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The Impact of Working Capital Management on Profitability: Empirical Evidence from Vodafone Ghana

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Abstract

This study investigates the impact of working capital management on the profitability of Vodafone Ghana, focusing on the period from 2016 to 2020. Employing a quantitative longitudinal design, the research relies exclusively on secondary data extracted from the company's audited financial statements. Profitability is measured using Return on Assets (ROA) and Return on Equity (ROE), while key working capital indicators include the Cash Conversion Cycle (CCC), Accounts Receivable Period (ARP), Accounts Payable Period (APP), and Inventory Turnover Ratio (ITR). Firm Size (FS) and Current Ratio (CR) are incorporated as control variables. Descriptive statistics, correlation analysis, and multiple regression techniques are used to analyze the data. Results show that ROA is significantly influenced by CCC, ARP, ITR, and CR, with longer receivable periods and extended cash cycles reducing profitability, while inventory efficiency and liquidity enhance it. Conversely, the model for ROE is statistically insignificant, suggesting that shareholder returns are more sensitive to broader financial strategies than to working capital practices. The findings underscore the operational relevance of working capital management in enhancing asset-based profitability and offer practical and policy-level recommendations to improve financial performance in the telecommunications sector.

Keywords - Working Capital Management, Return on Assets, Vodafone Ghana

1. Introduction

Working capital management (WCM) is a vital component of corporate finance that affects a firm's liquidity, operational efficiency, and profitability. As defined by Olfimarta and Wibowo (2019), WCM encompasses the strategic administration of current assets—such as cash, inventory, and accounts receivable—and short-term liabilities, particularly accounts payable, to ensure an organization meets its short-term obligations while optimizing financial performance. Achchuthan and Kajananthan (2013) emphasize that working capital is the "lifeblood" of any economic unit, irrespective of size or structure.

Efficient WCM ensures a firm maintains the delicate balance between profitability and liquidity by managing key components such as cash flow, receivables, inventories, and payables. While it is often overlooked due to its short-term focus, mismanagement of working capital can lead to liquidity crises, increased borrowing, and reduced shareholder value.

In capital-intensive and dynamic sectors like telecommunications, WCM takes on even greater importance. Ghana's telecommunications sector, for instance, is a key contributor to national development, accounting for approximately 18.4% of GDP in Q3 2022 and generating GH¢4.3 billion in taxes and levies in 2021 (Ghana Chamber of Telecommunications, 2022). The sector also provides over 6,100 direct and 1.2 million indirect jobs. Despite these contributions, telecom firms often operate with low working capital-to-sales ratios and carry significant capital expenditure burdens (Cosma & Bitiren, 2018).

With the increasing demand for data, digital services, and emerging technologies like 5G, telecom firms are adopting WCM optimization strategies, such as receivables financing, customer credit, and supply chain finance, to enhance liquidity without incurring excessive debt (Cosma & Bitiren, 2018). Globally, these trends reflect the sector's shift toward diversified services such as software and analytics, further intensifying the need for effective WCM.

Vodafone Ghana, formerly Ghana Telecom, remains a pivotal player in the telecom sector since its acquisition by Vodafone Group in 2008. As of 2020, it controlled around 13.8% of the mobile voice market and had previously ranked as the second-largest operator in data services. Despite major strategic transformations, from rebranding to regional expansion, the firm faces persistent challenges, including intense competition, infrastructure investment demands, and falling average revenue per user (ARPU).

Given the industry's evolving landscape and Vodafone Ghana's operational pressures, efficient WCM is critical to sustaining profitability. Managing short-term assets and liabilities—especially through optimizing receivables, payables, inventory, and cash flows—has become essential to strategic financial decision-making. Accordingly, this study investigates the empirical relationship between WCM practices and profitability in Vodafone Ghana, contributing to theory and practical knowledge in telecom finance.

1.2 Statement of the Problem

Vodafone Ghana operates within a competitive and fast-paced environment where efficient financial management is key to long-term sustainability. The company faces recurring challenges from falling margins, rising service delivery costs, and the need to continually invest in technological infrastructure. These pressures are further intensified by increasing customer expectations and surging demand for data-driven services.

A major but underexplored contributor to Vodafone Ghana's profitability issues is the effectiveness of its working capital management. Inefficiencies in managing receivables, payables, inventory, and cash can limit liquidity, increase borrowing needs, and erode profitability. Although the company has implemented operational streamlining initiatives, it continues to face working capital difficulties driven by technological transitions and market volatility.

