

## Working capital and firm performance in Sub-Saharan Africa: Emphasis on the moderating role of rule of law



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### ABSTRACT

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The study investigated the extent to which institutional quality affects the correlation between working capital and the performance of manufacturing enterprises listed in several sub-Saharan African nations. The study sourced information from certified financial accounts of the companies, World Development Indicators, 2021, and Global Governance Indicators covering the period from 2010 to 2020. We selected five consistently listed companies from Ghana, Nigeria, Mali, and Cote d'Ivoire. We measured institutional quality as a rule of law and used return on equity as an indicator of performance. The control variables for the study are firm size, leverage, interest cover, inflation, and foreign direct investment. The study used the Arellano-Bond two-step GMM estimator to gauge the influence of working capital on return on equity while also examining the moderating effect of the rule of law on the connection between working capital and return on equity. Working capital has a statistically significant positive impact on equity returns. The rule of law significantly enhances the positive impact of working capital on equity returns. Sub-Saharan African countries should improve and build strong institutions where the rule of law is efficient and effective to pave the way for the sustainable performance of companies.

**Contribution/ Originality:** This interdisciplinary approach emphasizes the relationship between finance and law, providing empirical evidence relevant to Sub-Saharan Africa and indicating policy implications for enhancing legal governance to improve firm performance. This research enhances corporate finance theories by incorporating institutional factors, suggesting that efficient working capital management relies on both internal practices and external legal frameworks.

## 1. INTRODUCTION

Decisions about capital structure, managing current capital, and business performance are crucial aspects of corporate finance that significantly impact a company's performance. Comprehending these forces is crucial for sustainable economic growth in the distinctive circumstances of Sub-Saharan Africa. This study examines the Trade-off Theory of Capital Structure, specifically investigating the correlation between working capital and corporate performance while placing emphasis on the moderating impact of the Rule of Law. Working capital is an enviable tool in an organization's financial decision-making; hence, it has attracted attention in financial research (Ademola, 2014; Altaf & Ahmad, 2019). Peng and Zhou (2019) characterize working capital as the difference between a company's current assets, such as cash and other assets that could generate cash within a year, and its current

liabilities, which include wages, accounts payable, and accrued costs. Despite financial difficulties, a firm that maintains a pleasant working environment will have the flexibility to pursue development after fulfilling urgent obligations (Valipour, Moradi, & Farsi, 2012).

Theoretically, even profitable companies can go out of business, but companies with much working capital are sustainable (Peng & Zhou, 2019). According to Peng and Zhou (2019) a business can't depend on its "paper earnings" to pay off its debts. Working capital provides the cash on hand that a business needs. Working capital also covers the organization's daily costs and pressing needs. If a business has enough working capital, it can keep paying its employees, suppliers, and other debts like taxes and interest, even if it has cash flow problems (Gelsomino, Mangiaracina, Perego, & Tumino, 2016). You can also use working capital to grow your business without taking on more debt. For example, if a business needs to borrow money, being able to show that it has a favorable working capital situation might help it get more credit. This can also help reduce changes in income. An organization needs working capital, and having more of it can make the business run more efficiently and do better overall.

Several studies have confirmed the beneficial influence of working capital on company performance, such as those conducted by Aktas, Croci, and Petmezas (2015); Konak and Güner (2016) and Altaf (2024). While these investigations are commendable and provide an important basis for understanding such relationships, the influence of working capital on organizational performance is dependent on the institutional quality present in the country of interest—something that has received less attention. We use the institutional quality of a country as a metric to evaluate its institutions and government system (Sun, Edziah, Sun, & Kporsu, 2019). Often discussed aspects of institutional quality include governance, voice and responsibility, political security, government effectiveness, regulatory quality, rule of law, and corruption control (Kilpatrick, 2015). One of the most important indicative institutional qualities is the role of rule of law in a country (Selvanayaki, Sivakumar, & Mahendran, 2015). Rule of law ensures that contracts are binding and enforceable, and this predictability in the business environment promotes stable cash flow, leading to higher performance. However, an independent study has not validated this theoretical claim, making it impossible to determine the extent to which rules of law influence the relationship between working capital and company performance, particularly in sub-Saharan African countries. As a result, the study addressed the question, what is the moderating role of rule of law in the relationship between working capital and company performance in Sub-Saharan African countries? They tested alternative hypotheses to address this question.

1. Working capital has a significant impact on the performance of companies in Sub-Saharan African countries.
2. In Sub-Saharan African countries, the rule of law has a significant moderating role in the relationship between working capital and the performance of companies.

Testing the above hypotheses using data from Sub-Saharan African countries would inform whether rule of law compliments or otherwise working capital impacts the performance of companies in the sub-region.

## 2. LITERATURE REVIEW

### 2.1. Trade-Off Theory of Capital Structure

The trade-off theory of capital structure states that in order to attain optimal profitability, a firm must maintain a specific level of current assets and/or working capital (Serrasqueiro & Caetano, 2015). The trade-off theory of capital structure suggests that organizations should carefully consider the costs and advantages of debt and equity financing in order to determine the optimal mix of both to achieve a desired level of working capital (Belkhir, Maghyereh, & Awartani, 2016; Köksal & Orman, 2015). In the Trade-off Theory, corporations try to achieve a middle ground between the tax advantages of taking out a loan and the consequences of going into debt (Myers, 1984). While debt financing aids in meeting working capital requirements, it carries associated costs, particularly interest payments, which can result in excessive debt and bankruptcy, thereby compromising the firm's performance (Nassar, 2018). Thus, the choice of financing working capital can influence the effect of working capital on organizational performance (Aggarwal & Padhan, 2017).

