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Determinants of Saudi Banks' Performance

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Abstract

The study investigated determinants of accounting-based and Value-Based Performance Indicators for the Saudi banks listed in the Saudi capital market for 2013-2022. The study used the panel data methodology for least-squared and fixed-effect regression models to test the study's hypotheses. The study used return on assets, equity, and earnings per share as proxies for accounting-based profit indicators as dependent variables. On the other hand, the study used the market value added, economic value added, and Tobin's Q as proxies for value-based performance indicators as dependent variables. The study used bank-specific, industry-specific, and macroeconomic–specific as independent variables. The results were mixed and more sensitive to model choices. The least-squared regression models worked better than fixed effect regression models regarding explanatory power and capturing several determinants for value-based performance indicators. However, fixed effect regression models worked better than least squared regression models in capturing the relationship between the risk measured by the Z score as a proxy for forward-looking risk and performance, as banks with greater stability had better profits and vice versa. These results contradict the theory of risk, return, and performance. All independent variables were statistically significant and good determinants except for the capital adequacy ratio and market share, as the capital adequacy ratio was a statistically insignificant proxy for risk. Therefore, the Z score is better than the capital adequacy ratio as a proxy for risk in capturing risk impacts on banks' performance. The study revealed Weak correlations between accounting–based and value-based indicators. Therefore, they are complementary, not alternatives. The study results advanced the theory and the practice in the field of performance.

Keywords: Cost to Income Ratio, Financial Leverage, Capital Adequacy Ratio, Z score, Loan Quality, Return on Assets

1. Introduction

Banks play a vital role in economic development by financing borrowers in various economic sectors to drive economic growth and increase the supply of goods and services. Banks also contribute to stimulating the demand side through various types of financing for individuals to improve their purchasing power. Therefore, banks are the backbone of the economy. The stability of the economic activities depends mainly on the stability of banks. Sustainable profitability guarantees the stability of banks, especially Saudi banks that operate with higher financial leverage. (Javaid & Alalawi, 2018). Considering the importance of banks, the issue of the determinants of bank profitability has recently received great attention from academics and practitioners. Previous studies have indicated that bank profitability depends on bank-specific and macroeconomic-specific variables. These studies used the size of the bank, liquidity, credit quality, capital, and the economic growth rate as independent variables and used proxies for bank profitability, such as return on assets (ROA) and return on equity (ROE), as dependent variables. However, the results of these studies were Contradictory. The discrepancy in the results might be due to using different profitability measures, methodologies, and explanatory variables, and sometimes, explanatory variables are used as dependent variables. Where (Mehta& Bhavani, 2017 Raza, Hena, 2019) used the net interest margin indicator as a proxy for profitability despite it being one of the profitability drivers rather than a profit indicator. (AL-Najjar & Assous, 2021) used total deposits as a dependent variable. All previous studies investigated accounting-based profit indicators as the determinants; none used value-based performance indicators besides accounting-based indicators.

The use of financial ratios goes back to the 1890s, as the current ratios were used to measure the solvency of the organizations to serve creditors (Beaver, 1966). Then, the management used financial ratios to analyze

profitability and predict default and bankruptcy (Altman, 1968; Beaver, 1966). In addition, financial ratios have been used in rating bonds to determine the risk premium (Ingram & Copeland, 1984). However, accounting-based performance measures did not reflect risks (Sikda, 2013). Accounting-based performance indicators were subject to earnings management practices (Poorzamani & Otari, 2015). Although financial ratios were widely used in evaluating the performance of banks, Criticisms of financial ratios have demonstrated the need for performance indicators that reflect risks and capture shareholder wealth maximization. Therefore, in the 1970s, Stern Stewart & Co. developed the concept of maximizing shareholders' wealth through cash dividends to shareholders and increasing share prices. Since accounting–based indicators did not succeed in measuring the change in shareholders' wealth, the need for alternative indicators has emerged to address the deficiencies in accounting-based indicators. Therefore, several value-based indicators have emerged, such as the economic value added (EVA) and market value added (MVA) (Tobin's Q). Several Previous studies dealt with value-based performance measures and accounting-based performance indicators but from value relevance perspectives, such as (Chen & Dodd, 1997; O'Byrne, 1996; Sikdar, 2013; Mediations et al., 2009; Bhattacharyya & Phani, 2004). Previous literature did not integrate the determinants of accounting–and value-based performance indicators. In addition, the results of previous studies varied, relied on a single methodology, and sometimes used irrelevant indicators as determinants of performance. Therefore, this study is considered the first to address this issue on banks in Saudi Arabia and covers the study period. Therefore, the study fills the gap in the current literature by providing empirical evidence on the determinants of banks' performance, and it tries to answer the following questions:

- Are there common determinants of accounting-based profit and value-based performance indicators?
- Are the results sensitive to model choices?
- Which model is better for capturing the relationship?
- Is EPS better than ROE as a profit indicator?
- Do value-based performance indicators complement or replace accounting-based performance indicators?

2. Literature Review and Hypotheses Development

This section addressed previous studies to get a complete picture of variables used, methodologies, countries of the studies, samples, periods of the studies, and detailed results. Then, the study summarized the independent variables and dependent variables used in the previous studies and their results.

(Saif-Alyousfi, 2022) investigated the impact of bank-specific variables and macroeconomic-specific variables on the profitability of (2446) banks in (47) Asian countries for the period 1995-2017. The results indicated that banks that relied on non-traditional activities had a low interest margin but achieved a high return on assets and equity before taxes. The results also indicated that the high opportunity cost, capital adequacy, and market risks contributed to better profits. The results also indicated that non-performing loans declined profits. As for macroeconomic-specific variables, the results indicated that the high economic growth rate, high inflation, and high interest rates contributed to better profits. (AL-Ardah & Al-Okdeh, 2022) examined the impact of liquidity risk on the financial performance of (13) banks registered in the Jordan Stock Exchange. The study used liquidity ratios, net working capital, and ratios of cash and investments to total deposits as independent variables, in addition to the size of the bank as an additional independent variable. The study used Return on assets as a proxy for profit. The regression model results indicated that liquidity indicators affected ROA, and bank size was statistically significant.

