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Article

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Article

Does Environmental Disclosure and Corporate Governance Ensure the Financial Sustainability of Islamic Banks?

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Abstract: The purpose of this study is to investigate the influence of environmental disclosure and corporate governance on the financial performance of Islamic banks in Saudi Arabia. This study highlights that sustainable practices are transparent with financial objectives using the religious framework of Islamic finance. This research is based on Worldwide Vision 2030, which covers sustainable development and promotes environmental, social, and governance (ESG) principles, as well as corporate governance factors, such as board composition and Shariah Supervisory Boards (SSBs). We use a hybrid approach for our findings, with a dataset spanning 2011–2023 for the quantitative analysis and 20 semi-structured analyses conducted for a qualitative approach that aligns with objectives. We found that environmental disclosure boosts profits and stakeholder trust. Corporate governance structures, such as environmental boards and sustainability committees, improve the environmental disclosure of financial performance in Islamic banks. In this positive interaction, specialized governance drives Sharia-compliant sustainability initiatives. SSBs help Islamic banks integrate sustainability and meet religious and ESG environmental standards. Board diversity and dedication in the sustainability committee both play important roles in enhancing environmental disclosure practices; in return, these improved financial performances. The interaction of environmental disclosure and board environmental expertise has a positive impact on the overall performance, which indicates that governance structure supports sustainability-related decision-making, aligning with transparency. This study suggests that Islamic banks standardize ESG frameworks, improve board environmental expertise, and invest in real-time sustainability reporting digital solutions. Saudi Islamic banks can lead regional and global sustainable banking by adopting these strategies to align with global sustainability trends, improve financial performance, and meet ethical finance expectations.

Keywords: environmental disclosure; corporate governance; Islamic banking; financial performance; Saudi Arabia

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1. Introduction

Financial institutions now include environmental, social, and governance (ESG) themes, making sustainable finance and corporate governance global priorities. Since Sharia law is moral, Islamic banking requires sustainable finance. Leaders in Islamic finance like Saudi Arabia appreciate the importance of financial sustainability for economic

stability and environmental responsibility. Saudi Arabia's Vision 2030 stresses sustainable economic growth; therefore, corporate governance must provide environmental transparency. Environmental disclosure lets banks report their sustainability and environmental impact, affecting stakeholders and financial performance. Saudi Islamic banking prioritizes environmental sustainability since Sharia law stresses land stewardship and social justice. Environmental disclosure's impact on Islamic bank financial sustainability is understudied despite ethical duties (Bashir & Babiker, 2023; Muhammad et al., 2021).

Islamic banking governance mixes Sharia and financial rules. Sharia Supervisory Boards (SSBs) monitor Islamic finance. These boards oversee ethical and religious banking, but their impact on environmental sustainability and corporate transparency is unknown. Governance and board effectiveness affect financial sustainability in traditional finance, but their role in Islamic banking, particularly environmental disclosure, needs greater investigation. Islamic banks must understand how governance structures affect sustainability reporting and financial performance owing to ethical and religious constraints. To compete in the global financial system, which prioritizes ESG compliance, Islamic banks must meet international sustainability disclosure guidelines. The lack of Islamic banking-specific environmental disclosure laws is serious (Alwi et al., 2024; Sari & Hussien, 2024).

Corporate governance and ESG integration in mainstream banking have been extensively studied, but not in Islamic finance. Environmental disclosure frameworks that meet ESG and Islamic banking rules are scarce, limiting research. Islamic finance's ethical, religious, and operational challenges are sometimes overlooked by traditional financial disclosure regulations for Western banks. Islamic banks struggle to report and evaluate their worldwide ESG sustainability performance. Without standardized disclosure methods, investors and regulators cannot assess Islamic financial institutions' sustainability practices, which may restrict overseas fundraising and investment. Islamic banking environmental disclosure study and implementation are needed due to this ambiguity (Al-sartawi, 2020; Habtoor, 2022).

Another sustainability governance literature vacuum is Sharia Supervisory Boards. Islamic financial compliance depends on SSBs, but little is known about how they influence sustainability policies, monitor environmental requirements, and integrate ESG into banking operations. Most SSB research focuses on financial compliance, ignoring its environmental and social governance potential. This is critical as regulatory and social pressure on banks to embrace sustainable practices grows. Understanding how SSBs affect sustainability governance may assist Islamic banks in improving their environmental responsibility while following Sharia law (Rouf, 2024).

Diversity and environmental awareness in Islamic banking governance structures are understudied. Diverse boards with environmental professionals improve traditional finance sustainability and profitability, according to research. These findings are uncertain for Islamic banking, which has different ethical and operational standards. Few studies have examined how board diversity, environmental expertise, and specialized sustainability committees affect Islamic banks' financial sustainability. Sharia law encourages ethical stewardship; therefore, ESG-based governance could improve Islamic banks' environmental and social effects. Thus, more empirical research is needed to determine if Islamic bank governance models should include more skills for sustainability (Abdallah et al., 2022; Rehman et al., 2020; Sarwar et al., 2022).

Beyond governance difficulties, Islamic bank environmental disclosure's financial implications are unstudied. Many anecdotal studies have illuminated Islamic finance sustainability trends, but few quantitative studies have linked environmental disclosure to financial performance. It is unknown if environmental openness encourages investment and improves Islamic banks' long-term financial viability or raises operating and

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compliance costs without sufficient empirical data. Global finance is increasingly focused on ESG compliance; therefore, regulators and industry stakeholders must understand sustainability disclosure's financial impacts. Addressing this gap would help policymakers design more ethical and financially sound Islamic banking policies (A. Buallay et al., 2020; Shehadeh et al., 2024; Salhi et al., 2020).

Research is complicated by Saudi Arabia's regulations and market. Saudi Arabian Islamic banks' sustainability initiatives are based on government policy and religion, unlike many Western financial markets where investor demand and regulations drive ESG inclusion. Due to this dual effect, Islamic banks meet global ESG trends with unique challenges. Comparing Saudi Islamic banks to international ones can improve governance and environmental disclosure. Financial stability and environmental responsibility measures can be developed by understanding how local regulatory frameworks affect Saudi Islamic bank sustainability.

Given these limitations, this work addresses many critical scientific questions. First, it will determine if environmental transparency boosts Saudi Arabian Islamic bank finances. Second, it will analyze how Sharia Supervisory Boards drive sustainability in corporate governance. Islamic finance rules and sustainability will be illuminated by studying how governance systems affect environmental policy. Finally, the study will explore how board diversity, governance, and environmental understanding affect sustainability and financial performance. The dynamics can help Islamic banks establish ESG-compliant governance structures without breaching Sharia (Abdulrahman, 2024; Aslam et al., 2023). Several theoretical frameworks organize this study's Islamic banking sustainability analysis. Stakeholder theory requires financial decision-making to balance regulators, investors, customers, and society. Institutional theory examines legislative and cultural influences on Islamic bank governance and environmental disclosure. Sharia Supervisory Boards' ethical compliance and sustainability are encouraged by Sharia governance theory. Using many theoretical perspectives, it establishes a framework for understanding how governance processes affect Islamic banking environmental disclosure and financial sustainability.

The research affects regulators, financial institutions, investors, and policymakers. The study advises authorities on improving Islamic banking environmental disclosure regulations to satisfy global ESG benchmarks and Sharia law. The study teaches Islamic banks how board diversity and SSBs may improve sustainability and profitability. ESG integration's impact on Islamic bank financial stability can help investors and analysts choose investments. Comparing Islamic banking systems in different countries lays the framework for future sustainability research in Islamic finance (Kashi et al., 2024).

This study investigates Saudi Arabian Islamic banks' financial sustainability, environmental transparency, and corporate governance. The study fills literature gaps to inform policy, governance, and sustainable Islamic financial discourse. ESG principles and Sharia-compliant financial models help Saudi Arabia lead ethical and sustainable banking as it pursues Vision 2030. This article improves Islamic banks' transparency, governance, and financial resilience using empirical analysis and theoretical ideas to increase their worldwide responsible finance and sustainability position.