## 2.2. Working Capital and Organizational Performances

Working capital management is critical to an organization's performance because it ensures liquidity, operational efficiency, and response to market dynamics (Smith, 1980). According to Ujunwa and Mbazor (2021) the dynamic nature of sub-Saharan African macrosocial-economics highlights the importance of specific working capital solutions. In Ghana, for example, Amponsah-Kwatiah and Asiamah (2021) found that working and its management, such as inventory management, account receivables, account payables, and the cash conversion cycle, have positive effects on return on assets (ROA) and return on equity (ROE), while leverage affects them negatively. Additionally, the studies conducted in Nigeria (Otekunrin, Nwanji, Eluyela, Olowookere, & Fagboro, 2020) have observed that effective working capital management and working capital enhance the profitability of firms. However, Oladimeji and Aladejebi (2020) found no significant relationship between the working capital and profitability of Nigerian firms, suggesting a mixed picture of the relationship between working capital and performance in Sub-Saharan African countries.

Similarly, researchers find mixed results in other developing countries. For example, Mathuva (2015) and Karadag (2015) revealed that effective working capital practices, such as the cash conversion cycle, have a notable influence on company performance in India and Pakistan, respectively. Riley, Michael, and Mahoney (2017) explained that the cash conversion cycle has a favourable connection with businesses that are maturing and reviving. Lyngstadaas and Berg (2016) used 29 Istanbul enterprises and a pooled ordinary least squares test to study the connection between organisational performances and working capital, finding that strong working capital improves the performance of the firms. However, in Vietnam, Nguyen, Pham, and Nguyen (2020) found a negative relationship between working capital and performance of firms. Sensini and Vazquez (2021) found in emerging economies that granting longer extensions to customers (DSOs) does not affect profitability. Umar and Al-Faryan (2024) revealed in Indonesia, Malaysia, Saudi Arabia, Pakistan, and the United Arab Emirates that the cash conversion cycle and account receivable period significantly reduce profitability.

The relationship between working capital and firm performance has been found to be mixed in Sub-Saharan African countries and other emerging economies. This suggests that the relationship should be looked at in more depth, taking into account factors that may strengthen the relationship. As mentioned in the preceding section, the rule of law is one of the factors that need consideration.

## 2.3. Moderating Role of Rule of Law in the Relationship Between Working Capital and Performance

A country's institutional quality framework heavily relies on the rule of law, which establishes the legal guidelines for activities (Lu & Wang, 2021). The concept of rule of law guarantees that established and transparent laws, not the whims of individuals or the government, govern a society. Scalia (2013) articulated the principle of the rule of law, stating that every individual and organization, including government officials, must adhere to and be accountable to the law.

The Rule of Law in Sub-Saharan Africa wields considerable power over the region's business climate, influencing strategic decisions made by corporations operating in the region's different governments. According to La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999) the Rule of Law represents the degree to which individuals and entities trust and follow societal rules. The efficacy of legal frameworks and institutions, the prevalence of corruption, the preservation of property rights, and access to justice are all critical in this environment. Inconsistent property tenure systems, limited access to legal representation, and political instability can all stymie the creation of a strong Rule of Law (Alonso & Garcimartín, 2013). Furthermore, the region's commitment to human rights and international collaboration impacts the overall landscape. As Sub-Saharan Africa deals with these difficulties, resolving these issues is critical for creating an environment that enhances access to working capital and optimizes the potential positive effect of working capital on businesses (Sarraf et al., 2005).

The role of the Rule of Law in capital structure decisions is receiving more empirical attention, with studies such as Ntim, Opong, Danbolt, and Thomas (2012) providing light on its significance. The connection between a company's

actions about its capital structure and its performance is an intricate interplay of financial dynamics, where the Rule of Law emerges as a significant factor that can impact and regulate this connection. According to Ntim et al.'s research, a strong Rule of Law serves as a stabilizing influence, potentially amplifying the favorable benefits of optimal capital structure decisions on company performance. As Ntim et al. (2012) point out, a strong legal framework can help mitigate the capital structure-performance nexus. The Rule of Law's ability to moderate this relationship is based on its ability to resolve information asymmetry, which is a typical difficulty in financial decision-making. Firms may enjoy less information asymmetry in contexts typified by a well-established legal system, leading to enhanced transparency and a higher ability to make educated capital structure decisions. In turn, this can improve corporate performance by encouraging more responsible financial management practices.

Also, according to Sun et al. (2019) organizations' capacity to secure financing in developing nations is significantly undermined by weak Rule of Law featured in poor administration of justices. Sun and Razzaq (2022) demonstrate that fund providers are reluctant to extend loans to businesses in countries where Rule of Law is weak because of fear of losing the funds to those businesses. The implication of this is that enhancing the business' financial climate greatly depends on the effectiveness of Rule of Law in the country of operation of such an organization (Dhar, 2015; Fernández & Tamayo, 2017; Lu & Wang, 2021).