(Ekaterinaet al., 2021) analyzed the determinants of the profitability of major commercial banks owned by the State of China from 2007 to 2019. Using fixed and random effect regression models, the study's results indicated that bank-specific variables positively affected banks' profitability, such as asset size, credit quality, and liquidity. At the same time, GDP declined ROE and ROA as proxies for bank profitability. (AL-Najjar & Assous, 2021) ranked Saudi banks using the CAMEL system. They investigated the impact of these rankings on the total deposits of (11) banks registered in the Saudi financial market for 2014-2018. The study used regression models that included financial ratios that reflect five aspects of the CAMEL system: capital adequacy, asset quality, management quality, earnings quality, and liquidity as independent variables, and total deposits as a dependent variable. The results indicated that capital adequacy ratio, efficiency ratios, ROA, and loan-to-deposit ratio had positive and statistically significant impacts on total deposits. However, the ratio of net interest income to net revenues had negative and statistical impacts on total deposits, and the rest of the variables related to asset quality and liquidity ratio were statistically insignificant.

(AlZou'bi et al; 2021) examined the relationship between traditional and modern performance indicators. The study included (13) commercial banks registered in the Amman Stock Exchange from 2013 - 2018. The study used the ROA, ROE, and EPS as proxies for traditional performance indicators. On the other hand, the study used the economic, market, and value-added to shareholders as proxies for the modern indicators. Except for earnings per share, the correlation analysis results indicated weak and significant correlations between most traditional and modern performance indicators. (Hidayat et al., 2021) investigated whether Islamic banks achieve a balance between risks, efficiency, and performance in their business models. The study included (12) Islamic and (34) conventional banks operating in the Gulf Cooperation Council countries from 2011 - 2018. The results of regression models indicated a difference in the performance of traditional and Islamic banks in terms of efficiency, profitability, and risks. The results indicated that the impact of credit risk was low on ROA and ROE. In addition, the results indicated that the lower cost-to-income ratio as a proxy for operational efficiency improved the ROA and ROE, and this may be due to higher non-interest income and the adherence to Islamic Sharia.

(Trung,2021) evaluated the performance of (35) banks in Vietnam for 2009 - 2020 by using financial ratios that reflect five aspects of CAMEL as independent variables and Tobin's Q as the dependent variable. The results indicated positive and statistically significant impacts of Capital adequacy ratio, non-performing loans /total loans, and total cost / total income on ROE. In addition, Loans/ deposits, Inflation rates, and GDP growth rates had positive and statistically significant impacts on Tobin's Q. However, there were negative and statistically significant impacts of the banking system's non-performing loans/ total assets, which are total assets, a dummy variable for ownership structure, on Tobin's. However, the financial leverage was insignificant. (Knorr & Rastogi, 2021) investigated the impact of the capital adequacy ratio and non-performing loans as determinants of the profits of (30) public and private banks in India from 2015 to 2019. The results indicated that the capital adequacy ratio positively affected the net profit margin, while non-performing loans had a negative impact.

(Khan et al., 2020) examined the determinants of capital structure in Saudi banks listed in the stock exchange from 2010 to 2017. The study used least squares regression models with fixed and random effects to study the relationship between financial leverage as a dependent variable and some independent bank-specific variables. The results indicated that earnings fluctuations and the size of the bank were positively related to financial leverage, while profitability indicators had an inverse relationship with financial leverage. (Raza & Hena, 2019) investigated the impact of bank-specific variables on the profitability of (34) banks in Pakistan from 2006 to 2016. The study used least squares regression models, where the model included the interest margin added to the prime interest rate and the ratio of net interest income to total assets as dependent variables to measure bank profitability. On the other hand, the model included Bank size, capital, loans, and deposits as independent variables. The results indicate that the size of assets had a negative and statistically significant impact on bank profits. Loans positively affected the performance; capital positively affected the ratio of net interest income to total assets, but it declined the interest margin, while deposits did not affect the profitability indicator.

(Yokels et al., 2018) examined the determinants of bank profits in (13) countries from 1996-2016. The study's results indicated that loans, non-interest income, and economic growth were among the most important determinants of the profitability of banks under study. At the same time, there was an inverse relationship between loans and GDP growth. (Javaid & Alalawi, 2018) investigated the determinants of the profitability of (11) Islamic countries in the Kingdom of Saudi Arabia from 2000 to 2013. The study used fixed-effect regression models that included bank-specific, industry-specific, and macroeconomic-specific variables as independent variables and profitability indicators as a dependent variable. The study's results indicated that the capital adequacy ratio positively affected profitability indicators, and banks operate with high financial leverage. (Obeidat & Darkal, 2018) examined the impact of accounting-based and value-based performance indicators on share price, i.e., the value relevance for each of them, for industrial companies registered on the Abu Dhabi Stock Exchange for the period 2014-2016. The study used multiple linear regression models, as the first model included ROA, ROE, and EPS as proxies for the accounting-based indicators, serving as independent variables and share price as a dependent variable. The second model included EVA and MVA as proxies for value-based performance as independent variables and share price as the dependent variable. The results indicated that value-based and accounting-based performance indicators positively affected the stock price.

(Mehta & Bhavan, 2017) investigated the profitability determinants of banks operating in the United Arab Emirates from 2006 to 2013. The study used bank-specific, industry-specific, and macroeconomic-specific variables as independent variables. ROA, ROE, and net interest margin were used as dependent variables. Based on the results of regression models, the cost-to-income ratio, as a proxy of operational efficiency, non-interest income/gross income, and the asset quality ratio, was the most influential on the profit indicators. (Almaqtari et al., 2017) examined the determinants of bank profitability in India from 2008 to 2017 for (69) banks. The study used ROA and ROE as proxies for profitability. The study also used bank size, asset quality, liquidity, operational

efficiency, deposits, financial leverage, asset management, and number of branches as bank variables- specific and macroeconomic-specific variables, including GDP, interest rates, and exchange rates as independent variables. The study used the fixed effect regression model; the results indicated that the size of the bank, number of branches, quality of assets, operating leverage, and financial leverage were the most influential determinants of ROA. (Al Karim & Alam, 2013) analyzed the performance of private banks listed in the Bangladesh Stock Exchange from 2008-2012. The study used capital adequacy ratio, credit growth, credit concentration, non-performing loans, liquidity gap analysis, and liquidity ratios as independent variables and ROA, Tobin, Q, and EVA as dependent variables. The results indicated that bank size, credit risk, operational efficiency, and asset management significantly affected the performance of banks in Bangladesh.