This pattern is consistent with global telecom industry dynamics. Cosma and Bitiren (2018) report that telecom companies globally tend to have low working capital-to-sales ratios while simultaneously bearing some of the highest capital expenditure burdens. To address this, many firms are adopting WCM tools—such as supply chain finance and receivables securitization—to enhance liquidity and finance long-term investments.

However, in Ghana's context, empirical research on the impact of WCM on profitability in the telecom sector remains limited. Most existing studies have focused on manufacturing, banking, or retail sectors, creating a research gap concerning telecommunications firms like Vodafone Ghana. Given the rising importance of internally generated funds to finance capital projects, a firm-specific investigation is critical.

This study seeks to fill that gap by examining how WCM indicators—namely the cash conversion cycle, receivables period, payables period, inventory turnover, and liquidity ratios-affect Vodafone Ghana's profitability. The findings will offer valuable insights for financial managers and policymakers striving to enhance the financial performance of telecom operators in Ghana.

1.3 Motivation for the Study

This study is driven by three key motivations. First, there is a lack of empirical research on working capital management (WCM) within Ghana's telecommunications sector, despite its significant economic contribution. Most existing studies focus on manufacturing, banking, or retail, leaving a gap in understanding WCM's role in telecom firms like Vodafone Ghana.

Second, prior studies on WCM and profitability show mixed results. While some highlight positive effects on liquidity and performance, others reveal risks related to poor receivables or payables management. This inconsistency underscores the need for firm-specific, sector-based analysis.

Third, although telecom companies face growing financial pressures from capital investments and technological demands, limited research has examined how internal strategies like WCM can enhance profitability. This study addresses that gap by evaluating the impact of key WCM components, CCC, ARP, APP, and ITR, on Vodafone Ghana's profitability, offering insights for both practitioners and policymakers.

1.4 Research Objectives

1.4.1 General Objective

The main objective of this study is to assess the impact of working capital management on the profitability of Vodafone Ghana, using Return on Assets (ROA) and Return on Equity (ROE) as profitability indicators.

1.4.2 The specific objectives are to:

1. Examine the effect of the cash conversion cycle (CCC) on the profitability of Vodafone Ghana.
2. Analyze the relationship between the accounts receivable period (ARP) and profitability.
3. Assess the influence of the accounts payable period (APP) on Vodafone Ghana's profitability.
4. Determine the impact of the inventory turnover ratio (ITR) on profitability.
5. Evaluate the effect of liquidity, measured by the current ratio (CR), on profitability.
6. Investigate the influence of firm size (FS) as a control variable on profitability.

1.5 Research Questions (Revised)

1. How does the cash conversion cycle affect the profitability of Vodafone Ghana?
2. What is the relationship between accounts receivable period and profitability?
3. To what extent does the accounts payable period influence profitability?
4. What is the impact of the inventory turnover ratio on Vodafone Ghana's profitability?
5. How does the current ratio affect profitability?
6. What role does firm size play in explaining profitability?

1.6 Hypotheses of the Study (Revised)

1. H_{01}: The cash conversion cycle has no significant effect on the profitability (ROA, ROE) of Vodafone Ghana.
2. H_{02}: The accounts receivable period has no significant effect on the profitability of Vodafone Ghana.
3. H_{03}: The accounts payable period does not significantly influence profitability.
4. H_{04}: The inventory turnover ratio has no significant effect on profitability.
5. H_{05}: The current ratio has no significant effect on the profitability of Vodafone Ghana.
6. H_{06}: Firm size does not significantly affect profitability.

1.7 Significance of the Study

This study offers several important contributions. From a managerial perspective, it provides financial managers and decision-makers at Vodafone Ghana and other telecommunications firms with practical insights on optimizing working capital components to enhance profitability and liquidity. In terms of policy relevance, the findings offer empirical evidence that can inform regulatory frameworks and initiatives by government bodies and industry stakeholders, such as the Ghana Chamber of Telecommunications, promoting financial efficiency within the sector. Academically, the research enriches the limited literature on working capital management in Ghana's telecommunications industry by adding firm-level analysis to complement broader macroeconomic and sector-wide studies. Additionally, it offers valuable insight for investors by illustrating how internal financial management practices impact firm value and profitability, thereby enabling more informed investment decisions.