Adegbite (2012) research provides vital insights into this dynamic relationship. Effective management of working capital is a crucial aspect of a company's financial strategy as it directly influences its liquidity, operational efficiency, and overall financial well-being. The results of Adegbite et al. indicate that the Rule of Law can have a moderating role in determining the success of effective capital management methods, particularly in the context of how enterprises negotiate uncertainty in the business environment. The influence of the Rule of Law on effective capital management is multidimensional. A well-established legal framework contributes to a stable business climate by avoiding uncertainties that could disrupt a company's day-to-day operations. Companies may benefit from more predictability in contractual agreements, more effective dispute resolution systems, and enhanced protection of property rights in areas where the Rule of Law is strong. These elements, taken together, provide an atmosphere favorable to successful working capital management.

Furthermore, Adegbite (2012) research suggests that the Rule of Law may serve as a deterrent to potential abuses and malpractices in working capital management. Contracts may be more likely to be enforced in jurisdictions with strong legal bases, fostering fair business practices. As a result, the efficiency of supply chain linkages, credit conditions, and overall working capital dynamics can improve. In contrast, in areas where the Rule of Law is weaker, businesses may face uncertainty as a result of contract enforcement challenges, legal conflicts, and inadequate property rights protection. Such uncertainties can disturb the smooth operation of working capital cycles, potentially resulting in inefficient management practices and, as a result, negative repercussions for the financial performance of a firm. Understanding the Rule of Law's moderating function in working capital management is critical for both academics and practitioners. When building regulatory environments, policymakers should examine the impact of legal frameworks on businesses, and firms can consider legal issues when developing working capital plans. Recognizing the relationship between legal institutions and working capital dynamics becomes more important for creating resilience and sustainable financial performance as organizations operate in increasingly globalized and diversified legal settings.

### 3. METHODS

#### 3.1. Data Sources

The study used data from listed manufacturing companies in four countries, i.e., Ghana, Nigeria, Kenya, and South Africa, over the period 2010 and 2020. This study confined itself to this period because it presented significant global events, like fluctuation in commodity prices and the COVID-19 pandemic, which could have an effect on

working capital. Therefore, an empirical study of this nature must specifically focus on this period to better understand the impact of working capital during economic recessions such as the 2010-2020 period.

The study specifically selected manufacturing companies listed in each country since 2010. As a result, Camelot Ghana Limited, Unilever Ghana Limited, Benson Oil Palm Plantation Limited, Guinness Ghana Limited, and Aluworks Ghana Limited were sampled from Ghana. Agropet Nigeria Limited, Comvicong Nigeria Company, Western Goldfields Group Limited, Engine Pet Manufacturing Company, and Service Manufacturing Company were sampled from Nigeria. In Kenya, the Association of Manufacturers, Karebe Gold Mining Limited, Doshi Group of Companies, Coninx Industries Limited, and Mayfox Mining Company Limited were sampled. Also, Consulmet South Africa, Kellogg Company South Africa Limited, Steeledale Manufacturing Company Limited, South African Coal Mining Holding Limited, and Mitek Industries South Africa were sampled.

The study made use of two types of data: macroeconomic data and firm-specific data. The audited financial statements of the selected manufacturing enterprises provided the firm-specific data. Conversely, we obtained the macroeconomic statistics from the World Development Indicators 2021 and the Global Governance Indicators.

### 3.2. Measurement of Study Variables

Three distinct groups categorize the research variables: the dependent variable, the independent variable, and the control variables (firm-specific factors and macro-economic factors). Table 1 presents the description of the study variables.

Table 1. Measurement of study variables.

Categories	Variables	Measurement/ Description	Source	Expected sign
Dependent variable	Profitability of manufacturing firms (Return on equity)	ratio of net income and shareholders' equity	Tayeh, Al-Jarrah, and Tarhini (2015)	
Independent variable	Working capital	Current asset less current liability	Zimon (2021)	(+/-)
Control variables				
Firm-specific factors				
1.	Firm size	The natural logarithm of total assets	Dang, Li, and Yang (2018)	+
2.	Interest cover	Earnings before interest and tax/ Finance cost	Badertscher, Jorgensen, Katz, and Kinney (2014)	(+/-)
3.	Leverage	Total debt to total equity	Baker and Martin (2011)	(+/-)
Macro-economic factors				
i.	Inflation	Reflects the annual percentage change in the typical consumer's cost of purchasing a range of products and services, which may be set or altered on an annual basis, for example.	World Development Indicators (2020)	(+/-)
ii.	Foreign direct investment inflows	Annual growth in foreign direct investment	World Development Indicators (2020)	+
Moderating variable	Institutional quality (Rule of law)	Audiences of how much agents trust and abide by social norms, including the effectiveness of the enforcement of contracts, property rights, the police, and the courts, as well as the possibility of criminal activity and violence.	Kaufmann, Kraay, and Mastruzzi (2005)	+

### 3.3. Model Specification

The study modified the profit function model by considering how working capital and the rule of law affect firms' performance. The profit function of firms underscores the decision-making behaviors that influence their profitability. The traditional profit function considers variables such as quantity of goods produced, input price, and output price to be critical factors influencing firms' profit. However, this current study moved away from those factors to consider new variables such as working capital and the rule of law in firms' profit determination.

