

Determinants of Working Capital Requirements Listed Companies in East Africa: An Empirical Study Using Generalised Method of Movements

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Abstract

Effective working capital management is essential to a company's survival. Working capital management helps managers in the value creation of the company and prevents the possibility of insolvency. This leads managers and researchers to make an effort to identify variables that affect working capital management. The main focus of this study is to examine the determinants of working capital requirements of non-financial firms listed in East African stock markets. Working capital requirement as a dependent variable was presented by the ratio of current assets less current liabilities over total assets and cash conversion cycle. However, the independent variable was represented by return on assets, sales growth, firm size, leverage and operating cash flow, while the country's gross domestic product growth rate was used as a control variable. For the company to be financially successful, it depends much on how financial managers use their skills to ensure that management of working capital is maintained at an optimal balance. The study used both a descriptive and a quantitative research design. Listed non-financial companies in East Africa, covering the period of 8 years from 2016 to 2023, were selected to represent the sample. Data analysis was done by eView12 using the panel generalised method of movement to establish the relationship between dependent and independent variables. This study concluded that there is a significant positive influence of return on assets, growth, firm size and operating cash flow on working capital requirement. This indicates that if the firm wants to grow and improve profitability it must increase the level of working capital. Furthermore, leverage and firm size were revealed to have a negative and significant influence on working capital requirement. Then, if the firm is highly geared, it leads to a reduction in the level of working capital. Moreover, GDP growth rate impacts working capital requirement positively, meaning that when the country's GDP increases, the company demands more cash to finance their working capital.

Keywords: Working capital, growth, leverage, return on assets, listed nonfinancial firm

1.0 INTRODUCTION

Financial decisions related to working capital management have been critical and strategic since they impact the daily operation of the business and the company's value (Bukwimba & Ngata, 2022). In today's challenging economic environment, working capital management, dealing with current assets and current liabilities, has gained significant attention (Kisyeri & Kira, 2022). It is an important part of financial management decisions in all firms (Githiga, 2023). Management of working capital has been essential to all companies (Ahmed & Mwangi, 2022). When the company fails to have proper management of working capital, it faces a liquidity problem, which causes difficulties in paying its day-to-day obligations when they fall due. By maintaining optimal working capital, the company can improve its liquidity position and effectively decrease the company interest liabilities, thus reducing the exposure to potential risk (Anton & Afloarei, 2021). The key drivers of working capital management that can improve profitability and value of the firm have been a problem facing many financial managers. This study aims to establish the key drivers that determine the level of working capital for listed non-financial firms in East Africa. Any firm focuses on maintaining an efficient working capital level to avoid keeping too high a level of working capital and too low a level of working capital not sufficient to run the day-to-day operation of the business (Högerle et al., 2020). The level of working capital of the firm mostly depends on its turnover, as the circulating capital with the volume of sales and stability of operation (Gołaś, 2020).

Globally, working capital management has taken centre stage in many organisations as it prevents liquidity and solvency for the company. For the company to have enough liquidity, the position must focus on proper management of working capital (Phuong & Hung, 2020). Financial managers can not reduce the level of working capital to the minimum without disturbing its normal operation (Bhattacharyay, 2023). This implies that to avoid affecting future sales and profitability, every company must ensure that its working capital is at the optimal level (Aldubhani et al., 2022). Every company focuses on the main objective of maximising its shareholders' wealth (Singitu & Basesa, 2021). A well-balanced approach between the aforementioned factors can help achieve this objective. Management of working capital mainly deals with the optimisation of the difference between components of working capital, which are current assets and current liabilities, which is the cause of business success (Hossain, 2020). The problem that developing countries are facing is the underutilisation of resources (Mandipa & Sibindi, 2022). However, working capital and fixed capital both contribute to the total capital of developing countries; the utilisation of production capacity produced by fixed assets is ensured by the availability of working capital (Boisjoly et al., 2020).