2. Literature Review

The Islamic banking literature on environmental disclosure, corporate governance, and financial sustainability identifies key concerns and gaps. Environmental disclosure is becoming more important in company openness, investor trust, and financial performance, but Sharia rules make its integration into Islamic finance challenging. The Global Reporting Initiative (GRI) and Task Force on Climate-related Financial Disclosures (TCFD) drive environmental disclosure in conventional banking, but Islamic banks must balance

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sustainability with religious obligations, resulting in disclosure standards and reporting inconsistencies. Some experts believe that environmental disclosure improves company governance and financial performance by enhancing transparency and investor trust, but others believe that sustainability reporting does not affect ROA, ROE, or RAROE. Corporate governance systems, notably Sharia Supervisory Boards (SSBs), may be more significant in integrating sustainability into Islamic banks than environmental disclosure (Abdulrahman, 2024).

Sharia governance institutions, especially SSBs, regulate financial transactions to ensure Islamic compliance, making Islamic banking corporate governance different from conventional finance. Islamic governance models complicate sustainability decisions by integrating ethical, religious, and societal factors. Traditional governance frameworks prioritize shareholders and regulations. Sharia compliance depends on SSBs, although their impact on sustainability and environmental disclosure is unknown. SSBs interface between regulators and financial institutions; therefore, their effects on corporate governance, sustainability, and financial performance warrant research. Studies suggest that SSBs could promote ethical finance and responsible investment by including sustainability criteria in their governance standards, increasing environmental transparency. SSBs' environmental governance and sustainability-related decision-making influence are inadequately explored, creating a critical literature gap (Boshnak, 2021; Ousama, 2022).

Conventional finance has extensively studied board composition and governance frameworks, finding that diverse boards with sustainability competence better integrate ESG into business strategy. Few studies have examined how board diversity and environmental expertise affect Islamic banking governance (Aslam et al., 2023). Sustainability experts on boards improve risk management, stakeholder engagement, and environmental policy, but these findings have primarily been applied to conventional financial institutions, neglecting Islamic bank governance characteristics. Gender diversity on corporate boards promotes accountability and ethical decision-making, but Islamic banks face cultural and institutional barriers (Boshnak, 2021; Ousama, 2022). Some studies (Latif et al., 2020; Narayanan & Pradhan, 2024; Rismawati & Bawono, 2022) suggest gender-inclusive boards improve corporate governance and encourage sustainable projects, but others believe the effect is limited, especially without diversity mandates. Understanding how board participation influences sustainability performance in Islamic banking frameworks is vital, especially in Saudi Arabia, where corporate governance structures operate in a unique legislative and cultural environment.

Islamic banking's corporate governance and environmental disclosure theories provide vital insights into sustainability integration, but research has failed to link them to Islamic finance's governance processes. Financial firms must consider investors, regulators, customers, and the community while addressing sustainability challenges, according to stakeholder theory. Islamic banks' ethical commitment to Sharia and stakeholder environmental requirements is highlighted by this strategy. Stakeholder theory supports sustainability disclosure but does not remove Islamic banks' structural barriers to ESG governance (Mukhlisin & Akbar, 2021) and said that resource dependence theory shows how regulatory monitoring, Sharia compliance, and external funding sources affect Islamic banking governance structures and environmental disclosure. This theory describes how external institutional forces affect governance mechanisms when Islamic banks contact regulatory bodies and SSBs on sustainability initiatives (Kashi et al., 2024).

Agency theory, which addresses manager-stakeholder disagreements, is important in Sharia governance because SSBs interface Islamic banks and regulators. Islamic values help SSBs reduce agency tensions and increase corporate accountability. Conventional agency theory suggests that stronger governance reduces principal-agent conflicts, while Islamic

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banking governance systems must balance financial performance and ethical compliance (Alhamami, 2023). Institutional theory can be used to examine how regulatory requirements, public expectations, and religious values affect Islamic banking environmental disclosure. This approach addresses external sustainability integration constraints but not how Islamic banks operationalize environmental disclosure and corporate governance within. Current research has not sufficiently related these theoretical approaches to Islamic banks' governance structures and sustainability concerns, fragmenting our understanding of how environmental disclosure and corporate governance interact in Sharia-compliant financial institutions (Almashhadani, 2023; Qoyum et al., 2022).

Islamic banking literature has focused on sustainability's ethical grounds but ignored systemic hurdles to ESG implementation. Many studies compare Islamic finance to sustainability but neglect the obstacles Islamic banks face in achieving ESG criteria. Sustainability performance assessment and reporting are problematic without Islamic banking-specific environmental disclosure rules (Khémiri & Alsulami, 2023). Despite global disclosure norms, GRI and TCFD neglect Islamic finance's religious and ethical dimensions. Islamic banks struggle to comply with Sharia and global ESG standards, causing disclosure and regulatory concerns (Ellili & Nobanee, 2023; Haddad & Souissi, 2022). It is revealed that a Sharia-compliant environmental disclosure system that meets global sustainability standards and Islamic banking ethics and religion is developed in this study (Lin & Qamruzzaman, 2023).

How SSBs improve environmental sustainability is seldom studied. SSBs are important for Sharia compliance, but they have not been studied for environmental policy, stakeholder participation, or sustainability. As Islamic banking's principal regulators, SSBs' impact on sustainable governance should be addressed. We examine how SSBs affect environmental disclosure and if they promote corporate transparency and financial sustainability to fill this gap (Almaqtari et al., 2023; A. M. Buallay et al., 2020; Akkas & Asutay, 2022; Ousama et al., 2020). Islamic banking board makeup and sustainability. Diverse and environmentally conscious boards improve corporate governance, but Islamic finance research disagrees. To assess sustainability, Islamic banking board structures must consider gender diversity, environmental understanding, and governance frameworks due to cultural and legal constraints. Saudi Islamic banks' environmental disclosure and corporate governance depend on board membership (Akkas & Asutay, 2022; Al-Matari et al., 2022; Haddad & Souissi, 2022; Khanifah et al., 2020; Lin & Qamruzzaman, 2023).

There are few empirical studies linking environmental disclosure to Islamic bank financial success. Sustainability trends have been revealed by qualitative research, but quantitative evidence on whether environmental transparency enhances financial stability or compliance is sparse. Without data, Islamic banking sustainability standards are hard to assess. This study will fill this gap by empirically assessing Saudi Arabian Islamic bank environmental disclosure, corporate governance, and financial sustainability to affect regulatory policies and business strategy (Almaqtari et al., 2023; A. M. Buallay et al., 2020; Haddad & Souissi, 2022; Lin & Qamruzzaman, 2023; Qoyum et al., 2022).

This study synthesizes literature, finds gaps, and integrates relevant theories to understand how environmental disclosure and corporate governance affect Islamic banking financial sustainability (Abdulrahman, 2024; Aslam & Haron, 2020; Ousama, 2022; Salhi et al., 2020). The findings will inform scholarly debate and policy ideas to strengthen Islamic bank governance while meeting Sharia and international sustainability standards. The Saudi Arabian Vision 2030 promotes environmental responsibility and economic diversification; therefore, Islamic banks need governance frameworks that support long-term sustainability and financial stability (Akkas & Asutay, 2022).

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3. Hypothesis Development

Based on the literature review and theoretical background, the following hypotheses are formulated:

- 1. Environmental disclosure positively impacts the financial performance of Islamic banks in Saudi Arabia, as measured by ROA, ROE, and RAROE.
- 2. Sharia Supervisory Boards influence the integration of sustainability practices in Saudi Arabian Islamic banks, positively affecting environmental disclosure.
- 3. The inclusion of ESG principles in environmental disclosure enhances the financial performance of Saudi Arabian Islamic banks.
- 4. Board composition, including environmental expertise and gender diversity, positively influences environmental disclosure practices in Saudi Arabian Islamic banks.
- 5. The corporate governance framework in Saudi Arabian Islamic banks supports sustainability efforts, improving overall financial performance and stakeholder trust.

These hypotheses show about study context how environmental disclosure and governance affect Saudi Arabian Islamic banks' sustainable finance. To better understand sustainable Islamic finance, our study will rigorously investigate these factors' complex interactions.