The general performance function of a firm is given in Equation 1.

$$P_{i,t} = \beta_0 + \beta_1 P_{i,t-1} + \sum_k \beta_k F_{k,i,t} + U_i + t_i + \varepsilon_{i,t} \quad (1)$$

The variable  $P_{i,t}$  denotes the performance of firm  $i$  in the year  $t$ .  $F$  denotes the vector of variables that affect the performance, encompassing both company-specific and macroeconomic factors. The  $U_i$  denotes the unobservable effects that remain constant over time and are unique to each organization.

$T_i$  is a constant impact that persists over time, while  $\varepsilon$  denotes the error term.

The study, as indicated in Equation 1, assessed the impact of working capital on performance, particularly return on equity (ROE), detailed in Equation 2.

Using Equation 3, the study also examined the moderating effect of the rule of law on the relationship between working capital and performance.

$$ROE_{i,t} = \alpha_0 + \alpha_1 ROE_{i,t-1} + \alpha_2 WK_{i,t} + \alpha_3 INSQ_{i,t} + \alpha_4 FIRMZ_{i,t} + \alpha_5 INTCOV_{i,t} + \alpha_6 LEV_{i,t} + \alpha_7 INF_t + \alpha_8 FDI_t + f_i + t_i + \gamma_{i,t} \quad (2)$$

$$ROE_{i,t} = \gamma_0 + \gamma_1 ROE_{i,t-1} + \gamma_2 WK_{i,t} + \gamma_3 INSQ_{i,t} + \gamma_4 WK * INSQ_{i,t} + \gamma_5 FIRMZ_{i,t} + \gamma_6 INTCOV_{i,t} + \gamma_7 LEV_{i,t} + \gamma_8 INF_t + \gamma_9 FDI_t + f_i + t_i + \gamma_{i,t} \quad (3)$$

Where ROE, WK, INSQ, FIRMZ, INTCOV, LEV, INFL, and FDI represent the return on equity, working capital, institutional quality, firm size, interest cover, leverage, inflation, and foreign direct investment, in that order. The study utilized the two-step System Generalized Method of Moments (GMM) model to estimate Equations 2 and 3. Arellano and Bover (1995) and Blundell and Bond (1998) propose System GMM, an improvement over difference GMM that overcomes the weak instrument problem by introducing two systems of equations. These two systems of equations are differential equations and level equations.

The level equations instrument the variables with their unique first difference, providing additional tools to boost the model's efficiency.

Roodman (2009) asserts that combining the moment conditions of the equation in levels and differences leads to model efficiency. Therefore, the system GMM assumed that the unobserved country fixed effect should not strongly relate to the first-difference instruments in the levels.

### 3.4. Analysis

The data collected was analyzed using STATA, specifically version 13.0. STATA is utilized due to its user-friendly interface. Initially, the study conducted a descriptive analysis of all the variables under investigation, utilizing measures of central tendency (mean) and dispersion (standard deviation).

The study additionally estimated Equation 2 and Equation 3 using the Arellano-Bond estimator. The acceptable level of significance for this study was set at 5%.

## 4. RESULTS

### 4.1. Summary Statistics of Study Variables

Table 2 presents the summary statistics of the study variables. The summary statistics were done to form the basis of the analysis.

Table 2. Descriptive statistics.

Variable	Mean	Std. dev.	Min.	Max.
WK	0.417	0.166	0.060	0.797
RL	-0.377	0.497	-1.181	0.183
ROE	0.064	0.122	-0.615	0.440
FIRMSZ	16.045	0.91567	13.775	18.229
INTCOV	10.254	17.862	-30.125	120.848
LEV	0.190	0.126	0.003	0.583
INFL	10.579	10.935	-4.321	103.822
FDI	18.455	8.028	-5.993	22.903

Note: WK= Working capital, RL= Rule of law; ROE= Return on equity; FIRMZ= Firm size, INTCOV=Interest cover; LEV= Leverage, INFL= Inflation and FDI=Foreign direct investment.

According to Table 2, the average value of working capital is 0.417, with the lowest and highest values being 0.0605 and 0.7969, respectively. The asset's return varies from -0.615 to 0.442, with an average of 0.064. Table 2 shows that the mean firm size for manufacturing companies in Sub-Saharan Africa is 16.044. The firm sizes range from a minimum of 13.775 to a maximum of 18.229. Table 2 further shows that the lowest interest cover was -30.126, and the highest interest cover was 120.849, with a mean value of 10.254. Leverage had a mean value of 0.192, with the lowest and highest values being 0.0031 and 0.583, respectively. Inflation had the highest value (103.822) and the lowest value (-4.320), with a mean value of 10.579. In the period 2010-2020, foreign direct investment recorded the highest value of 22.902 and the lowest value of -5.993, with a mean value of 18.454.

#### 4.2. Pairwise Correlation Analysis

The study conducted a pairwise correlation analysis of the study variables using a Bonferroni-adjusted p-value with a significance threshold of 5%. Table 3 displays the findings.