2. Literature Review

2.1 Theoretical Framework

This section outlines the Cash Conversion Cycle Theory and Operating Cycle Theory as the basis for analyzing how Vodafone Ghana's management of receivables, inventory, and payables affects its profitability. Both theories emphasize the importance of time-efficient cash flow management in enhancing liquidity and financial performance.

2.1.1 Cash Conversion Cycle (CCC) Theory (Summary Version)

The Cash Conversion Cycle (CCC) theory serves as a foundational framework for analyzing the efficiency of working capital management and its impact on profitability, particularly in firms like Vodafone Ghana. The CCC measures the time it takes for a company to convert investments in inventory and receivables into cash, calculated as:

CCC = Days Inventory Outstanding (DIO) + Days Receivables Outstanding (DRO) − Days Payables Outstanding (DPO) (Richards & Laughlin, 1980).

A shorter CCC implies that a firm is efficiently managing its inventory, accelerating collections from customers, and optimizing supplier payments, contributing to improved liquidity and profitability (Farooq et al., 2016; Korede, 2017). In contrast, a prolonged CCC may indicate inefficiencies that tie up working capital and weaken financial performance.

For Vodafone Ghana, where operations are capital-intensive and customer receivables are substantial, managing the CCC is critical. Delays in receivables or poor inventory turnover can stretch the CCC and strain internal cash flows. The theory also aligns with the pecking order theory by emphasizing the preference for internal financing and complements agency theory by highlighting managerial accountability in optimizing financial operations.

In this study, CCC theory provides a dynamic lens to evaluate how Vodafone Ghana's working capital decisions, especially related to receivables, inventory, and payables, influence its profitability outcomes.

2.1.2 Operating Cycle Theory

The Operating Cycle Theory by Richards and Laughlin (1980) emphasizes the time it takes for a firm to convert its investments in inventory and receivables into cash, minus the time taken to pay suppliers, captured by the Cash Conversion Cycle (CCC). A shorter or negative CCC improves liquidity and profitability by reducing reliance on external financing.

Applied to Vodafone Ghana, the firm's long receivables period (90.87 days) and extended payables period (570.77 days) result in a negative CCC of -471.29 days, indicating heavy reliance on supplier credit. While this enhances liquidity, excessive payment delays may strain supplier relationships. The study confirms that longer CCC and ARP reduce Return on Assets (ROA), highlighting the importance of timely cash flow management. The theory supports strategies such as tightening credit policies, improving inventory turnover, and optimizing payment cycles to boost operational profitability.

2.2 Concept of Working Capital Management

2.2.1 Working Capital Management and Profitability

Working capital management (WCM) refers to the strategic oversight of current assets—such as cash, inventory, and accounts receivable—and current liabilities like accounts payable, to ensure liquidity while maximizing profitability (Essel & Brobbey, 2021). The core goal of WCM is to balance operational efficiency and solvency, which is especially vital in capital-intensive and cash-sensitive sectors such as telecommunications, education, and financial cooperatives.

Recent studies highlight the significant role of WCM in driving financial performance. Ombui et al. (2024) found that effective management of cash, receivables, payables, and inventory enhanced the financial performance of public universities in Kenya's coastal region. Similarly, Burton and Miroga (2024), analyzing data from 31 Kenyan public universities, showed that sound management of accounts receivable and payable improves institutional liquidity and sustainability.

In private education, Nyaloti (2024) identified a negative relationship between the cash conversion cycle and liquidity, attributing this to poor receivables management. The study emphasized improving credit policies to enhance financial health. Wangechi and Irungu (2023) further confirmed that effective management of cash and receivables boosts the financial outcomes of SACCOs in Kenya's central region.

In the SACCO sector, Mutai and Kimani (2023) demonstrated that both accounts receivable and payable management significantly influence financial performance, while Minyoso and Otuya (2023), through a systematic review, concluded that poor WCM contributes to financial distress in public universities. They advocated incorporating contextual variables like government policy in future studies.

From a retail perspective, Rorlen et al. (2023) studied firms listed on the Indonesia Stock Exchange and reported that both the average payment period and inventory holding duration negatively affect profitability, while the average collection period had a positive but insignificant effect.

These findings underscore that WCM is not merely a transactional function but a strategic imperative, especially for institutions operating under financial uncertainty or structural inefficiency.

