

EXPLORING THE IMPACT OF SHARIA SUPERVISORY BOARD CHARACTERISTICS ON ENVIRONMENTAL DISCLOSURE: A GLOBAL STUDY OF ISLAMIC BANKS

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Abstract

This research assesses the extent to which Sharia Supervisory Board (SSB) traits impact the worldwide phenomenon of environmental disclosures of Islamic Banks. We used multivariate regression analysis to assess the environmental disclosures of 33 Islamic banks in the world using the GRI 300 standards obtained from the Refinitiv database. While the SSB traits of shariah qualification, financial expertise, gender and nationality diversity, board size, and the annual reports of the banks were manually collected as SSB were visions of Mufti Shariah. The research employed panel data regression using the fixed effects estimator to control for unobserved heterogeneity around the Banks and to ensure the reliability of the findings. The results showed that gender and national diversity had a positive effect on Mukahara Shariah, meaning that more diversity in religion and nationality of the board members led to more disclosure. In contrast, shariah qualification had a negative effect, while financial expertise and board size had no effect. The research results demonstrate the importance of SSB to advance the disclosure of sustainability reporting construction to the elders, that SSBs must give more priority to diversity over traditional religious qualifications. The research results have effectively empowered the regulators of Islamic financial institutions to complement the SSBs to include the Responsible Sharia governance of Islamic banking systems for compliance with the global sustainability standards.

Keywords: *Sharia Supervisory Board; Environmental Disclosure; Islamic Banks; Upper Echelon Theory*

Abstrak

Penelitian ini mengkaji sejauh mana karakteristik Dewan Pengawas Syariah (DPS) memengaruhi fenomena global pengungkapan lingkungan pada bank syariah. Kami menggunakan Analisis Regresi Multivariat untuk menilai pengungkapan lingkungan dari 33 bank syariah di dunia dengan menggunakan standar GRI 300 yang diperoleh dari basis data Refinitiv.



Sementara itu, karakteristik DPS yang meliputi kualifikasi syariah, keahlian keuangan, keragaman gender dan kewarganegaraan, serta ukuran dewan dikumpulkan secara manual dari laporan tahunan bank, mengingat DPS merupakan representasi dari visi Mufti Syariah. Penelitian ini menerapkan Regresi Data Panel dengan menggunakan Fixed Effects Estimator untuk mengontrol heterogenitas yang tidak teramat di sekitar bank dan untuk memastikan keandalan temuan. Hasil penelitian menunjukkan bahwa keragaman gender dan kewarganegaraan memiliki efek positif terhadap pengungkapan syariah, yang berarti bahwa semakin tinggi keragaman agama dan kewarganegaraan anggota dewan, maka semakin tinggi pula tingkat pengungkapan yang dilakukan. Sebaliknya, kualifikasi syariah memiliki efek negatif, sementara keahlian keuangan dan ukuran dewan tidak memiliki pengaruh. Hasil penelitian ini menunjukkan peran DPS dalam memajukan konstruksi pelaporan keberlanjutan bagi para pemangku kepentingan, bahwa DPS harus memberikan prioritas lebih pada aspek keragaman dibandingkan kualifikasi agama tradisional. Hasil penelitian ini secara efektif memberikan masukan bagi regulator lembaga keuangan syariah untuk melengkapi DPS agar mencakup tata kelola syariah yang bertanggung jawab pada sistem perbankan syariah demi kepatuhan terhadap standar keberlanjutan global.

Kata kunci: Dewan Pengawas Syariah; Pengungkapan Lingkungan; Bank Syariah; Teori Eselon Atas

INTRODUCTION

Issues faced by Islamic banks include, but are not limited to, managerial, profit-oriented, product *halalness* compliance, organizational, and structural guidance from Islamic religious supervisory boards. They also include global challenges that need to be addressed by Islamic corporate leaders, such as sustainability challenges (Ahmed, 2023; Sallemi, 2024; El-Essa et al., 2024; Jan et al., 2018). Islamic banks are required to achieve a balance among the institutional, societal, and environmental aspects of sustainability, in the context of Islamic social finance (Aliyu et al., 2016). Islamic banks are to prepare and disclose the implemented environmental strategies that have been designed from the start of the operational period.

