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Nexus of Capital Structure and Firm Value in SSA Insurance Companies; the Moderating Effect of Intellectual Capital

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Abstract

This study examined the nexus between capital structure and firm value in Sub-Saharan African insurance companies, emphasizing the moderating effect of intellectual capital. The study assessed how leverage indicators, including the debt-to-equity ratio, short-term debt, and long-term debt, impacted firm value measured by Tobin's Q, while also examining how intellectual capital enhanced the relationship between these capital structure elements and firm performance. A dynamic panel two-step system Generalized Method of Moments estimation was utilized to analyze a sample of 122 insurance companies from 46 Sub-Saharan African countries, covering the period from 2010 to 2022. The study assessed the influence of various leverage indicators on firm value, measured by Tobin's Q, and examined how intellectual capital moderates these relationships. The findings revealed that intellectual capital positively affected firm value and significantly moderated the impact of capital structure on performance. Specifically, companies with higher levels of intellectual capital exhibited a more favorable relationship between capital structure and performance. Additionally, while short-term and excessive leverage negatively impacted firm value, long-term debt and firm size were associated with improved performance. This study contributed valuable insights into the role of intellectual capital in the insurance sector, suggesting that policymakers and industry leaders should prioritize intellectual capital development and prudent debt management to enhance firm resilience and long-term value.

Keywords: *Capital Structure, Firm Value, Intellectual Capital, 2-step system GMM, Tobin's Q.*

JEL Codes: G32, L25

Introduction

The insurance industry is essential to maintaining economic stability and endurance, and financial institutions are essential to economic growth (Surminski, Barnes & Vincent, 2022; Malambo, 2022). Insurance companies play a dual role in the economy. They protect individuals and businesses by covering risks, and they also help get money into the larger system, which improves liquidity and investment opportunities (Signé & Johnson, 2020; Horvey, Osei & Alagidede, 2023). Considering the sector's importance, it is crucial for scholars and policymakers to comprehend what makes these enterprises valuable and stable. Because it is a symbol of financial health and resilience, an insurance sector that is both strong and profitable plays a crucial role in bolstering economic stability (Akinlo & Apanisile, 2014; Ongo Nkoa, Meytang, Asngar & Zeufack Nkemgha, 2024). Insurance companies exert significant influence on economic development in both developed and emerging nations (Apergis & Poufinas, 2020).

Insurance companies rely on an optimal capital structure to balance risk and maximize financial performance, which directly enhances firm value (Odusina, Okunuga & Arikawe, 2024). In insurance companies, capital structure plays a crucial role in determining financial stability and resilience. Tornyeva (2013) observed that the right mix of debt and equity helps these firms manage risks effectively, aligning with regulatory requirements while minimizing financing costs. Ayuba, Bambale, Ibrahim and Sulaiman (2019) noted that strong capital structure decisions enhance financial performance, which in turn boosts firm value by fostering investor confidence. A sound financial performance provides a solid base for growth, ensuring the company remains competitive in the market. Ultimately, firm value in insurance firms hinges on balanced capital structure choices and consistent financial health (Weerasinghe & Sudasinghe, 2024). Theories such as the Modigliani and Miller propositions emphasize capital structure's potential to impact firm value, especially in markets like SSA, where capital availability, economic volatility, and regulatory factors are significant (Mohohlo, 2013; Subagyo, 2021). The optimization of capital structure is

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particularly relevant for SSA insurance companies, which must balance their debt and equity to support long-term growth and resilience in a competitive, evolving market landscape. Thus, the capital structure is crucial for sustaining growth and competitive advantage in the insurance sector..

The relationship between capital structure and firm value in insurance companies shows mixed results across studies. Some research indicates a positive correlation between debt-to-equity ratio (DER) and firm value (Akhmadi et al., 2021; Akhmadi & Hardiyanti, 2022; Rachmata et al., 2019; Handoko, 2016), while others find a negative or non-significant relationship (Ismiyatun et al., 2021; Octavus & Adiputra, 2020). Short-term debt (STD) is positively associated with firm performance, whereas long-term debt (LTD) shows a negative correlation (Omush, 2020). The impact of capital structure on firm value may be controlled by factors such as firm size, although findings are inconsistent (Akhmadi et al., 2021; Akhmadi & Hardiyanti, 2022). Profitability also plays a role in moderating this relationship (Rachmata et al., 2019). The trade-off theory appears to better explain capital structure decisions in insurance companies (Handoko, 2016).

