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Do ESG Initiatives Improve the Performance of Saudi-listed Banks? The Moderating Effect of Bank Size

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Abstract
This study investigates the influence of bank size on the connection between ESG (Environmental, Social, Governance) initiatives and banks' financial performance in Saudi Arabia. Using data from 10 Saudi Arabian banks spanning 2014 to 2023, we analyze the influence of ESG initiatives by considering various indicators. Specifically, we used social responsibility (SR) initiatives to measure social aspects, environmental initiatives to measure the environmental aspect, and governance mechanisms to measure the governance aspect. Our observations indicate that environmental initiatives, social responsibility initiatives, and gender diversity have notable adverse effects on the return on assets (ROA). Additionally, social initiatives, board gender diversity, board independence, and audit committee activities have a negative impact on return on equity (ROE), whereas the number of board members had a positive impact on ROE. Bank size negatively moderates the relationship between board gender diversity and financial performance and positively moderates the relationship between audit members and ROA. These findings indicate that the impact of ESG initiatives on financial performance may depend on bank size.
Keywords: ESG, Banks' financial performance, Bank size, Saudi Arabia.

Introduction

The literature has an ongoing debate regarding the relationship between environmental, social, and governance (ESG) initiatives and banks' financial performance. Over recent decades, ESG initiatives have become increasingly important for banks to consider as stakeholders, including investors, customers, and regulators, place greater emphasis on sustainable business practices (Alanazi, 2019). The presence of sustainability standards and disclosure requirements has also enhanced transparency around ESG initiatives (Al-Jalahma et al., 2020), which can impact banks' financial performance. These initiatives often entail committing resources to improve ESG-related practices, which may create trade-offs with short-term financial performance (Buallay et al., 2020). However, despite these short-term significant costs, prior studies have suggested that strong ESG initiatives can improve financial performance through various mechanisms, such as enhanced reputation, reduced risk, and increased operational efficiency (Al-Faryan, 2017) for establishing long-term sustainability. There has been a significant change in the global investment landscape, where ESG factors are becoming increasingly important in the decision-making process. Saudi Arabia is, therefore, susceptible to these changes (Grant Thornton, 2024). As the Saudi Exchange (2020) states, Vision 2030 is a bold initiative to reduce the Kingdom's dependence on oil by promoting economic diversification. ESG audits are essential for businesses to ensure that their operations align with Vision's environmental goals, such as reducing carbon emissions, promoting renewable energy usage, and implementing sustainable resource management. Saudi Arabia, an emerging market with a rapidly developing financial sector, is witnessing the increasing importance of well-defined ESG legislation and regulations to enhance the efficiency of the performance of listed entities (Almulhim et al., 2024). Moreover, corporate governance in Saudi Arabia has evolved significantly in recent years and is driven by regulatory reforms and broader economic transformation initiatives. This is particularly crucial because of Saudi Arabia's legislative framework, which upholds the principle of equality as

outlined in the Basic Law of Governance, and the country's commitment to the Convention on the Elimination of All Forms of Discrimination against Women (UNDP, 2019; World Bank Group, 2020).

The adoption of sustainable practices has been linked to improved financial outcomes in Saudi Arabian firms (Almohanna & Alhussayen, 2024). There is increasing interest in evaluating environmental, social, and governance aspects in the banking industry, as it is anticipated that there are strong connections between ESG initiatives and financial performance (Bătae et al., 2021). The banking sector, which is crucial for the country's economic growth, raises pertinent questions about the impact of ESG initiatives on Saudi bank performance. Larger banks diversify their ESG activities, leading to better performance (Michael et al., 2023). Nevertheless, there are apprehensions over the excessive allocation of resources to ESG initiatives to comply with the expectations of investors and regulatory bodies (Pandey et al., 2024). Previous research in the banking sector has investigated the influence of sustainability reporting and ESG initiatives on bank performance, yielding inconclusive results (Al-Jalahma et al., 2020; Buallay et al., 2020). Some studies show a positive relationship between mechanisms such as risk mitigation and enhanced reputation (Lee & Isa, 2023; Sahu et al., 2024; Wu et al., 2024). For instance, companies that incentivize managers to invest in social responsibility (SR) practices show improved performance (Al-ahdal et al., 2023; Pulino et al., 2022). However, other studies suggest that ESG investments can reduce financial performance because of higher costs (Nareswari et al., 2023; Saygili et al., 2022). Given these mixed results, the link between ESG initiatives and financial performance remains inconclusive, especially in the context of Saudi Arabian banks. This study aims to clarify these ambiguities by incorporating bank size moderators to comprehensively examine the connection between ESG and financial performance in Saudi Arabia's banking sector, a critical area given the country's efforts to promote sustainability and ESG in finance.

This study makes several contributions to the current body of knowledge by presenting empirical evidence from the banking industry in Saudi Arabia. Initially, we examined the direct link between ESG initiatives and the financial performance of banks in Saudi Arabia. Saudi Arabia is an emerging market in the Gulf Cooperation Council (GCC) region (Al-Jalahma et al., 2020) with unique cultural, regulatory, and economic conditions. Unlike many studies that analyzed comprehensive ESG, our study is based on separate pillars of ESG initiatives such as social responsibility, environmental initiatives, and governance mechanisms.