Islamic banks are expected to contribute not only to social justice, but also to environmental sustainability as the preservation of the environment is vital to safeguard human welfare and long-term economic and financial stability (Ahmed, 2005; Ammar et al., 2023; Ullah & Khanam, 2018; Lone, 2016; Asutay & Harningtyas, 2015), rather than just for the sake of finance and income (Farag et al., 2018; Khan et al., 2017; Wajdi Dusuki, 2008). The ethical responsibility to finance such projects is derived from the risk-sharing and asset-backed nature of Islamic finance (Ullah & Khanam, 2018). Thus, the Extended Theory of the Firm offers a relevant operational framework.



Islamic banks uniquely include a Sharia Supervisory Board (SSB), which is particularly important for the governance of Islamic banks (Al Mannai & Ahmed, 2019). Islamic teachings include a Sharia value that is particularly focused on the encouragement of sustainability for the protection of the planet (Hartanto et al., 2024). This is the first such study that attempts to look through the lens of SSB characteristics in Islamic banks to determine specific decisions on corporate environmentally responsible behavior, as other studies have focused on Islamic Social Reporting (ISR) (Listyorini et al., 2024; Sarea & Salami, 2021; Wardani & Sari, 2019).

Islamic environmental ethics emphasize moderation, the avoidance of extravagance (*israf*), and advocacy for the welfare of future generations (Kula, 2001). Likewise, recent studies have linked corporate activity, particularly resource extraction, production, and waste generation, to environmental degradation (McCune, 2023; Afzali et al., 2024). Developing a conceptual/working theory that integrates corporate responsibility and the Islamic worldview is plausible, as the literature suggests that leadership and organizational decision-making are key drivers of effective environmental planning and desired sustainability outcomes (Boeske, 2023).

Developing a conceptual/working theory that integrates corporate responsibility and the Islamic worldview is plausible, as the literature points to leadership and organizational decision-making as the key drivers to effective environmental planning and desired sustainability outcomes (Chapra, 2001), and environmental sustainability (*bia*) (Bedoui, 2012; Khutub, 2017; Sarkawi et al., 2016). The second and third categories pertain to the operational elements and the furtherance of the portfolio (Ayub, 2007; ICIEC, 2023; Disli et al., 2023; Makhlof, 2017). As to the furtherance of the portfolio, Islamic Banking is said to have seventy percent of the assets of Islamic finance (Refinitiv, 2022).

This study seeks to advance knowledge of the influence of SSB on the level of environmental disclosure of Islamic Banks globally. The study is motivated by the rising expectations of stakeholders on Islamic Banks to be accountable for the environmental impact of their business in view of the escalating climate crisis, the recent integration of environmental, social, and governance (ESG) regulations, and the demand for sustainability report accountability. (Batemn et al., 2017; KPMG, 2022; Zeng et al., 2022).

LITERATURE REVIEW

Upper Echelon Theory and the Concept of Islamic Leadership

Upper Echelon Theory (UET) posits that an organization's culture embodies the attributes of its leaders. The theory states that the customs and



lifestyle of the top-tier executives of an organization govern the strategic choices made by the organization (Finkelstein & Hambrick, 1990; Osei Bonsu et al., 2024). UET suggests that the level of education, professional experience, and cognitive diversity of the leader(s) of an organization determines the behavior and output of the organization. Referring to the aforementioned leadership attributes, a number of studies have examined the social and environmental disclosure in an organization (Alfraih, 2016; Muttakin et al., 2015; Muttakin & Subramaniam, 2015; Sitthipongpanich & Polsiri, 2015), however, a scant amount of literature exists that examines the attributes of leadership concerning SSBs in Islamic banking.

This research contributes to knowledge by using the UET framework to assess the impact of SSB attributes such as Sharia qualifications, financial expertise, gender and nationality diversity, and size on the level of environmental disclosure in Islamic banks. Prior studies have reported that heterogeneity in knowledge and experiences improves transparency and the quality of decisions made (Ibrahim & Hanefah, 2016; Khan et al., 2019; Issa et al., 2022). Although gender diversity was not initially considered in UET, recent studies have confirmed that women in upper management positively impact the quality of disclosures and raise ethical consciousness (Luh et al. 2024). Including gender diversity in the analysis expands the UET framework to address the current challenges regarding governance in Islamic banks, as they aim to promote sustainability and operate on ethical principles.

