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Role of Cost Efficiency, Capital Leverage, and Cost of Capital in Determining Shareholders' Value

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Abstract

The objective of this research is to explore the impact of cost efficiency, capital leverage, and cost of capital on shareholder value regarding the GCC, a dynamic and inventive economy. Data from 41 banks that were listed on the stock exchange from 2015 to 2023 were collected. The Refinitiv Eikon interface provided bank-level data to achieve the aim of this study. GLS with cross-sectional weight as a panel econometric method was applied. The findings display that cost efficiency has a significant impact on shareholder value in the GCC banking sector. Reduced operational expenses, increased asset utilization, and effective tax planning have a positive effect on shareholders' return. Although financing with debt has a minimal effect on GCC banks' productivity, it is nevertheless important for evaluating the market performance, with DMC possessing a negative effect and DTA holding a positive influence. Moreover, revenue generation and the value of shareholders are all continuously improved by an optimum cost of capital (WACC). The outcomes of this study enrich the current literature by proposing a combined framework for assessing cost efficiency, capital leverage, and cost of capital. It also fills the gap in earlier regional research by providing new perspectives for creating shareholder value in the GCC banking industry.

Keywords:

Shareholders' Value;
Cost Efficiency;
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1- Introduction

Numerous academic investigations have focused on the function of banks and how they support the development of an economy. Banks are an essential component of every country's economic system and are major participants in its capital markets. In the context of internationalization, a major bank bankruptcy in a country may have a swift impact outside of its borders, as was the case throughout the banking crisis of 2008, in addition to having a detrimental impact on the economic growth and progress of the home nation. The necessity for a comprehensive, in-depth examination of the achievement of banks has been brought to light by the severe unrest in the world financial markets that resulted from the financial crisis, which started in the United States [1]. The literature emphasized that bank efficiency in economies with high incomes is significantly impacted by the outcomes of the financial crisis, while profitability in medium- and low-income nations is affected in a mixed pattern [1–4]. However, due to the distinct regulatory environment in the GCC region, the economic crisis exposed various weaknesses in the banking sector [5, 6]. As a result, regulatory authorities in GCC maintain an emphasis on moderate capital demands, financial stability, sufficient liquidity, preventing credit spread, and limited access to toxic resources. These financial institutions are still subject to fluctuations in oil-driven funding [5, 7].

The association between productivity and shareholder value is complex. Nantell et al. [8] and Rappaport [9] suggested that the common term for shareholder benefit is that a business generates value for its owners over a particular period of time once their return on capital allocated exceeds the potential cost, or the rate at which investors could profit from

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alternative investments with the same level of risk. Thus, a bank may significantly increase shareholder wealth by either raising its expected return on invested capital or lowering the potential cost of capital. Moreover, the ultimate outcome of a process involving all bank stakeholders is the value produced for owners, which can be reliably evaluated by considering two factors: the balance that exists between different bank activities, and how quickly efforts are reflected [10].

Concerning the initial factor, banks often have to make trade-offs between wealth-determinants, and there would not be many purely value-creating acts they could take to boost value. Most acts have both beneficial and detrimental consequences on the generation of value for shareholders; the overall impact will determine if an activity is value-boosting. Fiordelisi & Molyneux [3] argued that banks may attempt to improve their economic value added by raising their financial leverage and decreasing the amount of capital they invest. Nevertheless, by raising bank business risk, this decreases the level of equity capital and might lead to an increased cost of capital. Hence, it is not guaranteed that raising leverage will improve the value of shareholders. In addition, to minimize the average cost of capital, the initial concepts on firm leverage advocated for a specific level of borrowing in the financial structure, up to a balanced level. Nonetheless, the theory of Modigliani and Miller (M&M) developed a method of dividing financing structure from cost of capital, as a result of shareholders' trading strategy, and under optimal conditions, such as the lack of handling expenses and business and private taxes [11]. Each business wants to have the structure of capital that optimizes its worth while minimizing the cost of capital. When the predicted return on capital exceeds the cost of capital is an investment made by a business is recognized as valuable [12]. The reasoning driving this is that an organization must generate more revenue in order to fulfill the shareholders' demand, thereby increasing the value of the business. Regarding the second factor, Fiordelisi & Molyneux [3] also explained that some measures (such as capital reductions) should result in an increase in value instantaneously, while other steps (such as growing in size to acquire market dominance or improving cost efficiency) might require additional time to affect shareholder value before they translate into higher net operating profits. Other measures, such as reducing labour expenses and layoffs, may affect shareholder value immediately, but they may also influence other factors that hinder shareholders' wealth, such as employee motivation and client satisfaction, which may eventually have an opposing effect on the value of shareholders.

Prior studies examined how several factors affect the performance of banks in both developing and emerging markets. In developing countries, Ahmed [13] investigated the factors that affect bank performance among 9 listed Iraqi banks between 2017-2021. The study used Two-Stage Least Squares (2SLS) and found that asset efficiency and effective corporate governance enhance bank profitability; however, high interest rates diminished profitability. Mondol & Wadud [14] focused on factors that influence the profitability of commercial banks in Bangladesh. The findings showed that size and liquidity have a detrimental effect on bank profitability, while capital adequacy and efficiency in operation have a positive influence on bank performance. Moreover, GDP as a macroeconomic factor negatively affects profitability. Isayas [15] examined the factors influencing banks' financial performance among 14 banks in Ethiopia. The findings display that capital adequacy, capital leverage, and liquidity affect the profitability of banks. Ben Khediri & Ben-Khedhiri [16] analyzed the elements that could determine the profitability of Islamic banking in the MENA area. Their findings showed that capital investment, performance of management, economic development, and bank profitability are all positively correlated.