Table 3. Pairwise correlation analysis.

Variables	WK	RL	ROE	FIRMZ	INTCOV	LEV	INFL	FDI
WK	1.000	0.342*	0.547**	0.612**	0.2416	0.342*	0.024	0.129
RL		1.000	0.359*	0.131	0.042	0.287	0.233	0.117
ROE			1.000	0.427**	0.356*	0.315*	0.101	0.191
FIRMZ				1.000	0.120	0.117	0.104	0.021
INTCOV					1.000	0.059	0.061	0.044
LEV						1.000	0.053	0.026
INFL							1.000	-0.372*
FDI								1.000

Note: \*\* Significant at 1%; \*Significant at 5%; Where; WK= Working capital, RL= Rule of law; ROE= Return on equity; FIRMZ= Firm size, INTCOV=Interest cover; LEV= Leverage, INFL= Inflation and FDI=Foreign direct investment.

From Table 3, working capital and return on equity have a statistically significant positive and strong relationship ( $r=0.547^{**}$ ). Similarly, the rule of law and return on equity have a statistically significant positive but weak relationship ( $r=0.359^*$ ). The results further show that the rule of law and working capital have a statistically significant positive relationship, but the relationship is weak ( $r=0.342^*$ ). According to Table 3, none of the pairwise correlation coefficients of the explanatory variables were strong, though some were statistically significant. This implies that the explanatory variables were not multi-collinear; hence, no serious multicollinearity problem is expected in the data set.

#### 4.3. Estimation of Equation 2 and Equation 3

The study employed the Arellano-Bond Two-step System GMM estimator to calculate the estimates for Equation 2 and Equation 3. Table 4 presents the findings.

**Table 4.** Impact of working capital on the return on equity and moderating role of rule of law in the relationship between working capital and return on equity.

Variables	Equation 2			Equation 3		
	Coef.	Std. err.	Z	Coef.	Std. err.	Z
L1.	-0.044	0.012	-3.64**	-0.048	0.027	-1.75
lnWK	0.151	0.027	5.51**	0.177	0.061	2.91*
lnRL	-0.003	0.007	-0.49	0.083	0.0522475	1.60
lnFIRMZ	-0.289	0.052	-5.60**	-0.428	0.184	-2.32*
lnINTCOV	0.065	0.003	24.59**	0.063	0.005	11.42**
lnLEV	-0.162	0.046	-3.51**	-0.098	0.133	-0.74
lnINFL	-0.034	0.011	-3.02*	-0.030	0.011	-2.81*
lnFDI	0.002	0.011	0.17	-0.005	0.024	-0.21
lnWK*lnRL	-	-	-	0.228	0.052	4.36**
Const.	0.924	0.150	6.16***	1.339	0.518	2.59
Wald chi2(8)			23199.72	Wald chi2(9)		7279.80
Prob > chi2			0.000	Prob > chi2		0.000
No. of instruments			37	No. of instrument		37
Arellano-bond AR (1)			0.270	Arellano-bond AR (1)		0.302
Arellano- bond AR (2)			0.293	Arellano-bond AR (2)		0.266
Hansen test			0.999	Hansen test		0.998

Note: \*, \*\* and \*\*\* represent 5%, 1% and 10% significant level; Where; WK\*RL= Working capital interacting with rule of law; FIRMZ= Firm size; LEV= Leverage, INTCOV=Interest cover, L1. = Lag 1 of natural log of return on equity; lnWK=Natural log of working capital; lnRL=Natural log of rule of law; lnFIRMZ=Natural log of firm size; lnINTCOV=Natural log of interest cover; lnLEV=Natural log of leverage; lnINFL=Natural log of inflation; lnFDI=Natural log of foreign direct investment; dependent variable=Natural log of ROE.

The results as indicated in Table 4 show that Working Capital (WC) has a statistically significantly positive impact on return on equity (Coeff= 0.1512004; Std. Err= 0.0122189; Z-score=5.51\*\*) of the selected manufacturing companies in the Sub-Saharan Africa countries. The results further show that the rule of law independently does not have a statistically significant impact on return in equity at either a 1% or 5% significant level (Coeff. = -0.0032489; Std. Err. = 0.0066658; Z-score= -0.49). However, the interaction of working capital with the rule of law has a statistically significant impact on return on equity (Coeff. =0.2284443; Std. Err=.052408; Z-score= 4.36\*\*). This implies that statistically, the rule of law has significantly moderated the relationship between working and return on equity.

For every standard deviation unit increase in the rule of law, the influence of working capital on the return on assets increases by 0.4053414 (that is, 0.1769014 + 0.22844 = 0.4053414). This result implies that the rule of law enhances the positive influences of working capital on the return of equity of manufacturing companies in Sub-Saharan African countries.

## 5. DISCUSSION

The research identified a notable relationship between working capital and return on equity in manufacturing firms within Sub-Saharan African countries. Sawarni, Narayanasamy, and Ayyalusamy (2020) observe that effective working capital significantly positively impacts firm performance. Sawe, Makori, Lanlan, Ahmi, and Popoola (2022) identified a moderately positive correlation between working capital and the profitability of the target company. Yousaf, Bris, and Haider (2021) contended that working capital is detrimental to organisational performance, challenging its significance in this context.