4. Research Methodology

A well-structured methodology section analyzes Saudi Arabia's sustainable Islamic financing using quantitative and qualitative methods. Governance, sustainability issues, and decision-making are contextualized by semi-structured interviews with board members, Sharia Supervisory Board (SSB) members, top management, regulators, and sustainability specialists. Data saturation principles make 20 interviews a strong methodological consideration because they ensure that no extra data is needed when responses become repetitive and provide no new insights. Scientific rigor will improve by specifying saturation criteria and analyzing topics and how their repetition warranted data collection elimination.

The well-designed quantitative analysis covers Saudi Arabian Islamic banks from 2011 to 2023, coinciding with global ESG adoption and Saudi Vision 2030. ROA, ROE, and RAROE are reliable indicators of institutional financial sustainability. Extracting financial data from annual reports, regulatory filings, and financial databases ensures industry-standard financial comparisons. A more complete explanation of how these financial indicators were selected for Islamic banking sustainability will improve methodological transparency.

Focusing on board composition, diversity, and environmental committees helps this methodology evaluate corporate governance. Environmental disclosure assessment aligns with Sharia-compliant and global ESG frameworks like the Global Reporting Initiative (GRI) and the Task Force on Climate-related Financial Disclosures (TCFD), balancing Islamic financial principles and international sustainability standards. Discussing how Sharia Supervisory Boards and ethical investment methods are measured can help operationalize governance factors.

Participant anonymity, uniform interview methodology, and interviewers without prior associations with respondents reduce biases and promote methodological rigor. Discussing interviewer biases and cross-verification may strengthen conclusions from self-reported qualitative responses. The study uses mixed methods; however, it does not describe how to integrate qualitative and quantitative findings in analysis to evaluate environmental disclosure, governance, and financial performance. Triangulation using comparative analysis, coding frameworks, or theme convergence improves methodological transparency.

The methodology part uses data saturation principles, operationalizes key financial and governance variables, and links study goals to international and Sharia-compliant frameworks. Integrating qualitative and quantitative data, clarifying Islamic financial governance measurement, and explaining saturation and interviewer bias standards would improve methodological rigor, study validity, and dependability.

5. Econometric Model

Environmental disclosure, corporate governance, and financial performance are quantified using the following two econometric models:

Model 1: Linear regression examines the direct relationship between environmental disclosure (ED) and financial performance, written as follows:

$$FP_{it} = \beta_0 + \beta_1 ED_{it} + \beta_2 CG_{it} + \beta_3 CVs_{it} + \varepsilon_{it}$$

ED (environmental disclosure) is measured through specific indicators, such as carbon emissions intensity. CG (corporate governance) includes metrics such as board environmental expertise and the presence of sustainability committees. CVs (control variables) are factors like bank size, age, and market share. ε is the error term. i shows cross sections and t shows time series now we are using panel dataset.

Model 2: The model accounts for bank-specific and time-specific effects and is expressed as follows:

$$FP_{it} = \alpha_i + \beta ED_{it} + \gamma CG_{it} + \delta CV_{it} + \lambda_t + \varepsilon_{it}$$

In model 2, i and t denote the bank identifier and time period, respectively; α_i and λ_t represent bank-specific and time-specific fixed effects; and ϵ_{it} captures the error term. These models quantify how environmental disclosure and governance affect financial performance while controlling for other factors.

6. Variables Measurement

To achieve the study's goals, complex sustainable finance dynamics in Saudi Islamic banks are measured using detailed variables. This study uses bank annual financial reports' ROA, ROE, and RAROE to measure financial performance. ROA and ROE indicate a bank's profitability and operational efficiency in generating returns from assets and equity. RAROE adjusts these returns for risk, giving risk-adjusted profitability for financial stability and sustainability under uncertainty. Annual reports on Saudi banks' websites or audited financial databases like the Saudi Stock Exchange (Tadawul) and Saudi Central Bank may contain these measurements. A bank's environmental disclosure (ED) variable evaluates its transparency in reporting environmental operations, such as CO₂ emissions intensity and green technology investments. The bank invests in carbon reduction and sustainability solutions and manages environmental effects with this composite statistic. Environmental disclosure scores are based on yearly corporate responsibility reports, sustainability disclosures, and Bloomberg ESG, which cover Saudi Arabian bank environmental characteristics. Saudi banks' green finance, carbon management, and environmental initiatives match global ESG frameworks in corporate and regulatory reports (Abdulrahman, 2024; Aslam et al., 2023; Ousama, 2022; Salhi et al., 2020).

Corporate governance (CG) evaluates banks' sustainability committees, board members with environmental expertise, and CEO incentives. The bank's governance features demonstrate its commitment to sustainable management and environmental stewardship in corporate decision-making. Saudi Central Bank (SAMA) and individual bank annual governance reports describe board composition, committee structures, and CEO pay. Fi-

nally, control variables (CVs) make up for external factors like bank size (measured by total assets), age, ownership type, GDP growth, inflation, and interest rates that may affect financial performance (Abdulrahman, 2024; Boshnak, 2021). These control variables separate environmental and governance influences on financial performance by adjusting for economic and institutional differences. Saudi bank control data from SAMA and GaStat, including macroeconomic variables like GDP growth, inflation, and interest rates, is credible for analyzing the Saudi banking industry (Aslam et al., 2023; Shehadeh et al., 2024). This structured data collection strategy offers a thorough analysis of Saudi Arabia's banking sector's financial performance, environmental disclosure, governance, and economy.

6.1. Qualitative Methodology

The qualitative method investigates how Saudi Islamic banks integrate sustainability into governance. The 20 semi-structured interviews target Sharia Supervisory Board members, senior executives, regulators, and sustainability experts to acquire diverse sustainable financial perspectives. Interviews include sustainability decision-making, assessing environmentally sustainable financial products, and reconciling Sharia and environmental aims. Internal discussions are contextualized by thematic studies of regulatory documents, sustainability reports, and Sharia compliance norms. Triangulation helps validate quantitative results with qualitative observations and improve understanding of Saudi Islamic financial sustainability (Abdulrahman, 2024).

6.2. Data Collection Process

Annual reports, financial statements, and databases with relevant financial measures provide quantitative data from 2011 to 2023. Saudi Islamic banks' environmental disclosure and governance practices can be studied longitudinally over 12 years about 11 Islamic banks. Surveying board members, management, and Sharia experts evaluates governance and sustainability integration. Trustworthiness and confidentiality are guaranteed. Qualitative data is collected from 20 semi-structured interviews over four months with participant permission. These findings are supported by anonymized interviews and sustainability report and policy paper analysis. To analyze broad patterns and specific discoveries, this multi-method strategy provides a big dataset.

The study analyzes quantitative and qualitative data with sophisticated tools for precision and rigor. We analyzed quantitative data with Stata. Stata offers regression, time-series analysis, and econometric modeling for longitudinal panel data analysis. NVivo organizes, categorizes, and thematically analyzes interview transcripts and documents for qualitative analysis. NVivo's hierarchical coding, memos, and queries facilitate qualitative data analysis and theme identification. MAXQDA integrates interview data, document reviews, and other textual sources and provides visualization tools for data interpretation and transparency. Stata, NVivo, and MAXQDA handle both data formats well, enabling the mixed-methods study (Aslam et al., 2023).

This study follows stringent openness, privacy, and regulatory compliance ethics. Informed consent requires disclosure of the study's purpose, confidentiality, and withdrawal rights. All sensitive data regulatory permissions are safe, and participant names are anonymized. The study team discloses conflicts of interest and handles data honestly.

7. Data Analysis

Environmental disclosure, corporate governance, and control variables affect financial performance (ROA) across three model assumptions in the linear regression analysis (Table 1). Environmental disclosure (ED) is positively associated with ROA and statistically significant in Models 1, 2, and 3 (0.035, 0.029, and 0.031). This consistent positive effect,

significant at 5% in Models 1 and 3 and 10% in Model 2, suggests that banks with more environmental disclosure may perform better. Environmental openness may boost financial outcomes by attracting environmentally conscious investors or improving sustainable operational efficiency. Board environmental expertise improves financial performance, as shown by Models 1 and 2's coefficients of 0.028 and 0.030 (significant at the 10% level). This shows that board environmental competency may improve sustainable decision-making and financial returns. Though not statistically significant in Model 1, board gender diversity boosts Models 2 and 3 with coefficients of 0.021 and 0.025. The positive correlation suggests that gender diversity on the board may enhance balanced governance and increase financial performance through diverse perspectives, despite the lack of statistical significance. Log assets, which measures bank size, has a positive relationship with ROA across all models, with coefficients ranging from 0.038 to 0.045, significant at the 5% level, indicating that larger banks perform better. This suggests that scale improves banks' efficiency, market presence, and resource availability, increasing returns.