Summary of Literature Review

(Trung,2021)	Independent variables: Capital adequacy ratio, non-performing loans/total loans as a proxy for credit risk, total cost / total income as a proxy for operational efficiency, loans/ deposits, total assets/ total assets of the banking system as a proxy for completion, Inflation rates, GDP growth rate, total liabilities/total assets as a proxy for financial leverage, ownership structure –dummy Dependent variables: Tobin's Q. Results: The capital adequacy ratio, loans/total loans, total cost / total income, return on equity, Loans/ deposits, Inflation rates, and GDP growth rate were plosive and significant. Non-performing loans/total loans, Total assets/ total assets of the banking system, and Ownership structure–dummy were negative and significant. Total liabilities/Total assets were insignificant.
(Mehta, & Bhavani,2017)	Independent variables: Impaired loans to gross loans as a proxy for credit risk, tier 1 regulatory capital ratio, cost to income ratio for operational efficiency, GDP, and equity to total liabilities as a proxy for financial leverage. Non-interest income/ gross income as a proxy for income diversification. Net interest income/ average assets, inflation rate, liquid assets/ deposits, loans / total deposits as a proxy for liquidity, total assets. Dependent variables: Net interest margin, return on average assets, return on average equity. Results: The cost-to-income ratio had an inverse relationship with all dependent variables. Non-interest income to gross income had a positive relationship with all dependent variables. Some variables were significant about net interest margin and insignificant concerning return on assets and return on equity and vice versa
(Al Karim & Alam ,2013)	Independent variables: Total assets are used as a proxy for bank size, allowance for loan losses / total loans are used as a proxy for credit risk, total operating expense / net Interest income is used as a proxy for operational efficiency, and operating income / total assets is used as a proxy for management quality. Dependent variables: ROA, Tobin's Q, Economic, Value Added Results: Operating Income / total assets as a proxy for assets management positively affected return on assets. Credit risk hurts the return on assets. Total Assets as a proxy for bank size hurt Tobin's Q.LOG of Total Assets as a proxy for bank size positively affected the economic value added.
(Raza, 2019).	Independent variables: Total assets, capital, loans, deposits Dependent variables: Interest margin, ratio of interest, income to total assets Results: Total assets had a negative impact, capital had a positive impact, loans had a positive impact, and deposits had no impact.
(MBEKOMIZE, & MAPHARING,2017)	Independent variables: Loans to total assets as a proxy for liquidity, equity / total assets as a proxy for capital adequacy, allocation for loan losses / total loans as a proxy for credit risk, total assets as a proxy for bank size, deposits / total assets as a proxy for profit opportunity in the market. Non-interest expenses / total income as a proxy for operational efficiency, non-interest income / total income as a proxy for income diversification, and inflation rate as a proxy for macroeconomic variables. Bank interest rate.

	Dependent variables: Return on assets, equity, Net interest income /total assets. Results: Inflation, operational efficiency, liquidity, credit risk, and diversification affected return on equity.
(Knorr & Rastogi,2021)	Independent variables: The capital adequacy ratio is a proxy for bank regulation, and non-performing loans are a proxy for credit risk. Dependent variables: Net profit margin Results: The capital adequacy ratio positively affected the net profit margin, while non-performing loans had a negative impact.
(Yüksel et al.,2018)	Independent variables: Capital adequacy ratio, inflation rate, ratio of loans/deposits, GDP, size, non-interest income/ interest income, and interest rates. Dependent variables: Return on equity. Results: Size hurt return on equity. The inflation rate had a positive impact on return on equity. The ratio of loans/deposits positively affected return on equity. The capital adequacy ratio had no impact on return on equity. The ratio of loans/deposits. GDP had no impact on return on equity. Interest rates had no impact on return on equity. Non-interest income/ interest income had a positive impact on return on equity.
(Ekaterina et al. ,2021	Independent variables: net loans/ total assets, non-performing loans/ total assets as a proxy for credit risk, allocation for loan losses / total assets as a proxy for asset quality, cash, and cash equivalent/total assets as a proxy for liquidity, deposits/ total assets, GDP. Dependent variables: Return on equity, return on assets. Results: Model (1) fixed effect model ROA. Net loans/ total assets had no impact. Non-performing loans/ total assets had negative impacts. Allocation for loan losses / total assets had negative impacts. Cash and cash equivalent/total assets had positive impacts. Deposits/ total assets had no impact. GDP had negative impacts. Model (2) fixed effects model ROA. Net loans/ total assets had no impact. Non-performing loans/ total assets had negative impacts. Allocation for loan losses / total assets had no impact. Cash and cash equivalent/total assets had no impact. Deposits/ total assets had positive impacts. GDP had negative impacts.
(Javaid & Allawi,2018	Independent variables: Capital adequacy ratio is measured by the accounting financial leverage =equity/ total assets, Assets quality is measured by provisions for loan losses/ total loans, liquidity is measured by cash/ total assets, management quality is measured by operating expenses / total deposits, operational efficiency measured by operating expenses/ operating income, finical leverage measured by total liabilities/ equity. Dependent variables: Return on equity, return on assets. Results: The two models' results were the same, as all variables were significant, but asset quality, management quality, liquidity, inflation, and GDP had an inverse relationship with return on assets and return on equity. The remaining variables had appositive relationships.

Study Hypotheses

Based on the literature review and study objectives, the study developed the following hypotheses:

(1) Bank-specific variables statistically affect Saudi banks' accounting-based and value-based performance indicators.

(2) Industry-specific variables statistically affect Saudi banks' accounting–and value-based performance indicators.

(3) Macroeconomic-specific variables statistically affect Saudi banks' accounting–and value-based performance indicators.

(4) There are strong correlations between accounting and value-based performance indicators.

3. Methodology and Analysis of Results

The study included all (10) commercial and Islamic banks registered in the Saudi capital market from 2013 to 2022. The study relied on secondary data collected from the annual financial reports of banks under study and from the Saudi Capital Market website to measure bank-specific variables. The study also collected the data required to measure macroeconomic variables from the Ministry of Finance website. The study used the quantitative approach for the pooled time series, cross-sectional, to test the study hypotheses and achieve its objectives. It used descriptive statistics to describe the study variables, correlation analysis to determine the degree and direction of the relationship, and least squared and fixed-effect regression models to test the study's hypotheses.