Furthermore, we analyze bank size as a moderating factor in this relationship. Our findings will reveal how banks may experience different impacts from ESG engagement at different levels of bank size. Therefore, our research could provide an original perspective for policymakers and practitioners aiming to enhance financial and social outcomes through tailored ESG strategies in the banking sector.

The remaining parts of the current study are as follows. Section 2 discusses the literature review and hypothesis development, followed by Section 3 describes the methodology, including data description and statistical models. Lastly, Section 4 discusses the findings of the study, and Section 5 concludes the study.

Literature Review and Hypotheses Development

Impact of ESG Initiatives on Financial Performance

The stakeholder theory posits that corporations should meet the stakeholders' expectations by incorporating sustainability measures into their strategies (Freeman, 1984). This theory directly links sustainability to how much a corporation values or overlooks shareholder interests (Alahdal et al., 2024; Campbell, 2007; Driver & Thompson, 2002). It recognizes the need to link ESG initiatives with the stakeholders' benefits (Diez-Cañamero et al., 2020). ESG initiatives are the measures that signify the firms' engagement towards sustainability-related issues. The firms' efforts towards sustainability practices lead them to achieve improved financial performance. In this sense, ESG could improve the firm performance in two ways: first, it increases the cash flow levels, and second, it increases the stakeholders' value (Gillan et al., 2021). Therefore, stakeholder theory provides meaningful interpretations of the relationship between ESG initiatives and firm performance.

Saudi Arabia is a rapidly evolving financial sector with a growing market. Comprehensive and precise ESG legislation, regulations, and disclosure guidelines are necessary in emerging markets

to enhance the overall effectiveness of the performance of listed companies (Almulhim et al., 2024). The banking industry in Saudi Arabia is of utmost importance to the country's economic development, prompting inquiries into the influence of ESG standards on the performance of Saudi banks. Banks and financial institutions strive to transform their business operations, redirect resources towards sustainable investments, and incorporate sustainability into risk management practices to rebuild confidence, promote transparency, and ensure long-term viability (El Khoury et al., 2023; Mohamed Adnan et al., 2023). ESG initiatives are a complex and ongoing endeavor that requires investment from owners with a long-term perspective and commitment (Yahya, 2024). A study conducted on Saudi Arabian enterprises indicated that organizations that embrace sustainable practices generally see enhanced financial results (Almohanna & Alhussayen, 2024). The banking sector is increasingly interested in evaluating environmental performance, social responsibility, and corporate governance. Additionally, it is anticipated that there will be notable connections between ESG aspects and financial performance (Bătae et al., 2021). Previous studies indicate a connection between corporate governance and firm success in Saudi Arabia (Almohanna

Alhussayen, 2024). In addition, a study conducted by Michael et al. (2023) examining GCC countries, specifically Saudi Arabia, concluded that there is a positive association between the size of a bank and the diversity of its ESG operation and overall performance. Ultimately, these findings indicate that banks allocate excessive resources to ESG initiatives to adhere to the most recent criteria established by investors and regulators. In addition, both researchers and theorists endorse a positive association between ESG initiatives and financial performance. Shaddady and Alnori (2024) found that the results align with the theories of stakeholders and resource-based theories, which suggests that banks' ESG policies are ethical commitments that help enterprises achieve a competitive advantage and enhance their reputation among stakeholders. Moreover, Bătae et al. (2021) provide evidence supporting stakeholder theory predictions and the resource-based view.

It was found that banks are interested in improving resource efficiency, offering environmentally conscious products and services, and adopting digital processes. Nevertheless, due to investors' insistence on socially responsible investing, U.S. companies are inclined to engage in ESG activities, resulting in a significant commitment from stakeholders and ultimately generating more value for the company in the future (Nguyen et al., 2022).

Previous studies have investigated the association between ESG initiatives and financial performance. These studies discovered a positive relationship, indicating that effective ESG initiatives can result in better financial outcomes. This can be achieved by reducing risks, saving costs, and enhancing reputation (Lee & Isa, 2023; Nguyen et al., 2022; Wu et al., 2024; Yoon et al., 2018). Pulino et al. (2022) showed a direct association between ESG initiatives and business performance, indicating that corporations should incentivize managers to engage in SR initiatives. In addition, when a regulatory framework requires the sharing of non-financial information, Bruna et al. (2022) present evidence that supports the positive and substantial influence of ESG practices on financial performance. Zhao et al. (2018) demonstrated that strong ESG practices can effectively enhance the financial performance of power generation companies listed in China. This finding is significant for industry investors, corporate executives, policymakers, and regulatory bodies. According to Naeem et al. (2022), there is a strong positive association between the ESG practices of environmentally conscious companies and their return on equity. Considering the notable impact of ESG elements on companies' financial success in the energy sector, it is reasonable to assume that a comparable association also exists in the banking industry, which is known for its focus on sustainability. According to Yoon et al. (2018), the impact of social responsibility (SR) on producing value is lower for companies operating in environmentally sensitive industries than for those in non-sensitive industries. Danila (2023) demonstrates a clear association between ESG initiatives and financial performance, indicating that bolstering ESG initiatives can enhance profitability. Rasyad et al. (2024) revealed disparate outcomes across many financial performance indicators. ESG has a substantial and favourable impact on financial performance, as measured by the Return on Assets (ROA). Bahadır and Akarsu (2024) contended that ESG has a detrimental association with return on assets.