Table 1. Results of linear regression analysis (Model 1).

Dependent Variable: Financial Performance (ROA)				
Variables	Model 1	Model 2	Model 3	
Environmental Disclosure (ED)	0.035 ** (0.012)	0.029 * (0.013)	0.031 ** (0.012)	
Board Environmental Expertise	0.028 * (0.014)	0.030 * (0.013)		
Board Gender Diversity		0.021 (0.015)	0.025 (0.014)	
Log Assets	0.045 ** (0.013)	0.038 ** (0.012)	0.042 ** (0.011)	
Capitalization Ratio	0.120 *** (0.035)	0.115 *** (0.034)	0.118 *** (0.033)	
Bank Age	0.003 (0.002)	0.004 (0.002)	0.003 (0.002)	
Market Share	0.015 (0.008)	0.013 (0.007)	0.014 (0.008)	
GDP Growth	0.020 * (0.010)	0.018 * (0.009)	0.019 * (0.009)	
Inflation Rate	-0.012 (0.007)	-0.014 (0.006)	-0.011 (0.007)	
Interest Rate	-0.025 * (0.011)	-0.027 * (0.010)	-0.026 * (0.011)	
Constant	0.010 (0.020)	0.015 (0.018)	0.012 (0.019)	
Observations	150	150	150	
R-squared	0.460	0.485	0.472	
Adjusted R-squared	0.448	0.472	0.460	
F-statistic	12.45 ***	13.28 ***	12.90 ***	

Note: Standard errors are reported in parentheses. ***, **, and * indicate significance at level 1%, 5%, and 10% respectively.

Financial performance is also influenced by control variables. Capitalization ratio, which is highly significant across all models with coefficients of 0.120, 0.115, and 0.118 (significant at the 1% level), positively correlates with ROA, showing that well-capitalized banks perform better. Banks with higher capital ratios may be more robust and profitable. GDP growth increases ROA at 10%, with coefficients around 0.020 in all models, demonstrating that stronger economic conditions benefit bank performance. Interest rate is inversely connected to ROA, with statistically significant coefficients of -0.025 to -0.027 across models, showing that higher interest rates may diminish bank profitability due to higher borrowing costs or less lending activity. Inflation rate and bank age are not statistically significant, but they adjust for bank economic and institutional features, strengthening the model. Final R-squared values vary from 0.460 to 0.485, indicating that predictors

explain 46–48.5% of financial performance variation. Each regression model has 1% F-statistics, proving its significance. These findings show that environmental and governance issues affect financial performance, whereas capitalization and macroeconomic indicators contextualize Saudi banking sector financial outcomes.

Table 2 displays panel data regression analysis utilizing fixed effects (Model 1) and random effects (Model 2) to explore the relationship between financial performance, assessed by return on assets (ROAs), and key predictor variables like environmental disclosure (ED) and governance aspects. Environmental disclosure (ED) positively and statistically significantly affects financial performance in both models, with coefficients of 0.033 and 0.031 for the fixed effects and random effects models, respectively, significant at 5%. Environmental transparency improves bank financial results by building stakeholder trust, attracting green investors, and indicating operational efficiency. Islamic banking stakeholders wanting financial returns and Islamic principles may desire environmental transparency and Sharia values of responsibility, social justice, and ethics.

Table 2. Results of panel data regression analysis (Model 2).

Dependent Variable: Financial Performance		
Variables	Model 1 (Fixed Effects)	Model 2 (Random Effects)
Environmental Disclosure (ED)	0.033 ** (0.011)	0.031 ** (0.012)
Board Environmental Expertise	0.027 * (0.013)	0.029 * (0.014)
Board Gender Diversity	0.018 (0.014)	0.021 (0.015)
Log Assets	0.042 ** (0.012)	0.039 ** (0.011)
Capitalization Ratio	0.115 *** (0.032)	0.110 *** (0.031)
Bank Age	0.004 (0.002)	0.003 (0.002)
Market Share	0.014 (0.007)	0.013 (0.008)
GDP Growth	0.019 * (0.009)	0.017 * (0.009)
Inflation Rate	-0.013 (0.006)	-0.011 (0.007)
Interest Rate	-0.026 * (0.010)	-0.025 * (0.011)
Constant	0.008 (0.018)	0.010 (0.019)
Fixed Effects (Bank)	Yes	No
Random Effects	No	Yes
Observations	150	150
R-Squared (Within)	0.452	0.438
R-Squared (Between)	0.468	0.475
R-Squared (Overall)	0.460	0.459
F-Statistic	14.20 ***	13.80 ***
Hausman Test (p-Value)	0.045 *	

Note: Standard errors are reported in parentheses. ***, **, and * indicate significance at level 1%, 5%, and 10% respectively.

Environmental disclosure and financial success are strongly correlated in the random effects model, which accounts for within-bank and between-bank heterogeneity. Internal changes are isolated in the fixed effects model to adjust for unobserved heterogeneity between banks. Islamic banks must incorporate environmental transparency into their operations and strategy due to this strong link. This suggests Islamic banks use Sharia-compliant, ESG-compliant reporting technology for transparent environmental disclosure that follows Islamic financial standards and operations.

Board environmental expertise improves financial performance in governance, with 10% significant coefficients of 0.027 in the fixed effects model and 0.029 in the random effects model. Board environmental competency improves sustainable decision-making and

financial performance. This supports resource dependence theory, which claims specialized organizations make better strategic judgements. We recommend Islamic banks recruit or train environmental specialists on their boards to enhance sustainable governance.

Board gender diversity had positive fixed effects and random effects coefficients of 0.018 and 0.021, respectively, but neither was statistically significant. While gender diversity may not directly affect financial performance in the sample, it may indirectly improve governance quality by encouraging varied perspectives and inclusive decision-making. Islamic banking, where Sharia rules, may need structural and cultural modifications to promote board gender diversity. To improve governance, policies should mandate gender representation and environmental competency diversity. Additionally, log assets, which represent bank size, positively and significantly affect financial performance, with coefficients of 0.042 and 0.039 in the fixed and random effects models, respectively, significant at 5%. This shows how economies of scale help larger banks lower costs, leverage market advantages, and invest in sustainability. Scaling operations and increasing resources can help Islamic banks sustain.

Control variable analysis provides further information. Banks with larger capitalization ratios perform better financially, according to fixed and random effects models with coefficients of 0.115 and 0.110 at 1%. Capitalized banks can invest in regulatory compliance and sustainability due to market resiliency, improving financial performance. GDP growth induces bank profitability, with coefficients of 0.019 and 0.017, both significant at 10%, demonstrating macroeconomic conditions encourage banking expansion and stability. Interest rates impair financial performance, with 10% significant coefficients of -0.026 and -0.025 in fixed and random effects models. Interest rates may raise borrowing costs and limit lending, diminishing profits. Integrating inflation and bank age completes the financial picture but does not affect profitability. According to the fixed and random effects models' R-squared values, within-bank predictors explain 45.2% of financial performance variance, whereas between-bank predictors explain 46.8% and 47.5%. Results demonstrate elements that illuminate Saudi Islamic bank financial performance.

Table 3 shows qualitative interview and document review themes on environmental disclosure, corporate governance, financial performance, implementation issues, and sustainable finance. Environmental disclosure lists 45 banks' transparent environmental reporting to build stakeholder trust. Meeting 38 environmental, social, and governance requirements and 22 carbon emission reporting rules may attract eco-conscious investors. In addition, 29 renewable energy investments and 18 resource efficiency rules demonstrate that banks are investing in renewable projects and implementing long-term resource efficiency initiatives. These efforts show the sector's increased focus on sustainability and global sustainable finance issues like transparency and resource responsibility.