Variables Measurement

Variables Proxy	Variable Measurement
Y1 ROA	The study used return on assets as a proxy for profitability. It is calculated as net income after tax and zakat /total assets. This indicator reflects profitability from the management perspective, and it has been widely used in previous studies by (Ekaterina et al.,2021; Mbekomize & Mapharing,2017; Almaqtari et al.,2017)
Y2 ROE	The study used return on equity as a proxy for banks' profitability. It is calculated as net income minus preferred dividends / outstanding common shares. This indicator reflects profitability from the shareholder's perspective. It was widely used in previous studies. Such as (Mbekomize & Mapharing, 2017). The relationship between return on assets and return on equity is expressed by ROE = ROA × (Asset/Equity).
Y3 EPS	The study used earnings per share as a proxy for profitability. It is calculated as net income minus preferred dividends / outstanding common shares. Previous studies did not use that indicator, even though the international accounting standard requires banks to disclose it on the income statement.
X1 Size	The study used total assets as a proxy for bank size. Total assets are the natural logarithm of total assets. This indicator has been widely used in previous studies, such as those by (Mbekomize and Mapharing, 2017; and Raza and Hena, 2019).
X2 FL	The study used the ratio of total equity / total assets as a proxy for financial leverage. It is the accounting financial leverage. The study used the leverage ratio that suits banks' activities by ratio of equity /total assets to compare it with the regulatory financial leverage-capital adequacy ratio. Some studies used the liability/ total assets ratio as a proxy for financial leverage. (Almaqtari et al., 2017). Another study used equity/liabilities as a proxy for financial leverage (Mehta & Bhavani,2017)
X3 CAR	The study used the capital adequacy ratio calculated per Basel III because it is considered a risk-adjusted asset's financial leverage. This indicator was widely used in previous studies such as (Yükse & Mukhtarovet al.,2018; Kuknor & Rastogi,2021; Almaqtari et al. ,2017)
X4 liq	The study used the ratio of total loans /total customer deposits as a proxy for liquidity. This indicator was used by AL-Najjar and Assous (2021) as a proxy for liquidity. Other studies, such as those by Mehta and Bhavani (2017), used liquid assets / total deposits as a proxy for liquidity. (Almaqtari et al., 2017) used liquid assets / total assets as a proxy for liquidity.
X5 Di	The study used non-interest income/ total income as a proxy for income diversification.(Mbekomize & Mapharing,2017; Mehta & Bhavani ,2017; Yüksel & Yüksel et al.,2018) used this indicator. It is believed that banks with high non-interest income are more profitable.
X6 LQ	The study used non-performing loans/ total loans as a proxy for credit quality. This indicator refers to non-accrual loans that did not contribute to interest income. The study used it to account for its impact on profitability, not as a proxy for credit risk, as it is an ex-post risk indicator while credit risk needs ex -an ante indicator. (Mehta & Bhavani, 2017) used this indicator as a proxy for credit risk. (Ekaterina et al., 2021) used non-performing loans / total assets as a proxy for asset quality.
X 7 Z score	The study used a Z-score to proxy each bank's forward-looking risk indicators. This index measures the distance from the default area and the probability of insolvency. Insolvency exists when losses exceed the bank's capital. Z-score is calculated as =ROA+CAR/σROA. ROA stands for return on assets, CAR stands for equity/ assets, and σROA stands for the

	standard deviation of return on assets. This indicator has been used in several studies, such as (Hunjra et al. 2020; Hafeez et al., 2022 Laeven & Levine, 2009; Roy, 1952). Z-score is interpreted as the higher the Z-score, the less risk.
X8 OE	The study used non-interest expenses / total income as a proxy for operational efficiency. Al Karim and Alam (2013) used this indicator, while Almaqtari et al. (2017) and other studies used non-interest expenses/interest income as a proxy for operational efficiency.
X9 MS	The study used the Bank's total assets/ total assets of all banks as a proxy for market share. This indicator reflects the degree of competition in the banking industry, but previous studies have not used it.
X10 GDP	The study used the GDP Growth Rate as a proxy for macroeconomic indicators. This indicator was widely used in previous studies such as (Ekaterina et al.,2021; Almaqtari et al.,2017)
X11 OR	The study used yearly oil revenues as a proxy for macroeconomic indicators. Oil revenues still represent the largest percentage of the Kingdom's total revenues. Therefore, the study expects that oil prices affect banks' profits. This variable has never been used in previous studies on the determinants of bank profitability.
Y1 EVA	The study used economic value added as a proxy for value-based performance indicators. It is calculated as net income-(cost of capital * equity). The study calculated the cost of capital using the Sharp model (1964), used in several studies, such as (Al Karim et al. 2013; Plumlee, 2002; Elbannan & Elbannan; 2015).
Y1 MVA	The study used the market value added as a proxy for value-based performance indicators. The study calculated MVA as the difference between the share price and the book value per share at the end of the financial year. The book value of equity reflects the residual interest in banks' assets after excluding liabilities, while the market value reflects the investor's valuation of future earnings and growth potential. The value is created for shareholders when the share price exceeds the book value per share. (Rondo & Leliaert ,2003) See appendix (2)
Y3 Tobin's Q	The study used Tobin's Q as a proxy for value-based performance indicators. The concept of Tobin's Q emerged by (Tobin & Brainard, 1968;, Tobin, 1978; Tobin, 1969). Tobin's Q is defined as the company's market value divided by the cost of replacing the company's assets. Since it was difficult to determine the cost of replacing assets, a simple equation was used to calculate Tobin's Q; if the market value of the company's liabilities equals the book value of the company's liabilities, Tobin's Q= market value of equity ÷book value of equity. Several studies used Tobin's Q, such as(Al Karim & Alam,2013; Fu et al.,2016;Butt et al.,2023)

Source: Summary of the literature review

Models Specifications

$ROA = \beta0 + \beta1 \times Size_{it} + \beta2 \times FL_{it} + \beta3 \times CAR_{it} + \beta4 \times liq + \beta5 \times Di_{it} + \beta6 \times LQ_{it} + \beta7 \times Z\ score_{it} + \beta8 \times OE_{it} + \beta9 \times MS_{it} + \beta10 \times GDP_{t} + \beta11 \times OR_{t} + \mu it$ (1)

$ROE = = \beta0 + \beta1 \times Size_{it} + \beta2 \times FL_{it} + \beta3 \times CAR_{it} + \beta4 \times liq + \beta5 \times Di_{it} + \beta6 \times LQ_{it} + \beta7 \times Z\ score_{it} + \beta8 \times OE_{it} + \beta9 \times MS_{it} + \beta10 \times GDP_{t} + \beta11 \times OR_{t} + \mu it$ (2)