While the rule of law does not significantly affect return on equity when considered on its own, it does attenuate the correlation between working capital and return on equity. This supports the notion that a proper rule of law is beneficial since it encourages a fertile environment for the growth of business organizations in Africa. Therefore, economies with effective rule of law leverage working capital more effectively, thereby enhancing business efficiency. This could potentially explain why companies prefer to operate in nations where the rule of law operates effectively



and ensures justice for all, irrespective of socio-economic status and the origin of the company's shareholders (Haggard, Iannetti, & Longo, 2013).

Ramanathan, He, Black, Ghobadian, and Gallear (2017) add that the rule of law fosters a calm environment with the potential of increasing growth and protecting the organization's lawful assets. As a result, improved rule of law quality is projected to increase company performance—a reflective case of the listed manufacturing companies in the selected Sub-Saharan African countries. This interaction between working capital, the rule of law, and corporate performance emphasizes the need to consider broader institutional elements when studying financial outcomes in various economic environments. These findings can help policymakers and practitioners encourage effective working capital management and establish circumstances that promote business growth in Sub-Saharan Africa.

## 6. CONCLUSIONS

The study's findings indicate that there is a favorable correlation between working capital and the financial success of manufacturing enterprises in Sub-Saharan Africa. This suggests that competent and efficient working capital management could potentially benefit Sub-Saharan African manufacturing companies listed on the stock exchange market. The companies can achieve this by reducing their operational cycles and utilizing trade credit insurance efficiently. Shortening the operating cycle entails the conversion of money locked up in production and sales into cash, which can enhance working capital and provide a greater return on equity for these manufacturing organizations. Trade credit insurance, on the other hand, acts as a safety net for businesses against nonpayment of accounts receivable. The study further concludes that Rule of Law significantly increases the positive influence of working capital on the financial performance of manufacturing companies in Sub-Saharan Africa. This highlights the importance of the quality of Rule of Law in relation to the connection between working capital and the financial success of firms in Sub-Saharan African countries.

## 7. POLICY SUGGESTION

This study makes a strong case for improving the rule of law in sub-Saharan African countries to facilitate the positive impact of working capital on the performance of firms in the region. Enforcing the rule of law provides a favorable setting for the effective and efficient financing and administration of working capital. This, in turn, leads to a rise in the long-term performance of manufacturing enterprises in the sub region. For example, policymakers should invest more in rule of law to ensure transparent and efficient contract enforcement mechanisms to help provide firms with a higher level of certainty in business transactions. This reduces information asymmetry and its associated problems, leading to the extension of more credit to firms to help them have a good working capital level.

Despite its novelty, the current study defines working capital as the sum of current assets less current liabilities. However, it is possible for firms to have different categorizations of current assets and current liabilities, and this may affect a uniform computation of working capital across firms. Future studies should, therefore, if possible, consider taking these industry differences into account when measuring working capital across different firms in different countries.