Under Corporate Governance, board environmental expertise (30 codes) and sustainability committee influence (24 codes) show banks value environmental understanding and sustainability bodies. Environmentally savvy board members promote sustainability policy, and sustainability committees develop and meet environmental targets. Some banks are connecting CEO compensation to environmental success (20 codes), signaling a trend towards sustainability leadership. Gender diversity on boards (16 codes) and accountability in governance (27 codes) foster inclusive and responsible sustainability debates, showing a greater understanding of the need for diversity and responsibility.

Financial performance shows banks believe transparent environmental initiatives improve performance (35 codes). Stakeholder trust (26 codes) illustrates that environmental disclosure has boosted banks' credibility. Compliance costs aside, participants think that environmental activities are resource-intensive yet long-term beneficial (19 codes).

Table 3. Qualitative themes and frequency of codes (NVivo/MAXQDA).

Main Theme	Sub-Theme	Frequency of Codes	Quotes
Environmental Disclosure	Transparency in Reporting	45	"Our bank is committed to full transparency in environmental reporting to enhance stakeholder trust."
	Compliance with ESG Standards	38	"Aligning with ESG standards is essential to attract environmentally conscious investors."
	Carbon Emission Reporting	22	"We are working towards accurate carbon footprint disclosures as per international guidelines."
	Renewable Energy Investments	29	"Investment in renewable energy projects is a core part of our sustainable finance strategy."
	Resource Efficiency Measures	18	"Resource efficiency is part of our long-term environmental strategy."
Corporate Governance	Board Environmental Expertise	30	"Having board members with environmental expertise has positively influenced our sustainability policies."
	Gender Diversity on Board	16	"Increasing gender diversity on the board has encouraged more inclusive discussions on sustainability."
	Sustainability Committee Influence	24	"The sustainability committee plays a critical role in setting our environmental goals."
	CEO Incentive for Sustainability	20	"CEO bonuses are now partially linked to achieving our environmental targets."
	Accountability and Governance	27	"Accountability in corporate governance is essential to driving sustainable finance initiatives."
Financial Performance	Impact of Environmental Disclosure	35	"Our financial performance has improved alongside increased transparency in environmental practices."
	Cost of Compliance	19	"Environmental compliance comes at a cost, but we believe it pays off in the long run."
	Stakeholder Trust	26	"Improved environmental disclosure has boosted our reputation among stakeholders."
Challenges in Implementation	Regulatory Challenges	28	"Navigating complex regulations is a major hurdle in implementing sustainable practices."
	Lack of Standardization	31	"There is a lack of standard environmental disclosure practices across the banking sector."
	Cost and Resource Constraints	21	"Implementing sustainable practices is costly, especially for smaller banks."
	Resistance to Change	15	"There is often resistance to adopting new environmental practices due to traditional mindsets."
Opportunities in Sustainable Finance	Attracting New Investors	23	"Sustainable finance attracts investors who prioritize ethical and responsible banking."
	Competitive Advantage	17	"Our environmental initiatives give us a competitive edge over other banks."
	Long-Term Value Creation	20	"We view sustainable practices as a pathway to creating long-term value."

Complex legal frameworks and lack of standardized disclosure procedures can prevent sustainable practices, says Challenges in Implementation. Due to cost and resource constraints (21 codes) and change resistance (15 codes), smaller banks struggle to devote resources for sustainability and overcome outmoded mindsets. Sustainable financing gives banks a competitive edge (17 codes) and attracts investors (23 codes). Long-term value creation (20 codes) advocates sustainable practices for long-term financial and reputational

rewards, preparing institutions for an environmentally conscious market. The industry is transitioning, balancing regulatory and resource issues with continued potential to improve reputation, investor appeal, and financial resilience.

The regression study with interaction effects in Table 4 indicates how environmental disclosure (ED), board environmental expertise (BEE), and their interaction affect financial performance (ROA). Environmental disclosure (ED) favorably and statistically significantly affects financial performance in all three models, with coefficients from 0.025 to 0.030 (significant at 10% and 5%). Environmental transparency and reporting may increase financial results by attracting sustainable stakeholders or aligning operations with efficiency-driven environmental norms. Board Environmental Expertise (BEE) exhibits positive coefficients in all models, but it is not significant. Ecologically aware board members may boost ROA; however, this characteristic alone does not predict financial success in the sample.

Table 4. Regression analysis with interaction effects.

Dependent Variable: Financial Performance (ROA)			
Variables	Model 1	Model 2	Model 3
Environmental Disclosure (ED)	0.025 * (0.012)	0.030 ** (0.011)	0.028 * (0.013)
Board Environmental Expertise (BEE)	0.015 (0.014)	0.018 (0.013)	0.017 (0.014)
ED * BEE (Interaction)	0.045 ** (0.015)	0.042 ** (0.016)	0.048 ** (0.015)
Board Gender Diversity	0.020 (0.014)	0.022 (0.015)	0.021 (0.014)
Log Assets	0.035 ** (0.012)	0.033 ** (0.011)	0.036 ** (0.012)
Capitalization Ratio	0.110 *** (0.030)	0.105 *** (0.029)	0.109 *** (0.031)
Bank Age	0.004 (0.002)	0.003 (0.002)	0.003 (0.002)
Market Share	0.014 * (0.007)	0.013 (0.008)	0.015 * (0.007)
GDP Growth	0.018 * (0.009)	0.017 * (0.009)	0.019 * (0.009)
Interest Rate	-0.024 * (0.011)	-0.026 * (0.010)	-0.025 * (0.011)
Constant	0.010 (0.019)	0.012 (0.018)	0.009 (0.020)
Observations	150	150	150
R-Squared	0.480	0.495	0.488
Adjusted R-Squared	0.466	0.482	0.474
F-Statistic	13.75 ***	14.20 ***	13.90 ***

Note: Standard errors are reported in parentheses. ***, **, and * indicate significance at level 1%, 5%, and 10% respectively.

All models had 5% statistical significance for the interaction variable ED * BEE with coefficients between 0.042 and 0.048. This shows that environmental experts on boards boost financial success through transparency. Environmental disclosure alone increases financial performance, but board members with environmental experience may be better at strategic and successful environmental measures. This interaction effect highlights the necessity for sustainable programs and qualified board members to manage and optimize them. It shows that banks with good environmental disclosure and ecologically savvy board members may profit from sustainability.

Log assets (bank size) consistently positively correlates with ROA in the control variables, with coefficients around 0.033 to 0.036 (significant at 5%). This shows economies of scale, resources, and market presence benefit larger banks. The capitalization ratio also positively affects ROA, with coefficients around 0.105 to 0.110 (significant at the 1% level), demonstrating that well-capitalized banks have a financial cushion that enhances stability and profitability. GDP growth increases ROA by 0.017 to 0.019 (significant at 10%), indicating that excellent economic conditions promote bank profitability. Interest rate is negatively correlated with ROA, with coefficients between -0.024 and -0.026 (significant at 10%), implying that higher borrowing costs may limit bank profitability.

The models' R-squared values (0.480–0.495) show that the predictors explain 48–49.5% of financial performance variance, while the adjusted R-squared values (0.466–0.482) show a good model fit. The robustness of all models is confirmed by their 1% F-statistics. When environmental disclosure protocols meet board sustainability expertise, environmental and governance concerns affect financial performance. Integrating open environmental standards and informed governance may improve Saudi banking industry financial results.

Table 5 provides qualitative views on corporate governance, environmental disclosure, sustainable finance, and banking sector green finance market potential. Sustainability requires board environmental competence, according to corporate governance practices. One bank says its board's environmental experience influences green finance projects and decision-making. Due to their prominence, sustainability committees impact environmental policy. These committees set quantifiable environmental targets to encourage bank responsibility and sustainability and align operational policies with sustainable goals. Although gender diversity is still a problem, low female board representation may limit sustainability perspectives, which could affect how these initiatives are treated in decision-making forums.

Environmental disclosure strategies prioritize reporting transparency since banks know it improves stakeholder trust. In an environment demanding environmental accountability, banks want investor and customer trust by being open. ESG compliance is prioritized by many institutions despite standards and implementation issues. International stakeholder expectations and global competitiveness require ESG alignment. Carbon emission reporting is new, but banks are wary about accuracy due to reputational risk. This cautious approach highlights the need for greater carbon footprint management and reporting mechanisms for institutions.