In an emerging market, Mohamad et al. [17] explored the profitability of banks in Malaysia. Data was collected from the top 17 listed Islamic banks, and their findings illustrated that financial leverage and liquidity significantly affect the profitability of banks. Similarly, Guru et al. [18] analyzed Malaysian bank performance. According to their findings, cost efficiency as a crucial element significantly enhanced the profitability of banks. In the case of macroeconomic variables, GDP and inflation positively correlated with profitability; however, interest expenses negatively affected. Jigeer & Koroleva [19] provided an explanation of poor profitability for Chinese banks. Data was gathered from 16 registered banks in China. The outcomes of the study demonstrated that efficiency in operation, quality of credit, size of banks, capital adequacy, and GDP are all significant elements for determining banks' profitability.

Despite the critical role banks play in promoting economic growth and financial security, it is more necessary than ever to comprehend the elements that influence shareholders' value, especially in developing and oil-dependent nations such as the Gulf Cooperation Council (GCC). For example, Fu et al. [20] assessed the link between efficiency and value for shareholders in 14 Asia-Pacific countries using dynamic panel estimation techniques. Their findings showed that market risk, losses on credit, size, and productivity all have considerable effects on shareholder return. Saif-Alyousfi [1] examined the factors that explain shareholders' return among 70 banks in GCC countries. The findings illustrated that banks with an optimum debt level and higher growth have a higher chance of increasing the value of shareholders, while loans with poor performance do not affect the value of bank shareholders. Moreover, higher demand for deposits and capitalization could boost shareholders' value in the banking sector.

Although prior research extensively addressed the factors influencing bank profitability [13–19], less emphasis has been paid on factors that affect shareholders' value, particularly how cost efficiency, capital leverage, and cost of capital work together to affect the value of shareholders in the GCC banking industry. By examining the above factors on the value of shareholders in GCC banks, this study aims to bridge this gap. It emphasizes the importance of cost minimization and financial leverage. Through linking the creation of value for an area with distinct regulatory frameworks and economic environments with operational efficiency at the bank level, the results are expected to enhance theoretical as

well as practical understanding. Banking institutions are frequently the main source of funding in these countries, and they are extremely vulnerable to changes in macroeconomic periods and oil income. In this region, instability brought about by movements in the oil price might influence the performance of banks, capital structure options, cost efficiency, as well as cost of capital. These changes affect liquidity obstacles, the behavior of banks, and the quality of assets, which finally participate in creating value for shareholders.

The rest of this paper provides an outline of the relevant scientific literature and discusses the methodology of the study. The empirical findings are then analyzed and discussed. Recommendations are given in the study's conclusion in accordance with the results.

2- Literature Review

Marshall [21] argued that one of the primary business principles is that a firm generates value for its owners when the return on capital employed exceeds the opportunity cost. A significant determinant of how well a bank utilizes its assets to generate value is operational efficiency [13]. The method in which a bank uses its resources to generate revenue is measured by asset efficiency, which has an immediate effect on financial performance [22]. Similarly, operational efficiency has an enormous effect on overall achievement [23], which evaluates a bank's ability to effectively manage day-to-day operations in order to achieve financial goals and increase shareholder value. The performance of the banks was the subject of early researchers [24, 25]. Demirguc-Kunt & Huizinga [26] investigated the factors that influence the profitability of banks during the years 1988–1995 by employing bank-level data for 80 nations. The findings indicate that reduced market concentration and a higher bank asset-to-GDP ratio result in lower profitability and returns.

Further, it is widely accepted that cost efficiency plays a significant role in assessing the earnings of banks. It shows how well a bank controls its operating expenses compared to its revenue. Numerous investigations have shown a favorable relationship between productivity and cost efficiency, suggesting that banks with fewer operating costs typically offer better returns. Banks may be able to maintain profitability over the long run, increase their margins, and remain competitive with the support of efficient cost control. Cost efficiency is the measurement most frequently used to evaluate the performance of banks [27]. Anwar [28] displays that among the Indonesian banks, cost efficiency and financial performance are closely related.

In cost-effective ways, the three types of production, intermediation, and asset-based approach can be considered to realize the input and output aspects [27]. Based on this evidence, Hadad et al. [29] and Sufian & Akbar Noor Mohamad Noor [30] showed that in the production approach, expenses are accounted for in the input component and earnings are included in the output component. The banking sector functions as a broker in the intermediation paradigm, converting financial resources from surplus to deficit. This approach views costs as the input component and the overall debt and invested capital as the output. The banking sector is seen under the asset-based approach as a serving financial institution. The asset-based model has features with the intermediation approach, which employs assets to support output components [30, 31]. This study adopts an asset-based strategy to cost efficiency, viewing banks as operators of financial resources that utilize their capital to generate income and mitigate operational costs [30]. Jigeer & Koroleva [19] supervised research and collected data from 10 Indonesian banks between 2009 and 2018. Using a weighted panel regression model, the study discovered that cost efficiency had an adverse effect on the profitability of banks. However, Srairi [32] used data of 71 banks in GCC to test between cost efficiency and performance. The results demonstrated that banks in this region are successful in enhancing profitability when costs are under control. Similarly, Chowdhury & Rasid [33] examined the performance of 29 Islamic banks from GCC nations and suggested that when banks have strategies for cost efficiency, their performance reaches a high point. Mehzabin et al. [34] gathered data around 490 banks from 28 Asian countries from 2004 to 2018, and they used fixed-effect regression analysis. Their results illustrated that effective cost management and a reduction in operational expenses may improve the earnings of banks, thereby improving shareholders' value. Ahmed [13] found that efficient utilization of resources favorably affects bank performance, and Shubita et al. [35] discovered that tax avoidance as an element of a cost-minimization scheme positively affects bank profitability. In addition, a non-significant connection was viewed between cost efficiency and the profitability of banks by Khalifaturofi'ah [36]. From the above explanation, the following hypothesis was generated:

