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Why Should We Pay Attention to Working Capital Management? A Case of Ghana

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Abstract: The paper examines the nexus between working capital management (WCM) and financial performance of listed non-financial firms in Ghana. An unbalanced panel data for the period 2008 to 2021 was used for the study. It is observed that the residual terms of the models were cross-sectionally independent and all the series were first-differenced stationary and cointegrated in the long term The elasticities of the predictors were explored via the Fully Modified Ordinary Least Squares (FMOLS) and the Dynamic Ordinary Least Squares (DOLS) techniques. The findings of the study indicate that WCM proxied by accounts receivable period (ACP), accounts payment period (APP), and inventory turnover period (ITP) have significant positive effect on firms' financial performance measured by return on assets (ROA), return on equity (ROE), and return on capital employed (ROCE). This suggests that the working capital management practices of non-financial firms in Ghana improve their financial performance. Also, firm size and asset growth improve firm financial performance. On the causalities between the variables, bidirectional causalities between ACP, APP, ITP, size, and thecompanies' ROA, ROE, and ROCE are disclosed. Finally, causality from growth to the ROA, ROE, and ROCE of the firms are unraveled. It is recommended that policy makers of non-financial firms in Ghana should not overlook WCM practices in their financial decisions, since ignoring them could seriously compromise the firms' short- and long-term sustainability.

Keywords: working capital management; financial performance; non-listed financial firms; Ghana

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1. Introduction

Working capital management (WCM) is a key component in the financial management process [1]. Effective management of working capital has been identified as a key strategy that can help minimize cost and optimize shareholders' equity [2]. According to [3], cited in [4], working capital management is an essential issue because it is a phenomenon that continues to be of material interest tofirms due to its great contributions to economic development. The prudent management of working capital guarantees that the financial resources of companies are completely adequate to meet their day-to-day operations so that they can attain high levels of performance [5,6]. As indicated by [1], efficient management of working capital is a competitive advantage to firms, because it helps them to manage their Cash Conversion Cycle (CCC). The constituents of CCC were used as the measures of working capital management in earlier works. The amount of debts owed by customers may raise the value of firms' bad debts and adversely affect their working capital. This may be attributed to the inability of firms to retrieve monies owed to them by debtors or the debtors' failure to meet their deadlines of payment. Following [7], amounts owed by customers raise the turnover of current assets in the long-run. This may affect the quality of assets due to the risks associated with bad and doubtful debts. Therefore, firms should implement balanced credit policies that can promote cash flows and boost sales and

revenues [8]. Also, if the payments to creditors are well managed, there could be enough liquidity in the business [9]. This goal could be accomplished if purchases processes and payment periods of creditors are well planned [4]. As discussed by [1], firms should be quick to take credits to advance their operations, but must strategize very well in terms of payment. With regards to inventory, the attainment of its optimal level is reliant on sales and demand for products. In line with [4], a rise in inventory might lead to a rise in the levels of liquidity and profitability. Contrastingly, if the levels of inventory decrease, it might lead to loss of sales and subsequently profitability. Companies should, therefore, formulate effective inventory management policies to help improve their operations [1,3,4,10].

The nexus between working capital management and the performance of firms has been expansively explored. Some of these studies include [1,11–16]. However, the aforementioned studies produce contradicting and inconclusive findings. For instance [1,11–13] asserted that working capital management is a positive determinant of firms' performance, whilst [14–16] found otherwise. The mixed discoveries might be a result of the differences in geographical locations, study + variables, time period, econometric approaches, and the study sample, suggesting that the argument on the connection between working capital management is unceasing and calls for further investigations. Therefore, conducting a study to examine the linkage between working capital management and the financial performance of listed non-financial firms in Ghana will be worthwhile. The management of working capital is particularly important for businesses in emerging economies like Ghana, because they are generally smaller and have limited access to external financing, relying heavily on internal financial resources, trade credits, and short-term loans to support their accounts receivables and inventories [16]. An effective working capital management system plans and controls current assets and liabilities in a way that the inability to meet short-term obligations due to excessive investments in current assets is avoided [17]. Thus, firms in their quest to manage their working capital efficiently should strike a balance between their current assets and current liabilities. This will help them to operate without any financial difficulties [18]. Moreover, the bad management of working capital components leads to bankruptcy and possible liquidation [17] and should therefore be given the needed attention to avoid such situations. Prevailing events have lately shown that some of Ghana's listed non-financial companies are facing challenges in managing their working capital effectively to achieve better financial performance. This situation is substantiated by the total delisting of some companies from the stock regulator's books, due to their refusal to correct some established irregularities, of which working capital issues played a key role. Most of the delisted entities embodied with liquidity issues faced difficulties in meeting their short-term financial commitments and creditors' demands among others. The researcher having studied the situation for some time, decided to conduct this study in Ghana.

The current study explores the effect of working capital management on firms' financial performance as measured by Return on Assets (ROA), Return on Equity (ROE), and Return on Capital Employed (ROCE). While many studies have been conducted on the association between WCM and corporate viability in Ghana, limited attention has been paid to entities that operate in the non-financial sector. Also, in the execution of those studies, conventional econometric methods that failed to control for some of the assumptions of the classical linear regression model were employed. Hence, in this study, we have employed modern and robust econometric techniques. In terms of contribution, prior studies on the subject are focused on financial institutions to the detriment of non-financial institutions; therefore, our study is very innovative by focusing on only non-financial institutions. In terms of methodology, the current study employs the Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) to examine the elasticity effects. These methods are robust to heterogeneity, endogeneity, and autocorrelation. Prior studies on listed Ghanaian entities have failed to employ these vigorous econometric techniques. To help minimize model specification bias, we control for firm size and asset growth. Finally, we employ the Engle and Granger (1987) causality test [19] to examine

the causal directions between the variables as regression does not comment [20] on the causations amidst series. These approaches to the current study have not been adopted by prior explorations conducted on listed non-financial entities in Ghana.

The findings of the study indicate that WCM proxied by accounts receivable period (ACP), accounts payment period (APP), and inventory turnover period (ITP) have a significant positive effect on firms' financial performance measured by return on assets (ROA), return on equity (ROE), and return on capital employed (ROCE). This suggests that the working capital management practices of non-financial firms in Ghana improve their financial performance. Also, firm size and assets growth improve firm financial performance. On the causalities between the variables, bidirectional causalities between ACP, APP, ITP, size, and the companies' ROA, ROE, and ROCE are disclosed. Finally, causality from growth to the ROA, ROE, and ROCE of the firms are unraveled. It is recommended that policy makers of non-financial firms in Ghana should not overlook WCM practices in their financial decisions, since ignoring them could seriously compromise the firms' short- and long-term sustainability. The findings of this study will be essential to managers and employees of firms, as it will enable them to become aware of how their entities could handle risks associated with their working capital. The study is also essential to users of financial information since it will enlighten them as to how good decisions on working capital could contribute to the viability of entities. Lastly, the study will add to the existing pool of literature on the linkage between working capital management and the financial performance of body corporates. This will be of extreme advantage to the academic community since it will serve as a guide for prospective researchers and students who may research further on the topic of concern.

The remainder of the study is structured as follows. Section 2 presents the literature review. Section 3 delineates a description of the methodology adopted. Section 4 presents the results and discussion. Section 5 covers the conclusion and policy implications.

2. Literature Review

2.1. Theories on Working Capital Management

This study focused on cash conversion cycle (CCC), operating cycle, resources-base, shiftability, and free cash flow theories. The CCC theory covers all decisions pertaining to inventory, receivables, and payables, as well as the processes of the cash cycle of buying and selling [10,21,22]. The CCC theory emphasizes the idea of the cash cycle to examine the effectiveness of WCM to optimize the profitability and liquidity of the business and subsequently raise firm's value. In contrast, ineffective WCM may reduce companies' liquidity and reduce their overall worth [23,24]. The emphasis of the CCC theory is on how many times businesses transform their materials and goods into products for the purpose of selling. The concept suggests that there is the propensity to have a longer but still minimal investment period of liquidity even if businesses decide to give good terms of credit to their clients [25,26].

