




“The role of market volatility and leverage in financial performance sustainability: Evidence from Tadawul”

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THE ROLE OF MARKET VOLATILITY AND LEVERAGE IN FINANCIAL PERFORMANCE SUSTAINABILITY: EVIDENCE FROM TADAWUL

Abstract

This study examines the impact of market volatility on the financial performance sustainability in the banking sector and other sectors of the Saudi stock market (Tadawul). Given Saudi Arabia's ongoing economic transformation under Vision 2030, financial stability remains a key priority, striving to sustain financial performance in the stock market sectors. Using panel data from various sectors of Saudi stock companies during 2019–2023, the study analyzes the effects of general market volatility and sector-specific volatility on financial performance indicators, such as ROE and net income volatility. A panel data regression approach, incorporating both fixed and random effects models, is employed to assess the relationships between volatility and financial performance. The results indicate that financial performance sustainability functions as a separate element because market volatility does not impact financial stability. Banks maintain their financial performance through their internal financial systems, which they use together with their debt management practices to navigate times of market instability. Financial leverage is a key factor that determines how financial performance is affected by financial volatility. Firms with high debt levels show high volatility in profits, indicating its importance in protecting against financial risks. The study reveals that firms should be effective in financial management systems and corporate governance to attain successful financial sustainability in their diversification of income streams. Additionally, policymakers and investors should optimize financial structures, as this approach strengthens market stability and supports Saudi Arabia in achieving its economic objectives.

Keywords sustainability, stocks, banks, markets, volatility, performance

JEL Classification G32, G12, G21

INTRODUCTION

The sustainability of financial performance in the stock markets is necessary for investors, regulators, and businesses to rely on. The sudden nature of stock market volatility through its price fluctuations forces financial stability to be compromised and, consequently, long-term investment planning to be difficult (Dugbartey, 2025). The Saudi stock market (Tadawul) has undergone a great deal of transformation along with the economic diversification initiatives, regulatory changes, and shifts in global market conditions in Saudi Arabia (Orlando & Bace, 2021). With Vision 2030 still being implemented, Saudi Arabia demands that the stock market be highly instrumental in establishing sustainable financial operations (Alghamdi, 2024).

The banking system functions as a critical component to both stock market operations and the entire financial industry. The banking sector in Saudi Arabia stands as the third largest market segment on Tadawul because it decides both market trends and investor behavior (Alsharif, 2023; Kouki et al., 2021). Through their role in capital distribution and financial intermediation and their support of corporate



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funding needs banks build up foundation for financial system stability. Banks existing economic status shows their performance which serves as essential market stability and economic growth assessment tool under Vision 2030. The research on Saudi banks which operate on Tadawul exchange shows that bank profitability and capital structure together with operational efficiency determine how financial markets perform and how investors make decisions (Alsaleh & Albarrak, 2024).

A crucial challenge to sustainable financial performance in stock markets generally remains volatile markets (Dugbartey, 2025). The volatility of the Saudi stock market has a profound impact on the sustainability of sectoral financial performance (Vinodkumar & Alarifi, 2022). Financial instability brought on by market fluctuations affects investor confidence and long-term planning of financial investments. The sector-specific volatility (SSV) and financial structure variations still pose risks despite efforts to stabilize the market (Almutairi et al., 2024). Therefore, there is a compelling imperative to align financial sustainability strategies with Vision 2030 as the driver of long-term, stable, and sustainable economic growth (Yusuf & Lytras, 2023). For sectors in the Saudi stock market to navigate volatility effectively, they can adopt robust risk management practices, bolster corporate governance, improve financial structures, leverage technology, and gain from supportive government policies (Almutairi et al., 2024). The implementation of these measures will range from maintaining the stability of finances to contributing to the broader economic transformation outlined in Vision 2030, making Saudi Arabia a strong, resilient, and competitive global financial center.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Research on financial performance sustainability in stock markets, especially in emerging economies such as Saudi Arabia, is deemed substantial. Financial stability and long-term investment strategies are also affected by market volatility (Dhingra et al., 2024; Singh, 2024), which is defined as the degree of variation of trading prices over time. Market volatility results from several global and domestic factors, including macroeconomic policies, investor sentiments, and industry-specific development (Alowaimer, 2025; Dhingra et al., 2024). Consequently, fluctuations in the market liquidity, investor confidence, and stability of financial institutions are often associated with high volatility (Batra et al., 2024). In addition, the banking sector maintains financial stability through its essential role which enables banks to function as financial intermediaries that provide support for market liquidity and credit access and sustain investor trust during times of market instability (Alsaleh & Albarrak, 2024; Demirgüç-Kunt et al., 2021). Also, Zhu (2023) stated that stock markets experience volatility, and this is due to global economic situations and domestic policy modifications, as well as market player sentiments

and firm industry-specific risks. Financial resources undergo improper utilization, and investors' trust decreases with rising capital costs because of excessive market uncertainty (Dhungana, 2023; Halim, 2024; Sonkavde et al., 2023). Some studies in financial literature have been done on the relationship between market volatility and financial performance. It was found that increased volatility increases risk, discourages investment and liquidity constraints, and has a negative effect on the long run profitability (Edem, 2017). Therefore, financial stability is based on the maintenance of risk resilience during market turmoil periods by adopting proper financial management along with sectoral allocation and risk avoidance strategy (Zahedi et al., 2022).

While in Saudi Arabia, the stock market changes frequently due to large fluctuations caused by global financial trends and changes in oil prices, economic diversification policies (Khayat, 2024). Oil is a big driver of economic growth, and thus a shift in its price can cause a big change in the stock market (Bin Amin & Rehman, 2022). According to Al-Maamary et al. (2017), fluctuations in oil prices would have put various sectors at risk of financial frugality. In Saudi Arabia, the banking sector which operates on Tadawul functions as a major contributor to market capitalization while its operations connect global financial mar-

ket disturbances with local financial outcomes (Alsharif, 2023; SAMA, 2024). Since the impact of market volatility significantly affects the financial performance of these sectors, these sectors in the Saudi stock market may implement the following strategic measures to secure sustainability (Vinodkumar & Alarifi, 2022). To minimize dependency on volatile markets, sectors should expand their revenue sources and investment portfolios (Narayanan, 2025). This aligns with Vision 2030's objective of economic diversification, and companies should invest in emerging industries like technology, healthcare, and renewable energy (Alghamdi, 2024; Saudi Vision 2030, 2016). As well as improving corporate governance practices, it increases investor confidence and minimizes risks posed by market volatility (Chen et al., 2023; Moridu, 2023). Banks require strong governance together with effective risk management practices because financial institutions experience extreme sensitivity to changes in regulations together with credit risks and economic instability (Demirgüç-Kunt et al., 2021).