2.2.2 Profitability and Financial Performance

Profitability is a key indicator of financial health, reflecting a firm's ability to generate returns relative to expenses over a given period. Metrics such as Return on Assets (ROA) and Net Profit Margin (NPM) are directly influenced by the efficiency of working capital utilization (Essel & Brobbey, 2021).

Essel and Brobbey (2021), using dynamic panel data and the Generalized Method of Moments (GMM), found that the impact of WCM components—particularly inventory, receivables, and payables—varies across sectors, sometimes exhibiting negative effects on performance. This highlights that profitability is closely linked to how effectively short-term assets and liabilities are managed.

Supporting this, Burton and Miroga (2024) showed that effective receivables and payables management strengthens liquidity and enhances long-term viability in public universities. Similarly, Nyaloti (2024) found that prolonged cash conversion cycles negatively impact profitability in private universities.

SACCO-focused studies by Wangechi and Irungu (2023) and Mutai and Kimani (2023) affirmed that sound cash and credit management significantly enhance financial performance and operational efficiency.

In the retail sector, Rorlen et al. (2023) reported that reducing payment and inventory durations enhances profitability, though longer collection periods did not yield significant gains.

Minyoso and Otuya (2023) concluded that WCM inefficiencies are major contributors to financial instability in universities, linking poor short-term financial practices to broader profitability challenges.

Collectively, the literature affirms that profitability is deeply intertwined with how institutions manage their working capital. Strategic WCM is thus critical to sustaining financial performance across sectors.

2.3 Empirical Review

2.3.1 Cash Conversion Cycle and Profitability

The Cash Conversion Cycle (CCC) is a key indicator of working capital efficiency, measuring the time between cash outflows for inventory and cash inflows from sales. A shorter CCC typically reflects stronger liquidity and profitability. Raheman and Nasr (2007) and Fransisca et al. (2023) found a negative relationship between CCC and profitability among Pakistani and Indonesian firms, respectively. Fransisca et al. further emphasized that firm size moderates the CCC-profitability link.

Biasha and Mwanzia (2022) corroborated this in Kenya's manufacturing sector, noting that CCC, inventory turnover, and receivables negatively impacted profitability, while accounts payable had a positive effect. In Nigeria, Onumoh et al. (2023) reported that CCC and accounts payable period (APP) were negatively and significantly associated with profitability in beverage firms, while accounts receivable period (ARP) and inventory conversion period (ICP) were insignificant.

Oroniran et al. (2023) showed that cash flow from operating activities negatively impacted profitability in Nigerian consumer goods firms, especially ROA. Hoque (2023) extended this by showing that cash flows from financing activities positively affected performance in Bangladeshi banks, whereas year-end cash balances had a negative effect.

In China, Laghari et al. (2023) found that reduced cash flow measures improved performance, especially in low-leverage firms. Adeyemi (2024), analyzing service firms in Nigeria, reported that the cash ratio had a significant positive effect on profit margins, while cash turnover was insignificant, underlining the importance of effective receivables and inventory management.

2.3.2 Accounts Receivable and Profitability

Efficient receivables management is vital for liquidity and profitability. Deloof (2003) and Mathuva (2010) found negative associations between receivable days and profitability in Belgian and Kenyan firms, respectively.

In Nigeria, Dan and Patrick (2020) found a positive relationship between ARP and profitability, suggesting longer credit terms may drive sales. Kirinyaga et al. (2019) observed that in small-scale Kenyan manufacturers, credit monitoring was more positively related to profitability than credit selection. Similarly, Munene et al. (2020) showed that average collection period and current ratio positively influenced ROE at Embu Water and Sanitation Company.

Siele and Tibbs (2019), studying KEWASCO in Kenya, found that accounts receivable turnover, average payment period, and average collection period explained 75.2% of the variance in ROE. In Sri Lanka, Nuwandhi and Perera (2019) highlighted that trade credit significantly contributes to profitability, especially in larger, more liquid firms.

In India, Shah (2020) noted that inefficiencies in receivable practices reduced profitability in BSE-listed printing firms, while Soundarya et al. (2020) recommended tighter monitoring at VKS Fabrics despite adequate receivables management. Muthoni et al. (2020) confirmed that

credit policy and collection period were significantly linked to financial performance among NSE-listed manufacturers.