Alternative research has found a negative association. Specifically, an increase in ESG scores is associated with a decline in financial performance due to the need for greater expenditure and incurred opportunity costs (Nareswari et al., 2023). For example, Saygili et al. (2022) demonstrate

that environmental disclosures adversely affect a firm's financial performance. Conversely, some studies have discovered the minimal impact of ESG initiatives on financial performance. When considering all available facts, it is still uncertain whether there is a clear connection between ESG factors and financial performance. Lamanda and Tamásné Vőneki (2024) found no association between banks' operational and financial success and their disclosure of ESG information. However, the composite ESG scores have no substantial impact on the financial performance of South African enterprises. Nevertheless, the scores obtained from the social and governance pillars exhibit a favorable association with business performance, whereas the impact of environmental scores is very restricted.

The empirical question of the link between ESG initiatives and financial performance in the Saudi Arabian banking sector remains unresolved because of the inconsistent findings of previous studies. This study seeks to resolve previous research's uncertainties and methodological constraints by employing a comprehensive methodology to investigate the link between ESG initiatives and corporate performance. Emphasis on the Saudi Arabian banking industry is especially pertinent because of the country's notable advancements in fostering sustainability and implementing ESG principles within the financial sector. Based on the aforementioned discussion, we propose the following hypothesis:

H1. ESG initiatives have a significant positive impact on the financial performance of Saudi Arabian Banks.

The Moderating Role of Bank Size on the Relationship between Esg Initiatives and Financial Performance

The legitimacy theory can explain the moderating role of bank size on the relationship between ESG initiatives and financial performance. ESG is crucial for firms to preserve legitimacy (Shakil, 2020). "Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995). Legitimacy theory claims an implied social contract exists between firms and society (Deegan, 2002). Firms that operate in a society should follow society's expectations by focusing on sustainability standards. Therefore, to preserve legitimacy in the eyes of stakeholders' firms rely on their ESG initiatives. Large-size firms have more resources and funding that can be invested more in sustainability measures to meet stakeholders' expectations and become socially responsible. Compared to smaller firms, large companies are more likely to engage in sustainability activities (Udayasankar, 2008). Additionally, larger firms face a higher risk of losing legitimacy; thus, they prioritize ESG efforts to enhance financial performance and maintain their standing with stakeholders.

The extent to which bank size moderates the link between ESG initiatives and financial performance has not been sufficiently investigated. The size of a corporation can significantly influence the strength of the linkage between ESG initiatives and financial performance. Larger banks often possess greater resources, experience, and visibility, which enable them to effectively adopt and use ESG efforts. Prior studies have indicated that larger corporations exhibit a greater range of ESG initiatives and achieve superior ESG outcomes than smaller enterprises (Al-Jalahma et al., 2020; Buallay et al., 2020). Stakeholders, regulators, and the public may subject larger enterprises to increased scrutiny, thus incentivizing them to allocate more resources towards ESG policies to improve their reputation and credibility. Conversely, smaller companies may encounter more significant resource limitations and have less influence when dealing with stakeholders. Consequently, this may restrict their capacity to fully leverage their ESG activities. According to Chen et al. (2023), the impact of ESG ratings on the performance of large-scale enterprises is substantial but negligible for small-scale companies. The findings indicate that the favorable influence of ESG ratings on firms' financial performance is more noticeable in high-risk than low-risk scenarios. In a comparable scenario, Dihardjo and Hersugondo (2023) discovered that company size has a beneficial moderating effect on the connection between ESG initiatives and the value of Indonesian enterprises. Additionally, ESG initiatives have a significantly adverse impact on company value.

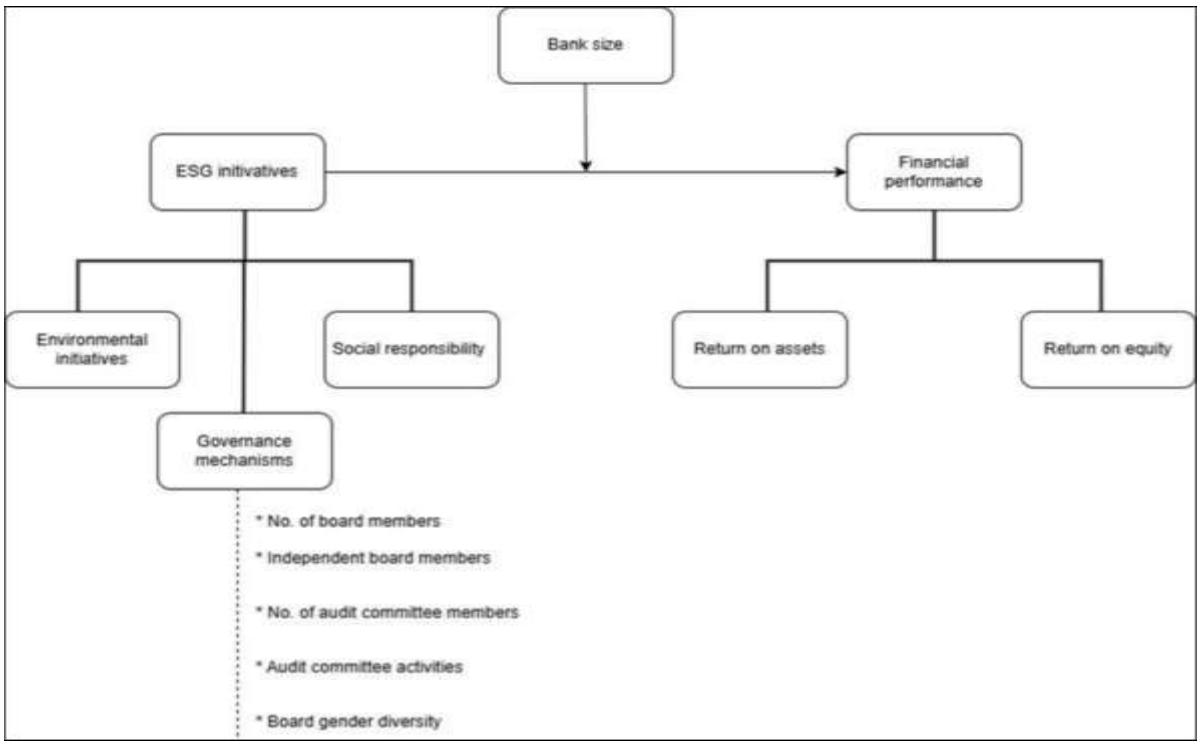
Large corporations were believed to possess superior plans and objectives for overseeing their commercial operations while concurrently engaging in sustainable ESG programs. Korkmaz and Nur