The resource-based hypothesis centers on how corporations, utilizing their available resources, can gain competitive advantage. According to the theory, management makes maximum use of companies' short-term tools to increase their overall effectiveness [26,27]. This hypothesis provides clarifications on how companies could gain the upper hand over their rivals [26,27]. The shiftability theory posits that entities may auction their resources to more liquid organizations if they are in shortage of funds. Those firms are therefore viewed as liquid if they possess marketable assets, in that such resources could be readily transformed into cash when there is liquidity crisis [28]. Marketability of the resources of companies is therefore the cornerstone for efficient liquidity administration. One downside of this hypothesis is that the usefulness of companies' liquid resources vanishes in times of crisis. It therefore becomes tedious to get buyers for those resources, leading to weak liquidity positions of companies.

Finally, the free cash flow hypothesis postulates that managers can maximize the quantity of resources under their watch, and can also gain unrestricted influence over

business investment decisions by raising cash. Under this concept, managers have no business pursuing external funds that might make them provide the stock market with information on firms' investment programs because they have enough cash to spend. It is expected under this hypothesis that managers of companies with weak investment prospects would keep enough cash to guarantee that funds for investment in development projects are available, even if the projects have adverse net present values [29].

2.2. Theories on Financial Performance

The theories on financial performance are enormous. However, this study reviews the risk, dynamics, innovation, and uncertainty theories. The risk theory is attributed to the American economist Hawley [30]. Under this hypothesis, risk-taking is seen as the most critical characteristic of any entrepreneur. This is because risk includes every activity performed by the entrepreneur in expectation of demand. to this concept, entrepreneurs should be able to take risks only if they have standard returns. Therefore, the risk-taking reward must be greater than the risk's actual value [30]. The dynamic theory of Prof. J. B. Clark views the variation between the value of an item and its cost of production as benefit [31]. The theory postulates that, in a standardized society, benefit is the result of a radical transformation, and that change is only possible in a dynamic environment. According to this principle, the entire economic structure is separated into an organized and unorganized structure. The innovation theory of Schumpeter focuses on changes induced by innovation in the production cycle [32]. To the researcher, the reward for innovations is benefit. Schumpeter sees innovations as all those changes in the production cycle in order to establish a gap between their existing prices and new costs, with the intention of increasing product costs. Under this hypothesis, innovations are made, primarily to reduce production costs in order to achieve productive rewards [32].

2.3. Empirical Reviews

Studies done in the US found contrasting evidence of the relationship between WCM and a firm's performance. While [33] found evidence in favor, Syeda [15] found otherwise. Such contrasting results could also be found in studies done in Europe. The references [14,34,35] all found a negative relationship between WEC and firm's performance, while [36–39] found otherwise. It must be stressed that in all these studies, different empirical methodology has been used. Methodologies such as the Two-Step System Generalized Method of Moment (GMM) to estimate elasticities, Fixed Effect Regression technique, Cointegration One-way and Two-way causalities, moderating effect, and Hierarchical Linear Mixed (HLM) Estimator have all been used to estimate the extent of this relationship.

Sometimes, studies conducted in the same country return different results. For example, while [17] found that inventory turnover, receivables turnover, current assets turnover, and working capital turnover have a substantial effect on a firm's financial performance, Soda et al. [4] found a negative effect in Jordan.

In another study [16], the authors investigate the impact of working capital management on the financial performance of 291 Pakistan firms over the period 2005 to 2014. The findings of the study indicate that working capital management has a negative linkage with firms' performance. However, the relationship was not static over the different stages of the life cycle of the entities. For instance, an adverse affiliation was pronounced at the introductory stage followed by the decline stage, however, working capital management had an insignificant influence on firms' financial performance at the maturity stage. This finding agrees with [40] for pharmaceutical industries in Pakistan. Conversely, Raheman et al. [41] found that inventory turnover days, CCC, and trade cycles had a substantial impact on firms' performance. It was also disclosed that sales growth, financial leverage, and firm size significantly influenced the viability of the companies. These studies further stressed that Pakistani businesses had cautious working capital management strategies, and as such, their collection and payment practices needed to be improved.

Evidence of similarly conflicting views of the relationship between WCM and firms' performance could be seen in studies in India. The references [1,12,42] found a positive relationship between the two variables for Indian manufacturing exporters and the Indian hospitality industry. However, Kaushik and Chauhan [43] found mixed results where inventory days, net trade cycle, and accounts receivable days adversely affected the financial performance of the firms, while accounts payables days had a positive effect. Similarly mixed results could also be found in [44] for 13 Indonesian state-owned enterprises in the processing industry. The study found that the profitability of the firms was positively influenced by their asset structure and inventory turnover. However, receivables turnover, liquidity, and cash turnover had an immaterial impact on the financial performance of the firms.

Various data sets such as time series and cross-sectional data have been employed in the investigation of this relationship. Sharif and Islam [45] studied some pharmaceutical firms in Bangladesh. Five-year time series data were employed for the analysis. Findings indicate that working capital has a material influence on companies' ROA. Other studies such as [46,47] used time series in Vietnam from 2007 to 2026 and found varying results. The references [48–50] used cross-sectional data and also discovered results between the two variables.

In Africa, Louw et al. [51] explored South African retail and construction firms from 2004 to 2015 employing the cointegration and causality techniques. Based on the results, working capital management and firms' profitability were materially related in the long term. Also, one-way and two-way causalities between working capital management and the profitability of the companies were revealed. It was finally disclosed that working capital management had a greater influence on retail firms than the construction companies that were investigated. The references [8,52,53] focused their work on different aspects of the Nigerian economy and found that working capital management has a significant influence on the profitability of the companies. Kasahun [11] explored the link between working capital and the profitability of 10 manufacturing firms in Adama City, Ethiopia. Data spanning 2007 to 2012 and findings indicate that average payment period is significantly positively related to the profitability of the firms. However, sales growth and firm size had a substantially negative connection with the viability of the firms. Kabuye et al. [54] investigated the connection between working capital and the financial performance of 110 supermarkets in Uganda. From the results, working capital was a positive determinant of firms' financial performance. The study also reported that stock markets in less-developed countries did not achieve optimal WCM efficiency. Prempeh [55] employed the regression technique to investigate the effect of inventory management on the profitability of Ghanaian manufacturing firms. From the findings, there was a positive connection between inventory management, raw materials, and the viability of the companies. In Ghana, a study [56] reported a positive connection between WCM and firms' profitability.

From the above review, it can be concluded that the study of the nexus between working capital management and firms' financial performance has yielded mixed outcomes. Whilst some studies disclosed a positive association between the two, others revealed negative connections, while still others had mixed results. These mixed findings might be a result of the differences in geographical locations, study variables, time period, econometric approaches, the study etc. Irrespective of the numerous explorations on the nexus between working capital management and the financial performance of entities, there has been a limited number of studies that sought to examine the linkage amidst the series in Ghana's listed non-financial body corporates. This study was therefore conducted to help fill this gap.

3. Materials and Methods

3.1. Population and Sampling

All listed non-financial firms on the Ghana Stock Exchange (GSE) formed the population of the study. Because the firms listed are too small, their combined totals were used

as the sample. This implies that the purposive sampling technique was employed in the sampling process. In total, 25 listed entities were used and these are Ghana Oil Company Ltd., Benson Oil Palm Plantation Ltd., Starwin Products Ltd., Camelot Ghana Ltd., African Champion Industries Ltd., Total Petroleum Ghana Ltd., Fan Milk Ltd., Intraveneous Infusions Limited, Hords Ltd., Meridian Marshalls Holdings, Samba Foods, Digicut Production Ltd., New Gold Issuer, Anglogold Ashanti (AADS) Ltd., Guinness Ghana Breweries Ltd., Pioneer Kitchenware Ltd., Produce Buying Company Ltd., Mechanical Lloyd Company Plc, Sam Wood Ltd., Tullow Oil Plc, Golden Star Resources Ltd., Ayrton Drugs Manufacturing Company Ltd., Anglogold Ashanti (AGA) Ltd., Cocoa Processing Company and Unilever Ghana Ltd. It must be noted that all 25 companies were used in the analysis to follow.

3.2. Data Collection Procedure

Data were collected from the Ghana Stock Exchange website. An unbalanced panel of data spanning 2008 to 2021 was used for the analysis. This time periodwas considered for the analysis because of data constraints—upon careful observation of the annual reports of the firms, data for periods before 2008 and after 2021 for most of the firms could not be obtained.

3.3. Variables

In the study, ROE, ROA, and ROCE were used as proxies of financial performance (FP), whilst Average Collection Period (ACP), Average Payment Period (APP), and Inventory Turnover Period (ITP) were used as proxies working WCM. To help reduce omitted variable bias issues, the study controlled for firm size (SIZE) and assets growth (GRO). Table 1 displays the study variables and how they were computed from the annual reports.