Moreover, financial sustainability is greatly influenced by market volatility, and several theoretical frameworks have been offered to illustrate how firms deal with such uncertainties (Shao et al., 2024). Diversification is a means to eliminate these unsystematic risks (Zahedi et al., 2022). The Modern Portfolio Theory (MPT) provides evidence that diversification helps reduce risk while maximizing returns. With this approach, investors will combine to have a well-balanced financial portfolio that will increase their financial potential in a dynamic market (Almutairi et al., 2024; Yusuf & Lytras, 2023). Banking stocks function as systemically vital components within diversified portfolios because their performance impacts both credit distribution and entire financial market stability (Alsharif, 2023; Beck et al. 2007). The Efficient Market Hypothesis (EMH) suggests that stock prices reflect all the available information, so markets are efficient, and it is difficult to forecast financial fluctuations (Sonkavde et al., 2023). According to this, market volatility is considered a property of an efficient market, not an error that needs to be dealt with. Yet, emerging markets, like in Saudi Arabia, are not free of inefficiencies and information asymmetry, leading to higher levels of unpredictability (Kalyanaraman, 2014; Al Naimi,

2022). Capital structure is explained through the Trade Off Theory, which tells how firms decide the combination of equity and debt financing such that stability is maintained. This theory indicates that debt can encourage tax benefits; however, it increases risk, particularly when there is a high volatility of the economy (Izhakian et al., 2022). The banks require this framework because their ability to handle market fluctuations depends on their capital adequacy and leverage ratios which their regulatory capital requirements establish (Demirgüç-Kunt et al., 2021).

The Arbitrage Pricing Theory (APT) demonstrates that financial results and market volatility respond to changes in macroeconomic conditions (Ross 2013). APT expands on traditional models by incorporating factors such as inflation rates, interest rates, and industry-specific risks. The Saudi stock market shows financial results that deviate from overall market patterns because external factors affect its performance. Various sectors experience significant effects from oil price changes and government regulations and international market conditions according to Alowaimer et al. (2025). The banking industry uses interest rates and monetary policy changes and macroeconomic conditions as its three main factors that drive its profitability and stock performance (Alsharif, 2023). Therefore, understanding these unique external factors is essential for making informed investment decisions (Basiru et al., 2023).

Other studies on financial performance sustainability have been widely focused on how market volatility affects it in empirical studies. Structural inefficiencies, political instability and economic fluctuations make emerging markets more volatile than developed ones (Karanasos et al., 2022). Studied in Saudi Arabia, global oil prices, and regional geopolitical events are important with respect to driving stock market volatility (Almutairi, 2020). The study showed that in cases of volatile markets, firms' ability to leverage to achieve financial sustainability is contingent upon an effective strategy to capital structure management, full transparency on wages, and sound risk management. For example, the study performed by Di Vito and Trottier (2022) demonstrated that such companies can read higher market uncertainty. This is also further backed by Sharma (2014), who

discovered that the financial institutions that used conservative lending showed higher resilience as there existed stock market turbulence. Recent research evidence demonstrates that banks with strong capital bases exhibit increased stability when financial markets experience volatility because they implement effective regulatory controls and risk management practices (Alsharif, 2023).

In addition, financial sustainability is determined by the volatility of a sector. Despite this, the Saudi stock market is exposed to market risks at differing levels across various industries. For example, Al-Maamary et al. (2017) pointed out the vulnerability of the petrochemical sector due to oil price fluctuations; therefore, financial stability is a key concern for companies in this domain. Besides this, another volatile sector is the banking sector, as it is largely based on interest rate changes, regulatory changes, the macroeconomic environment, and trends in credit markets (Di Vito & Trottier, 2022). The listed banks on Tadawul which include large commercial banks create a major impact on market trends through their substantial market value and their essential function in supporting economic growth according to the SAMA (2024). On the contrary, property market cycles, government policies, and investor speculation affect real estate firms. Thus, financial analysts and policymakers need to develop appropriate risk mitigation strategies that are targeted across sectors to improve financial sustainability and understand these sectoral variations (Almutairi et al., 2024; Sutikno & Aisyah, 2022). Additionally, a firm's revenue diversification, asset composition, and debt management are vital in mitigating market volatility (Malik & Masood, 2022; Sany & Lata, 2025). Firms with diversified revenue streams and strong financial governance structures are more resilient to market downturns (Malik & Masood, 2022). Al-ahdal et al. (2023) found that firms with lower debt-to-equity ratios experience reduced exposure to financial distress during periods of heightened market volatility. Other financial sustainability strategies, including debt management strategies, are also very crucial to avoid having an unending debt, as Keltto (2023) warned that a lot of borrowing during uncertain times could make the economic situation worse and can also be a long-term problem.

After reviewing the literature, this study aims to evaluate how Tadawul's different sectors can implement strategic approaches to guarantee sustained financial performance stability during market instability and fulfill the goals of Vision 2030. Through achieving objectives in analyzing the impact of general market volatility (GMV) on the sustainability of sectoral financial performance, examining the role of SSV in affecting financial performance stability, and investigating the influence of financial structure indicators (total revenue, assets, debt ratios) on financial sustainability. Therefore, the main hypotheses used to meet the study objectives are as follows:

H_1 : *GMV impacts the sustainability of sectoral financial performance in the Saudi stock market.*

H_2 : *SSV significantly affects the financial performance sustainability of different sectors.*

H_3 : *Financial leverage moderates the relationship between market volatility and financial performance sustainability, either amplifying or mitigating its effects.*

2. METHOD

The study was based on secondary data. Analysis was performed to obtain the financial statements of the Saudi banking sector and the other 17 Saudi sectors for the period from 2019 to 2023, quarterly. The data were gathered from the Saudi Stock Exchange website (Tadawul), and additional relevant information was obtained from Trading Economics, IMF, Saudi Arabia Monetary Authority, and World Bank.

The variables used in the analysis, along with their definitions and measurement methods, are presented in Table 1. The Return on Equity (ROE) and Net Income Volatility (NIV) represent the dependent variable. The independent variables central to this study are GMV and SSV, both of which are pivotal in understanding the broader market dynamics and their sectoral implications. To enhance the reliability of the results, financial structure indicators are included as control variables, which are total revenue, total assets, total debt, debt to assets, and equity to assets.

