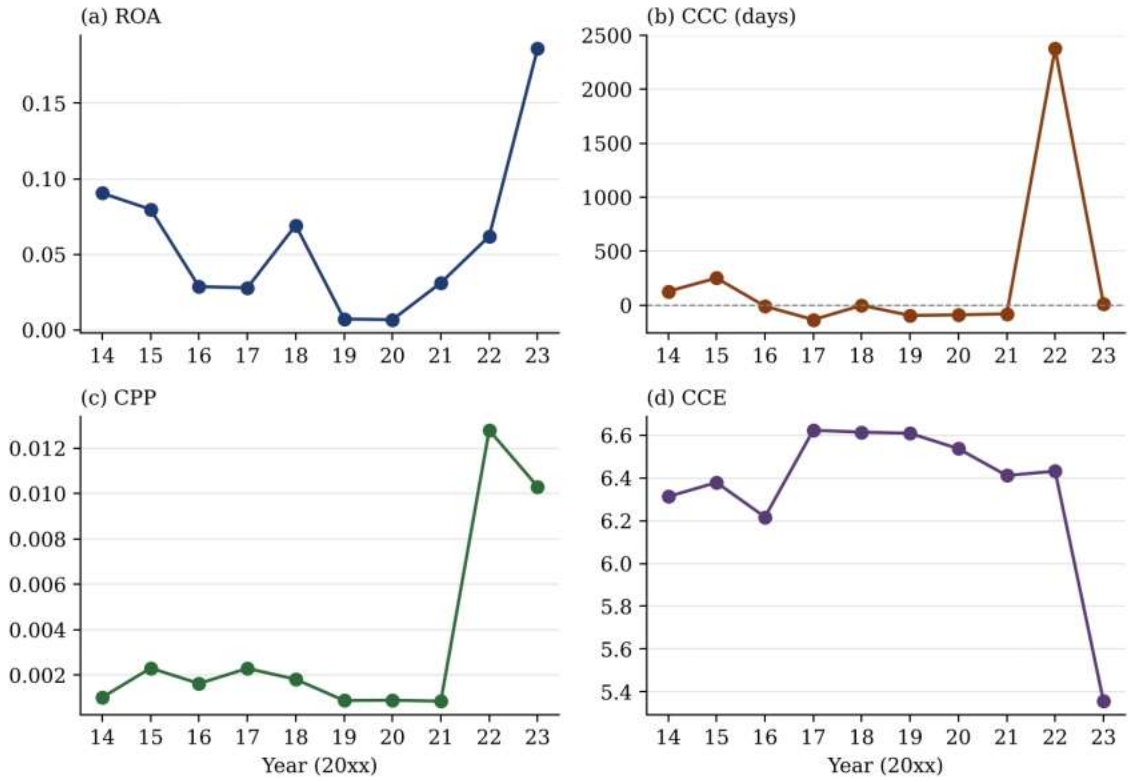


Figure 1: Trend of ROA, CCC, CPP and CCE of NCR Nigeria Plc, 2014–2023
Source: Researcher's plot of the data in Table 5.

Return on assets followed a U-shaped path. It stood at 9.05% in 2014 and 7.97% in 2015, fell to about 2.8% in 2016 and 2017, recovered briefly to 6.92% in 2018, and then collapsed to 0.72% in 2019 and 0.67% in 2020, the lowest level in the period. From that trough, it climbed to 3.11% in 2021, 6.19% in 2022, and a period high of 18.61% in 2023. The cash conversion cycle was positive in 2014 and 2015 (128 and 251 days), turned negative in every year from 2016 to 2021, reaching −134 days in 2017, and then jumped to an extreme 2,375 days in 2022 before settling at 13.5 days in 2023. The cash payment period stayed within a narrow band of 0.0009 to 0.0023 from 2014 to 2021 but rose roughly twelvefold to 0.0128 in 2022 and remained high at 0.0103 in 2023. Cash conversion efficiency was the most stable series, moving between 6.22 and 6.62 for nine years before dropping sharply to 5.36 in 2023. The fall in ROA from 2016 and its trough in 2019–2020 coincide with the 2016 recession, the foreign exchange scarcity that raised the naira cost of imported equipment, and the COVID-19 disruption, all of which squeezed margins for a firm that imports the machines it sells and services. The negative cash conversion cycle from 2016 to 2021 means that the firm, on the measures used, collected cash from customers and turned over inventory faster than it paid its suppliers, so supplier credit financed part of its operations. A negative cycle of this kind is common among firms that hold little inventory and sell services or equipment under advance or prompt-payment terms. The spike of 2,375 days in 2022 is far outside