From the Islamic standpoint, Upper Echelons Theory coincides with the concepts of Islamic leadership with regard to the three virtues of *amanah*, *'adl*, and *mas'uliyyah* (Mamat, 2019). In Islam, leadership is a fait accompli and a divine accountability to the stakeholders and God. The Qur'an likens people to 'khalifah' that they are stewards on earth (QS 2:30, 22:41) and are to establish justice and do no harm (Chapra, 2001). Anchoring on UET, corporate outcomes, including the disclosure of environmental practices, depend on the values, mental models, and experiences of those in power. Therefore, the characteristics of the SSB determine the focus and the degree to which environmental responsibilities are given precedence in the Islamic banks. The insight gained from social and environmental issues that in turn inspire greater openness, which is a benefit of having greater gender diversity. A broader institutional outlook and international standards on sustainability are gained from having diverse national backgrounds. The same goes for having Shariah qualifications, as it enriches the understanding of environmental care from the perspective of *maqasid al shariah*, while having formal financial knowledge allows the ethical and environmental concerns to be practically captured in a disclosure. Individually and together, these characteristics affect



the degree and quality of the environmental disclosures, as they mold the strategic directions and governance choices, making sustainability reporting, given the circumstances, not only a consequence of governance but also a facet of moral responsibility within the realm of Islamic banking.

Environmental Disclosure

Environmental disclosure constitutes a company's decision regarding past, present, and future management activities, actions, and performances in the environmental field (Berthelot et al., 2003). Due to the current trend in the business world, the adoption of environmental activity management disclosure as a company's environmental and social governance (ESG) management accountability practice is required to meet the company's management activities diversification (3 pillars in sustainability management). These disclosure reports increase managerial accountability and transparency, and provide a means to measure company management activities with the global sustainable management course. Environmental disclosure is a report of sustainability and is a specific component of the Environmental, Social, and Governance (ESG) activities of a company. These reports will use the Global Reporting Initiative (GRI) index as a standard that is universally accepted by the world (Bosetti, 2022). The Global Reporting Initiative (GRI) is becoming one of the most accepted reporting standards in the world.

To some degree, it offers instructions for entities to perform wide-ranging reporting involving their social, ecological, and economic impacts, which not only affect the reputation of the entity but also affect the decisions made by the stakeholders. With the increasing emphasis on sustainability, including climate change, social inequity, and environmental justice, the demand for transparency and responsibility for corporate reporting continues to grow (Ahmad et al., 2023; Hoang, 2023; Kramarz & Park, 2016).

The GRI framework reports on three fundamental areas of concern. The first area is a company's economic exposure. The economic pillar of impact assesses a company's economic contribution and is related to financial policies, community impact and engagement, and job creation. The second and third areas concern a company's environment and social impact. The environment pillar for companies is about reporting on the consumption of energy, waste management and disposal, greenhouse gas emissions, and the consumption of other resources. The third pillar is a company's social impact. The social impact reporting relates to human rights, the local community, occupational health and safety, and labor policies (GRI, 2016; Gümrah et al., 2019).



GRI has various Environmental reporting standards to enable companies to account for their environmental impacts and report on them with accountability and transparency (GRI, 2016). GRI Standard 300 is an environmental aspect that includes GRI 301: Materials, GRI 302: Energy, GRI 303: Water and Effluents, GRI 304: Biodiversity, GRI 305: Emissions; GRI 306: Waste, GRI 307: Environmental Compliance, and GRI 308: Supplier Environmental Assessment. These 8 indices are the research indicators for assessing the Islamic banks' reports on the levels of sustainability disclosure