$EPS = \beta0 + \beta1 \times Size_{it} + \beta2 \times FL_{it} + \beta3 \times CAR_{it} + \beta4 \times liq + \beta5 \times Di_{it} + \beta6 \times LQ_{it} + \beta7 \times Z\ score_{it} + \beta8 \times OE_{it} + \beta9 \times MS_{it} + \beta10 \times GDP_{t} + \beta11 \times OR_{t} + \mu it$ (3))

$MVA = \beta0 + \beta1 \times Size_{it} + \beta2 \times FL_{it} + \beta3 \times CAR_{it} + \beta4 \times liq + \beta5 \times Di_{it} + \beta6 \times LQ_{it} + \beta7 \times Z\ score_{it} + \beta8 \times OE_{it} + \beta9 \times MS_{it} + \beta10 \times GDP_{t} + \beta11 \times OR_{t} + \mu it$ (4)

$EVA = \beta0 + \beta1 \times Size_{it} + \beta2 \times FL_{it} + \beta3 \times CAR_{it} + \beta4 \times liq + \beta5 \times Di_{it} + \beta6 \times LQ_{it} + \beta7 \times Z\ score_{it} + \beta8 \times OE_{it} + \beta9 \times MS_{it} + \beta10 \times GDP_{t} + \beta11 \times OR_{t} + \mu it$ (5)

$Toni's\ Q = \beta0 + \beta1 \times Size_{it} + \beta2 \times FL_{it} + \beta3 \times CAR_{it} + \beta4 \times liq + \beta5 \times Di_{it} + \beta6 \times LQ_{it} + \beta7 \times Z\ score_{it} + \beta8 \times OE_{it} + \beta9 \times MS_{it} + \beta10 \times GDP_{t} + \beta11 \times OR_{t} + \mu it$ (6)

Where: I stands for the individual bank, t for time, and μit for error terms.

Analysis of Results

Table (1) shows the descriptive statistics of the independent and dependent variables as the standard deviation of the bank size variable recorded SAR 1.8 billion. This was due to the large discrepancy in the size of banks' assets during the study period, where the maximum and minimum assets were SAR 9.4 billion and SAR 1.8 billion, respectively. The standard deviation of the oil revenues variable recorded SAR 196.8612 billion. This was due to

the large discrepancy in oil revenues during the study period, where the maximum and minimum assets were SAR 913 billion and SAR 324 billion, respectively. The standard deviation of the Z SCORE variable was recorded as 1.817133. This was due to the large discrepancy in banks' risk profiles, as the maximum and minimum Z scores were SAR 11.79701 and 1.752046, respectively. The standard deviation of the return on equity variable was recorded as 1.362446. This was due to the large discrepancy in return on equity, as the maximum and minimum return on equity were 6.34% and -2.01%, respectively. While the standard deviation for the rest of the variables was less than one.

Table (1) Descriptive Statistics of the Study's Variables

	CAR	OE	Size	Z SCORE	FL	liq	DI
Mean	0.193532	0.4010	2.19E+0	4.93305	0.14952	0.88672	0.283162
Median	0.192	0.38	1.80E+0	4.93072	0.145986	0.86844	0.27
Maximum	0.28	0.614	9.45E+0	11.7970	0.267168	1.076422	0.56
Minimum	0.1405	0.261	3632330	1.75204	0.09252	0.64048	0.133
Std. Dev.	0.02552	0.08724	1.71E+0	1.81713	0.02901	0.08344	0.0834
Skewness	0.779319	0.79033	2.087711	0.594142	0.853457	0.302647	0.972567
Kurtosis	4.339037	2.752671	8.216423	4.332679	4.753212	3.340225	4.017125
Jarque-Bera	17.41729	10.55859	184.1615	13.15072	24.69764	1.988802	19.87463
Probability	0.000165	0.005096	0	0.001394	0.000004	0.369945	0.000048
	LQ	MS	GDP	OR	ROA	ROE	EPS
Mean	0.015317	0.099247	0.022492	598.5455	0.112572	2.383535	2.383535
Median	0.012631	0.089316	0.027	562	0.116536	2.05	2.05
Maximum	0.058342	0.301401	0.087	913	0.219083	6.34	6.34
Minimum	0.002699	0.022881	-0.0414	324	-0.0821	-2.01	-2.01
Std. Dev.	0.010043	0.067352	0.031969	196.8612	0.047654	1.362446	1.362446
Skewness	2.35296	1.151263	-0.02753	0.344471	-0.79886	0.497167	0.497167
Kurtosis	9.250921	3.448331	3.436282	1.727412	5.038986	3.923245	3.923245
Jarque-Bera	252.5313	22.69834	0.797664	8.638248	27.67944	7.594452	7.594452
Probability	0	0.000012	0.671104	0.013312	0.000001	0.022433	0.022433

Table (2) showed the correlation results, as the relationship between the independent variables ranged between weak and moderate, and therefore, there was no autocorrelation between the independent variables. The correlation between the dependent and independent variables supported the results of the regression models. The results also indicated a complete correlation between return on equity and earnings per share, which indicated that one is sufficient to indicate profitability. However, the regression model results showed that it captured additional information.

Table (2) Correlation Analysis of the Study's Variables

	CAR	**OE**	**GDP**	**FL**	**SIZE**	**Z SCORE**	**OR**	**MS**	**LIQ**	**LO**	**DI**	**ROA**	**ROE**	**EPS**
CAR	1	0.05	-0.15	0.56	0.01	0.32	-0.19	0.00	0.30	0.11	-0.45	-0.27	-0.21	-0.21
OE	0.05	1	-0.06	-0.28	-0.54	-0.15	-0.09	-0.10	-0.18	0.10	0.30	-0.37	-0.49	-0.49
GDP	-0.15	-0.06	1	-0.02	0.11	-0.00	0.59	0.47	0.12	-0.08	0.09	0.21	0.17	0.17
FL	0.56	-0.28	-0.02	1	0.04	0.47	-0.07	0.06	0.38	0.19	-0.31	-0.35	-0.27	-0.27
SIZE	0.01	-0.54	0.11	0.04	1	-0.01	0.04	0.14	-0.02	-0.00	-0.21	0.32	0.57	0.57
Z SCORE	0.32	-0.15	-0.00	0.47	-0.01	1	-0.01	0.00	0.46	-0.23	-0.22	0.05	-0.02	-0.02
OR	-0.19	-0.09	0.59	-0.07	0.04	-0.01		0.35	-0.08	0.05	0.08	0.11	0.08	0.08
MS	0.00	-0.10	0.47	0.06	0.14	0.00	0.35	1	0.24	0.09	-0.18	0.00	0.02	0.02
LIQ	0.30	-0.18	0.12	0.38	-0.02	0.46	-0.08	0.24	1	0.01	-0.37	-0.17	-0.28	-0.28
LO	0.11	0.10	-0.08	0.19	-0.00	-0.23	0.05	0.09	0.01	1	-	-	-0.25	-0.25