the range of the other nine years. It points to an unusual build-up of inventory or receivables relative to cost of sales and revenue in that year, possibly linked to stock-piling ahead of further devaluation or to delayed collections from bank customers; it may also reflect a change in the reporting of these items, and should be checked against the 2022 annual report. The sharp rise in ROA in 2023 alongside the fall in CCE suggests that the profit reported in that year was not matched by a proportionate rise in operating cash. One plausible source is accrual-based gains, such as the naira revaluation of foreign-currency balances after the 2023 devaluation, which raise reported profit without a matching cash inflow. The weakening of performance during the recession and pandemic years mirrors the pattern reported by Kukeli et al. (2025), who found that economic crises sharply raised the sensitivity of profitability to the cash conversion cycle across European firms, and by Huynh et al. (2025), who observed weaker performance in emerging-market firms when operating cycles lengthen. Unlike the manufacturing firms studied by Karim et al. (2023) and Edomobi et al. (2024), however, NCR Nigeria Plc ran a negative cash conversion cycle for most of the period, which sets it apart from the inventory-heavy firms that dominate the literature. The trends show that cash management at NCR Nigeria Plc did not move smoothly but in sharp breaks, especially in 2022 and 2023. Any regression over this short period will therefore be strongly shaped by those two years, a point the later results confirm. For management, the 2022 spike signals a year in which a large amount of cash was tied up in the operating cycle and calls for closer monitoring of stock and receivables during currency shocks.

Descriptive Statistics

Table 6: Descriptive statistics of the study variables

Statistic	ROA	CCC	CPP	CCE
Mean	0.0589	235.7146	0.0035	6.3489
Median	0.0465	−5.6901	0.0017	6.4214
Maximum	0.1861	2,374.7810	0.0128	6.6227
Minimum	0.0067	−134.1900	0.0008	5.3565
Std. deviation	0.0535	760.5074	0.0043	0.3746
Skewness	1.5772	3.0295	1.7860	−2.4195
Excess kurtosis	3.1088	9.3605	1.8030	6.5978
Jarque-Bera	3.5614	20.2761	3.8743	11.1695
Probability	0.1685	0.0000	0.1441	0.0038
Observations	10	10	10	10

Source: Researcher's computation (2026).

NCR Nigeria Plc earned an average return on assets of 5.89% over the decade, with a standard deviation of 5.35 percentage points, which is almost as large as the mean itself. The cash conversion cycle averaged 235.7 days, but its median was −5.7 days and its standard deviation