Table 1. Variables description

Variables	Definitions	Measures
Dependent variable	ROE	ROE measures sectoral profitability relative to shareholders' equity. It reflects how effectively capital is utilized and is widely used in financial performance evaluation (Ciftci et al., 2019). ROE is used in the random effect model, assuming uncorrelated unobserved sectoral differences
Dependent variable	NIV	NIV captures the stability of sectoral earnings over time. It is calculated as the standard deviation of net income across quarters and reflects the predictability of profitability. A lower NIV suggests more sustainable performance (Asaolu, 2021). NIV is used in the fixed effect model due to sector-specific influences
Independent variable	GMV	GMV is calculated based on the quarterly standard deviation of the Tadawul All Share Index (TASI) returns. This variable reflects macro-level instability affecting all sectors. It aligns with the efficient market hypothesis and is commonly used in emerging market volatility studies (Smales, 2021; Dhingra et al., 2024)
Independent variable	SSV	SSV measures the standard deviation of sector-level returns and is used to capture idiosyncratic risk. High SSV values indicate sectors that are more exposed to internal or industry-specific shocks (Gupta et al., 2023; Al-Maamary et al., 2017)
Control variable	Total revenue	Represents the overall income generated by each sector. Used to control size and operational scale. It is expected that larger revenue can reduce the sensitivity to volatility (Akhtar & Khan, 2016)
Control variable	Total assets	Captures the sector's resource base. Total assets may influence performance sustainability due to asset-driven income generation (Hewamana et al., 2022)
Control variable	Total debt	Reflects the overall borrowing level. High debt may amplify risk exposure, particularly under market stress
Control variable	Debt to assets	Measures financial leverage and risk. Based on Trade-Off Theory, this variable indicates the balance between the tax benefits of debt and potential financial distress (Murombi & Mohammed, 2025)
Control variable	Equity to assets	Measures capital structure and reliance on equity financing. A higher equity to assets may reflect more conservative financial policies, improving earnings stability

The study used a panel data regression approach to evaluate the impact of market volatility on the provision of sectoral financial performance in the Saudi stock market. Multiple sectors with their corresponding financial performance indicators are being used as a database for financial performance measurement of a company, where data are available every quarter. In this regard, two key equations are designed for the empirical model to explain the relationship between market volatility, financial structure, and sustainability. The study uses a fixed-effect model for NIV and a random-effect model for ROE to post-effects of market volatility on implied risk premium while, at the same time, considering distinctive sector-specific characteristics. These models help maintain the robustness of the findings that coefficient results are capturing the real relationship between financial sustainability and market variations (Abrevaya & Hsu, 2021).

$$\begin{aligned}
 NIV_{it} = & \alpha + \beta_1 GMV_{it} + \beta_2 SIV_{it} + \beta_3 TR_{it} \\
 & + \beta_4 TA_{it} + \beta_5 TD_{it} + \beta_6 DAratio_{it} \\
 & + \beta_7 EAratio_{it} + \mu_i + \varepsilon_{it},
 \end{aligned}
 \tag{1}$$

$$\begin{aligned}
 ROE_{it} = & \alpha + \beta_1 GMV_{it} + \beta_2 SIV_{it} + \beta_3 TR_{it} \\
 & + \beta_4 TA_{it} + \beta_5 TD_{it} + \beta_6 DAratio_{it} \\
 & + \beta_7 EAratio_{it} + \mu_i + \varepsilon_{it}.
 \end{aligned}
 \tag{2}$$

3. RESULTS

The analysis of the panel regression estimates in Table 2 represents a descriptive analysis of the distribution, central tendency, and variability of the financial and volatility-related variables used for the analysis. SSV exhibits considerable variation, with a mean of 377.99 and a high standard deviation of 445.16. The values range from 5.65 to 5,015.48, indicating that some sectors experience extreme volatility. In comparison, GMV has a mean of 450.97 and a standard deviation of 235.92, showcasing moderate variability with values spanning from 61.25 to 1,118.20. NIV has a mean of 9.24, but a high standard deviation of 36.38, suggesting significant income fluctuations for some firms. The range of 0.008 to 282.33 indicates the presence of both stable and highly volatile firms. Total revenue has a mean of 46.88, along with a large standard deviation of 197.02, reflecting substantial differences in revenue generation.

The minimum value is 0.28, while the maximum reaches 2,346.68, further emphasizing this disparity. Total debt presents a negative mean of -66.43 , potentially due to accounting adjustments, and a wide standard deviation of 124.66. The values range from -606.03 to -0.51 , illustrating considerable differences in debt levels. The debt-to-assets ratio averages 0.2987, indicating that 30% of assets are financed through debt, with a standard deviation of 0.1085. The equity-to-assets ratio has a mean of 0.4406 and a standard deviation of 0.1369, with values ranging from 0.1047 to 0.7005, indicating diverse capital structures. ROE reveals extreme variability, with a mean of 5,861.59 and a staggering standard deviation of 59,597.61, ranging from $-163,975$ to 1,045,654. Total assets also show significant dispersion, with a mean of 12.57, a standard deviation of 86.33, and values ranging from -32.55 to 1,491.57. The banking sector shows structural differences from other sectors because its firms keep more assets and higher debt levels which they use for financial intermediation purposes (Demirgüç-Kunt et al., 2021; SAMA, 2024).

Table 3 highlights the results of the Unit root test. In the panel regression model, the Im, Pesaran, and Shin (IPS) unit root test is used to test for stationarity. According to the null hypothesis for the IPS unit root test, all panels should be non-stationary, i.e., all contain a unit root. The results also show that most variables are stationary, as their statistics are very negative and p-values are less than 0.05. In this case, all variables such as SSV, GMV, NIV, total revenue, debt to assets ratio, and equity to assets ratio are stationary at level (0) ROE, and total assets are stationary at level (1). Total debt has a p-value of 0.0522, which is significant at the 10 % level. Confirmation of stationarity is particularly relevant when analyzing finan-

cial institutions such as banks, since banking sector indicators often display persistent time-series behavior which regulatory frameworks and credit cycles and macroeconomic conditions influence (Alsharif, 2023; Beck et al., 2007).