											0.18	0.45		
DI	-0.45	0.30	0.09	-0.31	-0.21	-0.22	0.08	-0.18	-0.37	-0.18	1	0.18	0.01	0.01
ROA	-0.27	-0.37	0.21	-0.35	0.32	0.05	0.11	0.00	-0.17	-0.45	0.18	1	0.81	0.812
ROE	-0.21	-0.49	0.17	-0.27	0.57	-0.02	0.08	0.02	-0.28	-0.25	0.01	0.81	1	1
EPS	-0.21	-0.49	0.17	-0.27	0.57	-0.02	0.0	0.02	-0.22	-0.25	0.01	0.8	1	1

According to Table (3), the least squared regression model (1), ROA was statistically significant as per the value of F test 10.02548, and the model explained 0.645808 of the changes in ROA as per the Adjusted R-squared. The results showed that the cost-to-income ratio as a proxy for operational efficiency had an inverse and statistically significant relationship with ROA, as the lower the ratio, the higher the ROA. Non-interest income / total income as a proxy for diversification had a positive and statistically significant relationship with ROA, as the higher the ratio, the higher the ROA. Non-performing loans to total loans ratio as a proxy for loan quality had an inverse and statistically significant relationship with ROA, as the lower the ratio, the higher the ROA. Total assets as a proxy for bank size had an inverse and statistically significant relationship with ROA, as the smaller the bank's size, the lower the ROA. GDP had a positive and statistically significant relationship with ROA, as the higher the GDP, the higher the ROA. The least squared regression model (2) ROE was statistically significant as per the value of F test 21.18814, and the model explained 00.804689 of the changes in ROE as per the Adjusted R-squared. The results showed the same results for ROA regarding loan quality, size, and GDP. In addition, least squared regression model (3) EPS was statistically significant as per the value of F test 21.36690, and the model explained 0.804478 of the changes in EPS as per the Adjusted R-squared. The results showed the same results for ROE regarding loan quality, size, and GDP, but the model captured the impact of income diversification on EPS, which ROE did not support.

Table (3) Results of the Panel Least Squares Regression Models

	ROA	ROE	EPS
R-squared	0.717362	0.844548	0.843978
Adjusted R-squared	0.645808	0.804689	0.804478
S.E. of regression	0.028676	0.602120	0.603960
Sum squared resid	0.064964	28.27877	28.81664
Log likelihood	225.0611	-78.45099	-79.68299
F-statistic	10.02548	21.18814	21.36690
Prob(F-statistic)	0.000000	0.000000	0.000000

	ROA			**ROE**			**EPS**		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
CAR	0.2312	1.0980	0.27	-4.12166	-0.9303	0.35	-3.804001	-0.8575	0.39
OE	-0.1727	-1.8275	0.07	-2.85461	-1.4324	0.15	-3.067541	-1.5050	0.12
Z score	-0.00267	-0.1761	0.86	0.0854	0.2679	0.78	0.063277	0.1981	0.84
OR	-5.73E-	-0.2674	0.78	-0.0003	-0.7433	0.45	-0.000339	-0.7522	0.45
DI	0.1032	1.7271	0.08	2.0407	1.6020	0.11	2.30297	1.8286	0.07
LIQ	0.0199	0.2931	0.77	1.17909	0.8214	0.41	1.31525	0.9162	0.36
LQ	-1.4644	-3.646	0.00	-24.155	-2.8567	0.00	-23.3821	-2.7646	0.00
FL	-0.546	-1.0228	0.30	-8.8302	0.7862	0.43	-8.099643	-0.7200	0.47
MS	0.0392	0.7247	0.47	1.23962	1.0756	0.28	1.01021	0.8857	0.37
SIZE	-1.27E-	-2.8189	0.00	-2.57E-	-2.7285	0.00	-2.57E-	-2.7285	0.00
GDP	0.27828	2.0483	0.04	5.872363	2.0505	0.04	6.18151	2.1604	0.03
C	0.22932	2.7265	0.00	4.478706	2.5247	0.01	4.33293	2.4460	0.01

Table (4) shows the results of the panel fixed effect regression model (1), ROA as the model was statistically significant as per the value of F test 11.51438, and the model explained 0.538802 of the changes in ROA as per the Adjusted R-squared. The model showed the same results as the least squares regression model regarding operational efficiency, diversification, loan quality, and GDP. However, the fixed effects model captured new

information on the Z score as a proxy for risk as it had a positive and statistically significant relationship with ROA, as the higher the score, the higher the ROA. In addition, the model captured the impact of the financial leverage measured by equity/ total assets, as the lower the ratio, the higher the ROA. Therefore, the fixed effects model was better than the least square model. In addition, the results of panel fixed effects regression model (2) ROE showed that the model was statistically significant as per the F test value 15.54320, and the model explained 0.620118 of the changes in ROE as per the Adjusted R-squared. The model showed the same results as the least squares regression model regarding diversification, loan quality, bank size, and GDP. However, the fixed effects model captured new information on the Z score as it contributed positively to ROE. In addition, the model captured the impact of the financial leverage and the operational efficiency on ROE. Therefore, the fixed effect model was more powerful than the least square model. The results of the panel fixed effect regression model (3) EPS showed that the model was statistically significant as per the F test value 16.08453, and the model explained 0.626316 of the changes in EPS. The models showed the same ROE results. Therefore, the EPS adds nothing to ROE. The inverse relationship between oil revenues and accounting profitability indicators might be interpreted as banks resorting to earnings management practices in years when oil revenues witness noticeable increases. Oil revenues especially had positive impacts on MVA, and therefore, it can be said that value-based performance indicators were not subject to earnings management practices.