In Africa, working capital has also been an area of focus among researchers. (Olaoye & Okunade, 2020) assumed investment in current assets represents a critical position in total assets. Efficient and effective management of current assets and current liabilities leads to the smooth day-to-day operation of the business. Effective management of working capital does not depend only on how big the company is, and then should not be relied upon for profitability (Amponsah-Kwatiah & Asiamah, 2021). For companies to run their daily operation smoothly, management of working capital is vital (Mandipa & Sibindi, 2022). In addition, there is a risktrade-off when working capital is at the optimal level. This strategy aims to minimise the overall cost of both liquidity and illiquidity to balance between solvency and financial performance (Sensini, 2020). The aim of working capital management is to improve financial performance and liquidity. This is because it significantly reduces the risk of the business failing to meet its daily obligations (Ntuli & Nzuza, 2022).

In East Africa, many companies are facing difficulties in raising enough money to run day-to-day activities because they experience working capital management problems (Singitu & Basesa, 2021). This situation leads to some companies adopting a prompt strategy of cost reduction. The optimum level of working capital improves the financial performance of any firm; that is why it is the prime concern of every firm's decision-makers (Khalaf et al., 2023). Both inadequate and excessive working capital pose a significant risk to the firm's financial health, as the former impedes day-to-day operations while the latter generates idle funds (Stephen, 2023). All firms focus on avoiding these two scenarios. Firms seek to maintain an optimal level of working capital so they can smoothly conduct the day-to-day operations of the business (Jaworski & Czerwinka, 2021). This makes working capital management essential for all companies' financial performance and relatively more important in ensuring the liquidity position is at the optimal level. These are the major problems facing many non-financial companies listed in East Africa due to economic and population dynamics. It makes sense to claim that additional investigation on key working capital determinants will help non-financial firms listed in East African stock markets achieve an optimal level of working capital. All previous known studies that have been conducted in East Africa regarding the subject matter used a method other than GMM. This study differs from others by using GMM estimators in establishing factors. GMM overcomes both heteroscedastic and endogeneity problems, which, if left unchecked, might provide biased results. Then it makes this result more robust and consistent.

The study offers knowledge on how poor management of working capital affects the financial performance of listed non-financial companies in East Africa. It will

be useful to financial managers since it will help in deciding on investments in their businesses. The result of this analysis will assist them in developing good policies that will ensure they maintain the optimal level of working capital for their companies to achieve the objective of maximising shareholder wealth. In addition, the study will assist policymakers in formulating policies that enhance financial performance through the management of working capital. It will provide an opportunity for researchers and scholars to comment on methodology and findings.

1.1 Objective of the Study

The main objective of the study is to examine the determinants of working capital requirements for non-financial companies listed in East African stock markets.

1.1.1 Specific Research Objectives

To find out whether the growth level impacts the level of working capital requirement of listed firms

To find out whether the size of the firm impacts the level of working capital requirement of listed firms

To identify whether profitability impacts the level of working capital requirement of listed firms

To examine whether leverage impacts the level of working capital requirement in listed firms

To examine whether operating cash flow impacts the level of working capital requirement in listed firms.

1.1.2 Research Questions

What is the impact of growth level on the level of working capital requirement of listed firms?

What is the impact of the size of the firm on the level of working capital requirement of listed firms?

What is the impact of profitability on the level of working capital requirement in listed firms?

What is the impact of leverage on the working capital requirement levels of listed firms?

What is the impact of operating cash flow on the working capital requirement levels of listed firms?

2.0 LITERATURE REVIEW

2.1 Theoretical Literature

These theories attempt to elucidate how a company can concentrate on optimising its working capital levels to enhance its liquidity position. If the company has

enough liquidity, its daily activities will run smoothly, hence increasing profitability. This section delves into the theory of Agency and Pecking order theory. These theories inform the management about the problem of working capital management practices and their effect on the liquidity position of the firm.

2.1.1 The agency theory

According to the agency theory, companies are characterised by the separation of ownership between management and owners, leading to a conflict of interest between managers and shareholders. Because of the knowledge asymmetry between managers and shareholders, managers aim to maximise their interests at the expense of the shareholders (Jensen & Meckling, 1976). Managers can invest in projects with a negative net present value for personal reasons like self-prestige, leading to the rise of conflict of interest, which may cause them to make decisions about capital and liquidity management that are not in the owners' best interests (Chung et al., 2005; Tjandra et al., 2021). Agyei et al. (2013) argued that with such extra cash flow, managers may make extremely poor investment choices, hold large inventories and extend credit payment periods to debtors beyond what is required by company policy. According to the literature mentioned above, a company's working capital policy in these circumstances would be greatly influenced by its cash balances and financial resources.