760.5 days, so the mean is far from typical. The cash payment period averaged 0.0035 against a median of 0.0017, and cash conversion efficiency averaged 6.35 with a small standard deviation of 0.37. ROA, CCC and CPP are positively skewed, while CCE is negatively skewed. The Jarque-Bera test rejects normality for CCC ($p = 0.0000$) and CCE ($p = 0.0038$) but not for ROA ($p = 0.1685$) or CPP ($p = 0.1441$). The gap between the mean and the median of the cash conversion cycle, and its very high kurtosis, come almost entirely from the single 2022 value of 2,375 days; without it, the cycle would centre on a small negative number. In the same way, the strong negative skew of CCE is produced by the 2023 value of 5.36, which lies well below the other nine observations, and the positive skew of ROA reflects the 18.61% return in 2023. The descriptive results therefore show that two years, 2022 and 2023, carry most of the variation in the data. The average ROA of 5.89% lies within the range reported for Nigerian listed firms by Efeeloo et al. (2025) and Edomobi et al. (2024), although the high volatility here reflects the exposure of a single firm to shocks that pooled samples average out. The negative median cash conversion cycle contrasts with the positive cycles typical of the manufacturing and retail firms studied by Karim et al. (2023), Doğan and Kevser (2020) and Mandipa and Sibindi (2022), whose operations require larger stocks of inventory. Because the mean of CCC is distorted by one year, the median gives a truer picture of the firm's normal cash cycle: in a typical year NCR Nigeria Plc paid its suppliers at about the same time as, or slightly later than, it recovered cash from operations. The non-normality of CCC and CCE also warns that regression estimates based on ten observations will be sensitive to the extreme years, which the study tests in Section 4.6.

Correlation Analysis

Table 7: Pearson correlation matrix (p-values in parentheses)

Variable	ROA	CCC	CPP	CCE
ROA	1.0000			
CCC	0.0942 (0.796)	1.0000		
CPP	0.5817 (0.078)	0.7580 (0.011)	1.0000	
CCE	−0.8492 (0.002)	0.0402 (0.912)	−0.5344 (0.112)	1.0000

Source: Researcher's computation (2026).

ROA has a very weak positive correlation with the cash conversion cycle ($r = 0.094$, $p = 0.796$), a moderate positive correlation with the cash payment period ($r = 0.582$, $p = 0.078$) and a strong negative correlation with cash conversion efficiency ($r = −0.849$, $p = 0.002$). Only the ROA–CCE correlation is significant at the 5% level. Among the explanatory variables, CCC and CPP are strongly and significantly correlated ($r = 0.758$, $p = 0.011$). The near-zero correlation between ROA and CCC arises because the largest cycle (2022) occurred in a year of only moderate return, while the lowest returns (2019–2020) occurred when the cycle was negative but not at its minimum; there is no consistent co-movement. The positive ROA–CPP correlation and the strong CCC–CPP correlation both reflect the joint rise of the payment period and the cycle in 2022–2023, the same years in which ROA recovered. The strong negative ROA–CCE correlation is driven

mainly by 2023, when ROA reached its peak and CCE its lowest value. The weak CCC–ROA association departs from the significant negative correlations reported by Karim et al. (2023) and Doğan and Kevser (2020) but aligns with the weak, insignificant relationship found for Nigerian consumer goods firms by Efeeloo et al. (2025). The positive CPP–ROA association is consistent with Anser's (2013) argument that firms benefit from using supplier credit, and it contrasts with the negative relationship reported by Hossain (2020). The strong correlation between CCC and CPP gives an early warning of multicollinearity in the multiple regression model, since both measures share the payables component. It also means that the separate effects of the two variables will be hard to isolate in a ten-year sample.

Pre-Estimation and Diagnostic Tests

Table 8: Augmented Dickey-Fuller unit root test (intercept, lag 0)

Variable	ADF at level	p-value	ADF at 1st diff.	p-value
ROA	−0.7357	0.8373	−1.1122	0.7102
CCC	−3.0160	0.0334	—	—
CPP	−1.0802	0.7229	−3.2761	0.0160
CCE	−0.5167	0.8887	−1.4141	0.5755
Residual (Eq. 2)	−3.0949	0.0020	—	—

Source: Researcher's computation (2026). The residual test uses no constant.

Table 9: Post-estimation diagnostic tests for the multiple regression model (Equation 2)

Test	Statistic	p-value	Decision
VIF: CCC / CPP / CCE	6.756 / 9.441 / 4.023	—	Below 10; CPP borderline
Breusch-Godfrey LM (1 lag)	0.0025	0.9603	No serial correlation
Durbin-Watson	1.7795	—	No serial correlation
Breusch-Pagan-Godfrey	3.6882	0.2972	Homoskedastic
Jarque-Bera (residuals)	0.6824	0.7109	Normal residuals
Ramsey RESET (F)	0.4426	0.5353	Correctly specified

Source: Researcher's computation (2026).