Table 3. Unit root test results

Variables	t-statistics	P-value
SSV*	-12.4314	< 0.001
GMV*	-13.8459	< 0.001
NIV*	-4.9218	< 0.001
Total revenue *	-10.8409	< 0.001
Total debt**	-1.6234	0.052
ROE*	-11.1266	< 0.001
Total assets*	-14.1476	< 0.001
Debt to assets *	-3.2616	< 0.001
Equity to assets *	-3.2542	< 0.001

Note: * Indicates the significance level at a 1% confidence interval. ** Indicates the level of significance at a 5% confidence interval.

Multicollinearity means a correlation coefficient above 0.7 or below -0.7 , which may also affect the model accuracy. There is a high correlation between ROE (Quarterly) and Total assets (0.9281, $p = 0.000$), which creates multicollinearity and redundancy in this model (Table 4). In addition, total revenue and NIV also correlate strongly (0.7395, $p = 0.000$) with the fact that firms with higher revenue are more volatile in terms of income. NIV and total revenue negatively correlate with total debt (-0.598), (-0.5394), and therefore, the firms with higher levels of debt have lower revenue and income stability.

On the other hand, the debt-to-assets ratio and equity-to-assets ratio have a negative correlation (-0.1738), which is expected because firms with higher debt ratios have lower equity ratios. There is little correlation between GMV and other finan-

Table 2. Descriptive statistics of study variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
SSV	360	377.9968	445.1593	5.646435	5,015.484
GMV	360	450.9654	235.9204	61.25297	1,118.196
NIV	324	9.24296	36.37839	0.008026	282.3254
Total revenue	360	46.88281	197.0217	0.278782	2,346.677
Total debt	360	-66.425	124.6626	-606.028	-0.51112
Debt to assets	360	0.298718	0.108504	0.060766	0.650515
Equity to assets	360	0.440574	0.13694	0.104707	0.700518
ROE	342	5,861.589	59,597.61	$-163,975$	1,045,654
Total assets	342	12.56634	86.33406	-32.5526	1491.575

Table 4. Correlation matrix

Variable	NIV	ROE	Total assets	Equity to assets	Debt to assets	Total debt	Total revenue	GMV	SSV
NIV	1	–	–	–	–	–	–	–	–
ROE	0.3185	1	–	–	–	–	–	–	–
Total assets	0.000	–	1	–	–	–	–	–	–
Equity to assets	0.3733	0.9281	0.0122	1	–	–	–	–	–
Debt to assets	0.000	0.000	–	–	–	–	–	–	–
Total debt	0.2332	0.1037	–	–	–	–	–	–	–
Total revenue	–0.253	–0.106	–0.1747	–0.1738	1	–	–	–	–
GMV	0	0.0501	0.0012	0.0009	–	–	–	–	–
SSV	–0.598	–0.1858	–0.2982	0.0308	0.3257	1	–	–	–
	0	0.0006	0	0.5602	0	–	–	–	–
	0.7395	0.1576	0.1352	0.2124	–0.1999	–0.5394	1	–	–
	0	0.0035	0.0123	0	0.0001	0	–	–	–
	0.0146	–0.0122	–0.0422	0.017	–0.0521	–0.0011	0.0713	1	–
	0.7937	0.8218	0.4371	0.7472	0.3243	0.9829	0.1771	–	–
	–0.082	–0.0366	–0.0188	–0.1656	–0.1544	0.0438	–0.0653	0.257	–
	0.141	0.4996	0.729	0.0016	0.0033	0.4073	0.2164	0.0000	1

cial indicators, suggesting a minor direct impact. These relationships also allow for determining the model reliability, and it helps in adjusting further with econometrics. The banking industry shows similar asset relationships with profitability and leverage because its profitability metrics depend on both balance sheet size and capital adequacy requirements (Demirgüç-Kunt et al., 2021).

Variance Inflation Factor (VIF) is used to assess multicollinearity among independent variables in a regression model. If the VIF exceeds 5, it implies multicollinearity concerns, and more than 10 indicates severe multicollinearity that can distort estimates of the regression. Although some variables exhibit high collinearity, as their VIFs are less than 10, this is acceptable. Table 5 shows a mean VIF of 3.34 here, which means overall multicollinearity is not a big issue.

Table 5. Results of the variance inflation factor (VIF)

Variable	VIF	1/VIF
Total assets	9.53	0.104937
ROE	9.05	0.110495
Total debt	1.88	0.531003
Total revenue	1.62	0.616304
Debt to assets	1.24	0.808518
Equity to assets	1.21	0.827411
SSV	1.14	0.878728
GMV	1.07	0.930377
Mean VIF	3.34	–

Table 6 displays the results of the fixed effects regression model with empirical results, the effects of the factors on the NIV while taking into consideration the sectoral effects. The positive and statistically significant (0.0646, $p = 0.000$) impact of total revenue suggests that the income volatility associated with firms with higher revenue levels may be caused by being exposed to a higher occurrence of operational risk. Similarly, the equity-to-assets ratio is positively significant (46.1226, $p = 0.03$), implying that firms with higher equity exhibit greater earnings volatility, possibly because they face more investment risks. In addition, there is also a positive and significant impact on total assets (0.0531, $p = 0.000$), which shows that such firms have more volatile income streams.

However, the debt-to-asset ratio suggests a negative but marginally significant coefficient (–45.2778, $p = 0.056$), indicating that greater leverage may reduce earnings volatility as discussed above for leveraged firms. However, NIV is not statistically significantly affected by total debt (0.0245, $p = 0.321$). Additionally, SSV and GMV have negative coefficients but are not statistically significant, which implies that external volatility factors may not account for net income variation completely. Prob > F is the value of 0.0000, which confirms the overall significance of the model.

The fixed effects model results show that both GMV and SSV coefficients lack statistical significance

Table 6. Results of the fixed effects regression model

ROE	Coefficient	Robust Std. Err.	t-value	P> t
SSV	-0.0008692	0.0031165	-0.28	0.781
GMV	-0.0006753	0.0047891	-0.14	0.888
Total revenue	0.0645942	0.0076639	8.43	0
Total debt	0.0245249	0.0246752	0.99	0.321
Debt to assets	-45.27784	23.61918	-1.92	0.056
Equity to assets	46.12256	21.09544	2.19	0.03
Total assets	0.0531256	0.0138391	3.84	0
Constant (_cons)	0.4166328	13.48924	0.03	0.975
Sigma_u (Sector-Level Variance)	19.886		-	
Sigma_e (Error Variance)	19.537		-	
Rho (Fraction due to u_i)	0.5089		-	
Overall R-squared	0.5018		-	
F-statistic (7, 299)	16.16		-	
Prob > F	0.0000		-	

which demonstrates that GMV together with SSV do not affect companies' net income fluctuations. The empirical evidence fails to support both H1 which claims GMV affects sectoral financial performance sustainability and H2 which states SSV has a major impact on financial performance sustainability in this model. The study discovered that leverage-related variables which include the debt-to-assets ratio demonstrate their importance because they establish financial structure as a key factor which determines income variability. The banking sector especially requires this information because banks use leverage together with capital adequacy for both financial performance assessment and risk control (Alsharif, 2023; Beck et al. 2007).