H1: *Shareholders' value is significantly affected by cost efficiency.*

After considering the importance of cost efficiency, financial leverage is another significant factor in determining the bank's performance and the value of shareholders [37]. It is a measure of how much debt a company uses in its financial structure in order to increase shareholder value. Many studies have been conducted under the assumptions of the Modigliani and Miller (M&M) model, which was initially set by Modigliani & Miller [38]. Afterwards, M&M changed their theory and released an expanded article that included corporate tax [22]. Several studies have been carried out in accordance with or in opposition to the M&M paradigm. Nevertheless, the entire explanation of M&M in 1958 towards capital financing was primarily predicated on the markets that are fully efficient. Two decades later, Jensen & Meckling [39] introduced the idea of funding through debt and demonstrated that it improves both a company's profitability and shareholders' value. The tax shelter is financed by debt offers, being one of its main advantages, and it continues to be demonstrated to play a significant role in the framework of financial structure [34]. Due to its ability to control corporate management, debt financing may have a favorable effect on a company's success [15]. Ahmed et al. [22] argued that

leverage is a method of investing that makes use of loaned funds; more precisely, it raises the likelihood of a return from an investment using different financial tools. However, Al-Hunnayan [40] collected data about 12 banks to investigate the determinants of capital structure. The findings display that greater profitability ratios demonstrate more internal money for covering potential investments, resulting in a lower dependency on debt financing. Isayas [15] and Abdullah & Tursoy [41] also argued that heavily leveraged companies face the possibility of becoming bankrupt if they are struggling to fulfill debt repayments. They might also have trouble attracting new lenders later. Zelalem [42] asserted that a company's leverage plays a crucial role in determining its payout policy when an excessive amount of debt results in lower payout. Saif-Alyousfi [1] stated that GCC banks with an optimum debt level and higher growth have a higher chance of increasing the value of shareholders, while loans with poor performance do not affect the value of bank shareholders.

Moreover, the theory of Jensen & Meckling's [39], which is well known as agency theory, highlights the different interests that could be observed between agents (managers) and principals (shareholders). The manager is authorized by the shareholders to operate the business efficiently and effectively. However, when managers act for personal interest, it creates a conflict of interest and leads to agency problems [43]. Based on the assumptions associated with agency theory, managers may put short-term success ahead of long-term development, which might result in lowering shareholders' value [22]. From this perspective, the theory argues that debt can prohibit managers from investing unnecessary capital in ineffective plans, as they are dedicated to repaying their borrowing and associated costs [39]. However, having a high amount of debt beyond a balanced level could result in bankruptcy due to the high agency cost and cost of capital [22]. The literature shows mixed results; for instance, a positive association between capital leverage and firm profitability is noticed by [41, 44–47]. On the other hand, an adverse correlation between leverage and profitability is observed by [22, 48–51], and some studies revealed no meaningful correlation [52, 53]. From the above explanation, the following hypothesis was generated:

H2: *Shareholders' value is significantly affected by capital leverage.*

Moreover, Damodaran [54] claimed that the most popular method for calculating the cost of capital is to evaluate the cost of equity, borrowing, and preferred stock. This method is known as the weighted average cost of capital (WACC), which is the weighted mean of the cost of equity and debt [55]. The equity market valuation is significantly impacted by the firm's debt strategy, which has a major impact on the cost of capital [56]. AlNaeem [57] noticed that banks that operate in GCC countries may differ from international standards as they depend on enormous and inexpensive government deposits. They are also taking advantage of significant government support. The above factors reduce the cost of debt and uncertainty. Hence, banks in GCC may have a stable Weighted Average Cost of Capital (WACC). Hasan et al. [58] argued that a high dependence on debt funding increases the cost of capital and finally decreases firm value. Acheampong & Ibeji [55] confirmed that banks that have efficient risk management systems earn from reduced debt and equity costs as a result of improved investor trust and less asymmetric information. The above arguments are supported by the previous investigations. For example, Rajhans [59], Omwanza [60], Sumaryati & Tristiarini [61], and Ivascu & Barbuta-Misu [62] found that WACC has a major and favorable effect on the financial performance. They also argued that investors demand that businesses provide the necessary return on their funding, or cost of capital. Additionally, they grounded their justification in the revised version of M&M theory, which asserts that a company's profitability rises as its debt climbs since constant interest payments are tax-deductible. However, Ibrahim et al. [12], Abdul-Satta [63], and Gomes et al. [64] found an adverse correlation between WACC and performance. These results followed the direction of the pecking order theory claims that firms should follow a hierarchy system. First, they should employ internal funds, then debt, and finally stock issuance if debt cannot cover the projects. From the above explanation, the following hypothesis was generated:

H3: *Shareholders' value is significantly affected by the cost of capital.*

3- Research Methodology

3-1- Method and Data

This study employed panel data estimates to examine how capital leverage, cost efficiency, and cost of capital influence shareholders' value across Gulf Cooperation Council (GCC) nations. Since time series and cross-sectional data are considered by panel data estimation, we developed this approach in this study. The proposed model used in this study complies with the investigations of [34, 65, 66]. Furthermore, panel and bank-specific factors, which compensate for consistent variation over time and are engaged in randomized elements, are incorporated into panel data predictions, which produce an effective outcome [67]. Baltagi [68] and Wooldridge [69] clarified that the econometric approach enables the analysis of dynamic impacts that are often difficult to determine using cross-sectional or time-series investigations.

This investigation collected bank-level data from the Refinitiv Eikon terminal. The present research uses a sample of 41 banks from six GCC nations; in total, there were 369 observations during 9 years from 2015 to 2023. There are no missing periods and consistent time measurements across all panels due to the well-balanced panel construction.

Furthermore, in order to prevent any regulatory biases, the analysis strictly includes the banking industry and leaves out the non-financial firms. Although the initial sample was large, some banks were excluded for some reason. For instance, banks that were recently established or failed to meet the data requirements. Some other banks were also removed from the original sample because of unclear variable descriptions and inadequate data availability for each factor. Table 1 shows the number of banks for each nation by the availability of data. Even though the study collected uneven data about the number of banks among GCC nations, the study uses balanced panel data methodology and adds macroeconomic data at the country level during the robustness test to consider this unevenness. This technique could mitigate the influence of uneven cross-country distribution and strengthen the validity of the outcomes across GCC nations.