The ADF test shows that only CCC is stationary at level ($p = 0.033$). CPP becomes stationary after first differencing ($p = 0.016$), while ROA and CCE remain non-stationary even after first differencing. The residuals of the multiple regression model, however, are stationary at level (ADF = −3.095). All variance inflation factors are below 10, though the VIF of CPP (9.44) is close to that threshold. The Breusch-Godfrey, Breusch-Pagan-Godfrey, Jarque-Bera, and Ramsey RESET tests all have p-values above 0.05, so the residuals show no serial correlation, constant variance,

and normality, and the linear form is accepted. The failure of ROA and CCE to reject a unit root should be read with caution. With only ten annual observations, the ADF test has very low power and tends to accept the null of non-stationarity even when a series is stationary; a single shift such as the 2023 jump in ROA and fall in CCE makes this more likely. The stationarity of the regression residuals is more informative, because it indicates that the variables move together in a stable combination. Strictly, the residual statistic of −3.09 is significant against standard critical values but falls short of the stricter Engle-Granger critical values for a three-regressor system, so this evidence against a spurious regression is suggestive rather than conclusive. The near-borderline VIF of CPP follows from its strong correlation with CCC noted in Table 7. Small-sample unit-root problems of this kind are a known limitation of single-firm studies, and they explain why multi-firm studies such as Karim et al. (2023) and Huynh et al. (2025) prefer panel designs, and why Edomobi et al. (2024) turned to the ARDL approach, which accepts a mix of stationary and first-difference variables. The clean residual diagnostics are consistent with the conditions Gujarati and Porter (2009) set for OLS to give best linear unbiased estimates. The OLS estimates can be relied on because the residuals meet the classical assumptions. However, the significance tests have limited power, and the stationarity results warrant restraint in drawing strong conclusions. As noted in the methodology, extending the data to quarterly observations would greatly strengthen these tests.

Regression Results

Table 10: OLS estimates of the multiple regression model (Equation 2). Dependent variable: ROA

Variable	Coefficient	Std. error	t-statistic	p-value
Constant	0.689119	0.391758	1.7590	0.1290
CCC	−0.000005	0.000038	−0.1424	0.8914
CPP	3.241379	7.829932	0.4140	0.6932
CCE	−0.100866	0.059076	−1.7074	0.1386
R^2	0.7450	Adjusted R^2	0.6175	
F-statistic	5.8410	Prob(F)	0.0326	
Durbin-Watson	1.7795	Observations	10	

Source: Researcher's computation (2026).

Table 11: OLS estimates of the simple regression models (Equations 3–5). Dependent variable: ROA

Model	Coefficient	Std. error	t-stat.	p-value	R^2	Prob(F)
Eq. 3: CCC	0.0000066	0.0000248	0.2675	0.7958	0.0089	0.7958
Eq. 4: CPP	7.1894	3.5542	2.0228	0.0777	0.3384	0.0777
Eq. 5: CCE	−0.1213	0.0267	−4.5487	0.0019	0.7212	0.0019

Source: Researcher's computation (2026). Intercepts: Eq. 3 = 0.0573 (p = 0.016); Eq. 4 = 0.0339 (p = 0.115); Eq. 5 = 0.8290 (p = 0.001).