The relationship between capital structure and firm value in insurance companies is complex, with mixed findings on whether higher debt-to-equity ratios positively or negatively affect firm value. Intellectual capital (IC) may serve as a moderating factor in this relationship, as it includes essential resources like human expertise, structural efficiencies, and relational assets that enhance firm resilience and adaptability (Omush, 2020; Todericiu, 2021; Ognjanovic, Dzenopoljac & Cavagnetto, 2023; Ahmad, 2024; Weerasinghe & Sudasinghe, 2024). By moderating the capital structure's effect, IC help mitigate the risks associated with high leverage, such as financial distress, or amplify benefits like improved operational efficiencies (D'Amato, 2021; Jin & Xu, 2022; Akhmadi & Hardiyanti, 2022). High intellectual capital allows insurance companies to use debt more effectively by fostering innovation and better risk management, ultimately leading to stronger firm performance (Alipour, 2012; Sherif & Elsayed, 2016; Iswati, 2007; Matei, 2020; Olarewaju & Msomi, 2021; Muhammad & Ismail, 2009; Asare et al., 2017). The moderating role of IC is thus needed to balance the trade-offs in capital structure decisions as stated by Handoko (2016), supporting a sustainable increase in firm value.

There is a growing corpus of research that highlights the significance of intellectual capital, which includes human capital, structural capital, and relational capital, as an essential factor in determining the firm value. In knowledge-intensive industries like insurance, intellectual capital enhances operational efficiency, drives innovation, and improves customer retention (Matei, 2020; Olarewaju & Msomi, 2021). Intellectual capital serves as a crucial complement to financial metrics, representing intangible resources that confer a competitive advantage. Despite extensive research on capital structure and its effect on firm value, there are no studies that have examined the moderating role of intellectual capital in this relationship, specifically concerning insurance companies in Sub-Saharan Africa.

This study is important and relevant as it addresses a critical gap in understanding how capital structure choices impact firm value in SSA's insurance sector, where financial sustainability is key for economic stability. By focusing on the moderating effect of intellectual capital, the research aims to uncover how knowledge assets can enhance the effectiveness of capital structure decisions, offering a new lens for value creation in insurance firms. Insights from this study can inform strategic financial management, helping SSA insurers optimize their capital structures in alignment with intellectual assets to build resilience, improve performance, and adapt to a competitive market environment. This contribution is especially valuable for advancing sustainable practices in an evolving sector with significant economic influence in SSA.

Literature Review

This study is grounded in the Resource-Based View (RBV) articulated by Wernerfelt (1984), which asserts that a firm's distinctive resources and capabilities are essential for attaining competitive advantage and enhanced performance. This study investigates the relationship between capital structure and firm value in insurance companies, emphasizing the role of intellectual capital. It demonstrates how intangible resources,

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including knowledge, skills, and relationships, improved a firm's capacity to optimize its capital structure. The Resource-Based View posits that the utilization of intellectual capital enhances decision-making, fosters innovation, and increases operational efficiencies, thereby impacting the overall value of the firm. This theoretical model posits that aligning capital structure with intellectual resources improved resilience and contributed to economic stability.

Empirical research highlights a dynamic relationship between capital structure and firm value in insurance companies, where intellectual capital often moderates this interaction. Studies, such as Olarewaju and Msomi (2021), suggest that intellectual capital, comprising human and structural capital positively influences financial performance within Sub-Saharan African insurance companies. This research, using a panel dataset of 56 general insurance companies, indicates that a well-structured intellectual capital base enables firms to better leverage their assets and, in turn, enhances firm value even amidst complex capital structures. Anuonye (2016) also supports this, revealing that components of intellectual capital significantly improve return on assets, implying that intellectual capital facilitates better resource management within insurance companies. In a similar vein, Anuonye (2016) found a notable positive impact of intellectual capital components on firm performance, particularly through return on assets (ROA), highlighting intellectual capital's role in driving resource optimization. Additionally, the work of Firer and Williams (2003) on 75 South African firms noted that value-added capital employed (VACA) was positively correlated with firm value, emphasizing how intellectual capital allows companies to achieve capital efficiency, especially in the context of capital structure pressures. Utami (2018) confirmed these findings by showing that intellectual capital consistently contributes to firm value across various economic settings.

However, the moderating role of intellectual capital does not always lead to uniform effects. Research by Uagbale-Ekatah et al. (2022) indicates that while human capital and structural capital tend to bolster firm value, relational capital occasionally demonstrates a weaker or insignificant relationship. In their study of 24 firms, the authors suggest that relational capital's influence may vary depending on specific market conditions or regulatory environments. This nuanced finding aligns with studies such as Halim Rachmata and Hardiyanti (2019), who observed that while intellectual capital positively influences firm value, the capital structure relationship can still be susceptible to fluctuations in external economic factors. Akhmadi et al. (2021) further explored the benefits of maintaining an optimal balance in capital structure and found that companies with moderate debt-to-equity ratios often perform better due to their intellectual capital's capacity to mitigate financial risks. Similarly, research by Handoko (2016) on the Indonesian insurance sector emphasizes that firm size and growth opportunities are vital in determining intellectual capital's moderating effects, with larger firms generally exhibiting stronger resilience in leveraging debt to their advantage. Uzliawati et al. (2018) reinforce this observation, noting that intellectual capital can improve long-term debt management by providing firms with better strategic flexibility.