Table 7 presents the random effects of the regression model results. In this model, GMV and SSV are statistically insignificant. The coefficient for GMV is 5.7664 ($p = 0.237$), and for SSV, it is

-0.4700 ($p = 0.856$), implying that broader market volatility and sector-specific fluctuations do not substantially drive firms' ROE variations. ROE (Return on Assets) is determined to be statistically significant by total revenue, total debt, debt to assets, equity to assets, and total assets. Total revenue has a coefficient of 26.621 ($p = 0.000$), implying that when the Revenue level is higher than normal, it causes fluctuations in the ROE, possibly because operational risk is high. The coefficient of total debt is 61.717 ($p = 0.000$), indicating that firm profitability changes more significantly with higher debt levels and could be due to higher financial leverage risk. Results suggest that leverage amplifies profitability fluctuations as its debt to assets ratio coefficient is positive and significant at 28,395.19 ($p = 0.014$). The equity-to-assets ratio is found to be positively significant (33,677.85, $p = 0.000$), thereby suggesting that firms with higher equity ratios have larger exposure to earnings fluctuations, potentially due to higher exposure to

Table 7. Random effects model

Variable	Coefficient	Std. Err.	z-value	P> z
GMV	5.766404	4.874705	1.18	0.237
Total revenue (in billions)	26.62101	6.748019	3.95	0.00
Total debt (in billions)	61.71735	11.31232	5.46	0.00
Debt to assets	28395.19	11535.92	2.46	0.014
Equity to assets	33677.85	8752.698	3.85	0.000
Total assets	665.3514	13.38459	49.71	0.0000
SSV	-0.4700767	2.596764	-0.18	0.856
Constant (_cons)	-25391.95	6625.153	-3.83	0.0000
sigma_u	0		-	
sigma_e	20063.854		-	
Rho	0		-	
Wald chi2	2615.39		-	

investment risks. The results from the random effects model suggest the determinants of quarterly ROE across different sectors. The overall significance of the model is confirmed by the Wald chi² value of 2,695.39 ($p = 0.000$).

The random effects model further confirms the hypothesis testing results. The two tests show that GMV and SSV do not lead to any significant results which makes us reject both H1 and H2. Financial institutions use leverage-related variables which include total debt and debt-to-assets ratio as significant data points because they use financial leverage to control how market volatility affects their financial results. Empirical evidence supports H3. The banking sector uses these findings because its primary profitability and financial stability factors derive from leverage and capital structure and asset size in accordance with its debt financing and credit intermediation practices (Demirgüç-Kunt et al., 2021; SAMA, 2024).

4. DISCUSSION

The first research hypothesis demonstrates that GMV impacts the sustainability of sectoral financial performance in the Saudi stock market. The analysis shows that the coefficient of the GMV for Model 1 is market volatility, which has no statistically significant relationship with NIV. Similarly, in Model 2, a GMV coefficient does not have any significant contribution to ROE. Thus, GMV is not associated with financial performance negatively. The analysis is consistent with research in several studies that predict market volatility is unlikely to have a consistent impact on a company's financial performance. For example, Hewamana et al. (2022) analyzed how stock market volatility could at times correspond to changes in economic conditions instead of directly to financial returns, and therefore fluctuation could not always correspond to lower financial performance. Karanasos et al. (2022) made it evident that returns in emerging markets are influenced by volatility; however, this does not always lead to a negative relationship with financial performance. Additionally, the effects can vary by sector and depend on the broader economic environment. This implies that for the Saudi stock market, the GMV may not have as great an effect as expected.

Moreover, the second hypothesis demonstrates that SSV significantly affects the financial performance sustainability of different sectors. In Model 1, the analysis shows that the SSV coefficient is statistically insignificant. Also, in Model 2, the SSV coefficient has neither NIV nor ROE, and shows a highly significant effect of SSV. However, the analysis is somewhat concurrent with prior studies such as Muriithi et al. (2021) which observed that sector volatility can matter a great deal in financial performance in some industries highly sensitive to sectoral risk (e.g., energy or commodities). Similarly, the study of Gupta et al. (2023) presented mixed results; while some sectors may grow during periods of high volatility, many sectors, particularly those that are less volatile, do not experience significant negative impacts. In other words, there may be a sector-specific influence on volatility, which might not be as significant in the Saudi stock market. Since GMV and SSV do not significantly impact financial performance, the role of financial leverage is crucial. This finding supports Vision 2030's emphasis on strengthening corporate governance and financial risk management.

Furthermore, the third hypothesis demonstrates that financial leverage moderates the relationship between market volatility and financial performance sustainability, either amplifying or mitigating its effects. The analysis of Model 1 shows that the total debt coefficient is not statistically significant, so it does not significantly impact NIV. However, the coefficient of the debt-to-assets ratio is significant, indicating that leverage has a significant effect on financial performance. In Model 2, the coefficient of the debt-to-assets ratio indicates that sectors use leverage proportionately in profitability and its volatility, or more rightly, financial leverage magnifies profitability and volatility. Additionally, the coefficient of the total debt variable is also significant, which certainly indicates the importance of leverage in explaining the variability of financial performance. Results indicated significant statistical effects of the debt-to-assets ratio and total debt in affecting the variability of the financial performance, and that financial leverage does moderate the relationship between market volatility and sustainability in financial performance. This matches the findings of, for instance, Asaolu (2021), who established the para-

mount role of financial leverage in a firm's performance under conditions of the market. Moreover, Khan et al. (2022) analyzed that financial leverage may boost or reduce financial performance, with the firm's exposure to market volatility as the intervening variable of importance to the result, naturally, validating the moderation found in this study. Financial leverage significantly affects financial performance sustainability under volatility, and these results suggest that firms with higher financial leverage are more sensitive to market changes and thus, financial leverage is a major influencing factor that leads to financial performance sustainability during periods of volatility.