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## REFERENCES

- Adegbite, E. (2012). Corporate governance in the Nigerian banking industry: Towards governmental engagement. *International Journal of Business Governance and Ethics*, 7(3), 209-231. <https://doi.org/10.1504/ijbge.2012.050039>
- Ademola, O. J. (2014). Working capital management and profitability of selected quoted food and beverages manufacturing firms in Nigeria. *European Journal of Accounting Auditing and Finance Research*, 2(3), 10-21.
- Aggarwal, D., & Padhan, P. C. (2017). Impact of capital structure on firm value: Evidence from Indian hospitality industry. *Theoretical Economics Letters*, 7(4), 982-1000. <https://doi.org/10.4236/tel.2017.74067>
- Aktas, N., Croci, E., & Petmezas, D. (2015). Is working capital management value-enhancing? Evidence from firm performance and investments. *Journal of Corporate Finance*, 30, 98-113. <https://doi.org/10.1016/j.jcorpfin.2014.12.008>
- Alonso, J. A., & Garcimartín, C. (2013). The determinants of institutional quality: More on the debate. *Journal of International Development*, 25(2), 206-226. <https://doi.org/10.1002/jid.1710>
- Altaf, N. (2024). Working capital financing, firm performance and financial flexibility: Evidence from Indian hospitality firms. *Global Business Review*, 25(2\_suppl), S199-S210. <https://doi.org/10.1177/0972150920961371>
- Altaf, N., & Ahmad, F. (2019). Working capital financing, firm performance and financial constraints: Empirical evidence from India. *International Journal of Managerial Finance*, 15(4), 464-477. <https://doi.org/10.1108/ijmf-02-2018-0036>
- Amponsah-Kwatiah, K., & Asiamah, M. (2021). Working capital management and profitability of listed manufacturing firms in Ghana. *International Journal of Productivity and Performance Management*, 70(7), 1751-1771. <https://doi.org/10.1108/ijppm-02-2020-0043>
- Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68(1), 29-51. [https://doi.org/10.1016/0304-4076\(94\)01642-d](https://doi.org/10.1016/0304-4076(94)01642-d)
- Badertscher, B., Jorgensen, B., Katz, S., & Kinney, W. (2014). Public equity and audit pricing in the United States. *Journal of Accounting Research*, 52(2), 303-339. <https://doi.org/10.1111/1475-679x.12041>
- Baker, H. K., & Martin, G. S. (2011). *Capital structure and corporate financing decisions: Theory, evidence, and practice*. Hoboken: John Wiley & Sons.
- Belkhir, M., Maghyereh, A., & Awartani, B. (2016). Institutions and corporate capital structure in the MENA region. *Emerging Markets Review*, 26, 99-129. <https://doi.org/10.1016/j.ememar.2016.01.001>
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115-143. [https://doi.org/10.1016/s0304-4076\(98\)00009-8](https://doi.org/10.1016/s0304-4076(98)00009-8)
- Dang, C., Li, Z. F., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking & Finance*, 86, 159-176. <https://doi.org/10.1016/j.jbankfin.2017.09.006>
- Dhar, R. L. (2015). Service quality and the training of employees: The mediating role of organizational commitment. *Tourism Management*, 46, 419-430. <https://doi.org/10.1016/j.tourman.2014.08.001>
- Fernández, A., & Tamayo, C. E. (2017). From institutions to financial development and growth: What are the links? *Journal of Economic Surveys*, 31(1), 17-57. <https://doi.org/10.1111/joes.12132>
- Gelsomino, L. M., Mangiaracina, R., Perego, A., & Tumino, A. (2016). Supply chain finance: A literature review. *International Journal of Physical Distribution & Logistics Management*, 46(4). <https://doi.org/10.1108/ijpdlm-08-2014-0173>
- Haggard, P., Iannetti, G. D., & Longo, M. R. (2013). Spatial sensory organization and body representation in pain perception. *Current Biology*, 23(4), R164-R176. <https://doi.org/10.1016/j.cub.2013.01.047>
- Karadag, H. (2015). Financial management challenges in small and medium-sized enterprises: A strategic management approach. *Emerging Markets Journal*, 5(1), 26-40. <https://doi.org/10.5195/emaj.2015.67>
- Kaufmann, D., Kraay, A., & Mastruzzi, M. (2005). Governance matters IV: Governance indicators for 1996-2004. *World Bank Policy Research Working Paper Series*(3630). <https://doi.org/10.1596/1813-9450-3630>
- Kilpatrick, C. (2015). On the rule of law and economic emergency: The degradation of basic legal values in Europe's bailouts. *Oxford Journal of Legal Studies*, 35(2), 325-353. <https://doi.org/10.1093/ojls/gqv002>

- Köksal, B., & Orman, C. (2015). Determinants of capital structure: Evidence from a major developing economy. *Small Business Economics*, 44, 255-282. <https://doi.org/10.1007/s11187-014-9597-x>
- Konak, F., & Güner, E. N. (2016). The impact of working capital management on firm performance: An empirical evidence from the BIST SME industrial index. *International Journal of Trade, Economics and Finance*, 7(2), 38-43. <https://doi.org/10.18178/ijtef.2016.7.2.496>
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). The quality of government. *Journal of Law, Economics, and Organization*, 15(1), 222-279.
- Lu, J., & Wang, J. (2021). Corporate governance, law, culture, environmental performance and CSR disclosure: A global perspective. *Journal of International Financial Markets, Institutions and Money*, 70, 101264. <https://doi.org/10.1016/j.intfin.2020.101264>
- Lyngstadaas, H., & Berg, T. (2016). Working capital management: Evidence from Norway. *International Journal of Managerial Finance*, 12(3), 295-313. <https://doi.org/10.1108/ijmf-01-2016-0012>
- Mathuva, D. (2015). *The influence of working capital management components on corporate profitability*. Su-Plus.strathmore.edu. Retrieved from <http://hdl.handle.net/11071/3382>
- Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, 39(3), 574-592. <https://doi.org/10.3386/w1393>
- Nassar, S. (2018). *The impact of capital structure on financial performance of the firms: Evidence from Borsa Istanbul*. Papers.ssrn.com. Retrieved from <https://ssrn.com/abstract=3198477>
- Nguyen, A. H., Pham, H. T., & Nguyen, H. T. (2020). Impact of working capital management on firm's profitability: Empirical evidence from Vietnam. *Journal of Asian Finance, Economics and Business*, 7(3), 115-125.
- Ntim, C. G., Opong, K. K., Danbolt, J., & Thomas, D. A. (2012). Voluntary corporate governance disclosures by post-Apartheid South African corporations. *Journal of Applied Accounting Research*, 13(2), 122-144. <https://doi.org/10.1108/09675421211254830>
- Oladimeji, J. A., & Aladejebi, O. (2020). The impact of working capital management on profitability: Evidence from selected small businesses in Nigeria. *Journal of Small Business and Entrepreneurship Development*, 8(1), 27-40. <https://doi.org/10.15640/jsbed.v8n1a3>
- Otekunrin, A. O., Nwanji, T. I., Eluyela, D., Olowookere, J. K., & Fagboro, D. G. (2020). Capital structure and profitability: The case of Nigerian deposit money banks. *Banks and Bank Systems*, 15(4), 221-228. [https://doi.org/10.21511/bbs.15\(4\).2020.18](https://doi.org/10.21511/bbs.15(4).2020.18)
- Peng, J., & Zhou, Z. (2019). Working capital optimization in a supply chain perspective. *European Journal of Operational Research*, 277(3), 846-856. <https://doi.org/10.1016/j.ejor.2019.03.022>
- Ramanathan, R., He, Q., Black, A., Ghobadian, A., & Gallear, D. (2017). Environmental regulations, innovation and firm performance: A revisit of the Porter hypothesis. *Journal of Cleaner Production*, 155, 79-92. <https://doi.org/10.1016/j.jclepro.2016.08.116>
- Riley, S. M., Michael, S. C., & Mahoney, J. T. (2017). Human capital matters: Market valuation of firm investments in training and the role of complementary assets. *Strategic Management Journal*, 38(9), 1895-1914. <https://doi.org/10.1002/smj.2631>
- Roodman, D. (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal*, 9(1), 86-136. <https://doi.org/10.1177/1536867X0900900106>
- Sarraf, S. A., Kuh, G. D., Hayek, J., Kandiko, C., Padgett, R., & Harris, K. (2005). *The institutional quality debate: US News quality indicators and the national survey of student engagement*. Paper presented at the Association for the Study of Higher Education Annual Conference.
- Sawarni, K. S., Narayanasamy, S., & Ayyalusamy, K. (2020). Working capital management, firm performance and nature of business: An empirical evidence from India. *International Journal of Productivity and Performance Management*, 70(1), 179-200. <https://doi.org/10.1108/ijppm-10-2019-0468>