Sharia Supervisory Board and Environmental Disclosure

SSB is a governance body of Islamic banks tasked with ensuring that Islamic banks' operations, products, and services conform to Islamic law (Nurkhin et al., 2018). SSB is one of the most vital Sharia governance mechanisms, where SSB *Sharia* experts are engaged to provide a Sharia-compliance monitoring function for Islamic banks on behalf of the stakeholders (Pranata & Laela, 2020). The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) elaborates that SSB is an autonomous body of scholars who hold Islamic jurisprudence(AAOIFI, 2010). The SSB is to ensure that the transactions and operations within the IFI are within the bounds of *Shari'ah*, thus fulfilling *Shari'ah* (*Shari'ah* Governance Framework, 2018) requirements and satisfying the ethical concerns of stakeholders of the institution(Minhat & Dzolkarnaini, 2016). This mechanism comprises a variety of dimensions, in particular, age, competence, education, and skills.(Jabari & Muhamad, 2020). Such heterogeneity encourages the creation of a more expansive knowledge structure, creative thought, and innovations, which in turn boosts the competitive advantages and profitability of Islamic Financial Institutions (Aisyah et al., 2022; Jabari & Muhamad, 2020).

The SSB can also venture beyond financial oversight to include social and environmental dimensions (Habib, 2023; Saad & Abd Rahman, 2018). From this perspective, the SSB could assist Islamic banks in their attempts to achieve the *maqasid al-shariah* by providing equilibrium between economic and environmental objectives. Practical measures such as the financing of green sukuk for renewable and other eco-positive projects showcase the incorporation of ethical financing with the vision of sustainability (H. M. Ahmed, 2023b; Clarke, 2023). This incorporates the Islamic perspective of khalifah which focuses on stewardship of the earth and strengthens Islamic financial institutions as agents of social and environmental good. Thus this SSB acts as a conduit between the Sharia prescriptions and contemporary models of sustainability, harmonizing the spiritual and the ecological.



HYPOTHESES

Shariah Qualifications and Financial Expertise of Shariah Supervisory Boards

In Islamic banking governance, the SSB functions as a mechanism for both sharia compliance and accountability to stakeholders. Stakeholder-based, legitimacy, and resource-dependent governance theories suggest that board composition and expertise govern the direction, quality, and range of sustainability disclosures (including environmental) as the board sets the agenda, controls the resources, and dictates the reporting standards of the bank. Evidence in Islamic banking captures that the presence and characteristics of SSB are largely and positively associated with the degree of social and ISR disclosure, with an environmental dimension (Farook et al., 2011; Tumewang et al., 2025).

Supervisory Shariah Boards (SSBs) have been given the authority to ensure that Islamic banks function guided by *Shariah* principles. This task requires members to have certain formal *Shariah* qualifications, particularly advanced *Shariah* education, fatwa (Islamic legal opinion) expertise, or Islamic professional certification (Saad & Abd Rahman, 2018). Such knowledge allows SSB members to understand the concepts of *amanah*, *mas'uliyah*, and *maslahah*, and oversee Islamic ethical principles in banking. In the context of Upper Echelons Theory, these qualifications shape how members of the board think and the values they hold that ultimately determine how they define and what they choose to prioritize as key responsibilities of the organization. A robust understanding of *maqasid al shariah* provides SSB members with the knowledge that environmental protection is a fundamental aspect of social welfare and an essential part of intergenerational equity, which, in turn, calls for broader transparency on issues of environmental sustainability, as an expression of religious obligation and accountability. Based on the above, SSBs that have relatively more *Shariah* qualifications are likely to foster more robust environmental disclosure.

Empirical evidence about Islamic banks across countries demonstrates the positive relationship between the presence and/or effectiveness of SSB and the degree of CSR/ISR disclosure. Because ISR indicators encompass the environment (i.e. environmental policy, energy use, waste management), growing the *Shariah* qualifications in SSB should increase the amount of environmental information disclosed (Farook et al., 2011). Thus, the present study gives the following hypothesis. **H1:** Islamic banking discloses more environmental information when the majority of SSB members have *Shariah* qualifications.