These insights are complemented by Octavus and Adiputra's (2020) work, which underscores that while debt can have negative effects on firm value, intellectual capital helps alleviate these risks by enabling firms to adapt to financial and market changes. Their study, alongside others, suggests a stabilizing role of intellectual capital amidst varying capital structures, thereby preserving firm value. Eristy Minda Utami (2018) also found that intellectual capital provides insurance companies with a cushion against financial strain by enhancing operational efficiency, indicating a supportive relationship between intellectual capital and firm value in the face of debt. The findings of Ngozi Ben Anuonye (2016) along with Olarewaju and Msomi (2021) further elaborate that firms with robust intellectual capital frameworks are more likely to leverage debt effectively, thus maximizing firm value. This was echoed by Firer and Williams (2003), whose findings indicate that companies with higher levels of intellectual capital are better positioned to benefit from tax shields associated with debt while minimizing potential risks. Studies like this underscore intellectual capital as a strategic moderator that not only supports firm value but also allows firms to harness the benefits of debt prudently.

Further research by Firer and Williams (2003), who analyzed 75 publicly traded South African firms, found that value-added capital employed (VACA) was positively associated with firm value, emphasizing the role of intellectual capital in optimizing resource use and capital efficiency. In this context, intellectual capital appears to offset potential downsides of high debt-to-equity ratios, enhancing financial sustainability and

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resilience in highly leveraged firms. Additionally, Utami's (2018) study confirms that intellectual capital positively affects firm value, even in varied market conditions, suggesting that firms with higher intellectual capital are better positioned to benefit from or mitigate risks associated with different capital structures. These findings underscore the importance of human capital efficiency (HCE) and structural capital efficiency (SCE), which are shown to contribute positively to firm value across diverse financial contexts within the insurance industry (Uagbale-Ekatah et al., 2022). While some studies, like those of Uagbale-Ekatah and colleagues, indicate occasional negative associations between certain intellectual capital elements and firm performance, the overall empirical consensus supports intellectual capital as a crucial asset in managing the capital structure-firm value nexus.

Methodology

This research study employed a positivist paradigm alongside a descriptive and quantitative methodology, concentrating particularly on the insurance sector as its focal topic of inquiry. The total population consisted of 178 insurance companies from 46 nations across the sub-Saharan African region within a specified timeframe. The sample size estimation of 122 was achieved using a modified Cochran Formula. Secondary data was obtained from credible sources, including Wharton Research Data Services (WRDS), S&P CapitalIQ, and Refinitiv Eikon, covering the period from 2010 to 2022. Selecting 2010 as the year to analyse the post-Great Financial Crisis trends and transformations in the insurance industry of Sub-Saharan Africa was a rational choice. These changes and patterns are essential for comprehending the industry's enduring success and its operational responses to economic challenges. This study gathered panel data from 46 countries in Sub-Saharan Africa during a twelve-year period. The dataset comprised 1,464 observations representative of 122 insurance companies.

The model for this study is stated as;

$$Tobin's\ Q_{it} = Tobin's\ Q_{(t-1)} + \beta_1 STD_{it} + \beta_2 VAIC_{it}^{TM} + \beta_3 STD_{it} * VAIC_{it}^{TM} + \beta_4 SIZ_{it} + IndustryFixedEffect_i + YearFixedEffect_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots 3.1$$

$$Tobin's\ Q_{it} = Tobin's\ Q_{(t-1)} + \beta_1 LTD_{it} + \beta_2 VAIC_{it}^{TM} + \beta_3 LTD_{it} * VAIC_{it}^{TM} + \beta_4 SIZ_{it} + IndustryFixedEffect_i + YearFixedEffect_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots 3.2$$

$$Tobin's\ Q_{it} = Tobin'sQ_{(t-1)} + \beta_1 DER_{it} + \beta_2 VAIC_{it}^{TM} + \beta_3 DER_{it} * VAIC_{it}^{TM} + \beta_4 SIZ_{it} + IndustryFixedEffect_i + YearFixedEffect_t + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots 3.3$$

Please note that Tobin's Q captures the firm value, STD and LTD are both measures of liquidity and they stand for short term debt and long term debt ratio. SIZ stands for firm size, and this is included in this model as a control variable, ε_{it} is the stochastic error term and ε_{it} denotes that it is a panel model.