In Tanzania, Danga et al. (2019) found that the accounts collection period reduced profitability but improved liquidity, recommending a balance between efficient collection and liquidity maintenance.

2.3.3 Accounts Payable and Profitability

Accounts payable serve as a short-term financing tool, enhancing liquidity if well-managed. Gill et al. (2010) found a positive link between longer payment periods and profitability, provided supplier relationships are maintained.

Mburu and Warui (2023) demonstrated that payables management significantly affected ROA in Kenyan microfinance institutions, urging process improvements. Nkwasibwe et al. (2023) found a strong positive correlation between payables management and profitability ($r = 0.872$) at Kazire Health Products Ltd, despite declining profits due to other inefficiencies.

In the public sector, Kithinji et al. (2022) showed that payables management significantly influenced financial performance in 31 Kenyan universities ($R^2 = 0.536$), with student enrollment as a moderating factor. Similarly, Kazaara and Julius (2024) found a strong positive correlation ($R = 0.735$) in Uganda's Ntake Manufacturing Industry, highlighting the role of timely payments and supplier engagement.

2.3.4 Inventory Management and Profitability

Inventory turnover reflects operational efficiency, with high turnover often linked to strong sales and lower holding costs. Shin and Soenen (1998) supported this view, while Lazaridis and Tryfonidis (2006) cautioned against excessive minimization due to stock-out risks.

In Nigeria, Akinola et al. (2024) found that inventory management had an insignificant but directionally positive influence on ROA among consumer goods firms. Amahalu et al. (2021) noted a significant positive effect of inventory conversion on ROA in brewery firms, though ROE was unaffected.

Ajayi et al. (2021) reported that effective inventory practices significantly improved return on capital employed (ROCE) in consumable goods firms. In India, Panigrahi et al. (2021) confirmed a strong positive impact of inventory management on firm performance using CFA and regression models.

Bah et al. (2023) found that inventory conversion periods positively influenced ROA, while raw material and storage costs had insignificant negative effects. In Ethiopia's public sector, Debala et al. (2022) highlighted that procurement efficiency, ICT integration, and staff skills significantly influenced inventory performance, recommending digital upgrades and training.

2.4 Conceptual Framework

The conceptual framework establishes a causal model where working capital management practices (CCC, ARP, APP, ITR) directly influence profitability (ROA and ROE), with the effects potentially moderated or influenced by firm size and liquidity (FS and CR). The model provides a structured basis for testing the empirical relationships using Vodafone Ghana's financial data.

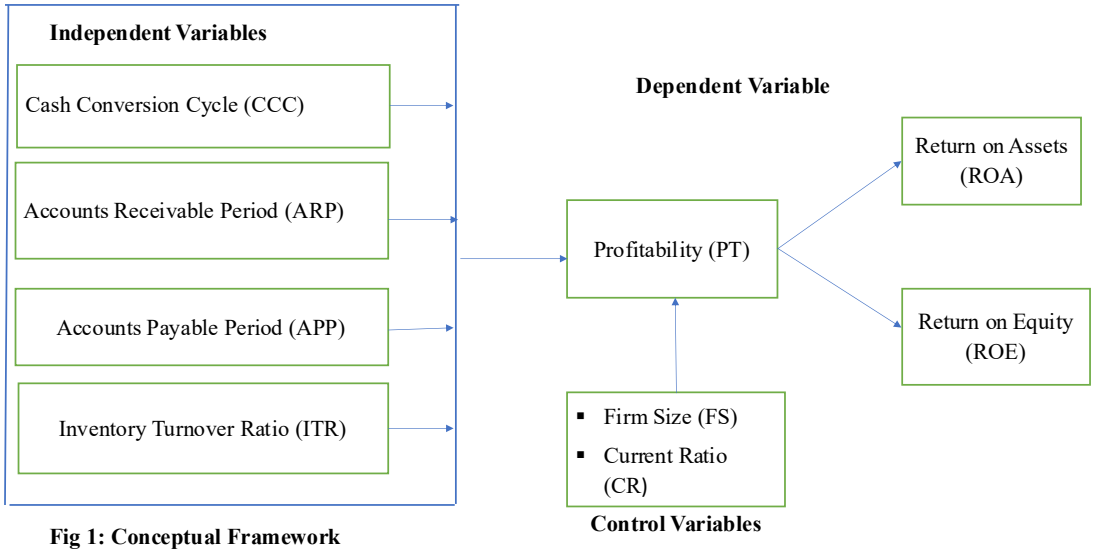

Fig 1: Conceptual Framework
Source: Authors Construct (2025)

3. Methodology

3.1 Introduction

3.2 Research Design

The study adopts a quantitative research design using a longitudinal approach based on secondary data from Vodafone Ghana covering the period 2016 to 2020. This design enables the examination of trends and relationships between working capital components and profitability over time.