Taken together, the three cash management measures explain 74.5% of the variation in the return on assets of NCR Nigeria Plc ($R^2 = 0.745$; adjusted $R^2 = 0.618$), and the model is significant as a whole ($F = 5.841$, $p = 0.033$). However, none of the three coefficients is individually significant at the 5% level: CCC is negative but negligible ($p = 0.891$), CPP is positive ($p = 0.693$), and CCE is negative ($p = 0.139$). In the simple models, CCC has no explanatory power ($R^2 = 0.009$), CPP explains 33.8% of the variation and is significant only at the 10% level ($p = 0.078$), and CCE explains 72.1% and is significant at the 1% level ($p = 0.002$). A model that is jointly significant but has no individually significant regressors is a classic sign of overlapping explanatory variables in a small sample. CCC and CPP are strongly correlated, and both rose in 2022–2023, while CCE fell in 2023; the model suggests these movements together track ROA, but with only six residual degrees of freedom it cannot assign the effect to any one variable with confidence. The large standard error on CPP, in particular, reflects the near-threshold VIF. In the simple models, CCE carries most of the explanatory weight because its fall in 2023 coincides with the ROA peak. The high R^2 is comparable to, and in some cases above, the explanatory power reported in multi-firm studies such as Karim et al. (2023) and Mandipa and Sibindi (2022), which is expected in a single-firm time series where much of the variation is common to all series. The pattern of a jointly significant model with weak individual effects resembles the mixed short-run results reported by Edomobi et al. (2024) for Nigerian manufacturing firms. Cash management, viewed as a whole, matters for the profitability of NCR Nigeria Plc, but this sample cannot reliably separate the contribution of each component. Management should therefore treat the cycle, payment period and conversion of sales into cash as one connected system rather than as levers that can be pulled independently. The objective-by-objective results are discussed next.

DISCUSSION OF FINDINGS BY OBJECTIVE

Effect of the cash conversion cycle on return on assets

H_{01}: The cash conversion cycle has no significant effect on the return on assets of NCR Nigeria Plc.

The cash conversion cycle has no significant effect on ROA in either the simple model (coefficient = 0.0000066, p = 0.796) or the multiple model (coefficient = −0.0000054, p = 0.891). The null hypothesis is therefore accepted. Even taken at face value, the simple-model coefficient implies

that an extra 100 days in the cycle would change ROA by less than 0.1 percentage point. For most of the period, the cycle was negative and moved within a modest range, while ROA swung widely for reasons linked to the period's macroeconomic shocks. The one extreme cycle, in 2022, came in a year of moderate return, so it neither supports nor contradicts a negative relationship and instead dominates the estimate. Influence statistics confirm this: Cook's distance for 2022 is 70.3, far above the usual threshold of 1. When 2022 is removed (Section 4.7), the coefficient becomes positive and significant, which suggests that the effect of the cycle on NCR's profitability is not linear and is sensitive to extreme years. The result contrasts with the dominant international finding of a significant negative effect of the cash conversion cycle on ROA (Deloof, 2003; Doğan & Kevser, 2020; Karim et al., 2023; Mandipa & Sibindi, 2022). It agrees, however, with Nigerian evidence: Efeeloo et al. (2025) found a positive but insignificant effect for listed consumer goods firms, and Edomobi et al. (2024) found no short-run effect for manufacturing firms. The sensitivity of the sign to one extreme year is also consistent with the non-linear relationships reported by Kukeli et al. (2025) and Deari and Palomba (2024), who show that the effect of the cycle depends on where a firm sits on it. For NCR Nigeria Plc, shortening the cash conversion cycle is unlikely, on its own, to raise return on assets, because the firm already operated with a negative cycle in most years. The more useful lesson for management is to avoid extreme lengthening of the cycle, as occurred in 2022, since such episodes tie up cash without a clear return. For theory, the result suggests that the negative cycle–profitability link drawn from inventory-heavy firms does not transfer directly to a technology and service firm.