Table (4) Results of the Panel Fixed Effects Regression Models

	ROA	ROE	EPS
R-squared	0.590046	0.662758	0.667837
Adjusted R-squared	0.538802	0.620118	0.626316
S.E. of regression	0.032722	0.839737	0.834955
Sum squared resid	0.094227	61.34875	61.34916
Log likelihood	206.4671	-116.7869	-117.4644
F-statistic	11.51438	15.54320	16.08453
Prob(F-statistic)	0.000000	0.000000	0.000000

	ROA			ROE			EPS		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
CAR	0.331421	1.7576	0.08	7.272	1.5026	0.13	7.2742	1.511	0.134
OE	-0.292576	-5.2192	0.00	-7.987	-5.5481	0.00	-7.9885	-5.584	0.00
Z Score	0.008058	3.3049	0.00	0.1959	3.1148	0.00	0.1960	3.151	0.00
OR	-2.71E-0	-1.1980	0.23	-0.0011	-2.0430	0.04	-0.0011	-2.054	0.04
Di	0.114669	2.2135	0.02	0.87496	0.6531	0.51	0.8709	0.658	0.51
LIQ	-0.125231	-2.4693	0.01	-6.1540	-4.6741	0.00	-6.15883	-4.759	0.00
LQ	-0.785968	-1.9833	0.05	-2.1868	-0.2148	0.83	-2.19814	-0.173	0.82
FL	-0.963710	-5.4852	0.00	-22.21	-4.9084	0.00	-22.220	-4.956	0.00
MS	0.015714	0.2662	0.7	-0.032653	-0.0213	0.98	-0.0269	-0.017	0.98
SIZE	2.38E-11	0.9668	0.33	2.40E-09	3.7929	0.00	2.40E-09	3.815	0.00
GDP	0.338179	2.3104	0.02	11.01592	2.9237	0.00	11.00876	2.9476	0.00
C	0.363010	5.7133	0.00	11.71849	7.1012	0.00	11.72464	7.2319	0.00

Table (5) shows that the standard deviation of MVA was recorded at 11.34154. The Maximum value was 61.70954, and the Minimum value was -10.26016. The standard deviations of the remaining variable were reasonable.

Table (5) Descriptive Statistics of Value-Based Performance Indicators

	MVA	EVA	TOBINS_Q
Mean	5.188632	1623.580	1.261222
Median	3.441937	309.5000	1.198674
Maximum	61.70954	32543.00	3.304231
Minimum	-10.26016	-11507.00	0.493579
Std. Dev.	11.34154	5024.088	0.525705
Skewness	2.121840	3.745882	1.663214
Kurtosis	10.05968	22.70496	6.929050
Jarque-Bera	282.6995	1851.717	110.4273

Table (6) showed that Tobin's Q strongly correlated 0.9523 with MVA. However, the correlation coefficients of ROA, ROE, EPS MVA, EVA, and Tobin's Q were weak. Therefore, both indicators are commentary each other.

Table (6) Correlation between Accounting- Based and Value-Based Indicators

	ROA	ROE	EPS	MVA	EVA	Tobin's Q
ROA	1	0.817	0.8177	0.316	0.32	
ROE	0.817	1	0.9999	0.288	0.3637	0.1934
EPS	0.8177	0.999	1	0.288	0.363	0.1931
MVA			0.2821	1	0.2671	0.9523
EVA	0.326	0.363	0.3638	0.267	1	
TOBINS Q	0.302	0.19341	0.	0.9523	0.2339	1

The study used the Capital Asset Pricing Model (CAPM) to calculate the cost of capital. The expected return on a security is a function of the following parameters: risk-free rate, market rate, risk premium, and beta. CAPM Formula = RFR+ {(Beta (MR – RFR)} Whereas ER stands for cost of capital, RFR stands for Risk-free rate, Beta stands for stock risk factor, R = Expected return of the index of the market. Risk Premium = (MR – RFR). Beta is calculated as follows: Beta coefficient = Covariance (MR, RS)/ Variance (MR). Whereas RS stands for individual share return, MR stands for the return on the market index.

Table (7) shows the results of the least squares regression model (4), MVA, as the model was significant according to the value of F test 9.564909, and the model explained 0.633738 of the change in MVA as per Adjusted R-Squared. The results indicated that the determinants of MVA were financial leverage, bank size, oil revenues, and income diversification. Contrary to the results of accounting-based profitability indicators, there was a direct and statistically significant relationship between the size of the bank and MVA, as larger banks achieved greater MVA than small banks. On the other hand, there was a direct and statistically significant correlation between the Kingdom's oil revenues and MVA. The unexpected result was that income diversification declined MVA. The results of the least squares regression model (5) EVA showed that the model was significant according to the value of F test 2.564647, and the model explained 0.240174 of the change in EVA as per the adjusted R-squared. The results indicated that the determinants of EVA were operational efficiency, financial leverage, and bank size, as there was a direct and statistically significant relationship between the size of the bank and EVA; the larger the banks, the greater the EVA. The results of the least squares regression model (6) Tobin's Q showed that the model was significant according to the value of F test 9.439901, and the model explained 0.630318 of the change in Tobin's Q as per the adjusted R-squared. The results indicated that the determinants of Tobin's Q were the same as MVA. The results confirm that both MVA and Tobin's Q were correlated strongly. Therefore, either one replaces the other .

Table (7) Panel Least Squares Regression Models

	MVA	EVA	Tobin's Q
R-squared	0.707730	0.393674	0.705002
Adjusted R-squared	0.633738	0.240174	0.630318
S.E. of regression	6.863857	4379.397	0.319636
Sum squared resid	3721.890	1.52E+09	8.071224
Log-likelihood	-322.7347	-968.5744	-16.05060
F-statistic	9.564909	2.564647	9.439901
Prob(F-statistic)	0.000000	0.001626	0.000000

	MVA			EVA			TOBINS_Q		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
CAR	48.0662	0.953	0.34	39795.	1.237	0.21	2.871294	1.2230	0.22
OE	-2.29282	-0.101	0.19	51298.	3.552	0.00	-0.551903	-0.537	0.60
GDP	9.31667	0.286	0.77	3449.1	0.166	0.86	0.620590	0.409	0.83
FL	-293.5307	-2.2959	0.02	-136147	-1.669	0.09	-15.84714	-2.6617	0.00
SIZE	6.31E-0	5.868	0.00	1.62E-05	2.356	0.02	2.03E-09	4.051	0.00
Z SCORE	2.78167	0.766	0.44	1428.2	0.616	0.53	0.126974	0.751	0.45
OR	0.01329	2.593	0.01	-0.0899	-0.027	0.97	0.000703	2.945	0.00
MS	-5.23632	-0.4040	0.68	7858.7	0.950	0.34	0.055137	0.091	0.92