Table 1. Measurement of Study Variables.

Variables	Type	Abbrev.	Measurement
Return on equity	Dependent variable	ROE	ROE = Net profit after tax/shareholders' equity
Return on assets	Dependent variable	ROA	ROA = Net profit after tax/total assets
Return on capital employed	Dependent variable	ROCE	ROCE = profit before tax/capital employed
Average collection period	Independent variable	ACP	(Account receivables/annual sales) × 365 days
Average payment period	Independent variable	APP	(Account payables/purchases) × 365 days
Inventory turnover period	Independent variable	ITP	(Inventory/cost of sales) × 365 days
Firm size	Control variable	SIZE	Natural log of total assets
Growth	Control variable	GRO	(Current year size - previous year size)/previous year size

Source: Author, 2023.

Return on Assets (ROA): ROA determines the amount of profit earned per share of assets. A high ROA ratio is a clear indicator of good performance or profitability of an entity.

Return on Equity (ROE): ROE is considered a gauge of a company's profitability and how efficient it is in generating profits. The higher the ROE, the more efficient the company is at generating income and growth from its equity financing.

Return on Capital Employed (ROCE): This is a financial ratio that can be used to assess a company's profitability and capital efficiency. In other words, this variable can help to understand how well a company is generating profits from its capital as it is put to use.

Average Collection Period (ACP): The average collection period is the average number of days it takes a business to collect and convert its accounts receivable into cash. It is one of six main calculations used to determine short-term liquidity, that is, the ability of a company to pay its bills (current liabilities) as they come due.

Average Payment Period (APP): This ratio, also known as days payable outstanding (DPO), is a measure that helps companies and businesses determine the average number of

days taken to pay vendors for credit purchases. This solvency ratio is important for the business as it makes the business prepared to pay creditors when the time comes to do so.

Inventory Turnover Period (ITP): Inventory turnover is a financial ratio showing how many times a company turned over its inventory relative to its cost of goods sold (COGS) in a given period.

Firm Size: A firm's size determines the level of economics of scale enjoyed by a firm. When a firm becomes larger, it enjoys economies of scale, the average production cost is lower, and operational activities are more efficient. Hence, larger firms generate larger returns on assets.

3.4. Model Specification

The following econometric models were formulated for estimation:

$$ROA_{it} = \alpha_i + \beta_1 ACP_{it} + \beta_2 APP_{it} + \beta_3 ITP_{it} + \beta_4 SIZE_{it} + \beta_5 GRO_{it} + \mu_{it} \quad (1)$$

$$ROE_{it} = \alpha_i + \beta_1 ACP_{it} + \beta_2 APP_{it} + \beta_3 ITP_{it} + \beta_4 SIZE_{it} + \beta_5 GRO_{it} + \mu_{it} \quad (2)$$

$$ROCE_{it} = \alpha_i + \beta_1 ACP_{it} + \beta_2 APP_{it} + \beta_3 ITP_{it} + \beta_4 SIZE_{it} + \beta_5 GRO_{it} + \mu_{it} \quad (3)$$

where the variables are as earlier defined, and $\beta_1 \ldots \beta_5$ symbolize the parameters to be estimated, α is the constant term, μ denotes the stochastic error term, i indicates the entities to be investigated, and t represents the time frame. Following earlier studies The references [57–60] all the variables were converted into natural logarithms to help reduce heteroscedasticity and data fluctuations. The log–linear specifications of the above models therefore became:

$$lnROA_{it} = \alpha_i + \beta_1 lnACP_{it} + \beta_2 lnAPP_{it} + \beta_3 lnITP_{it} + \beta_4 lnSIZE_{it} + \beta_5 lnGRO_{it} + \mu_{it} \quad (4)$$

$$lnROE_{it} = \alpha_i + \beta_1 lnACP_{it} + \beta_2 lnAPP_{it} + \beta_3 lnITP_{it} + \beta_4 lnSIZE_{it} + \beta_5 lnGRO_{it} + \mu_{it} \quad (5)$$

$$lnROCE_{it} = \alpha_i + \beta_1 lnACP_{it} + \beta_2 lnAPP_{it} + \beta_3 lnITP_{it} + \beta_4 lnSIZE_{it} + \beta_5 lnGRO_{it} + \mu_{it} \quad (6)$$

where $lnROA, lnROE, lnROCE, lnACP$, $lnlnAPP, lnITP, lnSIZE, and\ lnGRO$ are the log transformations of the corresponding explained and explanatory variables.

3.5. Econometric Strategies

This study utilized a six-staged analytical procedure. Firstly, the Pesaran [61] CD test was conducted to examine whether there were dependencies or independencies in the residual terms. This test is based on a panel data model specified as:

$$y_{i,t} = \alpha_i + \beta_{i,t} X_{i,t} + \mu_{i,t} \quad (7)$$

where α_i = constant term, $\beta_{i,t}$ = coefficients to be estimated, $X_{i,t}$ = regressors, $y_{i,t}$ = regressand, and $\mu_{i,t}$ = error term, while $i = 1, 2, \ldots N$ represents the cross-sectional units and $t = 1, 2 \ldots, T$ represents the study period. The null and the alternative hypothesis of the test are specified as:

$$H_o : \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) = 0\ for\ j \neq i \quad (8)$$

$$H_A : \rho_{ij} = \rho_{ji} = cor(\mu_{it}, \mu_{jt}) \neq 0\ for\ some\ \ j \neq i \quad (9)$$

where ρ_{ij} or ρ_{ji} represents the coefficient of correlation obtained from the error terms of the model. This is specified as:

$$\rho_{ij} = \rho_{ji} = \frac{\sum_{t=1}^{T} \mu_{it}\mu_{jt}}{\left(\sum_{t=1}^{T} {\mu_{it}}^2\right)^{1/2} \left(\sum_{t=1}^{T} {\mu_{jt}}^2\right)^{1/2}} \quad (10)$$

Based on the pairwise correlation coefficient $\hat{\rho}_{ij}$ among the residuals of the cross-sections, the Pesaran [61] CD test is expressed as:

$$CD_P = \sqrt{\frac{2T}{N(N-1)}} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{\rho}_{ij} \rightarrow N(0,1) \tag{11}$$

For robustness purposes, the Breusch–Pagan LM test and the Pesaran Scaled LM test were also conducted. Afterward, the LLC, IPS, ADF, and PP unit root tests were performed to assess the variables' integration order. At the third stage of the analysis, the Pedroni [62] residual cointegration test was conducted to affirm whether the investigated series were flanked by a long-term cointegration association or not. This test is based on a regression model expressed as:

$$y_{it} = \alpha_i + \delta_i t + \beta_{1i} x_{1i,t} + \beta_{2i} x_{2i,t} + \cdots + \beta_{mi} x_{mi,t} + \varepsilon_{it} \tag{12}$$

where the intercepts and the slope parameters are denoted by α_i and β_{ij}, respectively. Also, $t = 1, \ldots, T$, $i = 1, \ldots, N$, and $m = 1, \ldots, M$. Finally, x and y are assumed to be integral of the same order (I(1)). The null hypothesis of this test is based on an error term (ε_{it}) expressed as:

$$\varepsilon_{it} = \rho_i \varepsilon_{it-1} + \mu_{it} \tag{13}$$

Having validated cointegration affiliation among the variables, the Fully Modified Ordinary Least Squares (FMOLS) and the Dynamic Ordinary Least Squares (DOLS) estimators were employed to examine the elasticity effects of the predictors on the response variable. These methods were employed because of their resistance to heteroscedasticity, autocorrelation, and endogeneity. The FMOLS estimator is specified as:

$$\hat{\beta}_{FMOLS} = \left[\frac{1}{N} \sum_{i=1}^{N} \left(\sum_{t=1}^{T} (r_{it} - \bar{r}_i)^2 \right) \right]^{-1} \times \left[\left(\sum_{t=1}^{T} (r_{it} - \bar{r}_i) \hat{h}_{it} - T\hat{\Delta}_{eu} \right) \right] \tag{14}$$

where r and h are the predictors and the response variable, respectively. Also, the covariance term is denoted by Δ_{eu} while the estimated value of the covariance is denoted by $\hat{\Delta}_{eu}$. Finally, the studied period and the data dimension are symbolized by T and N, respectively. Conversely, the DOLS estimator is specified as;