Table 1. Number of banks per country based on the available data

Nation	Number of banks	Observations	%
United Arab Emirates	15	135	36.58
Saudi Arabia	9	81	21.95
Oman	6	54	14.63
Qatar	5	45	12.20
Bahrain	3	27	7.32
Kuwait	3	27	7.32
Total	**41**	**369**	**100**

3-2- Operationalization of Variables

In this research, shareholders' value is the explained variable and is proxied by return on assets (ROA), return on equity (ROE), and Tobin's Q (TQ). Both ROA and ROE are typically used to assess the performance of banks and are supported by prior investigation [27, 70–73]. Saif-Alyousfi [1] and Mateev et al. [74] argued that TQ can be applied as a reliable and accurate indicator for measuring the assumptions of market performance.

Cost efficiency, capital leverage, and cost of capital are the explanatory variables in this research. Operating expenses ratio (OP), asset turnover (AT), and tax burden (TB) are utilized as a proxy of cost efficiency. These selections are in line with the argument of [13, 22, 36, 75–77]. Capital leverage is another explanatory variable in this study, and following the direction of previous studies is measured through the debt-to-asset ratio (DTA) and debt-to-market capitalization (DMC) [34, 51, 78, 79]. Cost of capital is also an independent factor in this study, and according to the previous investigations, it is measured by WACC [11, 12, 55, 61, 62, 80]. Thus, this study used WACC as an indicator of the cost of capital. Table 2 lists all of the variables utilized in the present investigation, along with their descriptions and measurements.

Moreover, to reduce the selection bias of variables and consider bank-specific characteristics that could affect bank performance and risk, two control factors were added to the study models. They are an equity multiplier (EM), and revenue per share (RPS). Ahmed et al. (2023) [22], Baltas [81], Choiriyah et al. [82], Nemati et al. [83], and Hidayat et al. [84] argued that RPS and EM have a considerable influence on return on investment. Moreover, GDP was also added to the study models during the robustness check to mitigate the influence of uneven cross-country distribution and strengthen the generalizability of the outcomes across GCC nations. Prior investigations argued that one significant factor that influences bank profitability is GDP [85, 86]. Figure 1 shows the flowchart of the research methodology.

Table 2. Variable synopsis

Variables	Code	Type	Measure	Source
Return on Assets	ROA	Shareholder's value (Dependent)	Net income after tax/total assets	Refinitiv Eikon
Return on Equity	ROE		Net income after tax/total equity	Refinitiv Eikon
Tobin's Q	TQ		Market capitalization plus book value of debt)/book value of assets	Refinitiv Eikon
Operating Expenses Ratio	OP	Cost efficiency (Independent)	Total operating expenses/Total Revenue	Refinitiv Eikon
Asset Turnover	AT		Total revenue/total assets	Refinitiv Eikon
Tax Burden	TB		Net income after tax/net income before taxes	Refinitiv Eikon
Debt to Asset Ratio	DTA	Capital leverage (Independent)	Total debt/ total assets	Refinitiv Eikon
Debt to Market Capitalization	DMC		Total debt/(total debt plus market capitalization)	Refinitiv Eikon
Weighted Average Cost of Capital	WACC	Cost of Capital (Independent)	The average rate of return that an organization ought to pay its capital contributors	Refinitiv Eikon
Equity Multiplier	EM	Control variables	Total assets/total equity	Refinitiv Eikon
Revenue Per Share	RPS		Total revenue/number of shares outstanding	Refinitiv Eikon
Gross Domestic Product	GDP		Annual growth rate of GDP	World Bank Data

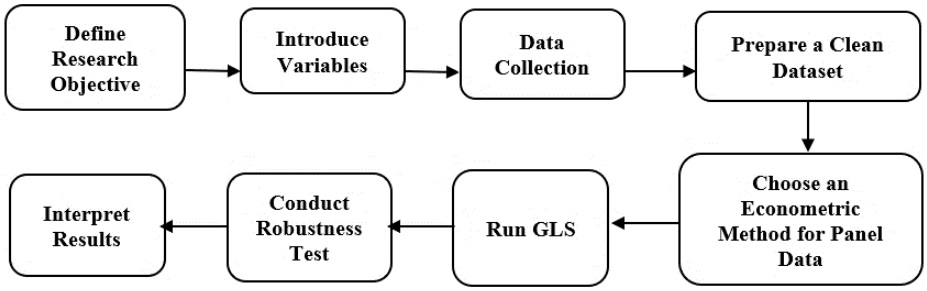

Figure 1. Flowchart of Research Methodology

3-3- Model Specification

To investigate the effect of cost efficiency, capital leverage, and cost of capital on the value of shareholders in the banking sector, this study follows the arguments of [87–90] and utilizes a panel estimation approach. To assess the aforementioned relationship, the following econometric models have been recommended as the extended regression model.

Model 1:

$$ROA_{it} = \beta_0 + \sum_{j=1}^{J} \beta_1 CE_{it} + \sum_{j=1}^{J} \beta_2 CL_{it} + \sum_{j=1}^{J} \beta_3 CC_{it} + \sum_{j=1}^{J} \beta_4 CO_{it} + e_{it}$$

Model 2:

$$ROE_{it} = \beta_0 + \sum_{j=1}^{J} \beta_1 CE_{it} + \sum_{j=1}^{J} \beta_2 CL_{it} + \sum_{j=1}^{J} \beta_3 CC_{it} + \sum_{j=1}^{J} \beta_4 CO_{it} + e_{it}$$

Model 3:

$$TQ_{it} = \beta_0 + \sum_{j=1}^{J} \beta_1 CE_{it} + \sum_{j=1}^{J} \beta_2 CL_{it} + \sum_{j=1}^{J} \beta_3 CC_{it} + \sum_{j=1}^{J} \beta_4 CO_{it} + e_{it}$$

where, i is a list of the companies that have been inspected, t is the time, β_0 is constant, ROA_{it}, ROE_{it}, and TQ_{it} are the shareholders' value of bank. CE represents the indicator of cost efficiency, CL represents the indicator of capital leverage, CC represents the indicator of the cost of capital, CO represents the control variables, and e is the standard error.