(2023) examine the impact of bank size on the linkage between ESG initiatives and financial performance in the banking sector. They found that ESG initiatives positively influence financial performance, whereas bank size does not moderate this association. Sukesti et al. (2024) showed that bank size positively moderates the relationship between social responsibility (SR) and stock returns. By contrast, Abdi et al. (2022) proposed that engaging in sustainability efforts as a managerial approach can be tailored according to the company's size. The researchers discovered that entity size plays a crucial role in influencing the connection between sustainability disclosure and the value and performance of entities in the airline industry. The impact of bank size on the outcome may differ based on the circumstances and the industry being studied. The current literature presents conflicting findings regarding the influence of company size as a moderating factor, thus necessitating additional empirical investigation. Essentially, this study aims to investigate the connection between ESG practices and the financial performance of banks in Saudi Arabia. Additionally, this study attempts to explore how bank size influences this link. Based on this discussion, we propose the following hypothesis:

H2. Bank size significantly moderates the relationship between ESG initiatives and financial performance among Saudi Arabian banks.

We have created a conceptual framework based on the literature and theories (see Figure 1).

Figure 1. Conceptual framework of the study



Methodology

Data

This study investigates how bank size affects the linkage between ESG practices and financial performance, specifically focusing on Saudi Arabian banks listed on the stock exchange.

They employed two financial performance metrics: return on assets (ROA) and return on equity (ROE). We thoroughly examined the environmental, social, and governance variables. We regarded social responsibility actions as a gauge of social aspects and environmental initiatives as a gauge of environmental aspects. Regarding the governance pillar, we considered governance mechanisms such as the number of board members (B_MEM), presence of an independent board of directors (BIND), number of audit committee members (AC_MEM), activities of the audit committee (AC_ACTIVITIES), and diversity of board members in terms of gender (BGN). The study additionally accounted for firm-specific characteristics such as bank size (BSIZE) and bank age

(BAGE). The sample consisted of ten banks in Saudi Arabia from 2014 to 2023. This sample reflects the relatively small number of publicly traded banks in Saudi Arabia with consistent and comprehensive ESG disclosures. ESG reporting practices in this region are still developing. Saudi Arabia joined the UN Sustainable Exchanges initiatives in 2018 to raise awareness about ESG initiatives and sustainable business models. Saudi Arabia is developing regulations and reporting standards for Sustainability and ESG to enhance transparency and accountability. ESG investment trends are rising under the Vision 2030 initiative (Sullivan et al. 2024). Aligned with its Vision 2030 plan, Saudi Arabian companies are progressively adopting sustainable finance frameworks. Emphasis on ESG reporting and transparency is also increasing across these companies. In 2019, the Capital Market Authority established ESG disclosure guidelines and mandated that listed companies report ESG-related information (Sullivan et al., 2024). We ensure data reliability and comparability by focusing on these banks. These institutions are more likely to follow international ESG reporting standards. Additionally, the selected timeframe allows us to capture significant trends and developments in ESG practices within the Saudi banking sector. Despite its limited sample size, this will provide meaningful insights into ESG's financial impacts. An analysis of the Saudi banking sector offers a valuable and detailed opportunity to examine how company size affects the connection between ESG initiatives and financial performance. Saudi Arabia is noteworthy for research purposes because of its strong commitment to implementing sustainable development. This commitment is of utmost importance, considering the specific context and national ideals of the Kingdom (Saudi Exchange, 2020). Effective corporate reporting can assist a corporation in achieving many objectives related to internal and external stakeholders and facilitate informed decision-making (Saudi Exchange, 2020). We applied winsorization to all variables except ROE at the 2nd and 98th percentiles to address the potential presence of outliers. The variables are defined in Table 1.

Variables Definitions

Explained Variables

The variables explained in our study are the measures of financial performance: return on assets (ROA) and return on equity (ROE). Return on Assets (ROA) reflects a company's ability to generate profits from its total assets, indicating how efficiently it utilizes these assets to produce net income (Buallay, 2019; Lee & Isa, 2023; Rasyad et al., 2024; Wu et al., 2024). Return on Equity (ROE) assesses the company's capacity to generate profits from shareholders' equity, demonstrating the effectiveness with which it employs the investments of its equity shareholders to generate net income earnings (Buallay, 2019; Lee & Isa, 2023; Wu et al., 2024).