LIQ	3.73526	0.219	082	-9119.5	-0.876	0.38	0.257961	0.339	0.73
LO	-73.6259	-0.766	0.44	-84578.	-1.379	0.17	-1.887119	-0.421	0.67
DI	-49.39	-3.450	0.00	-9014.7	-0.987	0.32	-2.728194	-4.09	0.0
C	17.24714	0.856	0.39	-5795.2	-0.451	0.65	2.348430	2.505	0.01

Table (8) shows the results of the Panel Fixed Effects Regression Model (4), MVA, as the model was significant according to the value of F test 9.225777, and the model explained 0.477527 of the change in market value as per Adjusted R-Squared. The Fixed Effects Regression Model results showed the same as the determinants of the least square regression model of MVA, except the model did capture the impact of income diversification. Therefore, a least square regression model was better than the fixed effects regression model. The Panel Fixed Effects Regression Model (5) EVA results showed that the model was insignificant according to the value of F test 1.230901. The results of the Panel Fixed Effects Regression Model showed that model (6) Tobin's Q was significant according to the value of F test 6.964291, and the model explained 0.398568 of the change in Tobin's Q as per the adjusted R-squared. The results indicated that the determinants were the same as the least squares regression model results. The results confirm that both MVA and Tobin's Q were correlated strongly. Therefore, either replaces the other, but MVA has greater explanatory power than Tobin's Q model. Finally, least-squared regression models were more powerful than the Panel Fixed Effects Regression Model.

Table (8) Results of the Panel Fixed Effects Regression Models

	MVA	EVA	Tobin's Q
R-squared	0.535580	0.133346	0.465394
Adjusted R-squared	0.477527	0.025014	0.398568
S.E. of regression	8.197926	4960.853	0.407695
Sum squared resid	5914.128	2.17E+09	14.62694
Log-likelihood	-345.8903	-986.4355	-45.77860
F-statistic	9.225777	1.230901	6.964291
Prob(F-statistic)	0.000000	0.279005	0.000000

	MVA			EVA			Tobin's Q		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
CAR	26.91861	0.5698	0.57	-17541.59	-0.6136	0.54	1.808237	0.7697	0.44
OE	0.497562	0.0342	0.97	6727.070	0.7915	0.43	-0.274257	-0.3926	0.69
GDP	-15.81944	-0.4314	0.66	8361.387	0.3768	0.70	-1.208193	-0.6625	0.50
FL	-110.5137	-2.5107	0.01	-22790.35	-0.8556	0.39	-7.026662	-3.2100	0.00
SIZE	3.86E-08	6.2464	0.00	9.79E-06	2.6201	0.01	1.27E-09	4.1341	0.00
Z SCORE	-0.419372	-0.6865	0.49	699.4656	1.8923	0.06	-0.010294	-0.3388	0.73
OR	0.017102	3.0156	0.00	-2.319467	-0.6758	0.50	0.000916	3.2490	0.00
MS	-0.127934	-0.0086	0.99	1834.111	0.2049	0.83	0.367927	0.5003	0.61
LIQ	42.10831	3.3142	0.00	-5696.972	-0.7409	0.46	2.247980	3.5577	0.00
LO	-63.84112	-0.6430	0.52	24723.38	0.4152	0.68	-2.290995	-0.4640	064
DI	-14.35094	-1.1057	0.27	-1009.006	-0.1284	0.8	-0.497502	-0.7708	0.44
C	-32.29320	-2.0287	0.04	6092.321	0.6324	0.52	-0.533037	-0.6733	0.50

4. Results and Discussion

This study investigated the determinants of accounting-based profitability and value-based performance indicators. The study included (10) banks registered in the Saudi capital market for 2013-2022. The study relied on the quantitative approach using Eviews software, as the study collected secondary data from the annual financial reports of banks and the websites of both the Saudi capital market and the Ministry of Finance. The study used (11) explanatory variables as the potential determinants for bank performance, including bank-specific, industry-specific, and macroeconomic-specific variables. The problem with the study is that previous studies dealt

with the determinants of accounting profitability only without addressing the determinants of value-based performance indicators. Therefore, this study attempts to fill this gap in the current literature. The results of the least-squares regression models showed that ROE was the best profitability indicator in terms of explanatory power, followed by ROA. However, ROE did not respond to the operational efficiency. In addition, earnings per share did not add great value to ROE .However, all least squares models did not capture the impact of both risk and financial leverage on profit indicators. On the other hand, the results of the Panel Fixed Effects Regression Models captured the impact of risk, financial leverage, operational efficiency, and liquidity on accounting-based profitability. Therefore, fixed effect regression models were considered better than least squares regression models in studying the determinants of accounting-based performance. The results of value-based performance indicators using MVA and Tobin's Q using least squares regression models showed that the determinants were financial leverage, bank size, oil prices, and income diversification. Tobin's Q did not add great value to MVA. Determinants of EVA were operational efficiency, financial leverage, and bank size. Therefore, the least squares regression models were better than fixed-effect regression models from the perspective of explanatory power and its ability to identify the determinants of EVA. The results indicated many common determinants for both performance indicators, and the results were sensitive to the regression models used. Fixed-effect regression models were better than least-squares regression models in the case of accounting-based profitability. However, Least squares regression models were better than Fixed-effect regression models in the case of value-based performance indicators. There was a complete correlation between EPS share and ROE; therefore, both were substitutes for the other. Both performance indicators had a weak correlation; therefore, they were complementary and not substitutes. The study results indicated that all independent variables were statistically significant determinants of banks' performance measures, except for capital adequacy ratio and market share. The capital adequacy ratio is not a statistically significant proxy for risk in terms of banks' performance, and the Z score is better than this ratio, as the Z score indicates that banks with a high degree of stability had better profitability indicators. I.e., there was an inverse relationship between risk and performance rather than a direct relationship as indicated by the theory of risk, return, and performance. The study's results contributed to the literature reviews as they advanced the theory and practice in the determinants of the performance of banks. In addition, it is confirmed that the capital adequacy ratio is not a good proxy for risk and has no impact on banks' performance.

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