Supplementary evidence arises from a study of the Islamic banking sector within the GCC (Gulf Cooperation Council) countries, showing that CSR commitments correlate with more active and responsive disclosure practices, amplifying the assertion that *sharia* orientation promotes engagement on climate issues more proactively (Platonova et al., 2018). Concerning the *Shariah* competence of the SSB, SSB members' financial familiarity (e.g., background in accountancy and finance, membership in audit committees) augments the granularity of supervision over the reporting systems and the internal reporting frameworks, thus streamlining actionable, quantifiable, and verifiable environmental disclosures and improving the synergy of ESG metrics with *Shariah* compliance. Mainstream governance literature proposes that the presence of financial experts on the board or audit committee is positively associated with the quality and comprehensiveness of ESG or environmental reporting, especially concerning carbon and climate change reporting, since they possess a better understanding of the environmental materiality, metrics, and financial risk related to climate change (Liao et al., 2015; Peters & Romi, 2013). Islamic banks' regulatory developments and market custom place sustainability disclosure oversight with audit committees/reporting specialization; this steers the focus to the belief that SSBs with financial background would elicit richer and investor-grade environmental disclosure (Moats et al., 2024; Parker et al., 2021). For this reason, the authors put forward the hypothesis as follows. **H2:** Islamic banking discloses more environmental information when the majority of SSB members have financial expertise.

Gender Diversity of the Sharia Supervisory Board

The presence of women on the boards of companies, including Islamic banks, helps to improve transparency and environmental disclosures (Said, 2024). Studies on gender diversity on the SSB, Women on corporate boards and Islamic banking illustrate how female board members bring to the board a more altruistic, socially responsible, and cooperative decision-making style than their male peers, which translates to an improved quality of corporate reporting, allowing fuller environmental disclosures (Wijayanti & Setiawan, 2022).

In wealth management, it is confirmed in multiple studies that women in senior management positions are better able to handle integration with environmentally related disclosures; they also address responsibility accounting, social responsibility, and responsibility reporting with greater competence. It is also identified that diversity of gender promotes more innovative and constructive corporate decision-making, including in



corporate policies on eco-efficient corporate disclosures that are more open to the public (Nurkhin et al., 2018; Said, 2024; Wijayanti & Setiawan, 2022). It is reasonable, therefore, to propose that Islamic banks (IBs) with greater representation of women in SSB are more proactive in environmental reporting. Thus, the hypothesis is stated as follows. **H3:** Islamic banking discloses more environmental information when the proportion of women in the SSB is greater.

Nationality Diversity of the Sharia Supervisory Board

The diversity in the SSB members' nationalities is also recorded as one of the key dimensions of the board diversity that positively influences the governance and the extent of disclosures. The upper-echelon of a theory suggests that the board of varied nationalities encompasses a rich blend of differing expertise, connections, and policies that are regulatory in nature, thus broadening the organizational scope. This incorporates knowing how to comply with international best practices in environmental reporting and standards such as the Global Reporting Initiative (Harjoto et al., 2018). The SSB's diverse nationalities permit Islamic banks to gain access to diverse sustainability relative to the member country. Studies in the international banking sector show that the diversity of the board's nationality is positively correlated with the level of social and environmental responsibility reporting, where foreign members usually contribute to the global market demand for transparency and environmental responsibility (García-Meca et al., 2015; M. Jizi, 2017).

An SSB consisting of multiple nations within the context of Islamic banking can serve as a conduit between Shariah principles and sustainable standards on a global scale. Lessons learned from jurisdictions with strict sustainable regulations may influence the Islamic value-based reporting framework, focusing less on the environment to broaden the scope of the reported information. Research conducted in the Middle East and Asia supports this assumption on the positive impact of board diversity on sustainability disclosures (Harjoto et al., 2018; M. Jizi, 2017). This line of reasoning motivates this study's hypothesis. **H4:** Islamic banks disclose more environmental information when the country of origin of the SSB is more diverse.