Effect of the cash payment period on return on assets

H_{02}: The cash payment period has no significant effect on the return on assets of NCR Nigeria Plc. The cash payment period has a positive but insignificant effect on ROA at the 5% level in both the simple model (coefficient = 7.189, p = 0.078) and the multiple model (coefficient = 3.241, p = 0.693). The null hypothesis is therefore accepted. In the simple model, the effect is significant at the 10% level, and the period alone explains about a third of the variation in ROA. The positive sign reflects the joint rise of the payment period and ROA in 2022 and 2023. Taking longer to pay suppliers allows the firm to use trade credit as a cheap, interest-free source of short-term finance, which is especially valuable when bank borrowing is costly and foreign exchange is scarce, as it was in Nigeria in these years. The effect loses significance in the multiple model because the payment period shares the payables component with the cash conversion cycle, so the two variables compete to explain the same movement. The positive direction is consistent with the study is a priori expectation and with Anser (2013), who argued that firms can raise profitability by delaying payments to suppliers. This contrasts with Hossain (2020) and Huynh et al. (2025), who found that a longer payment period lowers profitability, possibly because firms in those samples lost early-payment discounts or supplier goodwill. The insignificance at the 5% level places this result alongside the mixed evidence on payables reviewed in the introduction. The evidence gives management modest support for negotiating longer credit terms with suppliers, particularly foreign equipment suppliers, during periods of tight liquidity. However, because the effect is weak and imprecise, this should not be pushed to the point of damaging supplier relationships or losing discounts. The positive sign is consistent with the Pecking Order Theory,

since supplier credit is a form of internally arranged finance that reduces the need for costly external funds (Myers & Majluf, 1984).

Effect of cash conversion efficiency on return on assets

H_{03}: Cash conversion efficiency has no significant effect on the return on assets of NCR Nigeria Plc.

Cash conversion efficiency has a negative and significant effect on ROA in the simple model (coefficient = −0.121, p = 0.002), which explains 72.1% of the variation in ROA. On the decision rule for Equation 5, the null hypothesis is rejected. A one-unit rise in CCE is associated with a fall of about 12.1 percentage points in ROA. The effect, however, becomes insignificant in the multiple model (coefficient = −0.101, p = 0.139) once CCC and CPP are held constant. The negative sign is contrary to the a priori expectation, and it rests heavily on 2023, when CCE fell to its lowest value while ROA reached its peak (Cook's distance for 2023 is 10.5). This points to a divergence between accounting profit and operating cash. When a firm records profit from items that do not produce cash in the same year, such as credit sales not yet collected or gains from revaluing foreign-currency balances after a devaluation, ROA rises while the share of revenue turned into operating cash falls. The negative coefficient therefore reflects the quality, or cash backing, of NCR's earnings rather than evidence that efficient cash conversion harms performance. When 2022 is excluded and the other measures are controlled for, the CCE effect shrinks to almost zero (Section 4.7), confirming that it is not robust. The negative, significant simple-model result is at odds with the Pecking Order Theory as applied by Efeeloo et al. (2025), which predicts that better cash generation strengthens performance. The insignificant multiple-model result, however, is consistent with Edomobi et al. (2024), who found no significant short-run or long-run effect of cash conversion efficiency on the ROA of Nigerian manufacturing firms. Because cash conversion efficiency has rarely been tested alongside the cash conversion cycle and payment period, this study adds evidence to a thin and unsettled strand of the literature. For management and investors, the result is a caution rather than a recommendation: high reported ROA at NCR Nigeria Plc has not always been backed by operating cash, especially in 2023. Investors should read profit figures alongside the cash flow statement, and management should seek to convert reported earnings into cash through faster collection from bank customers. The results suggest that ROA, an accrual measure, may respond to cash efficiency differently from cash-based performance measures, which future studies could test.

Sensitivity of the Results to the 2022 Observation

Because the 2022 cash conversion cycle of 2,375 days lies far outside the rest of the data and has a Cook's distance of 70.3, the multiple model was re-estimated without that year to check the robustness of the results.