4- Data Interpretation and Results

4-1- Summary Statistics

Table 3 displays the descriptive statistics of the variables used in the regression test based on a sample of 41 banks from 2015 to 2023. During the selected years, the bank illustrates an average mean value of 0.012, 0.011, and 0.344 for ROA, ROE, and TQ, respectively. Among the variables, EM has the highest mean value with a standard deviation of 1.736, while ROE has the lowest mean value of 0.11 with a standard deviation of 0.014. In summary, the statistical results show that the companies in the sample have balanced leverage, limited earnings, and obvious variations in market performance and profitability. This variation lends credibility to the idea that shareholders' profits may be explained by variations in cost efficiency, capital leverage, and cost of capital. This additionally suggests that financial management strategies and bank-specific features are crucial factors in determining market performance and efficiency.

Table 3. Descriptive statistics

Variables	Mean	Std. Dev.	Minimum	Maximum	Observations
ROA	0.012	0.013	-0.101	0.041	369
ROE	0.011	0.014	-0.126	0.041	369
TQ	0.344	0.259	0.054	1.457	369
OP	0.673	1.114	-1.562	21.164	369
AT	0.034	0.012	-0.049	0.119	369
TB	0.949	0.087	0.372	1.199	369
DTA	0.099	0.129	0.000	0.764	369
DMC	0.277	0.224	0.000	0.801	369
WACC	0.072	0.026	-0.042	0.171	369
EM	7.463	1.736	2.554	15.255	369
RPS	0.714	1.788	-0.055	18.622	369

4-2- Correlation Analysis

The Pearson correlation coefficients for all independent variables and control variables are shown in Table 4. All independent variables and control variables have little to no substantial association. DMC and DTA have the strongest relationship (0.734), while RPS and DMC have the lowest relationship (0.0003). Archambeault & DeZoort [91], Gujarati & Porter [92], and Yoshikawa & Phan [93] mentioned that the multicollinearity problem requires a value of 80% or more. To ensure a multicollinearity issue, none of the Pearson correlation values is higher than 80% as demonstrated in Table 4.

Table 4. Correlation coefficients of explanatory variables

Variables	1	2	3	4	5	6	7	8
OP(1)	1							
AT(2)	-0.091*	1						
TB(3)	0.066	0.042	1					
DTA(4)	0.205***	0.079	0.142***	1				
DMC(5)	0.067	-0.123**	0.179***	0.734***	1			
WACC(6)	-0.129**	0.016	-0.225**	-0.264***	-0.338***	1		
EM(7)	-0.009	-0.251***	0.070	-0.257***	0.002	0.002	1	
RPS(8)	-0.045	0.117**	-0.012	-0.091*	0.0003	-0.089*	-0.004	1

Note(s): *p < 10%; **p < 5%; ***p < 1%.

Moreover, the variance inflation factor (VIF) and tolerance, as indicated in Table 5, were two additional tests used in the present investigation to examine the existence of multicollinearity. The findings of Table 5 indicate that the tolerance value for all explanatory variables is greater than 0.1, with the value of VIF under 10, as recommended by [94–96]. Hence, as indicated in Tables 4 and 5, there are no multicollinearity issues in the current investigation, suggesting that the model does not have multicollinearity in its structure.

Table 5. VIF test

Variables	Mean	Std. Dev.
OP	1.105	0.905
AT	1.176	0.850
TB	1.083	0.923
DTA	2.897	0.345
DMC	2.747	0.364
WACC	1.192	0.839
EM	1.223	0.817
RPS	1.056	0.946
Average	**1.559**	

4-3- Stationarity Tests

Panel unit roof tests have a variety of forms. This investigation included several types of tests, including Levin, Lin, and Chu (LLC) established by Levin et al. [97], Phillips–Perron Fisher (PP) suggested by Phillips & Perron [98], and Hadri (HD) established by Hadri [99]. The LLC test indicates homogenous dynamics by assuming a single unit root process throughout all cross-sections. The HD and PP, on the other hand, capture heterogeneity in the panel data by allowing the unit root procedure to change throughout cross-sections. All of the indicators utilized in our investigation were found to be stationary at the level, as demonstrated in Table 6. Consequently, all variables studied accept H_1 at the 1%, 5%, and 10% levels, indicating that the series is stationary. ROA was significant at the 10% level in the case of LLC, while significant at the 1% in the case of PP and HD tests. ROE was significant at the 1% level in the case of the LLC and PP test; however, it was significant at the 5% level for the HD test. Moreover, RPS was significant at the 1% level in the case of the LLC and HD test, but not significant in the case of the PP test. The rest of the variables (TQ, OP, AT, TBM DTA, DMC, WACC, and EM) were significant at the 1% level in all three tests.

Table 6. Summary of the unit root test

Variables	LLC	PP	HF	Results
ROA	-1.47*	180.90***	2.51***	Accept H_1
ROE	-3.36***	198.59***	2.31**	Accept H_1
TQ	-9.33***	118.40***	5.66***	Accept H_1
OP	-2.54***	145.24***	13.55***	Accept H_1
AT	-6.48***	103.68**	3.77***	Accept H_1
TB	-6.73***	109.69***	3.93***	Accept H_1
DTA	-6.41***	120.34***	7.98***	Accept H_1
DMC	-5.91***	103.31***	9.03***	Accept H_1
WACC	-10.11***	130.13***	4.51***	Accept H_1
EM	-4.79***	163.45***	8.97***	Accept H_1
RPS	-2.42***	55.537	8.13***	Accept H_1

Note(s): *p < 10%; **p < 5%; ***p < 1% .

4-5- Panel Cointegration Analysis

The Kao cointegration test has been employed to investigate a longer-term stability connection among the panel parameters. This method was established and enhanced by Engle & Granger [100]. The test results, which are shown in Table 7, provide an obvious proof of cointegration.