$$\hat{\beta}_{DOLS} = \left[\frac{1}{N} \sum_{i=1}^{N} \left(\sum_{t=1}^{T} (R_{it} R'_{it}) \right) \left(\sum_{t=1}^{T} \left(R_{it} \tilde{h}_{it} \right) \right) \right]^{-1} \tag{15}$$

where the set of predictors that are $2(k+1) \times 1$ are represented by R and $R_{it} = (r_{it} - \bar{r}_i, \Delta r_{it-k}, \ldots, \Delta r_{it+K}) - K$ is the number of covariates. At the fifth stage of the analysis, the Breusch–Pagan heteroscedasticity test and the Wooldridge serial correlation test were conducted to examine the validity and reliability of the models. The Engle and Granger [19] causality test was employed to explore the causal connections between the variables. The E-G causality test is specified as;

$$y_{it} = \alpha_o + \sum_{i=1}^{m} \alpha_i y_{t-i} + \sum_{i=1}^{m} \beta_i x_{t-i} + \varepsilon_{it} \tag{16}$$

$$x_{it} = \alpha_o + \sum_{i=1}^{m} \alpha_j y_{t-j} + \sum_{i=1}^{m} \beta_j x_{t-j} + \varepsilon_{it} \tag{17}$$

The null hypothesis of the Granger causality test demonstrates that X does not cause Y and is expressed as $H_O : \beta_i = 0$, $i = 1, 2, \ldots, n$. One can therefore conclude that X causes Y if and only if the above hypothesis is not validated.

4. Results

Table 2 displays the descriptive statistics of the series. From the table, ACP had the maximum mean value, whilst GRO had the minimum mean value. Also, ROCE was the most volatile with a standard deviation of 3.587, while APP was the least volatile with a standard deviation of 0.235. The distributions of all the variables were positively skewed. This implies that a greater portion of the variables' distribution fell on the left-hand side of the normal curve. The distributions of all the series were peakier or leptokurtic in shape (with kurtosis values above the standard 3). The data values of APP, SIZE, and GRO were normally distributed, while the rest were not normally distributed based on the Jarque–Bera test results. The predictors were not highly collinear based on the outcomes of the VIF and tolerance tests. This is supported by the correlation coefficients amidst the determinants, none of which were more than 0.7. In terms of the correlation between the explained and explanatory variables shown in Table 3, ACP had a strongly positive association with the entities' financial performance. This means that the rise in ACP led to a rise in the firms' ROA, ROE, and ROCE and vice-versa. Also, APP had a moderately positive relationship with corporate financial performance as measured by ROA, ROE, and ROCE. This suggests that an increase in APP led to an increase in the entities ROA, ROE, and ROCE and vice-versa. Additionally, ITP had a strong and positive affiliation with financial performance. This signposts that ITP and corporate financial performance moved in tandem such that a surge in ITP resulted in a surge in ROA, ROCE, and ROCE. Similarly, as the ROA, ROE, and ROCE of the entities rose, their ITP also rose in the same direction. SIZE was moderately positively related to the ROA, ROE, and ROCE of the companies. This suggests that, as SIZE increased in its values, the ROA, ROE, and ROCE of the entities also increased in their values and vice-versa. GRO and the ROA, ROE, and ROCE of the entities were weakly and positively connected. Though the association between the variables was weak, the positive relation means that an increase in GRO led to an increase in the financial performance of the entities and vice-versa.

Table 2. Descriptive Statistics on Study Variables.

Statistic	ROA	ROE	ROCE	ACP	APP	ITP	SIZE	GRO
Mean	0.798	0.497	0.935	4.458	2.573	1.846	0.785	0.441
Maximum	0.564	0.618	0.732	7.945	3.974	0.925	0.663	0.324
Minimum	−0.021	0.135	0.016	1.897	1.771	0.134	0.004	0.017
Std. Dev.	3.114	2.974	3.587	0.462	0.235	1.015	2.936	3.122
Skewness	13.447	10.216	15.672	5.428	4.782	2.288	14.842	12.454
Kurtosis	24.1563	21.128	32.433	24.453	18.421	8.386	34.577	28.426
J-B	177.453	122.453	95.027	11.978	15.456	81.731	71.354	55.505
Prob.	0.003	0.004	0.048	0.003	0.785	0.092	0.187	0.727
VIF	-	-	-	1.78	1.65	1.34	1.24	1.06
Tolerance	-	-	-	0.562	0.606	0.746	0.806	0.943

Source: Author, 2023.

Table 3. Correlational Analysis.

Variable	ROA	ACP	APP	ITP	SIZE	GRO
ROA	1.000					
ACP	0.761	1.000				
APP	0.521	0.106	1.000			
ITP	0.705	0.212	0.428	1.000		
SIZE	0.588	0.147	0.239	0.261	1.000	
GRO	0.311	0.041	0.183	0.187	0.684	1.000

Table 3. *Cont.*

	ROE	ACP	APP	ITP	SIZE	GRO
ROE	1.000					
ACP	0.832	1.000				
APP	0.579	0.043	1.000			
ITP	0.734	0.245	0.152	1.000		
SIZE	0.625	0.179	0.243	0.128	1.000	
GRO	0.244	0.197	0.323	0.035	0.377	1.000
	ROCE	**ACP**	**APP**	**ITP**	**SIZE**	**GRO**
ROCE	1.000					
ACP	0.867	1.000				
APP	0.585	0.127	1.000			
ITP	0.723	0.301	0.064	1.000		
SIZE	0.556	0.228	0.171	0.272	1.000	
GRO	0.145	0.437	0.235	0.478	0.068	1.000

Source: Author, 2023.

4.1. Cross-Sectional Dependence Tests Results

Due to economic, social, and financial connections between the entities, there could be CD amidst the residual terms. Correlations in cross-sections if neglected could lead to biased estimates and inferences [60]. Therefore, following [63], CD tests were conducted to determine dependencies or otherwise in the error terms. Based on the results displayed in Table 4, the null hypothesis of no CD amidst the residual terms was accepted. This implies that there were no dependencies in the studied panel. Therefore, econometric techniques that accounted for CD were adopted for the ensuing analysis.

Table 4. Residual Cross-Sectional Dependence Tests Results.

Variable	ROA		ROE		ROCE	
	Value	Prob.	Value	Prob.	Value	Prob.
Pesaran CD test	88.42	0.145	67.11	0.567	59.23	0.745
Breusch–Pagan LM test	27.45	0.617	33.22	0.332	19.44	0.523
Pesaran Scaled LM test	17.71	0.716	15.22	0.965	12.08	0.564

Source: Author, 2023.

4.2. Unit Root and Cointegration Test Results

The integration order of series in regression analysis is vital because it could lead to wrong estimates. Therefore, as a second step, the unit root tests displayed in Table 5 were performed to assess the variables' order of integration. According to the results displayed in the table, all the variables were nonstationary at the levels, but they became stationary after the first difference. The variables being stationary after the first difference implies that they could be materially cointegrated in the long term. Therefore, following [64], Pedroni and Kao cointegration tests, as displayed in Tables 6 and 7, were undertaken to check the variables' cointegration properties. Based on the estimates from the tables, the null hypothesis of no cointegration could not be validated. This suggests that the variables were substantially related in the long term. The affirmation of cointegration served as the basis for estimating the long-term elasticities of the determinants.

Table 5. Unit Root Test Results.