Analysis and Discussion of Results

Table 1: Descriptive Analysis of Result

	TOBINSQ	VAIC	DER	STD	LTD	SIZE
Mean	7.6479	4.5881	3.3924	2619.940	350135.3	3.3238
Median	0.3810	10.64114	1.339634	57.17132	13382.00	3.3280
Maximum	4301.837	2346.491	101.1730	158103.5	11875529	7.2570
Minimum	-164.3701	-24914.65	0.0887	-93116.45	-92055.66	0.3117
Std. Dev.	125.0486	528.4211	4.7319	11954.89	1023645.	1.0350
Skewness	29.9982	-44.2918	5.4595	6.7496	6.6705	0.1125
Kurtosis	969.9362	2080.763	82.3227	67.0364	57.2451	2.4765
Jarque-Bera	93269907	4.29E+08	638728.6	421151.3	310491.5	31.96023
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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Sum	18240.26	10924.50	8111.355	6183058.	8.36E+08	7854.166
Sum Sq. Dev.	37278971	6.65E+08	53515.63	3.37E+11	2.50E+15	2530.659
Observations	2385	2381	2391	2360	2388	2363

Source: Researcher's Computation, 2024

In Table 1, the descriptive analysis of result for the variables under consideration in this study was presented. The variables are TOBINSQ, VAIC, DER, STD, LTD and SIZE. The mean value reflects the average across observations for each variable. TOBINSQ has a high mean value of 7.6479, indicating relatively high firm value-to-asset ratios. VAIC, which reflects intellectual capital efficiency, averages at 4.5881. DER (3.3924) and LTD (350135.3) suggest average debt ratios and debt levels, while SIZE, at 3.3238, indicates a typical firm size. The median shows the middle value, which reduces skew effects. For instance, TOBINSQ has a median value of 0.3810, significantly lower than the mean, suggesting extreme high values skew the average. VAIC and LTD also show median values (10.64114 and 13382.00, respectively) that contrast with their means, pointing to a highly skewed distribution. The maximum and minimum values reveal the range of data. TOBINSQ has an extremely high maximum (4301.837) and a negative minimum (-164.3701), further emphasizing its wide dispersion. Similarly, VAIC ranges from -24914.65 to 2346.491, showing substantial variability in intellectual capital efficiency across firms. STD and LTD also show extreme ranges, indicating high variability in short- and long-term debt levels. This indicates variability around the mean. VAIC (528.4211) and TOBINSQ (125.0486) exhibit high standard deviations, signaling significant dispersion, while SIZE (1.0350) is comparatively more consistent across observations. Positive skewness for TOBINSQ (29.9982), DER (5.4595), STD (6.7496), and LTD (6.6705) indicates a long right tail, where some firms have significantly higher values. VAIC shows negative skewness (-44.2918), indicating a long-left tail. High kurtosis values, particularly for TOBINSQ (969.9362) and VAIC (2080.763), suggest heavy tails and extreme outliers. The kurtosis results revealed that TOBINSQ, VAIC, DER, STD, LTD and SIZE were leptokurtic with kurtosis coefficient index greater than 3. While the kurtosis of SIZE was observed to be platykurtic with the kurtosis coefficient index less than 3. The Jarque-Bera values with the associated p-value < 0.05 indicated that the financial performance, intellectual capital and liquidity variables consisting of TOBINSQ, VAIC, DER, STD, LTD and SIZE were from normally distributed population datasets

Table 2: Correlation matrix

	TOBINSQ	VAIC	DER	STD	LTD	SIZE
TOBINSQ	1.0000	0.0107	-0.0281	-0.0119	0.0547	0.0322
VAIC	0.0107	1.0000	0.0261	-0.0384	-0.0394	-0.0158
DER	-0.0281	0.0261	1.0000	0.0753	-0.1427	0.3823
STD	-0.0119	-0.0384	0.0753	1.0000	-0.0339	0.2260
LTD	0.0547	-0.0394	-0.1427	-0.0339	1.0000	0.1604
SIZE	0.0322	-0.0158	0.3823	0.2260	0.1604	1.0000

Source: Researcher's Computation, 2024

In Table 2, the correlation coefficients demonstrate the degree of relationship among the explanatory variables considered in this study, including TOBINSQ, VAIC, DER, STD, LTD, and SIZE. The weak positive correlation between VAIC and DER (0.0261) suggests that higher intellectual capital may have a slight influence on capital structure decisions, although this relationship is not robust. Studies from Malaysia (Kamath, 2017), Taiwan (Chen et al., 2018), the United Kingdom (Andriessen & Tissen, 2019), India (Gupta & Kumar, 2020), and Nigeria (Adegbite et al., 2021) have reported varied relationships between intellectual capital and capital structure. While some, like Kamath (2017) and Chen et al. (2018), found a positive but weak correlation, supporting that higher intellectual capital marginally influences firms' capital structures, others, such as Andriessen & Tissen (2019), noted an insignificant impact, reinforcing that this influence is often minimal. Similarly, Gupta and Kumar (2020) observed that in high-capital environments, intellectual capital is not a primary determinant of capital structure, aligning with Adegbite et al.'s (2021) findings in

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Nigeria, where the impact was also weak. The implication of these results suggests that while intellectual capital may play a role in shaping capital structure choices, this influence is generally limited, reinforcing the view that other financial and operational factors more heavily influence capital structure decisions.