3.3 Sources of Data

The study relies entirely on secondary data obtained from audited financial statements of Vodafone Ghana. Key financial indicators such as net income, total assets, equity, current assets, and liabilities were extracted for analysis.

3.4 Variables and Measurements

The variables used in this study are classified into dependent, independent, and control variables. Table 3.1 summarizes the variables, their descriptions, and the methods of measurement.

Table 3.1 Summary of Study Variables and Measurements

Category	Variable	Description	Measurement/Formula
Dependent Variable	Return on Assets (ROA)	Measures profitability in terms of asset utilization efficiency	ROA = Net Income / Total Assets) × 100
	Return on Equity (ROE)		ROE = Net Income / Shareholders' Equity × 100

Category	Variable	Description	Measurement/Formula
		Assesses profitability based on return to shareholders	
Independent Variables	Inventory Turnover Ratio (ITR)	Reflects how frequently inventory is sold and replaced	ITR = $\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$
	Accounts Receivable Period (ARP)	Measures the average collection period from customers	ARP = $\frac{\text{Accounts Receivable}}{\text{Net Credit Sales}} \times 365$
	Accounts Payable Period (APP)	Indicates the average period for paying suppliers	APP = $\frac{\text{Accounts Payable}}{\text{Cost of Goods Sold}} \times 365$
	Cash Conversion Cycle (CCC)	Represents the net time to convert resources into cash	CCC = ARP + Inventory Period – APP
Control Variables	Firm Size (FS)	Captures the scale of the firm's operations	FS = Natural Logarithm of Total Assets (ln Total Assets)
	Current Ratio (CUR)	Measures the firm's short-term liquidity position	CUR = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

3.5 Data Analysis Techniques

The study employs descriptive statistics to provide a summary of the financial performance and working capital indicators over the five years. Correlation analysis is used to explore the relationships among variables. Further, multiple regression analysis is conducted to evaluate the effect of working capital components on profitability (ROA and ROE). The regression models are specified as follows:

Regression Results for ROA

Model Equation

The regression equation can be expressed as:

$$ROA=\beta0+\beta1CCC+\beta2ARP+\beta3APP+\beta4ITR+\beta5FS+\beta6CR+\epsilon$$

Where:

- ROA = Return on Assets
- CCC = Cash Conversion Cycle
- ARP = Accounts Receivable Period
- APP = Accounts Payable Period
- ITR = Inventory Turnover Ratio

- FS = Firm Size
- CR = Current Ratio
- ϵ = Error term

Regression Results for ROE

Model Equation

The regression equation can be expressed as:

$$ROE=\beta0+\beta1(CCC)+\beta2(ARP)+\beta3(APP)+\beta4(ITR)+\beta5(FS)+\beta6(CR)+\varepsilon$$

Where:

- ROE = Return on Equity
- CCC = Cash Conversion Cycle
- ARP = Accounts Receivable Period
- APP = Accounts Payable Period
- ITR = Inventory Turnover Ratio
- FS = Firm Size
- CR = Current Ratio
- ϵ = Error term

3.6 Ethical Considerations

Since the study uses publicly available secondary data, there are minimal ethical concerns. However, all data sources are properly cited, and no confidential or proprietary information has been used.

4. Results and Discussion

4.1 Introduction

This chapter presents and discusses the results of the study based on financial data from Vodafone Ghana for the period 2016 to 2020. The analysis includes descriptive statistics, trends in key variables, correlation analysis, and regression results to assess the relationship between working capital management and profitability.

4.2 Descriptive Statistics

Table 4.1 summarizes the descriptive statistics of the dependent, independent, and control variables used in the study.