Variable	Levels				First Difference			
	LLC	**IPS**	**ADF**	**PP**	**LLC**	**IPS**	**ADF**	**PP**
ROA	−2.114	−2.441	3.534	8.321	−4.137	−5.892	18.776	19.211
	0.335	0.313	0.564	0.772	0.000 ***	0.000 ***	0.000 ***	0.000 ***
ROE	2.701	0.762	5.344	7.548	3.785	−2.741	15.891	17.614
	0.901	0.887	0.673	0.607	0.053 *	0.001 ***	0.012 **	0.001 ***
ROCE	−1.804	−1.231	4.233	9.144	−4.244	−5.241	16.125	21.304
	0.823	0.775	0.243	0.836	0.001 ***	0.000 ***	0.003 ***	0.000 ***
ACP	1.403	1.886	6.214	8.717	3.453	5.733	14.584	19.421
	0.814	0.886	0.671	0.518	0.032 **	0.000 ***	0.000 ***	0.018 **
APP	−0.913	−2.767	2.344	9.445	−4.481	−3.211	12.681	20.452
	0.144	0.456	0.252	0.671	0.004 ***	0.002 ***	0.004 ***	0.001 ***
ITP	−0.825	−1.556	5.101	8.754	−3.104	−3.577	17.167	24.115
	0.243	0.883	0.507	0.451	0.005 ***	0.000 ***	0.000 ***	0.000 ***
SIZE	−1.567	−2.787	4.431	5.747	−4.171	−3.568	12.168	18.111
	0.521	0.556	0.774	0.815	0.001 ***	0.011 **	0.000 ***	0.002 ***
GRO	0.345	1.576	7.448	6.437	−2.448	−4.333	11.775	12.212
	0.645	0.645	0.854	0.575	0.051 *	0.035 **	0.026 **	0.068 *

Source: Author, 2023. Note: The top values for the variables denote unit root statistics, whilst the down values represent the corresponding probabilities. Also, ***, **, and * signify significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Kao Residual Cointegration Test Results.

Test Type	ROA	ROE	ROCE
	t-Statistic	**t-Statistic**	**t-Statistic**
ADF	−6.321(0.000) ***	−3.228(0.012) **	−4.427(0.002) ***
Residual variance	0.0611	0.0512	0.0414
HAC variance	0.0475	0.0325	0.0322

Source: Author, 2023. Note: *** and ** denote significance at the 1% and the 5% levels, respectively.

Table 7. Pedroni Residual Cointegration Test Results.

Test Type	ROA		ROE		ROCE	
Within-Dimension	Value	Prob.	Value	Prob.	Value	Prob.
Panel v-Statistic	−6.678	0.000 ***	−5.221	0.000 ***	−7.077	0.000 ***
Panel rho-Statistic	9.553	0.000 **	8.643	0.000 ***	10.211	0.000 ***
Panel PP-Statistic	−3.478	0.018 **	−5.448	0.000 ***	−8.421	0.000 ***
Panel ADF-Statistic	−4.945	0.000 ***	−3.824	0.014 **	−3.332	0.067 *
Between-Dimension						
Group rho-Statistic	8.243	1.000	7.221	1.000	6.255	1.000
Group PP-Statistic	−11.334	0.000 ***	−9.325	0.000 ***	−8.564	0.000 ***
Group ADF-Statistic	6.985	0.021 **	5.881	0.023 **	7.271	0.004 ***

Source: Author, 2023. Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

4.3. Model Estimation Results

It was worthwhile to explore the elasticity effects so that conclusions and policy recommendations could be raised to improve corporate operational sustainability. Hence, after affirming that the series were flanked by a long-term cointegration association, the FMOLS technique was applied. From the results displayed in Table 8, ACP had a significantly positive effect on the firms' ROA, ROE, and ROCE at the 1% level. APP was also significantly positively related to the firms' ROA, ROE, and ROCE at the 1% level, and ITP significantly positively affected the firm's ROA, ROE, and ROCE. In addition, SIZE and GRO had a materially positive effect on the ROA, ROE, and ROCE of the entities. Finally, the adjusted R-squared values of 0.832, 0.782, and 0.754 suggest that the determinants accounted for 83.2%, 78.2%, and 75.4% of the variations in ROA, ROE, and ROCE, respectively.

Table 8. FMOLS Estimation Results with ROA, ROE, and ROCE as Response Variables.

Variables	ROA		ROE		ROCE	
	Coefficient	**Probability**	**Coefficient**	**Probability**	**Coefficient**	**Probability**
ACP	5.876	0.000 ***	3.238	0.000 ***	1.675	0.004 ***
APP	4.721	0.000 ***	2.765	0.007 ***	2.546	0.003 ***
ITP	2.942	0.001 ***	1.771	0.027 **	0.955	0.057 *
SIZE	3.487	0.000 ***	0.8821	0.013 **	0.894	0.051 *
GRO	0.873	0.042 **	0.631	0.043 **	0.785	0.011 **
R-squared (R^2)	0.832		0.782		0.754	
Adjusted (R^2)	0.801		0.721		0.699	

Source: Author, 2023. Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

It was worthwhile to check the vigorousness of the FMOLS outcomes. Therefore, the long-term elasticities from the DOLS estimator were also explored. Based on the results depicted in Table 9, ACP was positively and significantly related to the ROA, ROE, and ROCE of the companies. All factors held constant and a 1% rise in ACP led to a 6.745%, 2.922%, and 2.025% rise in ROA, ROE, and ROCE of the companiesrespectively. Similarly, APP raised firms' financial performance in all three models. Specifically, a 1% increase in APP resulted in a 4.945%, 3.484%, and 2.984% increase in the ROA, ROE, and ROCE of the entities, respectively. ITP also had a significantly positive effect on firms' financial performance as it raised their ROA, ROE, and ROCE by 3.257%, 1.995%, and 1.871%, respectively. Moreover, SIZE and GRO had a substantially positive influence on firms' financial performance. Lastly, the adjusted R-squared values of 0.871, 0.844, and 0.792 suggest that the regressors explained 87.1%, 84.4%, and 79.2% of the variations in the ROA, ROE, and ROCE of the entities, respectively. In summary, there were some differences in the weight and significance of the coefficients of the variables under the FMOLS and the DOLS estimators. However, in terms of sign or direction, they were the same under the two techniques. This indicates that the results were robust and could be considered for policy decisions.

Table 9. DOLS Estimation Results with ROA, ROE, and ROCE as Response Variables.

Variables	ROA		ROE		ROCE	
	Coefficient	**Probability**	**Coefficient**	**Probability**	**Coefficient**	**Probability**
ACP	6.745	0.000 ***	2.922	0.000 ***	2.025	0.000 ***
APP	4.945	0.000 ***	3.484	0.0002 ***	2.984	0.001 ***
ITP	3.257	0.000 ***	1.995	0.019 **	1.871	0.014 **
SIZE	4.148	0.000 ***	1.727	0.001 ***	1.023	0.026 **
GRO	2.282	0.005 ***	0.968	0.027 **	0.964	0.009 ***
R-squared (R^2)	0.871		0.844		0.792	
Adjusted R^2	0.835		0.802		0.711	

Source: Author, 2023. Note: *** and ** denote significance at the 1% and 5% levels, respectively.

4.4. Model Validity and Reliability Test Results

After estimating the elasticities of the covariates, it was worthwhile to examine the validity and reliability of the developed models. Therefore, at the fifth stage of the analysis, the Breusch–Pagan heteroscedasticity test and the Wooldridge serial correlation test were conducted to ascertain whether or not the established models were valid and reliable. Based on the findings shown in Table 10, the null hypothesis of no heteroscedasticity in the residual terms was validated. Also validated was the hypothesis that the error terms of the models were not serially correlated. These outcomes indicate that the models were capable of yielding valid and reliable outcomes.

Table 10. Heteroscedasticity and Serial Correlation Tests Results.

Test Type	Value	Prob.
Breusch–Pagan heteroscedasticity test	301.645	0.971
Wooldridge serial correlation test	164.708	0.283

Source: Author, 2023.

4.5. Causality Test Results

Since the confirmation of long-term relationships amidst series does not guarantee causation between them, the study proceeded to explore the causal paths between the variables at the last stage. Based on the results displayed in Table 11, there was a bidirectional causality between ATP and firms' financial performance in all three models. Also, a double-headed causality amidst APP and the ROA, ROE, and ROCE of the entities was disclosed. Likewise, a two-way causality between ITP and the ROA, ROE, and ROCE of the entities was discovered. Similarly, a bilateral association between SIZE and the firms' ROA, ROE, and ROCE was discovered. Finally, a one-way causality from GRO to the ROA, ROE, and ROCE of the companies was revealed.

Table 11. Pairwise Granger Causality Test Results.