Conversely, the VAIC model demonstrates a negative correlation with short-term debt (STD, -0.0384), long-term debt (LTD, -0.0394), and firm size (SIZE, -0.0158), suggesting that firms with higher intellectual capital levels might adopt a conservative stance toward debt financing, potentially favoring lower levels of both short-term and long-term debt. Similar findings have emerged across multiple international studies, supporting the relationship between intellectual capital and capital structure. For instance, in Indonesia, a study found that high intellectual capital is inversely related to leverage, reflecting firms' conservative debt use to mitigate financial risk (Christoforus & Adiputra, 2020; Olarewaju & Msomi 2021). In Malaysia, research confirms that intellectual capital efficiency prompts firms to limit debt, prioritizing internal funding (Rachmata & Hardi, 2019). Studies in Europe also reveal that firms with enhanced intellectual resources tend to reduce reliance on long-term debt, aligning with risk-averse strategies (Uzliawati et al., 2018). Similar conclusions were observed in a study from Nigeria, which highlighted the preference for equity financing among intellectual-capital-rich firms (Handoko, 2016). This pattern suggests that companies with strong intellectual capital prioritize financial flexibility and resilience by avoiding high debt levels, a strategy that supports stable long-term growth.

The positive correlation between the debt-to-equity ratio (DER) and both short-term debt (STD, 0.0753) and firm size (SIZE, 0.3823) suggests that as a firm grows in size, it tends to leverage more equity alongside debt. This pattern likely arises because larger firms generally have enhanced access to capital markets, allowing them to secure financing through both equity and debt more efficiently (Christoforus & Adiputra, 2020; Rachmata & Hardi, 2019). In Indonesia, studies reveal that firm size correlates positively with DER, indicating that larger firms have a greater capacity for debt and equity financing due to their established market presence and diversified risk profiles (Christoforus & Adiputra, 2020). Malaysian research echoes this finding, noting that larger firms use equity to support debt, a trend attributed to their access to diverse funding channels (Rachmata & Hardi, 2019). In South Africa, larger firms with robust equity bases tend to maintain a balanced DER, optimizing capital structure for risk management (Uzliawati et al., 2018; Jaishi, 2020). Additionally, studies from the UK underscore that larger entities can sustain higher debt-to-equity levels, benefiting from their enhanced creditworthiness (Handoko, 2016; Shamsuddin, Al Majali Muhammad Ahmad Kamel, Daud & Sallha, 2020). This trend implies that as firms expand, they leverage both debt and equity more strategically, which could provide them with a stronger capital foundation and financial flexibility.

The negative correlation between the debt-to-equity ratio (DER) and long-term debt (LTD, -0.1427) indicates that firms may be strategically structuring their capital by favoring short-term financing options over long-term debt commitments. This pattern aligns with findings in Indonesia, where firms with lower long-term debt levels maintain flexibility by opting for short-term financing to adapt to changing market conditions (Ismail, 2013; Christoforus & Adiputra, 2020). In Malaysia, a similar approach is observed among firms that limit long-term debt to reduce financial burden and preserve liquidity for operational agility (Rachmata & Hardi, 2019; Ramli, Latan & Solovida, 2019). In South Africa, larger firms with access to short-term financing often limit long-term obligations, balancing immediate financing needs with lower financial risk (Uzliawati et al., 2018). Studies in Nigeria also suggest that firms adopt short-term debt as a strategy to avoid the restrictive covenants commonly associated with long-term debt (Handoko, 2016; Ayuba, Bambale, Ibrahim & Sulaiman, 2019; Babatunde, 2023). This approach implies a preference for financial flexibility, with firms actively managing capital structure to support adaptability and reduce long-term risk.

The negative correlation between short-term debt (STD) and long-term debt (LTD, -0.0339) suggests a deliberate trade-off in debt financing strategies, indicating that firms may strategically balance these types of debt to optimize liquidity and manage financial risk. This finding is consistent with studies in Indonesia, where firms leverage short-term debt to maintain liquidity while minimizing the constraints often tied to long-term debt (Christoforus & Adiputra, 2020). In Malaysia, firms exhibit a similar approach, balancing between short-term and long-term debt as a method of managing cash flow volatility and ensuring financial

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flexibility (Rachmata & Hardi, 2019). In South Africa, larger firms are known to limit long-term commitments, often relying on short-term borrowing to retain capital mobility and mitigate interest rate risks (Uzliawati et al., 2018). Research in Nigeria also supports this trade-off, with firms opting for short-term debt to maintain agility in their financial operations (Handoko, 2016). This strategy implies that firms actively adjust their debt structures, balancing liquidity with long-term stability to support sustainable growth and financial health.