Banks face sustainable finance challenges when implementing sustainable practices. Banks struggle to build sustainable financial strategies due to changing regulations. Other issues include implementation costs, especially for smaller banks that may struggle to support sustainable initiatives. Sustainable finance capacity building and skill development are needed across the industry since banks lack the specialist skills and knowledge to integrate sustainability into core operations. Opportunities in green finance stress sustainability's competitiveness. Customers seeking eco-friendly solutions are driving green financing demand, indicating growth. Banks are just starting to offer green loans, but this need creates a big opportunity. Sustainable banking practices have given banks an edge and attracted ethical and sustainable consumers. This illustrates that sustainable practices can improve banks' market position, attract new customers, and produce long-term value beyond regulatory and reputational benefits.

Figure 1 shows how banking sector environmental disclosure scores affect financial performance. Representative banks' transparency and sustainability reporting is shown by environmental disclosure score dispersion. Most banks score mid-to-high, showing that while many have embraced environmental disclosure policies, a portion still lags, presumably reflecting industry flexibility or commitment to sustainability reporting. This distribution suggests environmental openness, although certain organizations may need government or market incentives to disclose more. A scatter plot shows how environmental disclosure scores affect ROA. Banks with greater environmental disclosure scores do better financially. Sustainability reporting improves stakeholder trust, risk management, and attractiveness to environmentally conscious investors, which may help banks financially. Such findings suggest that banks that excel in environmental disclosure may gain market favor. Environmental openness boosts profits, boosting sustainability's commercial argument.

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 Table 5. Summary of qualitative insights on corporate governance and environmental disclosure.

Theme	Insight	Example Quotes	Implications
Corporate Governance Practices			
Board Environmental Expertise	The presence of board members with environmental expertise is viewed as critical for guiding sustainability efforts.	"Our board includes members with environmental experience, which helps drive our green financing initiatives."	Enhances decision-making and commitment to sustainability.
Gender Diversity	Although gender diversity is gradually improving, many banks still lack sufficient representation of women on boards.	"Increasing female participation is on the agenda, but there's still a long way to go."	May limit diversity in perspectives on sustainability.
Sustainability Committees	Establishing sustainability committees is becoming a trend, with increasing influence on policy development.	"Our sustainability committee plays an instrumental role in setting and reviewing environmental goals."	Promotes accountability and fosters a sustainability focus.
Environmental Disclosure Strategies			
Transparency in Reporting	Banks recognize the need for transparent environmental disclosures to meet stakeholder expectations.	"We aim to disclose our environmental impact openly to build trust with investors and customers."	Improves stakeholder trust and credibility.
ESG Compliance	Many banks are beginning to adopt environmental, social, and governance (ESG) frameworks to standardize reporting.	"Aligning with ESG standards is challenging, but we believe it's essential for future competitiveness."	Enhances comparability and fulfills global expectations.
Carbon Emission Reporting	Reporting on carbon emissions remains a new practice, with some banks hesitant due to potential reputational risks.	"Accurate carbon disclosures are complex and may expose us to criticism, but we are working on it."	Highlights the need for clear frameworks and support.
Sustainable Finance Challenges			
Regulatory Constraints	Regulations around sustainable finance are evolving, creating uncertainty and complexity for banks.	"Regulatory changes make it hard to maintain a consistent strategy in sustainable finance."	Impedes consistent strategy implementation.
Cost of Implementation	High costs associated with sustainable practices can deter smaller banks from adopting them fully.	"Sustainability is a priority, but the initial costs are a major consideration for us."	May limit widespread adoption, particularly in smaller banks.
Resource Limitations	Limited expertise and resources are obstacles for many banks aiming to integrate sustainable practices.	"We lack the specialized staff and resources required for in-depth sustainability initiatives."	Indicates a need for capacity-building and expertise.
Market Demand for Green Finance	There is growing market demand for green finance, but product offerings are still limited.	"Customers are increasingly interested in green finance products, but we need to develop them further."	Highlights a growth opportunity for expanding green finance.
Competitive Advantage	Banks that adopt sustainable practices are perceived to have a competitive edge in the market.	"Our environmental initiatives have set us apart in the industry, attracting new clients."	Reinforces the business case for sustainable practices.

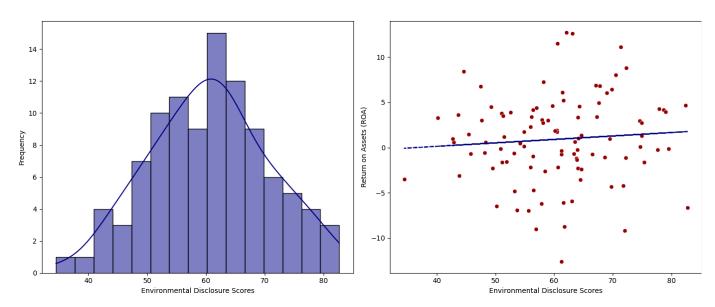


Figure 1. Distribution of environmental disclosure scores and scatter plot of environmental disclosure vs. financial performance.

Diagnostic charts evaluate the panel data regression model's assumptions and fit for environmental disclosure and financial performance in Figure 2. Residuals vs. fitted values tests homoscedasticity, which requires constant residual variance across fitted values. The model meets homoscedasticity because the residuals are randomly distributed around zero. Small clustering may suggest minor abnormalities, but not enough to worry about. A Q-Q (quantile–quantile) plot of residuals evaluates residual normality for regression hypothesis testing. These plots indicate that residuals follow the red line, indicating a normal distribution. The tails deviate, but the alignment supports the assumption of normalcy, making the model's inference tests reliable. The final figure, residuals vs. environmental disclosure score, examines the relationship. The plot reveals no trend, supporting the model's premise that residuals are independent of environmental disclosure score. These diagnostics show that the panel data regression model is well fitted and fits key assumptions, making the results interpretable.

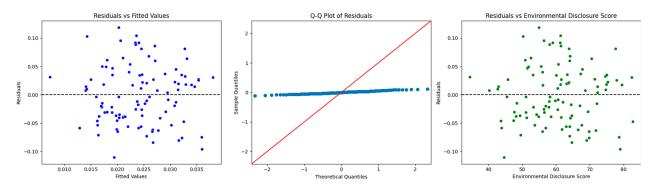


Figure 2. Panel data regression model diagnostics.

Figure 3 shows how environmental disclosure score and board environmental expertise affect predicted ROA. The blue line shows banks with low board environmental competency, whereas the orange line shows excellent board expertise. Better environmental disclosure ratings anticipate better ROA. Board environmental competence moderates high slopes. Banks with little board environmental understanding have a stronger relationship between environmental disclosure and financial performance. Environmental disclosure raises ROA more in banks without environmental professionals. Environmental disclosure

affects financial success less for banks with high board environmental understanding, as the slope is flatter. Environmental disclosure usually boosts financial success, but the board's competency may matter. Environmental transparency may increase stakeholder trust and reduce information asymmetry in institutions with little environmental expertise. For banks with more board knowledge, transparency slightly boosts ROA due to a baseline level of trust or efficiency. Disclosure policies and board composition are crucial to understanding sustainability-related financial results.

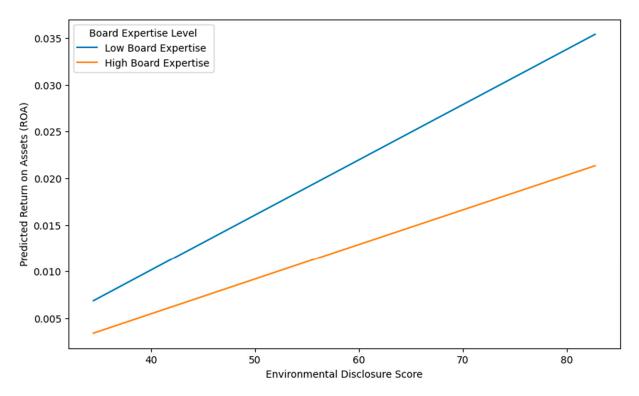


Figure 3. Interaction effects plot for moderating variables.