Explanatory Variables

The independent variables in our study are environmental initiatives (ENVI), social responsibility initiatives (SRI), number of board members (B_MEM), independent board of directors (BIND), number of audit committee members (AC_MEM), audit committee activities (AC_ACTIVITIES), and board gender diversity (BGN). Environmental initiatives (ENVI): This pertains to the degree to which a company may implement managerial actions to mitigate environmental risks, while simultaneously increasing shareholder value (Tahmid et al., 2022). Social responsibility initiatives (SRI): This social pillar entails utilizing all accessible resources to cultivate trust and loyalty to ensure enduring advantages for stakeholders (Tahmid et al., 2022). The number of board members (B_MEM) refers to the aggregate number of directors on board (Kyere & Ausloos, 2021; Olayiwola, 2018; Pillai & Al-Malkawi, 2018; Saidat et al., 2019).

Table 1. Variables' description

Name	Abbreviation	Variable Measure	Sources
Dependent variables			
Return on assets	ROA	Company's ability to generate profit from its total assets. ROA=Net income/Average Total asset	
Return on equity	ROE	Determines how effectively shareholders' funds are utilized to produce returns. ROE = Net income/Average	Annual reports

		Shareholders' equity	
Independent variables			
Environmental Pillar: Environmental initiatives	ENVI	Scores represents actions to mitigate environmental risks	
Social pillar: Social responsibility initiatives	SRI	Scores represents all accessible resources to cultivate trust and loyalty	
Governance pillar:			
No. of board members	B_MEM	Board of Directors membership count.	Annual reports
Independent board of directors	BIND	Number of independent directors on the board	
No. of audit committee members	AC_MEM	Number of members in the audit committee	
Audit committee activities	AC_ACTIVITIES	Number of meetings in a year	
Board gender diversity	BGN	Gender composition of the board of directors	
Moderator			
Bank size	BSIZE	Natural log of total assets of banks.	Annual reports
Control variables			
Bank age	BAGE	Natural log of the number of years since the incorporation of the bank.	Annual reports
Point of sale distribution	POS	No. of point of sale	

Independent board of directors (BIND) refers to the ratio of the number of independent directors to the total number of board directors (Fuzi et al., 2016; Kyere & Ausloos, 2021; Saidat et al., 2019). The number of audit committee members (AC_MEM) refers to the aggregate number of individuals actively serving a bank's audit committee (Olayiwola, 2018; Zhou et al., 2018).

Audit committee activities (AC_ACTIVITIES) refer to the number of meetings in a year (Kyere Ausloos, 2021; Safari Gerayli et al., 2021). Board gender diversity (BGN) refers to the percentage of women on a board (Mahadeo et al., 2012; Terjesen et al., 2016). This diversity aims to achieve gender parity, guaranteeing equal participation and influence for both males and females in the organization's top governing body.

Moderator Variable

Bank size (BSIZE) is the magnitude of an organization's activities (Lamanda & Tamásné Vőneki, 2024; Nareswari et al., 2023; Nguyen et al., 2022). This is calculated by taking the natural log of banks' total assets (Aggarwal, 2013; Al-Janadi et al., 2016; Koji et al., 2020).

Control Variables

Bank age (BAGE) refers to the length of time that a company has been in operation since its establishment or incorporation (Almohanna & Alhussayen, 2024). Point of sale distribution (POS) pertains to the physical and operational systems that enable banks to directly provide products and services to clients at the point of sale (Akwam & Yua, 2016).

Statistical Models

This study employs hierarchical regression models to investigate the direct effect of ESG initiatives on financial performance as well as the moderating effect of business size on this association. We have performed the Breusch-Pagan LM test and Hausman test, based on which we found the ordinary least squares (OLS) estimation method is more appropriate for our study. Therefore, we employed OLS for hierarchical regression models. The analysis was performed using four consecutive models. The initial model comprises control variables. The subsequent model contained independent variables, specifically ESG indicators. The third model further includes the moderator (bank size). Finally, the fourth model integrates the interaction terms between ESG indicators and bank size. This methodology allows researchers to methodically examine both immediate and moderating impacts within the banking industry framework in Saudi Arabia. The models are presented in the following manner:

$$/ = 0 + 1 + 2 + \quad (1)$$

$$/ = 0 + 1 + 2 + 3 + 4 + 5 \_ + 6 + 7 + 8 \_ + 9 \_ + \quad (2)$$

$$/ = 0 + 1 + 2 + 3 + 4 + 5 \_ + 6 + 7 + 8 \_ + 9 \_ + 10 + \quad (3)$$

$$/ = 0 + 1 + 2 + 3 + 4 + 5 \_ + 6 + 7 + 8 \_ + 9 \_ + 10 + 11 * + \quad (4)$$

Data Analysis and Discussion

Descriptive Statistics and Correlation Analysis

The descriptive data presented in Table 2 and the correlation matrix shown in Table 3 comprehensively examine the financial performance indicators, different ESG (Environmental, Social, and Governance) pillars, and particular control variables for each organization. The dataset consists of 100 observations in which ROA and ROE are used as dependent variables to assess financial performance. The average return on assets (ROA) is 0.017, with a level of variability represented by a standard deviation of 0.005. ROA values ranged from 0.002 to 0.027. On the other hand, the average return on equity (ROE) is 0.119, but it has a greater level of variation, as indicated by a standard deviation of 0.052. The range of ROE values extends from -0.078 to 0.339.