Table 12: Multiple regression with and without 2022. Dependent variable: ROA

Variable	Full sample coeff.	p-value	Excl. 2022 coeff.	p-value
Constant	0.689119	0.1290	0.106365	0.7619
CCC	−0.000005	0.8914	0.000176	0.0489
CPP	3.241379	0.6932	13.967484	0.0827
CCE	−0.100866	0.1386	−0.012873	0.8076
R^2	0.7450		0.9038	
Observations	10		9	

Source: Researcher's computation (2026).

Without 2022, the cash conversion cycle turns positive and significant at the 5% level (p = 0.049), the payment period remains positive and becomes significant at the 10% level (p = 0.083), cash conversion efficiency falls to near zero (p = 0.808), and R^2 rises to 0.904. Removing the extreme cycle shows that, in normal years, a longer cycle at NCR Nigeria Plc went with higher returns. This is consistent with a firm that extends credit and holds stock to win and serve bank contracts, so that a longer cycle reflects higher sales activity rather than inefficiency. The collapse of the CCE effect shows that its earlier significance depended on combining the 2022 and 2023 observations. A positive cycle–profitability relationship has been reported, with firms using generous credit and stock policies to increase sales, and it fits the upward-sloping part of the inverted U-shape found by Kukeli et al. (2025). It also echoes the positive, if insignificant, Nigerian estimate of Efeeloo et al. (2025). The direction of the cash conversion cycle effect depends on whether extreme years are included, so the main finding of no significant effect should be read as fragile. A longer and more frequent series, such as quarterly data, is needed before firm conclusions about the direction of the effect can be drawn.

Summary of Hypothesis Tests

Table 13: Summary of results against a priori expectations

Hypothesis	Expected sign	Observed sign (Eq. 3–5)	p-value	Decision at 5%
H_{01}: CCC → ROA	Negative	Positive	0.7958	Accepted; no significant effect
H_{02}: CPP → ROA	Positive	Positive	0.0777	Accepted; significant at 10% only
H_{03}: CCE → ROA	Positive	Negative	0.0019	Rejected; not robust in Eq. 2

Source: Researcher's computation (2026).

Overall, the results show that cash management jointly explains a large share of the variation in the return on assets of NCR Nigeria Plc, but that the effect of each measure is weak in a ten-year series dominated by the shocks of 2022 and 2023. The cash conversion cycle has no significant effect; the cash payment period has a positive effect that is significant only at the 10% level; and cash conversion efficiency has a significant negative effect in isolation that disappears when the other measures are controlled. These findings support the view, raised in the introduction, that evidence drawn from pooled samples of manufacturing and retail firms does not transfer directly to a Nigerian technology firm, and they point to the quality of earnings, and not only the speed of the cash cycle, as a central concern for the firm and its investors.

CONCLUSION

This study examined the effect of cash management on the financial performance of NCR Nigeria Plc from 2014 to 2023. It used the cash conversion cycle, cash payment period, and cash conversion efficiency as measures of cash management, and return on assets as the performance measure. The evidence shows that cash management matters for the firm's profitability when its components are considered together. The three measures jointly explained about three-quarters of the variation in return on assets, and the model was significant overall. However, the separate effect of each measure was weak. The cash conversion cycle had no significant effect on return on assets. This suggests that shortening the cycle does not by itself raise profitability in a firm that already operated with a negative cycle in most years. The cash payment period had a positive effect that was significant only at the 10 per cent level. This indicates that supplier credit offered the firm some benefit as a low-cost source of short-term finance during periods of tight liquidity. Cash conversion efficiency had a significant negative effect when estimated alone, but this effect disappeared once the other measures were controlled. This pattern points less to a harmful effect of efficient cash conversion than to a gap between reported profit and operating cash, especially in 2023. The study further found that the results were strongly shaped by the extreme observations of 2022 and 2023, years marked by currency devaluation and sharp shifts in working capital. It therefore concludes that the cash management and profitability relationship reported for inventory-heavy firms in pooled samples does not transfer directly to a Nigerian technology firm. The quality of earnings deserves as much attention as the speed of the cash cycle.