Figure 4 presents the primary themes of qualitative analysis and concepts on banking sector corporate governance, environmental disclosure, and sustainable financing as a word cloud. Sustainability and financial performance arguments center on compliance, reporting, risk, impact, and governance. Compliance and reporting suggests banks promote environmental and financial transparency and regulatory compliance owing to shareholder and regulatory accountability. Risk, financial, and management emphasize environmental and financial risk management, reflecting banks' struggle to reconcile profitability and sustainability. Ethics, strategy, community, and stakeholder highlight the social and ethical dimensions of sustainable finance in addition to compliance, showing that banks are meeting community expectations and stakeholder interests. Market value and competitive advantage highlight the financial and market benefits of sustainable practices, whereas innovation, efficiency, and standards emphasize efficient, innovative means to achieve sustainability goals. The word cloud demonstrates that banks are increasingly prioritizing ethical governance, regulatory compliance, risk management, and strategic sustainability investment for financial stability and competitiveness.



Figure 4. Word cloud of key themes from qualitative analysis.

8. Discussion and Findings

This study examined how environmental disclosure, corporate governance, and sustainability affect financial performance using quantitative and qualitative Saudi Arabian Islamic bank data. Environmental disclosure scores, corporate governance indicators, economic control variables, and long-term financial measurements like ROA, ROE, and RAROE are quantitative. You can study how governance regulations and environmental transparency affect profitability over time with this longitudinal dataset. Quantitative analysis and qualitative data from interviews and document reviews expose banks' operational, regulatory, and ESG challenges. Saudi Arabian Islamic banks' financial performance can be assessed using these datasets to determine how sustainability and governance frameworks affect financial outcomes (Tumewang et al., 2024).

Regression analysis in Tables 1, 2, and 4 shows that environmental disclosure increases Saudi Arabian Islamic banks' ROA, ROE, and RAROE. The financial performance of banks with greater environmental disclosure scores shows the importance of environmental reporting in profitability and efficiency. Environmental disclosure scores and financial performance improve for banks with high environmental transparency, as seen in Figure 1. This supports global research that shows environmental disclosure attracts environmentally conscientious investors, develops stakeholder trust, and reduces operational risks through resource management. Environmental disclosure meets CSR and Sharia ethical business standards for religious and culturally strict Saudi Arabian Islamic banks. Environmental responsibility promotes Islamic resource conservation, boosting the bank's credibility (Shehadeh et al., 2024).

The qualitative themes in Table 3 and the word cloud in Figure 4 emphasize environmental disclosure compliance, ethics, governance, and the Sharia Supervisory Board (SSB)'s sustainability impact. The Sharia Supervisory Board can promote Islamic bank sustainability by aligning environmental policies with Sharia principles and company goals. Qualitative research shows that environmental disclosures require board members with environmental competence, such as Sharia scholars with sustainable financial knowledge.

Sharia Supervisory Boards can promote sustainability by demonstrating ESG awareness that fulfills global responsible investing standards. Thus, Saudi Islamic banks might teach SSB members about ESG frameworks to help them incorporate sustainability into Sharia law (Sari & Hussien, 2024).

ESG principles in environmental disclosure improve financial performance, according to regression tables and the word cloud's compliance focus (Figure 4). Standardizing ESG disclosures makes banks' sustainability reporting more comparable and complete (Alghafes et al., 2024). Local and international stakeholders are scrutinizing Saudi Arabia's banking industry for environmental accountability, making this plan crucial. For Islamic banks, ESG principles can satisfy stakeholders and attract sustainable international investors. ESG principles help companies manage environmental risks and opportunities, improving revenues (Tables 1 and 2). Therefore, Saudi Arabian Islamic banks should standardize their environmental disclosures using ESG frameworks to attract global investors and demonstrate sustainability (Abdulrahman, 2024).

Environmental competence and gender diversity on boards promote environmental disclosure (Table 5 and Figure 3). Table 4 shows that environmental competence on the board improves financial performance through environmental disclosure, demonstrating the importance of informed board members in sustainability. Table 3 qualitative insights emphasize gender diversity on boards because various viewpoints improve holistic and inclusive governance, which sustains integration. Gender diversity on Saudi business boards could improve corporate governance and environmental accountability. Women and environmentally aware board members may boost bank transparency and stakeholder trust. To meet regulatory requirements and improve sustainability, Saudi Arabian Islamic banks should actively hire environmentalists and increase female board representation (Bashir & Babiker, 2023).

Saudi Arabian Islamic banks' quantitative and qualitative assessments show that sustainable corporate governance boosts financial performance and stakeholder trust. Banks with effective corporate governance, including environmental awareness and sustainability committees, perform better financially (Table 1, Table 2, and Table 4). Figure 2 shows that the model is well specified and accurately reflects governance, environmental disclosure, and financial performance. Table 3's qualitative findings show sustainability committees set environmental goals and monitor banks (Ed-Dafali et al., 2024). Saudi Arabia's regulatory system integrates sustainability; thus, banking sector corporate governance systems can be modeled. To improve corporate governance, Saudi Islamic banks should formalize sustainability committees and let them influence environmental disclosure policies and operations (Muhammad et al., 2021).

These data suggest methods Saudi Arabian Islamic banks can use to improve financial performance and meet global sustainability criteria. Islamic banks should first establish ESG-compliant frameworks for transparency, comparability, and ethical local and foreign investment. Islamic-compliant ESG compliance standardized reporting and promotes the bank's environmental responsibilities. The Sharia Supervisory Board (SSB) must support. Islamic banks can improve stakeholder confidence and loyalty by training SSB members on ESG ideas to ensure their sustainability projects respect Sharia and religious and ethical norms. Third, Islamic banks should focus on board diversity and expertise to increase environmental disclosures. Environmental specialists and gender diversity can improve bank governance and inclusivity (Abdallah et al., 2022).

Islamic banks should work with regulators to set sustainability guidelines to simplify new laws (Table 3). The Saudi Central Bank (SAMA) should adopt sector-specific environmental disclosure criteria to standardize. Training and technical support from sustainability NGOs may help smaller banks overcome cost and resource constraints. To

satisfy eco-conscious clientele, Islamic banks may provide more green funding options. As seen in Table 3, clients want green financial solutions; thus, Islamic banks can provide more to compete, attract new customers, and satisfy global sustainability trends.

This study found that environmental transparency and governance can improve Saudi Arabian Islamic banks' financial performance and stakeholder trust. Environmental transparency and good governance may boost Islamic bank profitability and make them sustainable finance leaders. Islamic banks can meet global norms and exhibit ethical financing by adopting ESG frameworks, strengthening Sharia Supervisory Boards, diversifying boards, and tackling implementation issues. This Islamic- and market-driven integrated sustainability approach boosts banks' competitiveness and Saudi Arabia's financial sector's economic and environmental sustainability.

The study's conclusions are important to Saudi Arabia's social, political, and economic climate. Environmental disclosure and governance by Islamic banks represent the country's strong Islamic ideals of accountability, ethics, and stewardship. This builds trust, especially as Vision 2030 empowers women and diversifies leadership. Islamic banks can meet changing social expectations while following Sharia by prioritizing board diversity and environmental competence. Vision 2030, the Kingdom's growth plan, is sustainable. Islamic banks can achieve these goals by integrating ESG principles into operations and harmonizing environmental disclosure with legislation. By adding ESG to Islamic financial regulations, Sharia Supervisory Boards (SSBs) can assure compliance with national sustainability laws and strengthen the regulatory framework. The global shift towards sustainable and ethical funding may help Islamic institutions. As Saudi Arabia diversifies away from oil, ESG-standard Islamic banks may attract global investment and offer competitive green financial solutions. Smaller banks can work with regulators and NGOs, while larger banks can lead these initiatives. This would promote banking and help Saudi Arabia diversify and sustain its economy.

Because GDP growth and interest rates affect financial performance, notably in Saudi Arabia's economy and banking operations, this study adjusts for both. GDP growth indicates economic health and impacts banking service demand and profitability. Saudi GDP growth is a significant metric of economic progress and financial performance as Vision 2030 diversifies the economy. Even though Sharia-compliant Islamic banks avoid traditional interest systems, interest rates affect their profits. Benchmark rate changes may affect Islamic bank competition and costs. The study links environmental disclosure and governance to Sharia-compliant financial success, closing gaps in Islamic banking's sustainability and performance indicator integration. Modern evidence like GCC banking ESG makes the paper relevant. This study also shows how board diversity and environmental awareness affect financial performance and how Saudi Arabia applies global ESG recommendations to its regulatory and economic framework. These articles examine how governments and financial institutions might reconcile administrative, economic, and environmental concerns.