Table 7. Test for cointegration

Kao test	ROA		ROE		TQ	
	t-Stat.	Prob.	t-Stat.	Prob.	t-Stat.	Prob.
ADF	-3.388735	0.000	-3.492771	0.000	-4.959099	0.000
Residual variance	6.52E-05	-	6.32E-05	-	0.012811	-
HAC variance	3.89E-05	-	3.92E-05	-	0.00955	-
Results	Reject H_0		Reject H_0		Reject H_0	

The estimated t-statistics were significant at critical levels at the 1% level in all three models (ROA, ROE, and TQ), supporting the different assumptions of no cointegration. This implies a consistent, long-term relationship between the variables and demonstrates the integration of all indicators.

4-6- Results and Discussion

Table 8 displays the regression results obtained using Generalized Least Squares (GLS) with the cross-section weight to investigate the effect of cost efficiency, capital leverage, and cost of capital on the shareholders' value. In order to select the appropriate and reliable method in this study, first, Breusch–Pagan LM test is performed to choose between pooled OLS and random effect (RE). As presented in Table 8, LM has a probability value that is lower than 1% (p-value<1%). This suggests that the estimated findings using the RE method are more reliable than the cross-section pooled OLS and states that the null hypothesis of no RE is rejected. Second, the probability value of the Chow test is less than 1% (p-value<1%), indicating that the fixed effect (FE) model is more robust than the pooled OLS. Third, the Hausman specification test is then used in research for comparing the FE and RE methods. The results of Table 8 conclude that the statistics consistently and effectively contradict the RE method. Therefore, the FE model is more robust. However, the chosen FE model has shortcomings as it does not pass the preliminary diagnostic examinations. More precisely, the residuals are serially correlated, and the error variance produced by the chosen FE framework is inconsistent or heteroscedastic.

In order to address these issues, the study uses the Generalized Least Squares (GLS) method to estimate the chosen FE model. The GLS approach is commonly used because it addresses basic data problems such as non-constant variance and deviations from normality and allows for cross-sectional correlation and heteroscedasticity across panels [101–103]. Claeys & Vander Vennet [104] also argued that the GLS estimation approach outperforms the FE and RE models in terms of efficiency. Gujarati & Porter [92] claimed that GLS is an OLS model that has been revised and is better suited for data that is not normal. Thus, the findings of this study are interpreted based on the GLS outcomes.

The results of Table 8 demonstrated that the majority of the correlations are statistically significant at the 1% level (p-value<1%). The adjusted R_2 typically indicates that the factors used in the present investigation could be responsible

for 85.9%, 87.4%, and 96.5% of the variation in ROA, ROE, and TQ for banks in the GCC region. Most of the independent variables are significant at the 1% level, indicating that these models are adequately matched. Given the fact that the F-statistical probability is lower than 1% (p-value<1%), all three models are adequately fitted for the independent components.

The findings of Table 8 illustrate that OP, as a measure of cost efficiency, is negatively correlated with ROA, ROE, with the beta coefficient values of (β = -0.010; sig. <1%), and (β = -0.011; sig. <1%), respectively; however, it is positively linked with TQ, with the value of (β = -0.014; sig. <1%). These results are statistically significant at the 1% level. This suggests that increased operational expenses diminish financial returns, which reflects decreased earnings and cost effectiveness from the viewpoint of shareholders. Although these expenses lower profitability in the short term, their positive impact on TQ shows that the market considers these costs as intelligent investments that increase the bank's potential for future growth and value.

The findings of Table 8 also display that all proxies of shareholders' value (ROA, ROE, and TQ) are positively correlated by AT, with the beta values of (β = 0.414; sig. <1%), (β = 0.489; sig. <1%), and (β = -0.137; sig. >10%), respectively. These results are statistically significant in the case of ROA and ROE only. This implies that increased utilization of resources increases the earning power of banks and returns to shareholders by improving the efficiency with which assets generate revenue. The insignificant relation between AT and TQ suggests that increased managerial efficiency may not always contribute to better market valuation in the short run. TB also has a positive and significant relationship with ROA and ROE, with a coefficient of (β = 0.018; sig. <1%), and (β = 0.019; sig. <1%), but a negative on TQ with a beta coefficient of (β = -0.091; sig. <1%). This implies that higher tax burdens improve the internal performance of banks and increase value to investors as a consequence of profitability. Nonetheless, the adverse correlation with Tobin's Q suggests that the market views greater taxes as a barrier to bank value and future development, which results in poorer market efficiency. Based on the above results, the first hypothesis that shareholders' value is significantly affected by cost efficiency is accepted and is consistent with the study of [13, 27, 28, 32]. From the findings, it could be observed that banks in GCC nations present a novel association between cost efficiency and the value of shareholders. This might be because their operational atmosphere is influenced by large oil income, large liquidity, and high government support. These elements have a significant role in banks to decrease operational expenses. In oil-producing countries, the performance of financial institutions is not only affected by cost effectiveness; other factors, such as financing circumstances, government assets, and oil price fluctuations, are also significant factors in determining performance.

Furthermore, the indicators of capital leverage (DTA and DMC) show an insignificant association with ROA and ROE. However, DTA exhibits a positive effect on TQ, whereas DMC harms TQ with a beta coefficient of (β = 1.914; sig. <1%), and (β = -0.473; sig. <1%). These findings suggest that financial leverage has no direct impact on performance or the bank's capacity to provide operational returns and similar to the argument of [43, 44]. However, it has a greater influence on how the market is perceived. In particular, an increased DTA is linked to improved market performance, suggesting that shareholders could view reasonable debt management favorably as an indication of a strong financial position or effective resource allocation. The negative correlation between DMC and TQ indicates that heavy market-based debt increases the risk of bankruptcy and lowers confidence among shareholders. The above findings are in line with the investigation of [22, 50–53] and partially support the second hypothesis that shareholders' value is significantly affected by capital leverage. These results display the complexity of how financial structure affects banks' performance in GCC countries. This is due to some structural factors that distinguish this area from conventional assumptions. For example, significant government involvement and indirect government assurance were observed to reduce the risk of failure, demonstrating the conventional trade-off between the advantages of borrowing and the cost of bankruptcy. Furthermore, economic instability caused by fluctuations in oil prices has a significant effect on banks' capital structure decisions, sustainable profits that were not completely illustrated by agency or M&M theory.