- Sawe, K., Makori, D., Lanlan, Z., Ahmi, A., & Popoola, O. (2022). Financial management practices and performance of commercial and services companies listed at Nairobi securities exchange, Kenya. *International Journal of Recent Technology and Engineering*, 6(09), 324-331. <https://doi.org/10.51505/ijebmr.2022.6908>
- Scalia, R. (2013). The microcirculation in adipose tissue inflammation. *Reviews in Endocrine and Metabolic Disorders*, 14, 69-76. <https://doi.org/10.1007/s11154-013-9236-x>
- Selvanayagi, S., Sivakumar, S. D., & Mahendran, K. (2015). Working capital management in modern rice milling firms at Kangayam, Tamil Nadu. *Indian Journal of Finance*, 9(2), 17. <https://doi.org/10.17010/ijf/2015/v9i2/71520>
- Sensini, L., & Vazquez, M. (2021). Effects of Working Capital Management on SME Profitability: Evidence from an emergent economy. *International Journal of Business and Management*, 16(4), 85-95. <https://doi.org/10.5539/ijbm.v16n4p85>
- Serrasqueiro, Z., & Caetano, A. (2015). Trade-off theory versus pecking order theory: Capital structure decisions in a peripheral region of Portugal. *Journal of Business Economics and Management*, 16(2), 445-466. <https://doi.org/10.3846/16111699.2012.744344>
- Smith, K. (1980). Profitability versus liquidity tradeoffs in working capital management. *The Journal of Financial Research*, 3(3), 261-271.
- Sun, H., Edziah, B. K., Sun, C., & Kporsu, A. K. (2019). Institutional quality, green innovation and energy efficiency. *Energy policy*, 135, 111002. <https://doi.org/10.1016/j.enpol.2019.111002>
- Sun, Y., & Razzaq, A. (2022). Composite fiscal decentralisation and green innovation: Imperative strategy for institutional reforms and sustainable development in OECD countries. *Sustainable Development*, 30(5), 944-957. <https://doi.org/10.1002/sd.2292>
- Tayeh, M., Al-Jarrah, I. M., & Tarhini, A. (2015). Accounting vs. market-based measures of firm performance related to information technology investments. *International Review of Social Sciences and Humanities*, 9(1), 129-145. <https://doi.org/10.1016/j.accinf.2004.08.001>
- Ujunwa, A., & Mbazor, O. (2021). Working capital management and firm performance in Sub-Saharan Africa: Evidence from Nigeria. *International Journal of Finance and Managerial Accounting*, 6(4), 1-14. <https://doi.org/10.23918/icabep2021p42>
- Umar, U. H., & Al-Faryan, M. A. S. (2024). The impact of working capital management on the profitability of listed halal food and beverage companies. *Managerial Finance*, 50(3), 534-557. <https://doi.org/10.1108/mf-12-2022-0606>
- Valipour, H., Moradi, J., & Farsi, F. D. (2012). The impact of company characteristics on working capital management. *Journal of Applied Finance and Banking*, 2(1), 105-125.
- World Development Indicators. (2020). *World development indicators*. The World Bank. NW Washington, USA. Retrieved from <https://datatopics.worldbank.org/world-development-indicators>
- Yousaf, M., Bris, P., & Haider, I. (2021). Working capital management and firm's profitability: Evidence from Czech certified firms from the EFQM excellence model. *Cogent Economics & Finance*, 9(1), 1954318. <https://doi.org/10.1080/23322039.2021.1954318>
- Zimon, G. (2021). Working capital. *Encyclopedia*, 1(3), 764-772. <https://doi.org/10.3390/encyclopedia1030058>

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