Conclusively, regression results are discussed that bring out important facts on the determinants of financial performance sustainability in the Saudi stock market. This is indicative of the fact that in this study, financial performance volatility is not extensively determined by market and SSV. Therefore, it suggests that Saudi firms have developed a level of resilience against external market fluctuations. This financial stability aligns

with Saudi Vision 2030's emphasis on strengthening the financial sector through regulatory reforms, improved corporate governance, and enhanced market transparency (Alomair & Al Naim, 2024). The resilience of the stock market may be attributed to the ongoing economic diversification initiatives aimed at reducing dependence on oil revenues. This finding supports the objectives of Vision 2030's Financial Sector Development Program (FSDP), which advocates for practical debt management and financial risk mitigation strategies to enhance economic stability (Alsahliy & Husin, 2024). The results indicated statistically insignificant relations between market volatility and financial performance variability for all other models in the analysis. The determinants of performance sustainability in the context of external market changes are shown to be influenced by financial leverage (Akhtar et al., 2022). Hence, even though market and SSV in the Saudi stock market might not significantly affect financial performance, an understanding of the influence of leverage on financial performance in the context of the Saudi stock market is imperative.

CONCLUSION

The study aims to bring an important understanding of the relationships between market volatility and the sustainability of financial performance in the Saudi market. The study used a fixed effect model for NIV and a random effect model for ROE to post effects of market volatility on implied risk premium while considering unique sector-specific characteristics. The study demonstrates how market volatility (general and sectoral) affects the sustainability of financial performance in the Saudi stock market sectors. The study results demonstrate that GMV and SSV do not create a major effect on sustainable financial performance which shows no significant difference between the two measures. Also, the results indicate that financial resilience depends more on internal financial structures and corporate governance and strategic decision-making processes than on external factors. The banking institutions in the Saudi financial sector should understand these implications because financial stability depends on their capital structure and leverage and risk management methods.

However, the study also demonstrates the moderate role of financial leverage in the sustainability of financial performance. In contrast, companies with a balanced financial structure (balance of money and assets) have the highest stability, indicating the necessity of proper capital control during market fluctuations. In addition, the study discovered that companies with higher equity-to-assets ratios demonstrate greater income variability than their competitors who maintain lower equity-to-assets ratios. Additionally, the results showed that companies need to create risk management plans which will help them control their capital expenses to achieve their long-term financial stability goals. Also, the results indicated that market volatility does not create a direct link to financial instability although different environments can cause sector and macroeconomic variations to impact financial results. Market dynamic monitoring remains necessary for policymakers and investors and corporate executives who seek to boost financial stability according to Vision 2030 financial sector development objectives. This

is particularly important for the Saudi banking system because banks serve as the main link between borrowers and lenders who drive economic growth while maintaining the stability of Saudi Arabia's financial markets.

This concludes that financial structure optimization, risk management, and corporate governance are critical to financial sustainability during market fluctuations. Therefore, policymakers should direct their attention toward strengthening financial regulations, increasing transparency, and urging firms to move away from relying on centralized revenue-generating models such as subscriptions. Investment decisions are also affected by capital structures and leverage positions of firms, and it is the responsibility of investors to look at them. To stabilize the Saudi market, attract more long-term investments, and contribute to the objectives defined in Vision 2030, these measures should be implemented.

AUTHOR CONTRIBUTIONS

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REFERENCES

1. Abrevaya, J., & Hsu, Y. C. (2021). Partial effects in non-linear panel data models with correlated random effects. *The Econometrics Journal*, 24(3), 519-535 <https://doi.org/10.1093/ectj/utab004>
2. Akhtar, M., Yusheng, K., Haris, M., Ain, Q. U., & Javaid, H. M. (2022). Impact of financial leverage on sustainable growth, market performance, and profitability. *Economic Change and Restructuring*, 55, 737-774. <https://doi.org/10.1007/s10644-021-09321-z>
3. Akhtar, S., & Khan, N. U. (2016). Modeling volatility on the Karachi stock exchange, Pakistan. *Journal of Asia Business Studies*, 10(3), 253-275. <https://doi.org/10.1108/jabs-05-2015-0060>
4. Al Naimi, S. M. (2022). Economic diversification trends in the Gulf: The case of Saudi Arabia. *Circular Economy and Sustainability*, 2, 221-230. <https://doi.org/10.1007/s43615-021-00106-0>
5. Al-ahdal, W. M., Almaqtari, F. A., Tabash, M. I., Hashed, A. A., & Yahya, A. T. (2023). Corporate governance practices and firm performance in emerging markets: empirical insights from India and Gulf countries. *Vision: The Journal of Business Perspective*, 27(4), 526-537. <https://doi.org/10.1177/09722629211025778>
6. Alghamdi, O. A. (2024). Exploring the Link Between Social Media Adoption and Saudi Arabia SME's Sustainable Performance: The Moderating Role of COVID-19. *SAGE Open*, 14(4). <https://doi.org/10.1177/21582440241293043>
7. Al-Maamary, H. M., Kazem, H. A., & Chaichan, M. T. (2017). The impact of oil price fluctuations on common renewable energies in GCC countries. *Renewable*