Furthermore, there are many ESG-related factors. The average value for social responsibility initiatives (SRI) is 20.27, with a significant standard deviation of 22.568, suggesting a large variation among companies. Environmental initiatives (ENV) have an average of 3.23 with a standard deviation of 4.769. Governance mechanisms were measured using various variables. These include the number of board members (B_MEM) with an average of 9.88, board gender diversity (BGN) with an average of 0.13, independent board members (BIND) with an average of 4.19, number of audit committee members (AUD_MEM) with an average of 4.25, and audit committee activities (AC_ACTIVITIES) with an average of 6.47. Firm-specific variables consist of bank size (BSIZE), with an average value of 19.026, and bank age (BAGE), with an average value of 42.2 years.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	100	.017	.005	.002	.027
ROE	100	.119	.052	-.078	.339

BAGE	100	42.2	17.57	9	68
SRI	100	20.27	22.568	0	99
ENV	100	3.23	4.769	0	22
B MEM	100	9.88	.795	9	11
BGN	100	.13	.338	0	1
BIND	100	4.19	1.022	2	7
AUD MEM	100	4.25	.936	3	5
AC ACTIVITIES	100	6.47	1.85	4	10
BSIZE	100	19.026	.698	17.8	20.634
POS	100	64175.31	101420.61	2690	601153

The correlation matrix revealed significant relationships between the variables. ROA has a strong positive correlation with ROE (0.771, significant at the 1% level), suggesting that banks with higher asset returns tend to have higher equity returns. Bank size (BSIZE) shows a positive correlation with ROA (0.541) and ROE (0.291), indicating that larger banks tend to perform financially better. Among the ESG variables, SRI negatively correlates with both ROA (-0.222) and ROE (-0.184), implying that higher social responsibility initiatives might be associated with lower financial performance. Conversely, board members (B_MEM) show a positive correlation with ROA (0.280) and ROE (0.187), suggesting that a larger board size enhances financial performance. Board gender diversity (BGN) is negatively correlated with ROE (-0.186), indicating potential governance challenges. The correlation analysis highlights the significant relationships between financial performance measures, various ESG pillars, and firm-specific characteristics. While some ESG initiatives such as SRI seem to negatively impact financial performance, governance mechanisms such as board size appear to positively influence it. The data also underscores the importance of bank size and age in determining financial outcomes. POS has a significantly positive effect on financial performance.

The variance inflation factor (VIF) analysis indicated that multicollinearity was not a significant issue, with all VIF values below the threshold of 10. The mean VIF is 2.112, with bank size (BSIZE) having the highest VIF of 4.44, followed by bank age (BAGE), with a VIF of 2.872. This suggests that the independent variables do not overlap excessively when explaining the variance in the dependent variables.

Regression Results

Several variables significantly impact the ROA and ROE in the base model (Table 4). For ROA, SRI negatively impacts financial performance, suggesting that higher SRI may lead to lower financial performance. This may be because socially responsible investments require additional expenditure that reduces profitability in the short term. Moreover, B_MEM positively affects ROA (0.0191, $p<0.01$), indicating that a larger board size may improve asset returns. Conversely, BGN negatively impacts financial performance, suggesting potential challenges for more gender-diverse boards. Additionally, BAGE positively affects ROE (0.000816, $p<0.05$), indicating that older banks tend to have higher returns on assets. Similarly, POS significantly positively impacts financial performance, implying that increasing point-of-sale distribution leads to improved financial performance.

The hierarchical regression results (Table 5) provide a comprehensive analysis of how ESG initiatives and firm-specific variables influence financial performance, as measured by ROA and ROE, while also considering the moderating effect of bank size.

The first model shows that POS positively affects ROA (1.75e-08, $p<0.01$), suggesting that a higher point of sale leads to better asset returns. In the second model, adding ESG variables reveals that SRI negatively impacts ROA (-5.28e-05, $p<0.05$), indicating that higher SRI efforts may reduce asset returns. Similarly, ESGI (-0.000235, $p<0.1$) and BGN (-0.00360, $p<0.05$) negatively affected ROA. These results highlight the negative impact of ESG factors on financial performance. The third model includes BSIZE, which significantly and positively influences ROA (0.00668, $p<0.01$), underscoring the importance of bank size to financial outcomes. The fourth model introduces the interaction terms between bank size and the ESG variables. The significant negative impact of

BSIZE*BGN (-0.00414, p<0.01) and BSIZE*AC_MEM (0.00140, p<0.1) on ROA indicates that the effect of gender diversity and audit committee members on financial performance is moderated by bank size. The overall explanatory power of the models improves significantly from an R-squared of 0.15 to 0.564, demonstrating the substantial role of bank size and its interaction with ESG factors in explaining ROA.