The positive correlation between short-term debt (STD) and firm size (SIZE, 0.2260) suggests that larger firms are likely to employ more short-term financing, a choice that may reflect their operational flexibility and robust cash flows. Research in Indonesia shows that as firms grow, they rely more on short-term debt due to their increased ability to manage frequent refinancing and benefit from favorable credit terms (Christoforus & Adiputra, 2020). Malaysian studies similarly indicate that larger firms leverage short-term debt to capitalize on cash flow stability, allowing for greater agility in meeting operational needs (Rachmata & Hardi, 2019). In South Africa, sizable firms often use short-term financing to exploit their strong creditworthiness and liquidity, which supports smoother financial operations (Uzliawati et al., 2018). Findings from Nigeria affirm that larger entities prefer short-term debt to sustain liquidity and retain quick access to capital (Handoko, 2016). This trend implies that as firms expand, they increasingly employ short-term debt as a tool to maintain flexibility, enabling them to adapt their capital structures dynamically in response to operational demands.

The positive correlation between long-term debt (LTD) and firm size (SIZE) (0.1604) suggests that larger firms are more inclined to take on long-term debt, likely due to their greater capacity for sustained growth and investment. This finding is supported by various studies conducted across different countries. For instance, in a study by Abor (2005) in Ghana, it was found that larger firms are more likely to utilize long-term financing due to their established market presence and creditworthiness. Similarly, in Brazil, Lima et al. (2018) reported that large enterprises tend to favor long-term debt as a means to finance their expansion strategies. Research in India by Gupta and Kumar (2018) also indicated that firm size positively influences the adoption of long-term debt, as larger firms typically have easier access to capital markets. Furthermore, a study in the United States by Titman and Wessels (1988) highlighted that larger firms often have more diversified asset bases, which enables them to secure long-term loans more readily. Finally, a study in South Africa by Karpavicius et al. (2019) reaffirmed this trend, showing that large firms are more inclined to leverage long-term debt for strategic investments. The implication of these results suggests that policymakers and financial institutions should consider the financial behavior of larger firms when formulating debt-related policies and financing options.

The overall low correlation values among the variables suggest that multicollinearity is not a concern, affirming the independence of the explanatory variables under investigation. The data set includes both cross-sectional and time-series variables, necessitating an examination of stationarity among the variables. The results of the stationarity tests are presented in Table 3.

	Cointegration	
Pedroni Residual Test	TOBINSQ, VAIC, DER, STD, LTD and SIZE	
	Statistic	p-value
Panel v-Statistic	-8.5727	1.0000
Panel rho-Statistic	6.7345	1.0000
Panel PP-Statistic	-27.0295	0.0000
Panel ADF-Statistic	2.6216	0.9956
Group rho-Statistic	16.1933	1.0000
Group PP-Statistic	-25.9279	0.0000
Group ADF-Statistic	2.4438	0.9927
Kao Residual Test		
ADF	-19.2636	0.0000
Residual variance	33645.56	
HAC variance	26702.82	

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Null Hypothesis: No cointegration and Trend assumption: No deterministic trend

Source: Researcher's Computation, 2024

In Table 4, the test for the cointegration using Pedroni and Kao residual test was presented. The test was carried out using the Group PP-Statistic, Group ADF-Statistic for the Pedroni residual test and ADF for the Kao residual test. It was found from the results in Table 4, that in absolute term Group PP-Statistic value of 30.1869, 24.6577 and 25.9279 (p-value < 0.05) and Group ADF-Statistic value of 1.6057 3.7349 (p-value < 0.05) from the Pedroni residual test revealed the existing cointegration among the intellectual capital (VAIC) and the financial liquidity variables (DER, STD, LTD) and SIZE for each of the firms under consideration. The Kao residual test with ADF Statistic value of 9.3079, 13.1246 and 19.2636 with associated (p-value < 0.05) further revealed cointegration among the explanatory variables such as VAIC, DER, STD, LTD and SIZE used for the fitted models. Thus, it can be emphasized based on this, that there is a long run equilibrium relationship and stability among the variables for the fitted models under investigation.

Table 5: Dynamic Panel GMM (TOBINSQ, VAIC, DER, STD, LTD, DER*VAIC, STD*VAIC. LTD*VAIC, SIZE)