Table 4.1 Descriptive Statistics of Study Variables (2016–2020)

Variable	Mean	Std. Dev.	Min	Max
ROA (%)	-54.31	31.15	-90.26	-13.82
ROE (%)	40.70	52.53	10.00	135.36
ITR	8.21	2.54	4.31	10.47
ARP (days)	90.87	16.56	71.46	117.03
APP (days)	570.77	53.89	509.57	641.87
CCC (days)	-471.29	48.56	-532.61	-410.58

Variable	Mean	Std. Dev.	Min	Max
FS (ln Assets)	1,838.49	520.91	1,205.42	2,591.74
CR	0.52	0.25	0.12	0.75

Source: Generated by the researchers using data collected from financial statements of the selected Energy Sector Companies (2025)

Vodafone Ghana recorded a negative average ROA of -54.31%, indicating operational inefficiencies, while ROE remained positive at 40.70%, suggesting that shareholder returns were supported by leverage or financial restructuring. A lengthy ARP (90.87 days) reflects delayed customer collections, and an APP of 570.77 days indicates extended payment deferrals to suppliers. The negative CCC of -471.29 days suggests Vodafone relied heavily on supplier credit. These findings echo those of Padachi (2006) and Mathuva (2010), who identified similar inefficiencies in receivables and payables. Biasha and Mwanzia (2022) and Onumoh et al. (2023) also found that in Kenyan and Nigerian firms, high CCC and ARP reduced profitability, reinforcing the risks of prolonged credit cycles. A moderate ITR of 8.21 and a low CR of 0.52 point to inventory efficiency but strained liquidity issues. Adeyemi (2024) linked to weaker margins in Nigerian service firms.

4.3 Trend Analysis of Financial Performance Indicators

The trend analysis of Vodafone Ghana's key financial indicators from 2016 to 2020 reveals important insights into the company's working capital management and profitability dynamics. Return on Assets (ROA) declined significantly between 2016 and 2019, reflecting reduced efficiency in the use of assets to generate earnings. However, a slight improvement was observed in 2020, suggesting early signs of operational recovery. Interestingly, Return on Equity (ROE) surged in 2019, indicating a notable increase in shareholder returns despite the weak performance in asset utilization. The Cash Conversion Cycle (CCC) remained negative throughout the period, signifying that Vodafone Ghana was able to collect cash from customers faster than it paid its suppliers, an indicator of sound working capital management. Nevertheless, the Accounts Payable Period stayed consistently above 500 days across all five years, pointing to significant delays in settling supplier obligations, which may have implications for supplier trust and credit terms. Overall, these trends highlight the complex interplay between liquidity management, operational efficiency, and profitability in Vodafone Ghana's financial structure.

4.4 Correlation Matrix

The Pearson correlation coefficients among the study variables are presented in Table 4.2.

Table 4.2 Correlation Matrix

Variable	ROA	ROE	CCC	ARP	APP	ITR	FS	CUR
ROA	1							
ROE	0.29	1						
CCC	-0.88	-0.50	1					
ARP	-0.79	-0.30	0.91	1				
APP	-0.82	-0.35	0.97	0.84	1			
ITR	0.64	0.27	-0.66	-0.57	-0.67	1		

Variable	ROA	ROE	CCC	ARP	APP	ITR	FS	CUR
FS	-0.17	0.45	0.01	-0.16	-0.04	0.19	1	
CUR	0.55	0.38	-0.62	-0.60	-0.61	0.45	0.62	1

Source: Generated by researchers (2025)

The analysis shows that ROA is negatively associated with CCC (-0.88), ARP (-0.79), and APP (-0.82), suggesting that delays in cash flow reduce asset profitability. Positive correlations with ITR (0.64) and CR (0.55) indicate that inventory efficiency and liquidity enhance performance. These results align with Deloof (2003) and García-Teruel and Martínez-Solano (2007), who linked tighter working capital cycles with improved profitability. Similarly, Raheman and Nasr (2007) and Fransisca et al. (2023) reported that shorter CCC improves firm performance in Pakistan and Indonesia. ROE displayed weaker correlations, implying that equity returns are less influenced by operational decisions and more by broader financial strategies, consistent with the findings of Sharma and Kumar (2011) and Munene et al. (2020).