Table 6 shows the results for ROE. The first model indicates a positive effect of POS on ROE (1.17e-07, p<0.05). In the second model, the ESG variables reveal that SRI, BGN, BIND, and AC_ACTIVITIES have a negative impact on ROE, while B_MEM positively influences ROE (0.0191, p<0.01). This again shows the mixed impact of ESG factors on financial performance. The third model includes bank size, which significantly and positively affects ROE (0.0294, p<0.05). In the fourth model, the interaction terms reveal that BSIZE*BGN significantly negatively impacts ROE (-0.0493, p<0.01), suggesting that the negative effect of gender diversity on ROE is moderated by bank size. The overall R-squared improves from 0.076 to 0.459, highlighting the critical role of bank size and its interactions with the ESG variables in explaining ROE.

Table 3. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ROA	1.000											
(2) ROE	0.771***	1.000										
(3) BAGE	0.258***	0.184**	1.000									
(4) SRI	-0.222**	-0.184**	-0.172**	1.000								
(5) ENV	-0.045	-0.089	0.181**	-0.122	1.000							
(6) B_MEM	0.280***	0.187**	0.120	-0.221**	0.149	1.000						
(7) BGN	-0.073	-0.186**	-0.161	-0.125	-0.307**	-0.359***	1.000					
(8) BIND	0.135	-0.074	-0.099	-0.281***	0.001	0.327***	-0.014	1.000				
(9) AUD_MEM	0.223**	0.111	0.481***	-0.186**	0.209**	0.136	-0.040	0.214**	1.000			
(10) AC_ACTIVITIES	0.239**	0.089	0.262***	-0.260***	0.023	0.320***	0.063	0.027	0.001	1.000		
(11) BSIZE	0.541***	0.291***	0.728***	-0.098	0.306***	0.336***	0.276***	0.074	0.516***	0.425***	1.000	
(12) POS	0.376***	0.265***	0.431***	-0.010	0.499***	0.366***	0.234**	0.012	0.263***	0.328***	0.682***	1.000
Variance inflation factor (VIF)			2.87	1.563	1.589	1.605	1.525	1.306	2.059	1.628	4.438	2.521
1/VIF			0.348	0.64	0.623	0.623	0.656	0.766	0.486	0.614	0.225	0.347

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 4. Regression results (Base model)

Variables	(1) ROA	(2) ROE
BAGE	6.11e-05	0.000816**
	(3.92e-05)	(0.000373)
POS	2.12e-08***	1.64e-07***
	(6.43e-09)	(6.13e-08)
SRI	-5.28e-05**	-0.000800***
	(2.63e-05)	(0.000250)
ENV	-0.000235*	-0.00151
	(0.000126)	(0.00120)
B_MEM	0.00123	0.0191***
	(0.000758)	(0.00722)
BGN	-0.00360**	-0.0624***
	(0.00170)	(0.0162)
BIND	0.000164	-0.0107**
	(0.000530)	(0.00505)
AUD_MEM	-7.59e-05	-0.00848
	(0.000696)	(0.00662)
AC_ACTIVITIES	-0.000113	-0.00666**
	(0.000315)	(0.00300)
Constant	0.00336	0.0380
	(0.00717)	(0.0682)
Observations	100	100
R-squared	0.315	0.319
Adj R-squared	0.2466	0.2507
F-test	4.60	4.68
P-value	0.000	0.000

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Overall, the results presented inconclusive data regarding H1. Certain ESG elements, such as environmental initiatives, social responsibility initiatives, and gender diversity, have notable adverse effects on ROA. Additionally, social initiatives, board gender diversity, board independence, and audit committee activities had an adverse impact on ROE, whereas the number of board members had a positive impact on ROE. Therefore, the hypothesis that ESG initiatives have a beneficial impact on financial performance is only partially corroborated.

Furthermore, evidence suggests that bank size (H2) plays a substantial role in regulating the association between ESG initiatives and financial performance. Bank size negatively moderates the relationship between board gender diversity and financial performance and positively moderates the relationship between audit members and ROA. These findings indicate that the impact of ESG initiatives on financial performance may depend on bank size. The results of this study confirm that bank size significantly impacts the linkage between certain ESG indicators and financial performance. This partially supports the findings of Abdi et al. (2022), who also found that bank significantly moderates the link between sustainability disclosure and financial performance.

Table 5. Hierarchal Regression Results (DV=ROA)

Variables	(1) ROA	(2) ROA	(3) ROA	(4) ROA
BAGE	3.66e-05	6.11e-05	-5.13e-05	-7.65e-05*
	(3.22e-05)	(3.92e-05)	(4.03e-05)	(4.54e-05)
POS	1.75e-08***	2.12e-08***	3.70e-09	5.93e-11
	(5.57e-09)	(6.43e-09)	(6.53e-09)	(6.86e-09)
SRI		-5.28e-05**	-4.22e-05*	-0.000293
		(2.63e-05)	(2.31e-05)	(0.000717)
ENV		-0.000235*	-0.000197*	-0.00338