2.1.2 Pecking order theory

Myers and Majluf (1984) pecking order theory studies the role of asymmetric information on the choice to issue debt or equity. Because businesses peg their leverage ratio to their financing needs, the idea has the additional benefit of keeping them from setting a target debt-to-equity ratio. Additionally, businesses use cash as a buffer rather than having target cash levels. Moreover, firms hold cash to stand between retained earnings and necessary investment instead of having target levels of cash (Ferreira & Vilela, 2004). It implies that when internal funds rise, the company is likely to be less geared. The business will have more income for use in retiring the debt when it comes due, as long as it holds excess internal funds for a cushion to reduce the cost associated with adverse selection. Cash is used to "lever up" for an operating company that is not policy-constrained (Opler et al., 1999). Working capital, as one of the most accessible internal sources of finance, can be a substitute for external capital. External finance can be extremely expensive to the financially constrained firm because of floating charges and the lemons problem (Fazzari & Petersen, 1993). Firms that earn more will therefore want to rely on their resources and borrow less. Following the Pecking Order Theory, a firm with greater growth opportunities is also a firm more prone to higher risk due to a high likelihood of the firm raising debt. On the

other hand, Smith and Watts (1992) argued that businesses with greater development prospects will have lower capital debt.

2.2 Empirical Literature

2.2.1 Growth and working capital requirements

The growth of sales is the key determinant of the working capital requirements of the firm. This is because the level of working capital is directly correlated with the firm's sales volume. Many firms that have the opportunity to grow keep a high level of working capital to take advantage of growth opportunities when they arise. (Fazal, 2020) conducted a study on the determinants of working capital in the production and service sectors in Pakistan, using a sample of 34 companies from 2007 to 2011. The finding revealed that sales growth is a significant predictor of working capital requirements. Furthermore, (Pazos et al., 2023) suggested that a positive and significant relationship exists between sales growth and working capital in their paper on working capital and sales growth evidence in the fish industry in Europe. Findings from (Syasa Bella & Yudiantoro, 2022) revealed a positive relationship between sales growth and networking capital and suggested that an increase in sales growth without keeping adequate working capital can lead to financial distress. These findings are similar to the findings by Nastiti et al. (2019), who established the positive relationship between growth in sales and working capital requirements. However, the relationship between growth in sales and working capital requirements, as revealed by (Kim & Thu, 2022), indicates that not only does sales growth influence working capital, but also working capital can stimulate the growth of sales too. When the firm has a long-term credit policy for customers, it may lead to an increase in sales that requires a higher level of inventory commitment. This study uses the growth in sales as a proxy for overall growth. Then the study formulated the following hypothesis:

H_{at}: There is a positive influence of growth on working capital requirements.

2.2.2 Firm size and working capital requirements

The size of the firm influences its working capital requirements. Theoretically, a perspective suggests that large firms should have large investments in working capital to finance huge day-to-day operational requirements. Empirically, the study by (Kirugumi, 2022) concluded that firm size, measured by the natural logarithm of total assets, influences working capital requirements positively. It also revealed that large firms tend to be financially stable, which causes a reduction in debt financing and efficient management of working capital. It's similar to what (Iqbal et al., 2023) found when they used linear regression analysis to find out how effective working capital management is at making a

business profitable and how firm size affects that relationship. On the other hand, (Kim & Thu, 2022) revealed a significant negative relationship between firm size and working capital requirements for listed plastic firms in Vietnam, indicating that large firms require lower working capital compared to small firms. However, (Mardones, 2022) using purposive sampling and structural equation modelling to analyse the data, revealed that firm size impacts net working capital positively. Using a fixed effects model for panel data (Tripathi et al., 2024) suggests that large firms have different working capital requirements as compared with small firms, influencing their overall efficiency in the management of working capital. In the Sri Lankan context, (Gooneratne & Jayasinghe, 2022) reported a significant relationship between firm size and working capital requirements. Therefore, the researchers formulated the following hypothesis:

H_{a2}: There is a positive relationship between firm size and working capital requirements.