Cost of capital that is indicated by WACC has a positive and significant influence on all measures of shareholders' value (ROA, ROE, and TQ), with a value of (β = 0.036; sig. <1%), (β = 0.027; sig. <1%), (β = 0.195; sig. <1%). These results show that banks with a comparatively higher cost of capital typically have stronger market valuations and greater earnings. This implies that banks effectively use both equity and debt as sources of financing to provide substantial value for shareholders. These arguments accept the third hypothesis that shareholders' value is significantly affected by the cost of capital and similar to the study of [60–62]. In this situation, an increased WACC can indicate a more proactive but successful capital structure in which banks effectively control interest-paying obligations and rely on profitable leverage to improve profits and confidence among investors. The results also suggest that banks effectively use their financial structure to facilitate development prospects and increase total value for shareholders.

EM as a control variable has little to no significant effect on the metrics of shareholders' value. However, RPS has a significant and positive impact on ROA and ROE, but a negative impact on TQ, with a beta value of (β = 0.003; sig. <1%), (β = 0.002; sig. <1%), (β = -0.008; sig. <1%). Although EM seems independent, RPS increases bank productivity but partially decreases market-related value.

Table 8. Regression results

Variables	ROA		ROE		TQ	
	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.
OP	-0.010*** (0.001)	-9.623	-0.011*** (0.001)	-10.177	0.014*** (0.005)	3.054
AT	0.414*** (0.036)	11.633	0.489*** (0.032)	15.288	0.137 (0.231)	0.593
TB	0.018*** (0.001)	12.281	0.019*** (0.001)	13.990	-0.091*** (0.020)	-4.586
DTA	0.005 (0.006)	1.025	0.006 (0.005)	1.263	1.914*** (0.054)	35.748
DMC	-0.001 (0.002)	-0.278	-0.0004 (0.002)	-0.242	-0.473*** (0.019)	-24.381
WACC	0.036*** (0.008)	4.715	0.027*** (0.007)	3.896	0.195*** (0.062)	3.158
EM	0.0003* (0.000)	1.810	0.0002 (0.000)	1.174	-0.001 (0.002)	-0.626
RPS	0.003*** (0.000)	6.979	0.002*** (0.000)	6.458	-0.008*** (0.003)	-2.838
C	-0.020*** (0.003)	-7.367	-0.022*** (0.002)	-8.963	0.358*** (0.024)	14.974
R_2	0.877		0.891		0.970	
Adj. R_2	0.859		0.874		0.965	
F-statistic	47.839		54.545		216.807	
Prob.	0.000		0.000		0.000	
LM test	7.131***		7.115***		17.091***	
Chow test	231.387***		250.418***		474.340***	
Hausman Test	209.508***		279.525***		22.493***	
Heteroskedasticity Test	97.271***		97.750***		56.273***	
Serial Correlation Test	153.480***		158.060***		208.372***	

Note(s): *p < 10%; **p < 5%; ***p < 1%.

4-7- Robustness test

The primary analysis is further supported by the robustness test shown in Table 9, which examines the reliability of the findings. Particularly, when the macroeconomic data at the country level were added to the models, the findings were comparable with the baseline models, showing that shareholders' value is significantly determined by both cost efficiency and cost of capital, while debt financing has a minimal effect. Additionally, Figures 2 to 3 shows the actual, fitted, and graphically residual values once the exogenous variables have been regressed. Since there is a substantial correlation between the real and fitted lines, homoscedasticity is strengthened by lowering the residuals. This is evident in all of the figures. This indicates a strong correlation between the actual values and the outcomes predicted by the models.

Table 9. Robustness Test

Variables	ROA		ROE		TQ	
	Coef.	t-Stat.	Coef.	t-Stat.	Coef.	t-Stat.
OP	-0.010*** (0.001)	-9.307	-0.010*** (0.001)	-9.846	0.016*** (0.005)	3.528
AT	0.428*** (0.038)	11.390	0.489*** (0.034)	14.340	0.154 (0.233)	0.662
TB	0.018*** (0.002)	10.431	0.018*** (0.002)	11.237	-0.085*** (0.020)	-4.228
DTA	0.004 (0.005)	0.801	0.005 (0.005)	0.957	1.884*** (0.055)	34.006
DMC	0.0004 (0.002)	-0.184	0.0001 (0.002)	0.006	-0.458*** (0.020)	-22.620
WACC	0.021** (0.009)	2.165	0.016* (0.008)	1.851	0.159** (0.065)	2.442
EM	0.0002 (0.000)	1.281	0.0001 (0.000)	0.596	-0.002 (0.002)	-1.091
RPS	0.003*** (0.000)	6.768	0.002*** (0.000)	6.424	-0.008*** (0.003)	-2.758
GDP	0.0001*** (0.000)	3.334	0.0001*** (0.000)	3.694	0.0005** (0.000)	2.035
C	-0.019*** (0.003)	-6.347	-0.021*** (0.003)	-7.471	0.355*** (0.024)	14.545
R_2	0.871		0.884		0.970	
Adj. R_2	0.851		0.867		0.966	
F-statistic	43.911		49.755		211.793	
Prob.	0.000		0.000		0.000	

Note(s): *p < 10%; **p < 5%; ***p < 1%.