Environmental transparency, corporate governance, and financial performance are linked; however, the study should examine how they support or contradict sustainability and Islamic banking governance beliefs. The study found that Islamic banks' ethical and Sharia-driven stakeholders matter more than stakeholder theory's environmental openness, which builds trust with investors and regulators. This supports the theory's application to Islamic finance and highlights Sharia Supervisory Boards' mediation of sustainability commitments and Islamic financial legislation. The study should demonstrate Islamic banking's dual ethical and financial motivations for environmental transparency to refine or extend stakeholder theory and separate it from conventional banking models that rely on regulatory pressures and market forces.

Islamic banks promote resource dependence theory by integrating ESG and monitoring governance with external regulators, sustainability committees, and Sharia experts. Sustainability training, regulatory alignment, and governance understanding affect environmental disclosure and firm sustainability performance. Environmentally competent boards of banks do better financially. The study supports resource dependence theory but suggests Sharia-compliant Islamic banks may have structural and operational barriers to using external sustainability information. This advances resource dependence theory and suggests that Islamic finance governance should incorporate ESG expertise into religious and financial legislation rather than relying on external resources like conventional banks.

Agency theory states that corporate governance systems eliminate principal-agent conflicts and align management, stakeholders, and regulators. Sharia Supervisory Boards enforce ethical financial practices as de facto monitors, improving sustainability, transparency, and financial performance. The addition of ethical monitoring for financial, moral, and religious compliance undermines agency theory in finance. The paper should explain that Islamic finance agency theory must account for Sharia monitoring systems, which mimic board governance but are different. ESG-aligned governance frameworks improve financial performance, but the study should expand to Islamic finance. These findings should be viewed in the context of regulatory policy development in other Gulf Cooperation Council (GCC) nations and emerging Islamic financial markets like Malaysia, Indonesia, and Turkey, where ESG integration efforts are rising but face legal and economic limits. The study notes that Saudi Vision 2030 combines financial and environmental goals, but other Islamic finance hubs may struggle to match Saudi banks' performance. Saudi Arabia's Islamic banking sector could be compared to Malaysia's Islamic Sustainable and Responsible Investment (SRI) framework for Sharia-compliant ESG integration.

Saudi Arabian Islamic banks should pursue long-term ESG adoption methods that conform with Sharia law. Research suggests improving gender diversity and hiring environmental experts on boards, as well as Islamic banking-specific ESG governance. Sharia Supervisory Board members should receive ESG training, ethical sustainability reporting should be required, and Islamic financial legislation should ensure ESG disclosure. The qualitative research highlights implementation costs and regulatory problems; therefore, the study may explore government incentives like tax benefits or Islamic banking ESG support to minimize these issues. The study incorporates GDP growth and interest rates, but governance and sustainability should affect financial outcomes. Higher interest rates hurt Islamic banks, which are interest-free under Sharia. Due to market and monetary reasons, alternative financing arrangements may indirectly affect Islamic banking profitability. Research is needed to determine how external economic shocks affect Islamic finance stability and whether sustainability-driven governance reduces macroeconomic volatility.

9. Conclusions

In an ethical and environmentally conscious market, environmental disclosure and corporate governance affect Saudi Arabian Islamic banks' financial performance, demonstrating the link between sustainability and financial performance. Environmental disclosure improves profitability, operational efficiency, and stakeholder trust, as shown by its positive link with ROA, ROE, and RAROE. Islamic banks, which embrace ethics and social responsibility, may benefit from connecting their financial strategy with environmental goals. Saudi Islamic banks can compete in the shifting financial market by complying with ESG requirements and transparently disclosing environmental impacts. These findings support higher disclosure morally and financially by showing that environmental openness is a strategic asset that aligns with Islamic banking values.

The research also stresses the importance of robust corporate governance frameworks, notably environmentally savvy board members and sustainability committees, for environmental transparency and funding. Environmental disclosure and board expertise favorably interact, showing that specialty governance structures boost sustainability operations' financial performance. This convergence of governance and environmental goals supports Saudi Arabia's strategic goal of sustainable banking, where Sharia values and environmental ethics combine. Sharia Supervisory Boards (SSBs) ensure Sharia conformity in environmental activities, including sustainability. Diverse and knowledgeable boards and sustainability committees help Saudi Islamic banks achieve regulatory requirements, improve stakeholder confidence, and support sustainable financial sector development.

In conclusion, this study provides data and practical advice for Saudi Arabian Islamic banks to follow global sustainability trends while adhering to Islamic banking standards. The financial benefits of environmental disclosure and good corporate governance allow these banks to include sustainability into their strategic frameworks, meeting market demands for responsible banking and regulatory transparency. These findings propose Saudi Arabian Islamic banks standardize ESG-compliant disclosure methods, strengthen board environmental competency, and empower Sharia Supervisory Boards to manage sustainability. By taking these steps, Islamic banks can boost their finances, satisfy socially conscious stakeholders, and become ethical and sustainable finance leaders. This strategy aligns with Vision 2030 and the worldwide trend towards responsible finance by increasing bank profits and sustainable economic development in Saudi Arabia.

This study has several limitations, especially regarding Saudi Arabian Islamic banks' pioneering and unstandardized sustainability reporting and environmental disclosure and corporate governance norms. The study used trustworthy quantitative and qualitative sources; however, bank reporting of environmental and governance indicators may have affected outcomes. Results from Saudi Arabian Islamic banks may not apply to banks in other countries with different regulatory, cultural, and commercial factors. The study finishes with major contributions, deficiencies rectified, and a complete research path. This study addresses a vacuum in Islamic banking literature by illustrating how Sharia-compliant governance and ESG principles affect financial performance and stakeholder trust. Mixing quantitative regression analysis and qualitative insights, the study defines Islamic banking governance and environmental variables and how they might be operationalized for sustainability research. The study focused on Saudi Arabian Islamic banks and used unstandardized sustainability reporting formats, but future research should use longitudinal data across varied geographies and regulatory environments to capture governance and sustainability practices' dynamic evolution. Practical contributions include standardizing ESG-compliant Islamic financing structures, diversifying boards with environmental expertise, and working with authorities to create consistent environmental disclosure standards that meet global sustainability targets. Further research should evaluate how digital transformation improves ESG integration, consumer and investor behavior in response to enhanced disclosures, regulatory reforms, and cultural factors to boost Islamic banking sustainability frameworks worldwide.

10. Research Implications

Sustainability and environmental openness are still emerging in Saudi Arabia's Islamic banking industry; therefore, this study's findings have theoretical and practical implications. Environmental disclosure and financial performance in Islamic banking support stakeholder and legitimacy theories that companies, including banks, must be ethical and transparent to sustain legitimacy and trust. Islamic finance's Sharia-based ethical framework makes environmental disclosure good for business, supporting the idea that

companies can gain competitive advantages by following social and environmental norms. The report emphasizes Sharia Supervisory Boards and board environmental knowledge, promoting ESG and Sharia-based governance frameworks and Islamic bank governance philosophy. The report finds that banks with strong environmental disclosure policies and governance structures can meet regulatory and public sustainability requirements while achieving profitability as Saudi Arabia aligns its Vision 2030 program with sustainable development aspirations.

These studies help Saudi Arabian Islamic banks improve financial performance and competitiveness through sustainable governance. Comprehensive, standardized ESG reporting systems that enable openness and comparability can boost market attractiveness and stakeholder trust for Islamic banks. Environmental disclosure improves financial performance. Sharia-compliant and global sustainability decisions made by environmental specialists on boards and sustainability committees assist Islamic banks' balance of profitability and ethics. These results suggest that Saudi regulatory organizations like the Saudi Central Bank (SAMA) should create Islamic bank-specific sustainability rules to ensure sector-wide environmental reporting. The study advises Islamic banks to invest in digital transformation, particularly fintech solutions for real-time sustainability monitoring and reporting, to overcome resource constraints and enhance transparency. These proposals can help Saudi Arabia's Islamic banks meet sustainability goals and lead the worldwide shift towards responsible finance, fostering long-term resilience and growth in a competitive and ethical financial sector.

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