2.2.3 Profitability and working capital requirements

Upreti & Kulshrestha (2022) established that a firm's profitability influences working capital requirements. Kandukira (2022) suggests that return on assets is a better measure of profitability than return on equity because it focuses more on operating efficiency than on looking at the capital composition of the firm. Then this study used the return on assets as a measure of profitability, as used by Kandukira (2022). (Sharma et al., 2020) revealed in their study on the determinants of behaviour and working capital requirements in listed firms in India that profitability is positively related to working capital requirements. This suggests that profitability plays a crucial role in predicting future net working capital requirements. (Tago & Ponsian, 2024) argue that profitability has a significant positive relationship with working capital. They suggest that firms with high profitability prioritise effective management of working capital, which in turn leads to an increased level of current assets. Moreover, Enow (2022) concluded that profit had a significant positive influence on working capital requirements. This finding is similar to the result of Umar et al., who reported a positive influence of profitability on working capital. The reason for this is that the most profitable firms can generate internal resources, which in turn leads to increased investment in working capital. Furthermore, Ali (2020) revealed a positive and significant relationship between return on assets and working capital requirement. However, Kristiana & Karnasi (2023), Oseifuah (2016), and Nguyen et al. (2020) found no significant impact of profitability on working capital requirements. Based on this, we established the following hypothesis for testing:

H_{a3}: There is a positive influence of profitability on working capital requirements.

2.2.4 Leverage and working capital requirements

Leverage refers to the ability of the firms to use long-term finance with fixed costs to enhance return, while working capital management deals with the management of current assets and current liabilities (Nayyef, 2023). Using panel data analysis from 68 listed Egyptian industry firms (Moussa, 2019) revealed the positive relationship between leverage and the requirements of the firm's working capital. However, (Alehegne, 2019) in their study on the determinants of working capital requirements in manufacturing firms, they established a strong negative relationship between leverage and working capital requirements. The study suggests that firms with higher leverage tend to have lower working capital requirements, while financial managers prioritise efficient working capital management. Furthermore, (Khalaf et al., 2023) established a significant negative relationship between leverage and working capital requirements using a sample of 135 firms from the United Arab Emirates covering the period of 14 years from 2008 to 2021. Agustin (2024), also revealed the same results using e-view analysis. Shroff (2023), analysed data from micro, small, and medium enterprises in India, revealing the negative relationship between leverage and working capital requirements and indicating that leverage is a significant determinant of working capital requirements. Stephen (2023), found that leverage does not significantly influence working capital requirements. The hypothesis formulated was:

H_{a4}: There is a negative influence of leverage on working capital requirements.

2.2.5 Operating cash flow and working capital requirements

Operating cash flow and working capital requirements are critical components of financial management that significantly influence a firm's liquidity and operational efficiency. OCF reflects the cash generated from a company's core business operations, while WCR indicates the capital needed to manage day-to-day operations. The interplay between these two elements is essential for maintaining financial health and ensuring sustainable growth. Studies indicate a negative relationship between operating cash flow and working capital requirement, suggesting that higher operating cash flows can reduce the need for working capital. This is particularly evident in Brazilian firms, where increased cash flow leads to shorter net operating cycles (Silva et al., 2019). Also, there is a negative and significant impact (Singh & Kumar, 2017). This highlights the importance of effective cash flow management in minimising working capital needs. On the other hand Sawarni et al., (2023), established a positive impact of operating cash flow with working capital. The hypothesis formulated was:

H_{a5}: There is a negative influence of operating cash flow on working capital requirements.

2.3 Conceptual Framework

It demonstrates the study's foundation and organisation. The conceptual framework connects independent and dependent variables and clarifies their logical relationship with one another. The conceptual framework for this study is shown below.