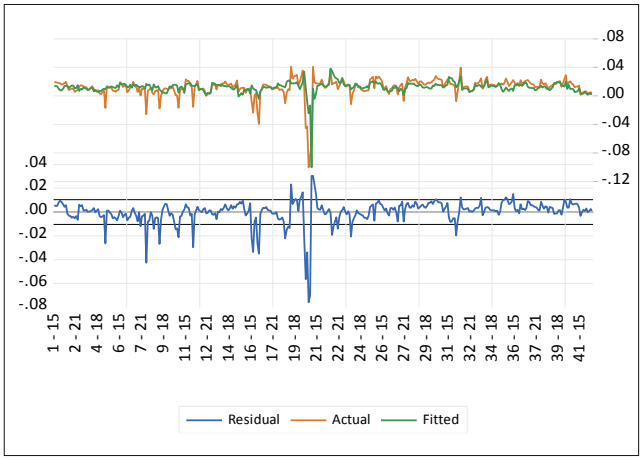

Figure 2. Return on Assets

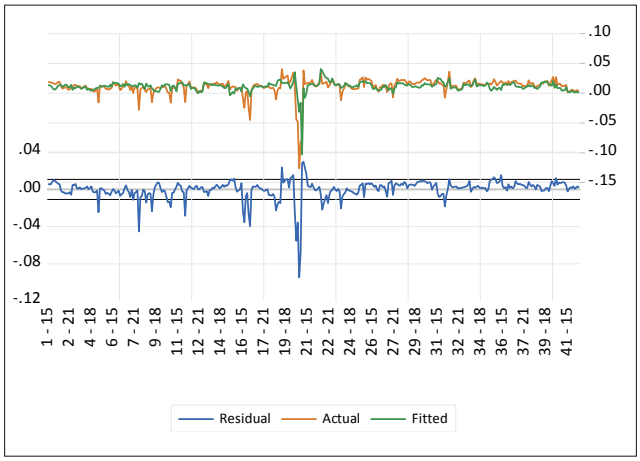

Figure 3. Return on Equity

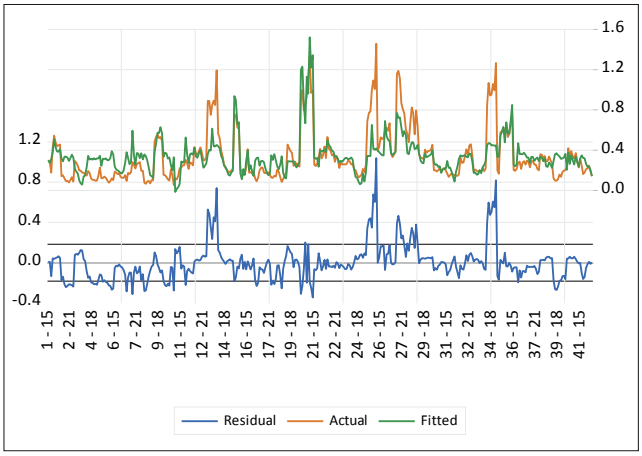

Figure 4. Tobin's Q

5- Conclusion

This investigation explores the impact of cost efficiency, capital leverage, and cost of capital on shareholders' value across listed banks in the GCC financial market. The study collected data about 41 registered banks for a 9-year period from 2015 to 2023. The data were collected from the Refinitiv Eikon terminal, as it gives accurate, consistent, and comprehensive financial information, guaranteeing the precision and legitimacy of the research. The Generalized Least Squares (GLS) approach with cross-sectional weight has been determined as an appropriate and acceptable method in this study. Shareholders' value is used as a response variable and proxied by ROA, ROE, and TQ, while the predictor variable is cost efficiency, indicated by OP, AT, and TB, capital leverage, measured by DTA and DMC, and cost of capital, measured by WACC. To reduce the selection bias of variables and consider bank-specific characteristics, two control variables, such as EM and RPS, were added to the study models.

The findings reveal convincing evidence that capital leverage and cost efficiency have significant effects on the value of shareholders in the banking industry. The findings show that financial results of banks, market valuation, and eventually investors' wealth are improved by changes in cost efficiency measures, such as reduced operational expenses, increased utilization of assets, and an appropriate tax burden. Although financial outcomes of banks through (ROA and ROE) are not significantly impacted by debt financing, they are crucial in assessing the value of market performance, with DTA making a positive contribution and DMC having an adverse effect. Additionally, revenue generation, market performance, and the value of shareholders are all continuously improved by an optimum cost of capital (WACC). These results demonstrate that sustaining the profitability of banks, market valuation, and the value of shareholders requires preserving efficient operations and making sensible financial structure choices.

The research provides important contributions to the current state of knowledge regarding the effects of cost efficiency, capital leverage, and cost of capital on generating shareholders value. The results provide novel perspectives on creating value in developing security markets by demonstrating the critical roles that managerial efficiency and an optimal financial structure serve in raising productivity and valuation of markets. It also offers insight into the challenges and opportunities faced by businesses in GCC markets that are prepared to embrace sustainable growth. GCC banks must prioritize cost management, capital efficiency, and shareholder efficiency in order to improve their financial condition and shareholder returns. The banks may be able to stave off the risk of competition by hiring qualified staff

and maintaining an outstanding development plan. Moreover, the analysis also suggests that banks should investigate methods to increase the volume of needed deposits by offering a greater and superior choice of services and goods, since it explicitly underlines the relevance of requested deposits to raise shareholder wealth. A greater appetite for deposits could mitigate risk and increase the value of shareholders.

There are some limitations to this study. First, this study used data about GCC countries only; therefore, it is recommended for future studies to conduct cross-country research by extending this study to additional developing or emerging economies. Second, additional studies might also concentrate on how bank supervision and regulation affect the value of bank shareholders in GCC nations. Lastly, future studies should undoubtedly concentrate on other sectors, such as non-financial firms, as they are governed by legislation, and one may have differing opinions about the relationship this study examined.

6- Declarations

6-1- Author Contributions

Conceptualization, A.M.A. and I.H.; methodology, A.M.A. and I.H.; software, A.M.A.; validation, A.M.A. and I.H.; formal analysis, A.M.A.; investigation, A.M.A. and I.H.; resources, A.M.A. and I.H.; data curation, A.M.A. and I.H.; writing—original draft preparation, A.M.A. and I.H.; writing—review and editing, A.M.A. and I.H.; visualization, A.M.A.; supervision, I.H.; project administration, A.M.A. and I.H.; funding acquisition, A.M.A. and I.H. All authors have read and agreed to the published version of the manuscript.

6-2- Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6-3- Funding

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6-4- Acknowledgments

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6-5- Institutional Review Board Statement

Not applicable.

6-6- Informed Consent Statement

Not applicable.

6-7- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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