- and Sustainable Energy Reviews, 75, 989-1007. <https://doi.org/10.1016/j.rser.2016.11.079>
8. Almutairi, F. A. S. (2020). A Review of Behavioral Finance. *Journal of Contemporary Scientific Research*, 4(2). Retrieved from <https://www.jcsronline.com/volume-4-issue-2-paper-1/>
 9. Almutairi, S., Azizan, N. A., & Abidin, S. Z. (2024). Impact of Different Exchange Rate Policies on Stock Market Performance: Kuwait vs Saudi Arabia. *Saudi Journal of Economics and Finance*, 8(3), 74-90. <https://doi.org/10.36348/sjef.2024.v08i03.002>
 10. Alomair, A., & Al Naim, A. S. (2024). Unraveling the impact of the new Saudi company regulations: Enhancing financial reporting quality and achieving Vision 2030. *Asian Economic and Financial Review*, 14(8), 594. <https://doi.org/10.55493/5002.v14i8.5150>
 11. Alowaimier, O. H. (2025). The impact of oil price volatility on financial performance of Saudi firms. *Entrepreneurship and Sustainability Issues*, 12(3), 326-340. <https://doi.org/10.9770/z6586657958>
 12. Alowaimier, O. H., Alobaid, R. O., Hossain, M. S., & Habtoor, O. S. (2025). Impact of Intellectual Capital on Financial Performance of Commercial Banks in Saudi Arabia. *SMART Journal of Business Management Studies*, 21(1), 15-25. <https://doi.org/10.34293/2321-2012.2025.0001.2>
 13. Alsahly, D. K., & Husin, M. M. (2024). Determinants of Financial Self-Efficacy and Saudi's Household's Intention to Participate in Protection & Savings Insurance: A Conceptual Framework. *Pakistan Journal of Life and Social Sciences*, 22(2), 18873-18891. <https://doi.org/10.57239/pjlss-2024-22.2.001384>
 14. Alsaleh, F., & Albarrak, M. (2024). The Impact of Capital Structure on Corporate Profitability for Islamic Banks on Saudi Stock Exchange "Tadawul". *The Arab Journal of Administration*, 44(3), 215-230. Retrieved from <https://ajajournal.org/aja/article/view/371>
 15. Alsharif, M. (2023). Short- and long-term impacts of merger activities in the banking industry: evidence from an emerging market. *Journal of Financial Economic Policy*, 15(6), 628-644. <https://doi.org/10.1108/JFEP-08-2023-0223>
 16. Asaolu, M. A. (2021). Debt capacity and financial performance of quoted firms in Nigeria. *American Journal of Finance*, 6(2), 1-24. <https://doi.org/10.47672/ajf.801>
 17. Basiru, J. O., Ejiofor, C. L., Onukwulu, E. C., & Attah, R. U. (2023). Financial management strategies in emerging markets: a review of theoretical models and practical applications. *Magna Scientia Advanced Research and Reviews*, 7(2), 123-40. <https://doi.org/10.30574/msarr.2023.7.2.0054>
 18. Batra, S., Yadav, M., Jindal, I., Saini, M., & Kumar, P. (2024). Stabilizing or destabilizing: the effect of institutional investors on stock return volatility in an emerging market. *Multinational Business Review*, 32(2), 204-225. <https://doi.org/10.1108/mbr-04-2023-0052>
 19. Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*, 12(1), 27-49. Retrieved from <https://www.jstor.org/stable/40216113>
 20. Bin Amin, M. F., & Rehman, M. Z. (2022). Asymmetric linkages of oil prices, money supply, and TASI on sectoral stock prices in Saudi Arabia: a non-linear ARDL approach. *SAGE Open*, 12(1). <https://doi.org/10.1177/21582440211071110>
 21. Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, 345. <https://doi.org/10.1016/j.jenvman.2023.118829>
 22. Ciftci, I., Tatoglu, E., Wood, G., Demirbag, M., & Zaim, S. (2019). Corporate governance and firm performance in emerging markets: Evidence from Turkey. *International Business Review*, 28(1), 90-103. <https://doi.org/10.1016/j.ibusrev.2018.08.004>
 23. Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2021). *The Global Findex Database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19*. World Bank. Retrieved from <https://documents.worldbank.org/en/publication/documents-reports/document-detail/099833507072223098> (Accessed: 15.12.25).
 24. Dhingra, B., Batra, S., Aggarwal, V., Yadav, M., & Kumar, P. (2024). Stock market volatility: a systematic review. *Journal of Modelling in Management*, 19(3), 925-952. <https://doi.org/10.1108/jm2-04-2023-0080>
 25. Dhungana, B. R. (2023). Stock market development and economic growth of Nepal. *Journal of Business and Social Sciences Research*, 8(2), 31-50. <https://doi.org/10.3126/jbsr.v8i2.62132>
 26. Di Vito, J., & Trottier, K. (2022). A literature review on corporate governance mechanisms: Past, present, and future. *Accounting Perspectives*, 21(2), 207-235. <https://doi.org/10.1111/1911-3838.12279>
 27. Dugbartey, A. N. (2025). Systemic financial risks in an era of geopolitical tensions, climate change, and technological disruptions: Predictive analytics, stress testing and crisis response strategies. *International Journal of Science and Research Archive*, 14(02), 1428-1448. <https://doi.org/10.30574/ijrsra.2025.14.2.0563>
 28. Edem, D. B. (2017). Liquidity management and performance of deposit money banks in Nigeria (1986-2011): An investigation. *International Journal of Economics, Finance and Management Sciences*, 5(3), 146-161. <https://doi.org/10.11648/j.ijefm.20170503.13>
 29. Gupta, S., Bandyopadhyay, G., Biswas, S., & Mitra, A. (2023). An integrated framework for classification and selection of stocks for portfolio construction: Evidence from NSE, India. *Decision Making: Applications in Management and Engineering*, 6(1), 774-803. <https://doi.org/10.31181/dmame0318062021g>