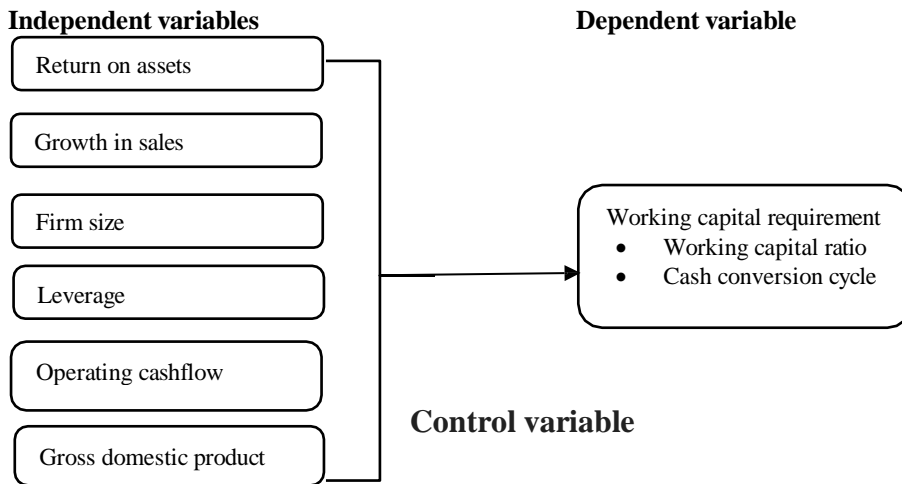


Figure 1: Conceptual Framework

3.0 RESEARCH METHODOLOGY

This empirical study is based on quantitative methodology, mainly focusing on the analysis of determinants of working capital management for listed non-financial firms in East African stock markets (Dar es Salaam Stock Exchange, Nairobi Securities Exchange, Uganda Securities Exchange, and Rwanda Stock Exchange). Currently, East Africa has a total of 60 listed non-financial firms; however, some do not have complete financial information needed in this study. A total of 45 non-financial firms were used in the investigation, spanning 8 years from 2016 to 2023. This makes a total of 360 observations in our panel analysis.

3.1 Data Source

This study used secondary data obtained from annual reports and audited financial statements from the firms' official websites.

3.2 Variable construction

3.2.1 Operationalization of dependent, independent, and control variables

The variables used in the study are classified into three categories: dependent, independent variables and control variable. Their measurement is shown below.

Table 1: Operationalization of dependent, independent, and control variables

Variable	Symbol	How is it measured	Source
Dependent variable			
Working capital ratio	WCR	$\frac{[(\text{Current Assets}) - (\text{Current Liabilities})]}{\text{Total Assets}}$	Kim et al., 2022; Nastiti et al., 2020
Cash conversion cycle	CCC	It is calculated as inventory conversion period + Receivables period – Payable period	Yeady et al., 2018
Independent variable			
Return on assets	ROA	$\frac{\text{Net income}}{\text{Total assets}}$	Tago & Ponsian, 2024; Kandukira, 2022
Growth in sales	GRS	$\frac{(\text{Total Sales}_t - \text{total Sales}_{t-1})}{\text{Total Sales}_{t-1}}$	Pazos et al., 2023; (Candra et al., 2021)
Firm Size	FS	Ln (Total Assets)	Kirugumi, 2022; Tripathi et al., 2023
Leverage	LV	$\frac{\text{Total debt}}{(\text{Total debt} + \text{Total equity})}$	Nayyef, 2023; Khalaf et al., 2023
Operating cashflow	OPCF	$\frac{\text{Net operating cash flow}}{\text{total assets}}$	Sawarni et al., 2023
Control variable			
Gross domestic product	GDP	Growth rate of gross domestic product for each year	Alehegne et al., 2019

3.3 Specification of the regression model

Based on the previous literature, the study used the dynamic panel general method of moments, as used by Akinlo (2011). Arellano and Bond provide a family of dynamic panel GMM estimators in the DPD 98 program that allows one to estimate coefficients from levels, first differences, or orthogonal deviations of the variables. In this study, the researcher estimates the equations in the first difference form.

The model used in this study is shown below:

$$\Delta Y_{i1} = \Delta Y_{i0} + \sum \Delta X_i \dots \dots \dots (1)$$

Where the Y_{i1} represent dependent variables, Y_{i0} represent the historical value of dependent variable and X_1, X_2, \dots, X_n represents an independent variable that serves as a valid instrument. Instruments for other cross-sectional equations are constructed in the same way.