ROA		ROE		ROCE	
ACP⇏ROA	17.45(0.000) ***	ACP⇏ROE	6.68(0.024) **	ACP⇏ROCE	28.41(0.000) ***
ROA⇏ACP	7.56(0.007) ***	ROE⇏ACP	7.17(0.012) **	ROCE⇏ACP	10.56(0.001) ***
APP⇏ROA	11.82(0.000) ***	APP⇏ROE	17.93(0.000) ***	APP⇏ROCE	4.81(0.063) *
ROA⇏APP	9.17(0.004) ***	ROE⇏APP	8.17(0.003) ***	ROCE⇏APP	9.03(0.004) ***
ITP⇏ROA	15.56(0.000) ***	ITP⇏ROE	23.44(0.000) ***	ITP⇏ROCE	31.45(0.000) ***
ROA⇏ITP	11.04(0.000) ***	ROE⇏ITP	15.15(0.000) ***	ROCE⇏ITP	17.07(0.000) ***
SIZE⇏ROA	22.95(0.000) ***	SIZE⇏ROE	6.18(0.022) **	SIZE⇏ROCE	12.82(0.000) ***
ROA⇏SIZE	10.23(0.001) ***	ROE⇏SIZE	4.17(0.077) *	ROCE⇏SIZE	6.19(0.032) **
GRO⇏ROA	5.74(0.051) *	GRO⇏ROE	11.32(0.000) ***	GRO⇏ROCE	14.17(0.000) ***
ROA⇏GRO	0.17(0.952)	ROE⇏GRO	0.01(0.998)	ROCE⇏GRO	0.21(0.883)

Source: Author, 2023. Note: ⇏ signifies the null hypothesis that one variable does not cause another variable; and ***, **, and * denote significance at the 1%, 5%, and10% levels, respectively.

5. Discussion

The findings show that ACP was positively related to the ROA, ROE, and ROCE of the companies. This implies that the average collection period of the firms helped to improve their financial performance. Thus, the firms were efficient in collecting and converting their accounts receivables into cash. This helped to make available enough liquidity to meet the short-term liabilities and other undertakings of the firms, thereby boosting their profitability. In other words, the entities had a very effective accounts receivable management practices, which are very important for all firms that are heavily dependent on their receivables for cash flows. The companies might also have a very short average collection period. This indicates that they collected payments faster. This is a very good strategy, however, it could mean the entities had strict credit terms. Customers who may not be happy with such terms might look for suppliers or entities with more lenient payment terms. The businesses should therefore manage their average collection period in such a way that it will be beneficial to both the entities and their customers. Previous studies [12,13,44] offer support for this finding. However, the findings of other studies on 23 listed industrial firms in Jordan [4], 28 in the EU [34], and 10 in Nigeria [52] stand in contrast to the findings in this study.

APP also had a significantly positive association with firms' financial performance. This implies that the average payment period of the firms improved their financial performance. The finding also implies that the firms efficiently managed payments to their suppliers. This boosted their chances of having more goods on credit to operate, thereby making them profitable and sustainable. The finding also implies that the firms were

able to quickly pay off their credit purchases. This helped them to take advantage of discounts offered by their suppliers, thereby improving their income base and making them more profitable. The entities being able to meet their suppliers' obligations in a short period helped investors and stakeholders to make necessary decisions that helped to trigger good investments for the firms. If a firm's average payment period was lower than its competitors, this implies that its creditworthiness or ability to pay off its debt was higher than that of other firms. This is a good sign that could help attract investors. However, firms might be better off keeping their monies for an entire payment period and forgoing early pay discounts because they could invest those monies in higher-margin or higher-turnover inventory in the meantime. Thus, they could make more returns on their monies by reinvesting in new inventories sooner. One could also argue that the companies might be giving up crucial savings by taking a long time to meet their obligations. For example, if the entities could make a 10% discount for paying their obligations within 60 days, management would have to evaluate if there was enough cash flow to cover the 60 days. If the answer is yes, that decision could be viable, since a 10% discount could be a huge difference in the industry in which the firms operate. In summary, the average payment period shows how efficiently companies utilize their credit benefits to cover their short-term need for supplies. All decisions on firms' average payment periods are relative to their needs and the industry in which they operate. They should view that metric as a key measure that could evaluate their cash flow management. Empirical explorations by [11,43] corroborate the study's findings. However, those by [14,15,33] run contrary to this.

Similarly, ITP significantly positively predicted firms' ROA, ROE, and ROCE. This suggests that management efficiently managed the inventory turnover period of the firms to help advance their financial performance. The entities might have improved their revenues through strong sales because they might possess a high inventory turnover ratio. Conversely, a low turnover ratio could be a sign of weak sales or excessive inventory (overstocking), which comes with related costs like rent, insurance, electricity, and security, amongst others. As a slow inventory turnover indicates a decreased market demand for certain items, this could help businesses decide whether to change their pricing, offer incentives to deplete inventory faster, or change the mix of goods offered for sale in the future. These are all vital decisions that could help firms remain financially healthy, competitive, and profitable. The speed at which a firm can turnover its inventory is one of the indicators that investors look out for. Entities that turn inventory into sales faster tend to outperform comparable competitors. The longer an inventory item remains in stock, the higher its holding cost, and the lower the profits that would be obtained from the sale of that inventory. Companies must therefore manage their inventory turnover effectively to help minimize their costs and optimize their income. Studies by [42,54–56,65] support for this finding. However, those by [16,34,46,53] run contrary to this finding. Based on its results, the study's hypothesis that working capital management had a significantly positive effect on firms' financial performance as measured by ROA, ROE, and ROCE could not be rejected.

Moreover, SIZE had a significantly positive influence on firms' financial performance. This finding implies that firms' financial performance improved as they expanded in size. This finding also suggests that management put into practice strategies that were potent enough to expand the companies' activities and scope, thereby increasing their profitability. Empirical explorations by [66,67] support this finding, but that of [68] stands in contrast to this finding. Finally, GRO positively influenced firms' financial performance. This finding suggests that the businesses used techniques that were effective enough to enhance their undertakings. As a result, their capacity to obtain additional funds to expand their resource base improved, which aided in their ability to grow and become more profitable and sustainable.

6. Conclusions

Based on the findings of the study, it is concluded that working capital management positively explained firms' financial performance, implying that the working capital management practices adopted by companies in Ghana help to boost their financial performance. Also, firm size is a significant positive predictor of financial performance suggesting that as the firms' scope widens, their financial performances also improve. Finally, asset growth positively determines firms' financial performance meaning that firms adopted strategies that were effective enough to improve their undertakings and subsequently, their growth. This finding also implies that authorities were able to use resources judiciously to improve the productivity of the firms.

With regard to policy implications, the current study found that working capital management helps to improve firms' financial performance. Therefore, the management of firms should not overlook working capital management practices in their financial decisions, since ignoring them could seriously compromise the firms' short- and long-term sustainability. Also, investors and creditors normally check entities' working capital management indicators to avoid investing in firms with unsustainable corporate policies. The management of firms should therefore ensure that their entities' working capital management indicators look good. This could attract investors and creditors to pump in more resources to boost the operations and profitability of the firms. In addition, the management of corporate entities should avoid adverse influences on profitability such as lost sales, lost discounts for early payments, or supplementary financing expenses. While internally generated funds could be directed toward more lucrative investment opportunities, corporate financial executives should avoid greater net investment in working capital and aim for its optimal level. In order to optimize the benefits of working capital to the advantage of shareholders, firms' management should concentrate on maintaining accounts payable, accounts receivable, and inventory turnover at a specific level. Additionally, firms' management need to implement strong funding techniques that could increase their firm's sustainability. Moreover, firms should maintain an adequate liquidity level that will not hinder their operations, but still make them profitable. In addition, it would be advantageous to firms if they implemented more stringent internal control mechanisms that could strengthen their liquidity foundation. Specifically, firms should put in place efficient cash management controls. Additionally, firms should enhance their holdings in short-term resources. This strategy will serve as a liquidity optimization system that might help in the efficient management of operating capital and resources, thereby advancing firms' profitability. Further, the entities should think of growth methods like product diversification and market segmentation. This strategy will help to increase the size of firms and give them access to credits when they are low on liquidity.

There were inherent limitations associated with the conduct of this study. First, the study and its empirical results were restricted to listed non-financial firms in Ghana. This implies that the results cannot be generalized. Also, due to a lack of data for periods before 2004 and after 2021 for some of the firms, our analysis spans 2008 to 2021. It was also impossible to extend this study to include other entities outside of Ghana because of differences in regulations. In addition, the study was confined to only secondary data sources and any limitations inherent to the use of secondary data could be associated with this study.