		(0.000126)	(0.000110)	(0.00264)
B_MEM		0.00123	0.00124*	0.00395
		(0.000758)	(0.000664)	(0.00444)
BGN		-0.00360**	-0.00531***	0.0768***
		(0.00170)	(0.00152)	(0.0284)
BIND		0.000164	-6.56e-05	-0.00835
		(0.000530)	(0.000466)	(0.0117)
AUD_MEM		-7.59e-05	-0.00110*	-0.0268*
		(0.000696)	(0.000639)	(0.0151)
AC_ACTIVITIES		-0.000113	-0.000537*	-0.00132
		(0.000315)	(0.000288)	(0.00637)
BSIZE			0.00668***	-0.000378
			(0.00126)	(0.00515)
BSIZE*SR				1.26e-05
				(3.80e-05)
BSIZE*ENV				0.000163
				(0.000133)
BSIZE*BMEM				-0.000165
				(0.000223)
BSIZE*BGN				-0.00414***
				(0.00144)
BSIZE*BIND				0.000441
				(0.000612)
BSIZE*AUDMEM				0.00140*
				(0.000798)
BSIZE*ACACT				5.81e-05
				(0.000332)
Constant	0.0141***	0.00336	-0.110***	0.0228
	(0.00134)	(0.00717)	(0.0223)	(0.0984)
Observations	100	100	100	100
R-squared	0.153	0.315	0.480	0.564
F-stats	8.738	4.601	8.22	6.233
Prob>F	0.000	0.000	0.000	0.000
R-squared changes		0.162	0.165	0.084
F-stats (change)		3.05	28.249	2.245
Prob>F		0.006	0.000	0.038

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6. Hierarchal Regression Results (DV=ROE)

	(1)	(2)	(3)	(4)
Variables	ROE	ROE	ROE	ROE
BAGE	0.000255	0.000816**	0.000322	-3.44e-05
	(0.000321)	(0.000373)	(0.000429)	(0.000482)
POS	1.17e-07**	1.64e-07***	8.73e-08	6.19e-08
	(5.55e-08)	(6.13e-08)	(6.95e-08)	(7.29e-08)
SRI		-0.000800***	-0.000753***	-0.00290
		(0.000250)	(0.000246)	(0.00762)
ENV		-0.00151	-0.00134	-0.0239
		(0.00120)	(0.00117)	(0.0280)
B_MEM		0.0191***	0.0191***	0.0827*
		(0.00722)	(0.00707)	(0.0472)
BGN		-0.0624***	-0.0699***	0.903***
		(0.0162)	(0.0162)	(0.302)
BIND		-0.0107**	-0.0117**	-0.0689
		(0.00505)	(0.00496)	(0.124)

AUD_MEM		-0.00848	-0.0130*	-0.136
		(0.00662)	(0.00680)	(0.161)
AC_ACTIVITIES		-0.00666**	-0.00853***	-0.0460
		(0.00300)	(0.00306)	(0.0677)
BSIZE			0.0294**	0.00850
			(0.0134)	(0.0548)
BSIZE*SR				0.000115
				(0.000404)
BSIZE*ENV				0.00115
				(0.00141)
BSIZE*BMEM				-0.00335
				(0.00237)
BSIZE*BGN				-0.0493***
				(0.0153)
BSIZE*BIND				0.00306
				(0.00651)
BSIZE*AUDMEM				0.00689
				(0.00848)
BSIZE*ACACT				0.00208
				(0.00353)
Constant	0.100***	0.0380	-0.462*	-0.103
	(0.0134)	(0.0682)	(0.237)	(1.045)
Observations	100	100	100	100
R-squared	0.076	0.319	0.354	0.459
F-stats	3.997	4.681	4.876	4.098
Prob>F	0.000	0.000	0.000	0.000
R-squared changes		0.243	0.035	0.105
F-stats (change)		4.582	4.833	2.284
Prob>F		0.000	0.030	0.035

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Conclusion

This study investigates the impact of bank size on the linkages between ESG initiatives and banks' financial performance in Saudi Arabia. By using multiple ESG indicators such as social responsibility, environmental initiatives, and governance mechanisms, as well as two financial performance metrics, ROA and ROE, we examined the influence of ESG initiatives on financial metrics. This study employed hierarchical regression to analyze panel data from 10 banks spanning a period of 10 years, from 2014 to 2023. The findings indicated that bank size significantly impacts the linkage between ESG initiatives and financial performance. More precisely, the interactions between bank size and specific ESG indicators, such as board gender diversity, considerably impact ROA and ROE. These data indicate that the impact of ESG initiatives on financial performance may depend on the bank size.

The findings of our study have significant implications for banks, regulators, and policymakers in emerging markets. We found that bank size affects the linkage between ESG initiatives and financial performance that stakeholders should consider in tailoring their ESG policies to align with the specific characteristics of individual banks. For example, larger banks show a stronger negative link between board diversity and financial performance. These banks may need specific strategies to manage diversity and governance; such targeted approaches can help balance their social goals with financial outcomes. Furthermore, regulators and policymakers should consider these findings when designing ESG frameworks that could enhance overall sector performance and investor confidence.

Despite the contributions of this study, it has several limitations as well. This study is based on a single industry and country, exclusively Saudi Arabian banks. While this study gives valuable insights, the findings may not be generalizable to other sectors and regions. The data utilized in this study also restricts its scope. Furthermore, the study has not considered the country-level factors, such as economic growth or country-level governance that could influence the ESG and financial performance relationships over time.

Future studies can address the limitations of this study by examining the ESG and financial performance linkages across additional GCC countries. This will allow for a comparative analysis and broader regional insights. Additionally, the other external factors outside banking could provide a more comprehensive view of how ESG initiatives affect financial performance across industries. Expanding the model to incorporate other moderating variables may further elucidate the complexities of ESG impact. Finally, longitudinal studies tracking the evolution of ESG practices in the region could capture changes in the effects of ESG initiatives as markets and regulations evolve.

Declaration of Conflict of Interest

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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