4.0 RESULTS

4.1 Descriptive statistics

This study examines the descriptive statistics of the working capital ratio (WCR), return on assets (ROA), firm size, leverage, operating cashflow, cash conversion cycle and gross domestic product. This analysis shows the mean, median, standard deviation, skewness, and kurtosis of each variable as shown in Table 2

below. Furthermore, it presents the maximum and minimum values of each variable used, which helps in getting a picture of the maximum and minimum values a variable has achieved.

Table 1: Descriptive statistics

	N	Min	Max	Mean	Std
	Statistic	Statistic	Statistic	Statistic	Statistic
Working Capital Ratio	360	-6.96	4.25	0.027	0.842
Return on Assets	360	-200.39	90.1	4.062	21.473
Growth	360	-0.86	10.94	0.061	0.620
Firm Size	360	16.49	29.17	23.807	2.414
Leverage	360	-2.58	8.01	0.571	0.808
Operating cashflow	360	-1.80	1.20	0.12	0.20
Cash conversion cycle	360	-663.3	608.93	-0.31	167.26
Gross domestic product	360	-3.40	10.90	4.69	2.10

The descriptive statistics in Table 2 above show results regarding variables used in this experiment for a sample of 360 observations. The working capital ratio has a mean value of 0.027 with a minimum value of -6.96 and a maximum value of 4.25, while the standard deviation is 0.843. Return on assets has a mean value of 4.062% with a standard deviation of 21.473%, while the minimum value is -200.39% and the maximum value is 90.10%. Growth has a mean of 0.061, a standard deviation of 0.62, a minimum value of -0.86, and a maximum value of 10.94. On the other hand, firm size has a mean value of 23.807 with a standard deviation of 2.414, while the minimum and maximum values are 16.49 and 29.17, respectively. Furthermore, leverage has a mean value of 0.571, a standard deviation of 0.808, and minimum and maximum values of -2.58 and 8.01, respectively. Operating cash flow has a minimum value of -3.4 and a maximum value of 10.9, with the mean and standard deviation of 0.12 and 0.2, respectively. The result facilitates further statistical analysis and modelling. Cash conversion cycle has a mean value of -0.31 and a standard deviation of 167.26. The maximum and minimum values for gross domestic product are -3.4 and 10.9, respectively, with a mean value of 4.69 and a standard deviation of 2.

Table 3. Unit root test at first difference

	Test on Differenced Series							
	WCR	ROA	GRS	FS	LV	OPCF	CCC	GDP
Levin,	-	-	-	-	-	-	-	-2.10462
Lin & Chu	3.26049 (0.0006)	4.08169 (0.0000)	3.57072 (0.0002)	5.15553 (0.0000)	5.76494 (0.0000)	2.07498 (0.0190)	4.83249 (0.0000)	(0.00177)
Im,	-	-	-	-	-	-	-	-0.69337
Pesaran and Shin	1.60842 (0.0539)	1.58044 (0.0570)	1.45506 (0.0728)	1.93450 (0.0265)	2.28629 (0.0111)	1.11225 (0.1330)	1.74454 (0.0405)	(0.2440)
W-stat								
ADF -	25.1487	25.1885	22.6799	28.9186	31.1536	20.7188	26.2517	18.5647
Fisher	(0.0331)	(0.0328)	(0.0306)	(0.0107)	(0.0053)	(0.1091)	(0.0240)	(0.1823)
PP -	71.6101	59.4016	42.3899	60.1070	36.4989	52.5271	49.6531	23.4645
Fisher	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0009)	(0.0000)	(0.0000)	(0.0531)

Table 3 above shows the results of the unit root test at the first difference for each method used. The upper number represents a statistical value, while their respective probability is written down in brackets. These first difference results show clearly that the null hypothesis of a panel unit root at first difference cannot be rejected in various lag lengths. Since their statistical values and their corresponding probability are significant at all levels, it was concluded that the data are stationary at first difference and ready for running an economic model.

4.2 Correlation analysis

Table 3 below displays the analysis of Pearson correlation for the variables used in this study's model. A correlation analysis shows the relationship between the variables used in the study. The coefficient of correlation between variables ranges from -0.8425 to 0.5134, which indicates that multicollinearity problems between variables do not exist because the coefficient of correlation is below 0.85 (Magoma et al., 2024).