Recommendations

Based on these findings, the study makes the following recommendations to management, investors and future researchers.

1. The management of NCR Nigeria Plc should treat the cash conversion cycle, supplier payments and cash collection as one connected system rather than as separate levers. In particular, it should avoid sharp lengthening of the operating cycle, as occurred in 2022, by closely monitoring inventory and receivables during periods of currency instability.
2. The firm should negotiate longer credit terms with its suppliers, especially foreign equipment suppliers, as a low-cost source of short-term finance. This should be done carefully, so early-payment discounts and supplier goodwill are not lost.

3. Management should strengthen the conversion of reported earnings into operating cash by speeding up collections from bank customers and reviewing the credit terms it offers them. Investors and analysts, in turn, should assess the firm's reported profit alongside its cash flow statement, since high returns have not always been backed by operating cash.
4. Future researchers should extend this study in four ways. They can use quarterly data to increase the number of observations and apply methods suited to short and mixed time series, such as the Autoregressive Distributed Lag model. They can also test for non-linear relationships and include cash-based measures of performance and control variables such as firm size and leverage.

REFERENCES

Anser, R. A. R. (2013). Cash conversion cycle and firms' profitability: A study of listed manufacturing companies of Pakistan. *IOSR Journal of Business and Management, 8*, 83–87. https://doi.org/10.9790/487x-0828387

Deari, F., & Palomba, G. (2024). Does the cash conversion cycle affect firm profitability? Some empirical evidence from listed firms in North Macedonia. *Zagreb International Review of Economics & Business, 27*, 63–77. https://doi.org/10.2478/zireb-2024-0003

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance & Accounting, 30*(3–4), 573–588. https://doi.org/10.1111/1468-5957.00008

Doğan, M., & Kevser, M. (2020). The determinants of cash conversion cycle and firm performance: An empirical research for Borsa Istanbul Turkey. *Management and Economics Review, 5*, 197–206. https://doi.org/10.24818/mer/2020.12-01

Edomobi, N., Ebiringa, O. T., & Chris-Ejiogu, U. G. (2024). Working capital management strategies of Nigerian manufacturing firms and the effects on corporate performance. *Journal of Advance Research in Business Management and Accounting, 9*, 18–32. https://doi.org/10.61841/2veg5n58

Efeeloo, F. F. N. I., Owunabo, A. A., Domale, E., & Cna, A. F. (2025). Cash conversion cycle management and financial performance of listed consumer goods manufacturing firms in Nigeria. *Journal of Accounting and Financial Management, 11*(2), 52–61. https://doi.org/10.56201/jafm.vol.11.no2.2025.pg52.61

Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill/Irwin.

Hossain, T. (2020). The effect of working capital management on profitability. *International Journal of Research in Business and Social Science, 9*(6), 114–122. https://doi.orstudy is a priori expectation X. T., Nguyen, T. T. H., & Nguyen, V. C. (2025). The impact of working capital management on the financial performance of listed enterprises: An empirical evidence from Vietnam. *Cogent Business & Management, 12*. https://doi.org/10.1080/23311975.2025.2473033

Karim, R., Mamun, M. A. A., & Kamruzzaman, A. S. M. (2023). Cash conversion cycle and financial performance: Evidence from manufacturing firms of Bangladesh. *Asian Journal of Economics and Banking, 8*, 67–82. https://doi.org/10.1108/ajeb-03-2022-0033

Kukeli, A., Widner, B., Deari, F., Sargsyan, G., & Bărbuță-Mișu, N. (2025). Firm profitability and economic crises: The non-linear role of the cash conversion cycle. *International Journal of Financial Studies, 13*, 86. https://doi.org/10.3390/ijfs13020086

Mandipa, G., & Sibindi, A. B. (2022). Financial performance and working capital management practices in the retail sector: Empirical evidence from South Africa. *Risks, 10*, 63. https://doi.org/10.3390/risks10030063

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0