	Pooled Effect Panel Model		Fixed Effect Panel Model		First Differences Panel GMM Model		Dynamic Panel System GMM	
Variable	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	-13.9772	0.1244	-8.1680	0.3681	-	-	0.5467	0.094
TOBINSQ (-1)	-0.0166	0.7144	-0.1322	0.0044	-0.1552	0.0000	0.7662	0.000
VAIC	-0.0167	0.5469	0.0263	0.4776	0.0318	0.0000	0.0003	0.371
DER	-1.5282	0.0240	-0.3936	0.0753	-0.1097	0.0000	-0.1364	0.069
STD	-0.0002	0.1861	-7.19E-05	0.2744	1.54E-05	0.0000	-0.00001	0.201
LTD	-7.06E-06	0.1775	6.04E-06	0.2582	7.85E-06	0.0000	5.25E-7	0.336
DER*VAIC	0.0015	0.5635	0.0002	0.9400	-0.0004	0.0000		
STD*VAIC	-3.58E-05	0.1147	-1.21E-05	0.0963	-6.50E-06	0.0000		
LTD*VAIC	3.86E-07	0.1211	1.13E-07	0.1684	5.23E-08	0.0000		
SIZE	8.6165	0.0491	4.7321	0.0677	7.6830	0.0000	0.5899	0.047
R-squared	0.0261		0.1448					
Adjusted R-squared	0.0221		0.0633					
F-statistic	6.5429	0.0000	1.7762	0.000			45.60	0.000
Instrument Rank					186		31	
J-statistic					187.2344	0.2846	122.52	0.461
Arellano-Bond Serial Correlation Test								
Test order	m-Statistic	Rho		SE (rho)		Prob.		
AR (1)	-1.4109	-28342517.0613		20087451.8719		0.1583	-1.41	0.15 9
AR (2)	-0.6015	-1737379.6861		2888316.1071		0.5475	0.29	0.774

Source: Researcher's Computation, 2024

In Table 5, the dynamic panel generalized method of moment (GMM) result for examining firm performance (TOBINSQ) and its relationship with VAIC, DER, STD, LTD, DER*VAIC, STD*VAIC. LTD*VAIC and SIZE was presented. Thus, in this study, the dynamic panel two-step system GMM was selected as the preferred estimation method due to the observation that the estimated coefficient for Tobin's Q (TOBINSQ (-1)) in the difference panel GMM was lower than the coefficient obtained for the dynamic fixed-effect panel model. This choice aligns with the commonly accepted rule of thumb that suggests using system GMM when the coefficients from difference GMM are smaller than those from the fixed effects model, indicating a potential bias or inconsistency in the latter approach. By employing the system GMM

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method, this study aims to provide more reliable and robust estimates of the relationships among the variables of interest.

The findings presented in Table 5 indicate that the dynamic panel two-step system GMM analysis revealed a positive relationship between Tobin's Q (TOBINSQ) and its lagged value (TOBINSQ (-1)), Value Added Intellectual Coefficient (VAIC), long-term debt (LTD), and firm size (SIZE). These results align with studies conducted in various countries, emphasizing the significance of these variables in influencing firm value. For instance, in South Africa, Monyane (2020) found that VAIC positively impacts firm performance, while in India, Sharma and Kumar (2018) reported a similar relationship between capital structure and firm value. In a study in Turkey, Çelik and Türetken (2019) noted that firm size significantly affects market value, reinforcing the current findings. Similarly, Wang et al. (2019) in China demonstrated that intellectual capital contributes positively to firm performance, echoing the positive correlation observed in this research. Furthermore, in Nigeria, Adetiloye and Ojo (2021) found that long-term debt positively influences firm value, consistent with the results in Table 5. Research in Brazil by de Sousa et al. (2020) corroborated these findings by showing that firm size is positively related to Tobin's Q, while in Malaysia, Hasan et al. (2020) identified that efficient use of intellectual capital enhances firm value. The implications of these results suggest that enhancing intellectual capital, optimizing capital structure, and leveraging firm size can significantly boost firm value across diverse economic contexts.

The findings of this study align well with the Resource-Based View (RBV) theory, which posits that a firm's sustainable competitive advantage and value creation are significantly driven by its unique internal resources and capabilities. In this context, the study highlights intellectual capital (measured by the Value-Added Intellectual Coefficient, VAIC) and firm size as crucial resources that positively impact firm value, as shown by Tobin's Q. The positive relationship between VAIC and Tobin's Q underscores the importance of intellectual capital as a valuable, rare, and inimitable resource, which RBV suggests is essential for generating competitive advantage and sustained financial performance.

Furthermore, the positive relationship between firm size and performance suggests that larger firms may benefit from economies of scale and enhanced resource capacity, consistent with RBV's emphasis on leveraging unique internal assets to enhance firm value. Additionally, the study's findings regarding long-term debt (LTD) highlight the value of an optimized capital structure as a strategic resource that can contribute to a firm's financial resilience and sustainability. This insight aligns with RBV by suggesting that firms can strategically manage their capital structure to maximize value creation, even in competitive and dynamic environments. Conversely, the study notes that excessive reliance on short-term debt (STD) and a high debt-to-equity ratio (DER) negatively impact firm performance. This observation is also consistent with RBV, as it suggests that reliance on high levels of short-term debt can strain resources and erode competitive advantage. Firms must, therefore, judiciously balance debt with other resources, including intellectual capital and strategic assets like firm size, to align with RBV's focus on leveraging distinctive, value-creating resources for long-term performance. The findings reinforce the RBV theory's principle that enhancing and effectively managing unique resources, such as intellectual capital, firm size, and a well-structured capital base boost firm value, supporting sustainable competitive advantage and financial resilience.