Table 4: Correlation Analysis

	WCR	ROA	GRS	FS	LV	OPCF	CCC	GDP
WCR	1							
ROA	0.5134	1						
GRS	0.0035	0.0789	1					
FS	0.1199	0.2628	0.1380	1				
LV	-0.8425	-0.4704	-0.0014	0.0456	1			
OPCF	0.1808	0.7068	0.0760	0.3787	-0.1092	1		
CCC	0.0722	0.0657	-0.1204	-0.2336	-0.0530	-0.0144	1	
GDP	0.0208	0.0219	0.0816	0.0713	0.0010	0.0367	0.0027	1

From Table 4, we can see that the working capital ratio (WCR) is strongly linked to return on asset, operating cashflow by 0.1808 and firm size by 0.5134 and 0.1199, respectively. It is only slightly linked to growth by 0.0035 and gross

domestic product by 0.0208. CCC is positively correlated with ROA by 0.0657 and negatively related with growth, firm size, leverage and operating cashflow by -0.1204, -0.2336, -0.053 and -0.0144, respectively. ROA is correlated by growth, firm size, and operating cash flow by 0.0789, 0.2628 and 0.0657, respectively. A significant negative correlation of -0.4704 exists between ROA and leverage. Firm size significantly positively correlates with growth, while leverage significantly correlates negatively. However, firm size and leverage are positively correlated by 0.0456. This correlation matrix provides a useful starting point for further regression modelling to understand the determinants of working capital.

4.3 Autocorrelation result

The was eliminated by the introduction of the lag variable of the dependent variable, then the outcome of the Durbin-Watson d-statistic value was 1.992, indicating that the data were free from autocorrelation because it is above 1.5 and less than 2.5. (Magoma et al., 2022; Sumawe & Magoti, 2025). Thus, this study was free from autocorrelation.

4.4 Regression results

The model used to run these regression analyses was panel Generalised Method of Movements with orthogonal deviation. The mode fitness was shown by Hansen J statistics that revealed a coefficient value of 13. 6749 (0.8466), which proves the absence of an endogeneity problem and that the instruments are valid. Table 4 shows the results for regression analysis that return on assets and growth have a positive and significant influence on the working capital ratio, while leverage and firm size have a significant negative influence on the working capital ratio.

Table 5: GMM results

Variable	Coefficients with P-Value	
	Model 1 (WCR)	Model 2 (CCC)
Constant	-0.353656 (0.0000)	-0.644679 (0.0000)
Return on Assets	0.008593 (0.0001)	0.012721 (0.0000)
Leverage	-0.451909 (0.0000)	-0.337951 (0.0000)
Growth	0.6191649 (0.0007)	0.918817 (0.0000)
Firm Size	0.041158 (0.0112)	0.350095 (0.0074)
Operating cashflow	0.935334 (0.0448)	0.559418 (0.0181)
Gross domestic product	0.014030 (0.0176)	0.426107 (0.0003)
Sargan Test:		
Prob> χ^2	0.12543	0.34261
AR (1) p-value	0.379755	0.384956
AR (2) p-value	0.365605	0.244535
Observations	360	360
Number of firms	45	45

5.0 FINDINGS AND DISCUSSION

5.1 Return on Assets on Working Capital Requirement

Table 5 shows that return on assets has a significant positive influence on working capital requirements measured by working capital ratio and cash conversion cycle. The result shows that an increase in return on assets by the firm causes the demand for high working capital. A one per cent increase in return on assets leads to 0.008 units increase in working capital ratio and 0.012 increase in cash conversion cycle. This result is supported by Sharma et al. (2020), who concluded a significant positive impact of return on assets on working capital requirement in India. Furthermore, Enow (2022) established a positive influence between return on assets and working capital. According to theories, the firm must ensure that they are liquid enough to meet its operating costs. Then, agency and pecking order theories encourage the firm to maintain high working capital as the profitability increases. This led to the acceptance of the alternative hypothesis that there is a positive influence of return on assets on working capital requirement.