Table 4.3 Regression Results: ROA as Dependent Variable

Variable	Coefficient (β)	t-value	p-value
Constant	-22.37	-0.55	0.624
CCC	-0.138	-3.41	0.019*
ARP	-0.211	-2.76	0.043*
APP	-0.096	-1.89	0.099
ITR	4.32	2.34	0.074
FS	-0.008	-0.33	0.759
CUR	35.88	3.72	0.015*
R^2	0.92		
Adjusted R^2	0.84		
F-statistic (p)	11.48 (0.027)		

Source: Generated by researchers (2025)

The regression model for ROA is statistically significant ($F = 11.48$, $p = 0.027$) with a strong explanatory power (Adjusted $R^2 = 0.84$). CCC and ARP both have significant negative effects ($\beta = -0.138$, $p = 0.019$; $\beta = -0.211$, $p = 0.043$), supporting prior studies by Onumoh et al. (2023) and Danga et al. (2019), who emphasized that long cash cycles and delayed receivables weaken profitability. APP shows a marginally significant negative effect ($\beta = -0.096$, $p = 0.099$), contrasting with the positive role suggested by Gill et al. (2010) and Nkwasibwe et al. (2023), and may reflect excessive reliance on delaying payments. ITR positively affects ROA ($\beta = 4.32$, $p = 0.074$), similar to findings by Ajayi et al. (2021) and Panigrahi et al. (2021), who noted the value of efficient inventory turnover. CR significantly enhances ROA ($\beta = 35.88$, $p = 0.015$), affirming results from Alipour (2011) and Adeyemi (2024) that highlight the importance of liquidity. FS has no significant effect, aligning with Fransisca et al. (2023), who found size to be a moderator rather than a direct determinant.

Table 4.4 Regression Results: ROE as Dependent Variable

Variable	Coefficient (β)	t-value	p-value
Constant	9.57	0.44	0.688
CCC	-0.073	-1.24	0.284
ARP	-0.138	-1.55	0.214
APP	-0.067	-1.02	0.368
ITR	3.17	1.69	0.187
FS	0.027	1.34	0.251
CUR	29.84	2.41	0.065
R^2	0.76		
Adjusted R^2	0.53		
F-statistic (p)	3.25 (0.101)		

Source: Generated by researchers (2025)

The regression model for ROE is statistically insignificant ($F = 3.25$, $p = 0.101$), with none of the working capital variables showing a significant effect. Although CR had a positive influence ($\beta = 29.84$, $p = 0.065$), it was not statistically robust. This suggests that ROE is shaped more by financing decisions or external market factors, a view echoed by Hoque (2023) and Laghari et al. (2023), who emphasized the role of cash flow from financing and investment activities. These findings imply that while efficient working capital practices drive operational profitability (ROA), their direct influence on shareholder returns (ROE) may be limited or indirect.

5. Conclusion and Recommendations

5.1 Conclusion

The study found that working capital management significantly affects Vodafone Ghana's operational profitability, particularly ROA. Delays in receivables and cash conversion cycles negatively impacted performance, while higher liquidity enhanced it. However, the ROE model was not statistically significant, suggesting that shareholder returns may depend more on external financing strategies and market conditions than on internal working capital efficiency. These results align with empirical evidence from Raheman and Nasr (2007), Fransisca et al. (2023), and Adeyemi (2024), underscoring the value of optimizing liquidity, receivables, and inventory management to strengthen asset-based profitability.

5.2 Recommendations

Vodafone should reduce its ARP by reviewing credit policies, tightening collections, and encouraging early payments, in line with recommendations by Danga et al. (2019) and Muthoni et al. (2020). The firm should also optimize its CCC by increasing inventory turnover and reducing receivable delays while avoiding excessive postponement of payables that could strain supplier relations (Gill et al., 2010; Kazaara & Julius, 2024). Liquidity should be improved through better current asset management to maintain short-term solvency (Adeyemi, 2024). Additionally, since ROE is less responsive to working capital variables, Vodafone should explore broader financial strategies such as restructuring debt or enhancing investment

returns. Industry regulators like the Ghana Chamber of Telecommunications could adopt these insights to promote standardized, efficient working capital benchmarks across the sector.

5.3 Implications

The findings underscore the critical role of efficient working capital management in driving profitability in asset-based firms like Vodafone Ghana. For managers, this highlights the need to shorten the cash conversion cycle and maintain sufficient liquidity to improve operational performance. For policymakers, the results offer empirical backing to develop sector-specific guidelines that enhance financial efficiency and competitiveness. These implications are consistent with broader studies (e.g., Kithinji et al., 2022; Mburu & Warui, 2023) that advocate for institutional reforms in working capital practices to improve financial sustainability in both public and private sectors.

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