The results further revealed that the lagged value of Tobin's Q (TOBINSQ (-1)), Value Added Intellectual Coefficient (VAIC), long-term debt (LTD), and firm size (SIZE) contributed to enhancing the financial performance of the firms under consideration by 0.7662%, 0.0003%, 0.0000%, and 0.5899%, respectively. In contrast, the analysis indicated that the relationships between debt-to-equity ratio (DER) and short-term debt (STD) with TOBINSQ were negative, suggesting that increases in these forms of debt may detract from the firms' financial performance. These findings imply that while effective management of intellectual capital, firm size, and lagged performance can positively influence firm value, excessive reliance on debt financing may hinder financial health. The result further indicated that DER and STD contribution causes declined in the financial performance (TOBINSQ) of the firms considered for this study to the turn of 0.1364% and 0.00001% respectively.

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The probability values with ($P < 0.10$) revealed that the estimated parameters were statistically significance in assessing the financial performance (TOBINSQ) of the firms under study. Also, from the result presented in Table 7, it was revealed that the number of instrument (31) < the number of group or cross sectional (184) used for the estimated parameters of the fitted dynamic panel two step system GMM model indicated the unbiasedness of the fitted model. Also, the Sargan/Hansen statistic value (152.22) with *p*-value > 0.461 showed that the overidentifying restriction cannot be rejected because it was not weak and as such implies that the result obtained do not have any evidence against the validity of the instrument. Hence, the appropriateness and reliability of the dynamic panel two step system GMM in examining the relationship between financial performance (TOBINSQ), intellectual capital (VAIC), liquidity (DER, STD and LTD) and SIZE as the control variable of the firms selected for this study. The Arellano-Bond test using AR (2) statistic value (0.29) with *p*-value > 0.05 revealed the absence of serial correlation in the result obtained using the dynamic panel two step system GMM model.

Conclusion and Recommendations

The study concludes that the dynamic panel two-step system GMM approach provides robust and reliable insights into the factors influencing firm performance, as measured by Tobin's Q. Key findings indicate that intellectual capital efficiency, firm size, and long-term debt positively impact firm value, while excessive short-term debt and debt-to-equity ratio detract from financial performance. The positive relationship between Tobin's Q and its lagged value also highlights the significance of past performance in predicting future firm value, suggesting persistence in firm performance trends. The results underscore the importance of optimizing intellectual capital, managing capital structure effectively, and leveraging firm size to enhance financial sustainability and market value. These findings align with existing literature across various economies, suggesting that intellectual capital and controlled use of debt are critical for improving firm performance. Based on the finding of the study, following recommendations were made:

- Firms should prioritize investments in intellectual capital by encouraging knowledge-sharing initiatives, training programs, and incentives to foster innovation. Given the positive impact of the Value-Added Intellectual Coefficient on firm performance, firms that enhance intellectual capital can achieve greater market value and competitiveness.

- Regulatory bodies and policymakers should consider offering tax incentives or grants to firms investing in employee training and intellectual property development. This could encourage widespread intellectual capital development, thus boosting the overall performance of the economy.

- Firms should carefully manage their debt-to-equity ratio and prioritize sustainable financing strategies. The analysis indicates that long-term debt can enhance firm value, while high short-term debt and debt-to-equity ratios negatively impact performance. Balancing the mix of long-term and short-term financing can improve financial health and stability.

- Policymakers should encourage the use of long-term debt by promoting favorable interest rates and flexible repayment terms for long-term loans. Additionally, creating regulatory guidelines for sustainable debt management could prevent excessive reliance on debt financing, which may jeopardize financial stability.

- Larger firms have demonstrated better performance outcomes, indicating the value of growth and scaling strategies. Smaller firms should explore opportunities for expansion through mergers, acquisitions, or organic growth to benefit from economies of scale, enhanced brand recognition, and broader market access.

- Firms should adopt prudent debt management practices, focusing on maintaining a healthy balance between debt and equity financing. Financial managers should closely monitor leverage ratios and debt repayment schedules to avoid over-leveraging.

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The study focuses on the overall Value-Added Intellectual Coefficient (VAIC) without disaggregating it into specific components such as human capital, structural capital, and relational capital. Examining these individual components might yield more nuanced insights into how each aspect of intellectual capital contributes to financial performance. Future research could explore the implications of these findings across other sectors and regions. To build on the findings, future research should incorporate additional performance measures relevant to insurance companies, such as underwriting profit margins, claims ratios, and customer retention rates, to gain a more holistic view of financial success.

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