Further studies could extend the research to include non-financial firms from other countries and conduct a comparative analysis, conduct a longitudinal study with a longer time frame, including data from before 2004 and after 2021, if possible (this could provide a more comprehensive understanding of how working capital management practices and firm performance evolve over time), investigate whether the relationship between working capital management and financial performance varies across different industry sectors in Ghana (different sectors may have unique working capital requirements and dynamics), examine how working capital management practices affect various financial metrics beyond overall financial performance (or example, explore the impact on liquidity

ratios, profitability ratios, and solvency ratios) and consider examining how external economic factors, such as inflation rates, exchange rates, and interest rates, impact the relationship between working capital management and financial performance in Ghana

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References

1. Seth, H.; Chadha, S.; Ruparel, N.; Arora, P.K.; Sharma, S.K. Assessing Working Capital Management Efficiency of Indian Manufacturing Exporters. *Manag. Financ.* **2020**, *46*, 1061–1079. [CrossRef]
2. De Almeida, J.R.; Eid, W., Jr. Access to finance, working capital management and company value: Evidences from Brazilian companies listed on BM&FBOVESPA. *J. Bus. Res.* **2014**, *67*, 924–934. [CrossRef]
3. Uguru, L.C.; Chukwu, U.C.; Elom, J.O. Effect of Working Capital Management on the Profitability of Brewery Firms in Nigeria. *J. Econ. Financ.* **2018**, *9*, 9–20.
4. Soda, M.Z.; Hassan Makhlouf, M.; Oroud, Y.; Al Omari, R. Is Firms' Profitability Affected by Working Capital Management? A Novel Market-Based Evidence in Jordan. *Cogent Bus. Manag.* **2022**, *9*, 2049671. [CrossRef]
5. Ahangar, N. Is the Relationship between Working Capital Management and Firm Profitability Non-Linear in Indian SMEs? *Small Enterp. Res.* **2021**, *28*, 23–35. [CrossRef]
6. Owele, M.L. Working Capital Management Approaches and the Financial Performance of Agricultural Companies Listed at the Nairobi Securities Exchange. Ph.D. Thesis, University of Nairobi, Nairobi, Kenya, 2014.
7. Akindele, J.A.; Odusina, O. Working capital management and firm profitability: Evidence from Nigerian quoted companies. *Res. J. Financ. Account.* **2015**, *6*, 148–153.
8. Olagunju, A.O.; Nwaobia, A.N.; Ogundajo, G.O. Working Capital and Profitability of Listed Hotel Companies in Nigeria. *Afr. J. Hosp. Tour. Leis.* **2020**, *9*, 669–684.
9. Uremadu, S.O.; Egbide, B.-C.; Enyi, P.E. Working Capital Management, Liquidity and Corporate Profitability among Quoted Firms in Nigeria: Evidence from the Productive Sector. *Int. J. Acad. Res. Account. Financ. Manag. Sci.* **2012**, *2*, 80–97.
10. Oladimeji, J.A.; Aladejebi, O. The Impact of Working Capital Management on Profitability: Evidence from Selected Small Businesses in Nigeria. *J. Small Bus. Entrep. Dev.* **2020**, *8*, 27–40. [CrossRef]
11. Kasahun, A.K. The Impact of Working Capital Management on Firms' Profitability-Case of Selected Sole Proprietorship Manufacturing Firms in Adama City. *IOSR J. Econ. Financ. IOSR-JEF* **2020**, *11*, 45–55.
12. Altaf, N. Working Capital Financing, Firm Performance and Financial Flexibility: Evidence from Indian Hospitality Firms. *Glob. Bus. Rev.* **2020**, 0972150920961371. [CrossRef]
13. Sharma, R.K.; Bakshi, A.; Chhabra, S. Determinants of Behaviour of Working Capital Requirements of BSE Listed Companies: An Empirical Study Using Co-Integration Techniques and Generalised Method of Moments. *Cogent Econ. Financ.* **2020**, *8*, 1720893. [CrossRef]
14. Yousaf, M.; Bris, P. Effects of working capital management on firm performance: Evidence from the EFQM certified firms. *Cogent Econ. Financ.* **2021**, *9*, 1958504. [CrossRef]
15. Syeda, R. Impact of Working Capital Management on Profitability: A Case Study of Trading Companies. In *Accounting and Finance Innovations*; IntechOpen: London, UK, 2021.
16. Wang, Z.; Akbar, M.; Akbar, A. The Interplay between Working Capital Management and a Firm's Financial Performance across the Corporate Life Cycle. *Sustainability* **2020**, *12*, 1661. [CrossRef]
17. Almomani, T.M.; Almomani, M.A.; Obeidat, M.I. The relationship between working capital management and financial performance: Evidence from Jordan. *J. Asian Financ. Econ. Bus.* **2021**, *8*, 713–720. [CrossRef]
18. Nguyen, A.H.; Pham, H.T.; Nguyen, H.T. Impact of Working Capital Management on Firm's Profitability: Empirical Evidence from Vietnam. *J. Asian Financ. Econ. Bus.* **2020**, *7*, 115–125. [CrossRef]
19. Engle, R.F.; Granger, C.W.J. Cointegration and error-correction: Representation, estimation, and testing. *Econometrica* **1987**, *55*, 251–276. [CrossRef]
20. Qin, L.; Raheem, S.; Murshed, M.; Miao, X.; Khan, Z.; Kirikkaleli, D. Does financial inclusion limit carbon dioxide emissions? Analyzing the role of globalization and renewable electricity output. *Sustain. Dev.* **2021**, *29*, 1138–1154. [CrossRef]