5.2 Leverage on Working Capital Requirement

Table 5 shows that the negative significant influence of leverage exists between leverage and working capital. It revealed that a unit increase in leverage caused the working capital ratio and cash conversion cycle to decrease by 0.45 and 0.34 units respectively. This means that when the company increases the level of

leverage, it incurs the fixed obligation for repayment of the loan and its interest. This leads to financial distress, leading to less investment in current assets, which causes a decrease in the availability of funds to run day-to-day operations of the firm. The finding is also supported by the pecking order theory that when a firm has a fixed obligation to settle, its liquidity position declines. This result is similar to that of Khalaf et al. (2023), who also established a negative relationship between leverage and working capital requirements in the United Arab Emirates. Moreover, Shroff (2023) revealed a significant negative impact of leverage on working capital requirements. The developed alternative hypothesis was accepted that leverage influences working capital requirement negatively.

5.3 Growth on Working Capital Requirement

Result from the generalised method of movement revealed a significant positive influence of growth on working capital requirements. The result portrays that a unit increase in growth leads to increase in working capital requirements by an average of 0.76 units. This implies that when the firm is expanding, it needs a high level of working capital to support its expansion. The result was supported by Bella & Yudiantoro (2022), who revealed a positive relationship between growth and working capital requirements. Pazos et al. (2023) established a significant positive impact of growth and working capital requirements. Pecking order theory supports this finding that as the firm needs to expand, it needs to have enough liquidity, hence leads to a high working capital level. From this finding, we can accept our hypothesis that there is a significant positive impact of growth on working capital requirement.

5.4 Firm Size on Working Capital Requirement

From Table 5, the result shows that there is a positive and significant influence of firm size on working capital requirement. Meaning that as the size of the firm expands, it enjoys economies of scale that lead to an increase in the level of working capital to promote sales and profitability. The generalised method of movement revealed that a unit increase in firm size leads to an increase of working capital ratio by 0.041 and cash conversion cycle by 0.35. The result is supported by Kim et al. (2022), who established a significant positive impact of firm size and working capital requirements. This result leads us to accept the alternative hypothesis that firm size impacts working capital requirements positively.

5.5 Operating Cash Flow on Working Capital Requirement

From Table 5, the result shows that there is a positive and significant influence of operating cash flow on working capital requirement measured by the working capital ratio and cash conversion cycle. This means that positive net operating

cash flow leads to an increase in the level of working capital of the company. This helps the company to smooth its operations. The generalised method of movement revealed that a unit increase in operating cash flow leads to an increase of working capital requirement by an average of 0.74 units. The result is supported by Sawarni et al. (2023), who established a significant positive impact of firm size and working capital requirements. This result leads us to reject the alternative hypothesis that operating cash flow impacts working capital requirements negatively.

6.0 CONCLUSION AND RECOMMENDATIONS

This study was conducted to fulfill the objective of the study which was to examine the determinants of working capital management for non-financial companies listed in East African stock markets. A sample of 45 non-financial firms listed in East African stock markets covering the period of 8 years from 2016 to 2023, which makes a total of 360 observations. The result from the generalised method of movements concluded that return on assets, growth, firm size and operating cash flow have a significant positive influence on working capital requirement. On the other hand, leverage has a significant negative influence on working capital requirement measured by working capital ratio and cash conversion cycle.

The study has several benefits to policymakers, especially managers of firms in East Africa. First, it serves as a reference point for managers in determining the variables that affect working capital in their firms. The result of this study will guide non-financial firms listed in East Africa who aim to maintain the optimal level of working capital for them to smooth their day-to-day operations, on the key determinants of working capital. Before they decide on the level of working capital, they must keep in mind the key determinants that influence the level of working capital. The finding also helps the regulatory authorities, that is, stock markets, in formulating proper policy regarding working capital management that will smooth the operation of non-financial firms in East Africa. Working capital policy has a great impact on day-to-day operations and profitability. Failure of proper management of working capital may lead the firm into illiquidity and bankruptcy. Therefore, working capital management is essential for every firm. This makes the financial manager to become more confident when making the working capital decision in the firm.

This study has some limitations which can be addressed in future research. The study focused on only listed non-financial firms listed in East Africa. Future studies should focus on listed financial firms listed in East Africa. The study used a generalised method of movement models to estimate the results. Future studies

should use fixed-effect and random-effect models. This study used return on assets as a measure of profitability. A future study may use return on equity, as a measure of profitability. Other variables may be included in future studies, including, firm age and investment in fixed assets.

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