30. Halim, K. I. (2024). The Effect of Retention Rate, Debt to Equity Ratio, and Current Ratio on Company Sustainable Growth Rate. *InFestasi*, 20(2), 106-116. <https://doi.org/10.21107/infestasi.v20i2.27846>
31. Hewamana, R., Siriwardhane, D., & Rathnayake, A. (2022). Determinants of stock price volatility: A literature review. *South Asian Journal of Finance*, 2(1), 28-55. Retrieved from <https://journals.kln.ac.lk/sajf/images/articles/vol2/i01/v02i01a03.pdf>
32. Izhakian, Y., Yermack, D., & Zender, J. F. (2022). Ambiguity and the tradeoff theory of capital structure. *Management Science*, 68(6), 4090-4111. <https://doi.org/10.1287/mnsc.2021.4074>
33. Kalyanaraman, L. (2014). Stock market volatility in Saudi Arabia: An application of univariate GARCH model. *Asian Social Science*, 10(10), 142. <https://doi.org/10.5539/ass.v10n10p142>
34. Karanasos, M., Yfanti, S., & Hunter, J. (2022). Emerging stock market volatility and economic fundamentals: The importance of US uncertainty spillovers, financial and health crises. *Annals of Operations Research*, 313(2), 1077-1116. <https://doi.org/10.1007/s10479-021-04042-y>
35. Keltto, J. (2023). *Impact of Macroeconomic Factors on IPO Activity* (Master's Thesis). Handelshøyskolen BI. Retrieved from <https://helda.helsinki.fi/server/api/core/bitstreams/50fd0049-1e9a-43aebff7-64ff3c1335a1/content>
36. Khan, M. I., Ahmad, A., Akash, R. S. I., Mahmood, A., Ahmad, A., & Yasmin, S. (2022). The Effect of Sustainable Asymmetric Market Conditions on Returns & Volatility in Stock Markets during a Global Financial Crisis. *International Journal of Innovation, Creativity and Change*, 15(5), 42-56. <https://doi.org/10.53333/ijicc2013/15504>
37. Khayat, S. H. (2024). The Impact of Non-Oil Exports on the Economic Growth in Saudi Arabia: An Empirical Analysis. *International Business Research*, 17(3), 1-89. <https://doi.org/10.5539/ibr.v17n3p89>
38. Kouki, R., Khalaf, L. S., & Wadi, R. M. A. (2021). The Stock Markets Response during the Coronavirus: Evidence from Saudi Banking Sector. *Journal of Legal, Ethical and Regulatory Issues*, 24(1). Retrieved from https://scholar.google.com/citations?view_op=view_citation&hl=en&user=GIN1JNAAA AAJ&citation_for_view=GIN-1JNAAAAAJ:UeHWp8X0CEIC
39. Malik, M. A., & Masood, T. (2022). Identifying and characterizing volatility in economic growth: Evidence from Saudi Arabia. *Journal of Public Affairs*, 22(2). <https://doi.org/10.1002/pa.2467>
40. Moridu, I. (2023). The Role Corporate Governance in Managing Financial Risk: A Qualitative Study on Listed Companies. *The ES Accounting and Finance*, 1(03), 176-183. <https://doi.org/10.58812/esaf.v1i03.110>
41. Muriithi, S. G., Walters, B. A., McCumber, W. R., & Robles, L. R. (2021). Managerial entrenchment and corporate social responsibility engagement: The role of economic policy uncertainty. *Journal of Management and Governance*, 26, 621-640. <https://doi.org/10.1007/s10997-021-09569-7>
42. Murombi, E. M., & Mohammed, E. S. (2025). Balancing Risk and Return: The Influence of Leverage on Corporate Financial Performance. *East African Finance Journal*, 4(2), 107-118. <https://doi.org/10.59413/eafj/v4.i2.6>
43. Narayanan, N. (2025). *Saudi Arabia's stock market leads globally in growth: top official*. Arab News PK. Retrieved from <https://www.arabnews.pk/node/2590692/business-economy>
44. Orlando, G., & Bace, E. (2021). Challenging times for insurance, banking and financial supervision in Saudi Arabia (KSA). *Administrative Sciences*, 11(3), 62. <https://doi.org/10.3390/admsci11030062>
45. Ross, S. A. (2013). The arbitrage theory of capital asset pricing. In *Handbook of the fundamentals of financial decision making: Part I* (pp. 11-30). https://doi.org/10.1142/9789814417358_0001
46. Sany, M. A. I., & Lata, R. S. (2025). The Impact of Revenue Diversification on Bank Performance and Risk: Evidence from Bangladesh. *International Journal of Financial, Accounting, and Management*, 7(1), 125-139. <https://doi.org/10.35912/ijfam.v7i1.2843>
47. Saudi Central Bank (SAMA). (2024). *Financial Stability Report* Retrieve .15 August, 2025 from <https://www.sama.gov.sa/en-US/EconomicReports/Pages/FinancialStability.aspx>
48. Saudi Vision 2030. (2016). *Vision 2030 Objectives and Strategic Goals*. Retrieved from <https://www.vision2030.gov.sa/en>
49. Shao, H., Zhou, B., Wang, D., & An, Z. (2024). Navigating uncertainty: The micro-level dynamics of economic policy uncertainty and systemic financial risk in China's financial institutions. *Journal of the Knowledge Economy*, 16, 5831-5861. <https://doi.org/10.1007/s13132-023-01730-x>
50. Sharma, S. D. (2014). *Global financial contagion: building a resilient world economy after the subprime crisis*. Cambridge University Press. <https://doi.org/10.1017/cbo9781139225656>
51. Singh, K. (2024). Social performance, financial risk and financial performance in microfinance institutions. *International Journal of Bank Marketing*, 42(4), 768-793. <https://doi.org/10.1108/ijbm-01-2023-0005>
52. Smales, L. A. (2021). Geopolitical risk and volatility spillovers in oil and stock markets. *The Quarterly Review of Economics and Finance*, 80, 358-366. <https://doi.org/10.1016/j.qref.2021.03.008>
53. Sonkavde, G., Dharrao, D. S., Bongale, A. M., Deokate, S. T., Doreswamy, D., & Bhat, S. K. (2023). Forecasting stock market prices using machine learning and deep learning models: A systematic review, performance analysis and discussion of implications.

- International Journal of Financial Studies*, 11(3), 94. <https://doi.org/10.3390/ijfs11030094>
54. Sutikno, H. T., & Aisyah, E. N. (2022). Financial performance and financial sustainability: the role of institutional ownership as moderating variable. *Journal of Economics, Finance and Management Studies*, 5(4), 1165-1172. <https://doi.org/10.47191/jefms/v5-i4-25>
 55. Trading Economics. (n.d.). *Saudi Arabia Stock Market (TASI) - quote - chart - Historical data - news*. Retrieved from <https://tradingeconomics.com/saudi-arabia/stock-market>
 56. Vinodkumar, N., & Alarifi, G. (2022). Environmental social governance: A core value to responsible stakeholders and stock market sustainability in the Kingdom of Saudi Arabia. *Journal of Sustainable Finance & Investment*, 12(4), 1085-1101. <https://doi.org/10.1080/20430795.2020.1827602>
 57. Yusuf, N., & Lytras, M. D. (2023). Competitive sustainability of Saudi companies through digitalization and the circular carbon economy model: a bold contribution to the vision 2030 agenda in Saudi Arabia. *Sustainability*, 15(3), 2616. <https://doi.org/10.3390/su15032616>
 58. Zahedi, J., Salehi, M., & Moradi, M. (2022). Identifying and classifying the contributing factors to financial resilience. *Foresight*, 24(2), 177-194. <https://doi.org/10.1108/fs-10-2020-0102>
 59. Zhu, H. (2024). Industry Risk Assessment via Hierarchical Financial Data Using Stock Market Sentiment Indicators. *Association for the Advancement of Artificial Intelligence*, 2. <https://doi.org/10.48550/arXiv.2303.02707>