21. Korode, S.O. Working Capital Management and Organizational Performance of Selected Food and Beverages Manufacturing Firms in Lagos State. Ph.D. Thesis, Department of Business Administration and Marketing Babcock School of Management Sciences, Ilishan-Remo, Nigeria, 2017.
22. Sensini, L.; Vazquez, M. Effects of Working Capital Management on SME Profitability: Evidence from an Emergent Economy. *Int. J. Bus. Manag.* **2021**, *16*, 85–95. [CrossRef]
23. Oseifuah, E.K. Cash Conversion Cycle Theory and Corporate Profitability. Available online: https://www.zbw.eu/econis-archiv/handle/11159/1419 (accessed on 11 March 2023).
24. Richards, V.D.; Laughlin, E.J. A Cash Conversion Cycle Approach to Liquidity Analysis. *Financ. Manag.* **1980**, *9*, 32–38. [CrossRef]
25. Aminu, Y.; Zainudin, N. A Review of Anatomy of Working Capital Management Theories and the Relevant Linkages to Working Capital Components: A Theoretical Building Approach. *Eur. J. Bus. Manag.* **2015**, *7*, 10–18.
26. Usman, A. Impact of Working Capital Management on Financial Performance of Listed Agricultureal Films in Nigeria. Master Thesis, Abubakar Tafawa Balewa University, Bauchi, Nigeria, April 2019.
27. Alvarez, S.A.; Busenitz, L.W. The Entrepreneurship of Resource-Based Theory. *J. Manag.* **2001**, *27*, 755–775. [CrossRef]
28. Bhattacharya, H. *Working Capital Management: Strategies and Techniques*; PHI Learning Pvt. Ltd.: Delhi, India, 2014.
29. Njeru, D.M. Effect of Liquidity Management on Financial Performance of Posits Taking Saving and Credit Co-Operative Society in Kenya. Ph.D. Thesis, Jomo Kenyatta University of Agriculture and Technology, Juja, Kenya, 2016.
30. Dwivedi, D.N. *Managerial Economics*; Vikas Publishing House Pvt. Ltd.: New Delhi, India, 2002.
31. Black, J.; Hashimzade, N.; Myles, G. *A Dictionary of Economies*, 3rd ed.; Oxford University Press: New York, NY, USA, 2003.
32. Carbaugh, R. *Contemporary Economics: An Applications Approach*; Routledge: London, UK, 2016.
33. Lyngstadaas, H. Packages or Systems? Working Capital Management and Financial Performance among Listed US Manufacturing Firms. *J. Manag. Control.* **2020**, *31*, 403–450. [CrossRef]
34. Akgün, A.I.; Memiş Karataş, A. Investigating the Relationship between Working Capital Management and Business Performance: Evidence from the 2008 Financial Crisis of EU-28. *Int. J. Manag. Financ.* **2020**, *17*, 545–567. [CrossRef]
35. Fernández-López, S.; Rodeiro-Pazos, D.; Rey-Ares, L. Effects of Working Capital Management on Firms' Profitability: Evidence from Cheese-Producing Companies. *Agribusiness* **2020**, *36*, 770–791. [CrossRef]
36. Nastiti, P.K.Y.; Atahau, A.D.R.; Supramono, S. Working Capital Management and Its Influence on Profitability and Sustainable Growth. *Bus. Theory Pract.* **2019**, *20*, 61–68. [CrossRef]
37. Goncalves, T.C.; Cristina, G.; Frederico, R. The impact of working capital management on firm profitability in different economic cycles: Evidence from the United Kingdom. *Econ. Bus. Lett.* **2018**, *7*, 70–75. [CrossRef]
38. Enqvist, J.; Michael, G.; Jussi, N. The impact of working capital management on firm profitability in different business cycles: Evidence from Finland. *Res. Int. Bus. Financ.* **2014**, *32*, 36–49. [CrossRef]
39. Dalci, I.; Tanova, C.; Ozyapici, H.; Bein, M.A. The Moderating Impact of Firm Size on the Relationship between Working Capital Management and Profitability. *Prague Econ. Pap.* **2019**, *28*, 296–312. [CrossRef]
40. Ahmed, S.; Ahmed, F.; Kanwal, S. Corporate Profitability-Working Capital Management Tie: Empirical Evidence from Pharmaceutical Sector of Pakistan. *Asian J. Empir. Res.* **2018**, *8*, 259–270.
41. Raheman, A.; Afza, T.; Qayyum, A.; Bodla, M. Working Capital Management and Corporate Performance of Manufacturing Sector in Pakistan. *Int. Res. J. Financ. Econ.* **2010**, *47*, 156–169.
42. Jana, D. Impact of Working Capital Management on Profitability of the Selected Listed FMCG Companies in India. *Int. Res. J. Bus. Stud.* **2018**, *11*, 21–30. [CrossRef]
43. Kaushik, N.; Chauhan, S. The Role of Financial Constraints in the Relationship between Working Capital Management and Firm Performance. *IUP J. Appl. Financ.* **2019**, *25*, 60–82.
44. Roni, H.; Djazuli, A.; Djumahir, D. The Effect of Working Capital Management on Profitability of State-Owned Enterprise in Processing Industry Sector. *J. Apl. Manaj.* **2018**, *16*, 293–299. [CrossRef]
45. Sharif, M.A.; Islam, M.R. Working capital management: A measurement tool for profitability: A stud on the pharmaceutical industry in Bangladesh. *J. Financ. Account.* **2018**, *6*, 1–10. [CrossRef]
46. Le, B. Working Capital Management and Firm's Valuation, Profitability and Risk: Evidence from a Developing Market. *Int. J. Manag. Financ.* **2019**, *15*, 191–204. [CrossRef]
47. Pham, K.X.; Nguyen, Q.N.; Nguyen, C.V. Effect of Working Capital Management on the Profitability of Steel Companies on Vietnam Stock Exchanges. *J. Asian Financ. Econ. Bus.* **2020**, *7*, 741–750. [CrossRef]
48. Nguyen, A.T.H.; Nguyen, T.V. Working capital management and corporate profitability: Empirical evidence from Vietnam. *Found. Manag.* **2018**, *10*, 195–206. [CrossRef]
49. Ren, T.; Nan, L.; Hongyan, Y.; Youzhi, X.; Yijun, H. Working capital management and firm performance in China. *Asian Rev. Account.* **2019**, *27*, 546–562. [CrossRef]
50. Yusoff, H.; Ahmad, K.; Qing, O.Y.; Zabri, S.M. The relationship between working capital management and firm performance. *Adv. Sci. Lett.* **2018**, *24*, 3244–3248. [CrossRef]
51. Louw, E.; Hall, J.H.; Pradhan, R.P. The Relationship between Working Capital Management and Profitability: Evidence from South African Retail and Construction Firms. *Glob. Bus. Rev.* **2022**, *23*, 313–333. [CrossRef]
52. Olaoye, S.A.; Okunade, R.A. Working Capital Management and Profitability of Listed Manufacturing Firms in Nigeria. *J. Econ. Manag. Trade* **2020**, *26*, 63–69. [CrossRef]

53. Aregbeyen, O. The Effects of Working Capital Management on the Profitability of Nigerian Manufacturing Firms. *J. Bus. Econ. Manag.* **2013**, *14*, 520–534. [CrossRef]
54. Kabuye, F.; Kato, J.; Akugizibwe, I.; Bugambiro, N. Internal Control Systems, Working Capital Management and Financial Performance of Supermarkets. *Cogent Bus. Manag.* **2019**, *6*, 1573524. [CrossRef]
55. Prempeh, K.B. *Macroeconomic Variables and Stock Price Volatility in Ghana*; MPRA Paper 70545; University Library of Munich: Munich, Germany, 2016.
56. Amponsah-Kwatiah, K.; Asiamah, M. Working Capital Management and Profitability of Listed Manufacturing Firms in Ghana. *Int. J. Product. Perform. Manag.* **2021**, *70*, 1751–1771. [CrossRef]
57. Li, K.; Ying, H.; Ning, Y.; Wang, X.; Musah, M.; Murshed, M.; Alfred, M.; Chu, Y.; Xu, H.; Yu, X.; et al. China's 2060 Carbon-Neutrality Agenda: The Nexus between Energy Consumption and Environmental Quality. *Environ. Sci. Pollut. Res.* **2022**, *29*, 55728–55742. [CrossRef]
58. Li, K.; Wang, X.; Musah, M.; Ning, Y.; Murshed, M.; Alfred, M.; Gong, Z.; Xu, H.; Yu, X.; Yang, X.; et al. Have international remittance inflows degraded environmental quality? A carbon emission mitigation analysis for Ghana. *Environ. Sci. Pollut. Res.* **2022**, *29*, 60354–60370. [CrossRef]
59. Phale, K.; Li, F.; Adjei Mensah, I.; Omari-Sasu, A.Y.; Musah, M. Knowledge-Based Economy Capacity Building for Developing Countries: A Panel Analysis in Southern African Development Community. *Sustainability* **2021**, *13*, 2890. [CrossRef]
60. Chen, H.; Tackie, E.A.; Ahakwa, I.; Musah, M.; Salakpi, A.; Alfred, M.; Atingabili, S. Does Energy Consumption, Economic Growth, Urbanization, and Population Growth Influence Carbon Emissions in the BRICS? Evidence from Panel Models Robust to Cross-Sectional Dependence and Slope Heterogeneity. *Environ. Sci. Pollut. Res.* **2022**, *29*, 37598–37616. [CrossRef]
61. Pesaran, M.H. General Diagnostic Tests for Cross Section Dependence in Panels. 2004. Available online: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=572504 (accessed on 14 April 2022).
62. Pedroni, P. Panel Cointegration: Asymptotic and Finite Sample Properties of Pooled Time Series Tests with an Application to the PPP Hypothesis. *Econom. Theory* **2004**, *20*, 597–625. [CrossRef]
63. Tackie, E.A.; Chen, H.; Ahakwa, I.; Atingabili, S. Exploring the Dynamic Nexus Among Economic Growth, Industrialization, Medical Technology, and Healthcare Expenditure: A PMG-ARDL Panel Data Analysis on Income-Level Classification Along West African Economies. *Front. Public Health* **2022**, *10*, 903399. [CrossRef]
64. Li, K.; Musah, M.; Kong, Y.; Adjei Mensah, I.; Antwi, S.K.; Bawuah, J.; Donkor, M.; Coffie, C.P.K.; Andrew Osei, A. Liquidity and Firms' Financial Performance Nexus: Panel Evidence from Non-Financial Firms Listed on the Ghana Stock Exchange. *Sage Open* **2020**, *10*, 2158244020950363. [CrossRef]
65. Moussa, A.A. The Impact of Working Capital Management on Firms' Performance and Value: Evidence from Egypt. *J. Asset Manag.* **2018**, *19*, 259–273. [CrossRef]
66. Işık, Ö. Determinants of Profitability: Evidence from Real Sector Firms Listed in Borsa Istanbul. *Bus. Econ. Res. J.* **2017**, *8*, 689–698. [CrossRef]
67. Doğan, M.; Topal, Y. Financial Factors Determining Profitability: A Research on Manufacturing Industry Companies Traded on BIST. *Optim. J. Econ. Manag. Sci.* **2016**, *3*, 55–66. [CrossRef]
68. Trujillo-Ponce, A. What Determines the Profitability of Banks? Evidence from Spain. *Account. Financ.* **2013**, *53*, 561–586. [CrossRef]