Sharia Supervisory Board Size

The size of the board is one of the notable characteristics of the corporate governance structure that affects the efficiency of supervision and the level of information disclosure. In the case of Islamic banking, a larger size of the



Sharia Supervisory Board is believed to improve supervisory functions, as each member possesses different skills and has unique societal connections, which enable them to analyze Sharia compliance from different angles and oversee Sharia governance. This belief is consistent with Islamic values of shura and ijтиhad, which advocate for group governance. From the point of view of resource dependence theory, a larger board offers the organization a greater diversification of resources, ideas, and information that the organization can utilize (Pfeffer & Salancik, 1978). Supplementing this view, Upper Echelons Theory proposes that the size of the board is also important because the outcomes of the organization are a reflection of the members' values, experiences, and the board's thinking as a whole. This suggests that a larger board is able to incorporate a wider array of ideas for the strategic choices and disclosure outcomes for the organization. Within Islamic banks, this contribution to diversity in the composition of the SSB could enhance not only the oversight of Sharia compliance, but also the oversight of general ethical and sustainable functions and responsibilities, including environmental disclosure.

In the Islamic banking perspective, the SSB is believed to have higher supervisory ability, as members have different views, competence, and connections. This relates to the resource-dependence theory, which states that organizations with more board members have access to a wider pool of resources, diverse ideas, and information. Some studies indicate that the larger the board size, the more responsible social and environmental accountability disclosure is, which is attributed to the ability of the board to adequately divide and specialize tasks (Jizi et al., 2014). Within the Islamic banking framework, larger SSBs can also enhance the supervisory role on the *maqashid shariah* principles, which include environmental protection as a component of social welfare (Farook et al., 2011).

Moreover, there is evidence on the banking industry that large boards are likely to be responsive to the needs of stakeholders for more disclosure, which includes environmental disclosure (Esa & Ghazali, 2012). Large SSB can form other committees and do studies related to environmental risk management and reporting. **H5:** Islamic banking discloses more environmental information when there are more SSB members.

METHOD

The study utilizes a purposive sampling method for Islamic banks operating during the period 2019 - 2023, and Islamic financial institutions from around the world over the period 2019-2023 from the Bank Focus and Refinitiv databases. This purposive sampling technique consists of gaining



access to Islamic banks that have particular attributes, and those attributes are: (1) identified as Islamic banks in both Bank Focus and Refinitiv databases, (2) active during the period 2019 - 2023, (3) has annual reports that include details about the characteristics of the SSB, and (4) holds complete environmental disclosure scores in the GRI 300s. Thus, the banks that have met the criteria above are included in the final sample that is subjected to empirical analysis. Combining the criteria of data on Islamic banks from the two data sources, 33 Islamic banks from across the world are selected for the analysis to be conducted. To assess the SSB characteristics and the environmental disclosure index (EDI) of the banks, the study has employed a multivariate panel data regression analysis technique on Stata.

The sample includes Islamic banks in the following countries: Egypt, the UAE, Saudi Arabia, Turkey, Malaysia, Bahrain, Oman, Kuwait, Jordan, Qatar, and Indonesia. Regional banks from the Middle East, Southeast Asia, and North Africa provide diverse cross-sectional representation from all primary regions in Islamic finance. This cross-sectional representation allows the study to be classed as global as it captures different cross-sectional arrangements of institutions, laws and regulations, and Shariah governance frameworks in different jurisdictions. This allows the findings to be generalizable across the Islamic banking global landscape

The final sample consists of 33 banks. The Bank Focus database has information on 97 Islamic banks for certain measures of financial performance (ROE and ROA) with 326 observations. The Refinitiv database has 83 banks and 317 observations for the environmental disclosure score; however, observations for both databases were paired, after which only 33 banks were retained in the final sample. This is probably due to different banks being classified as Islamic across the two databases. Bank Focus defines an Islamic bank as an institution that wholly operates under Shariah, while Refinitiv includes banks that offer Shariah-compliant products but are not necessarily a fully Islamic bank.

Variable Measurement

The study employs the Environmental Disclosure Index (EDI) as the dependent variable, which, according to content analysis, pertains to the GRI Index 300 (Environment-specific) pertaining to the Annual Financial Statements of Global Islamic Banks, covering the years 2019-2023, which are available via Refinitiv. In this regard, a summary of the variables in question are presented in Table 1.

**Table 1. Variable Measurement**

Variable	Definition	Coding	Data Source
Dependent Variable			
Environmental Disclosure Index (EDI)	Level of environmental information disclosure measured using GRI 300 indicators (GRI 301–308). The score is taken from the Refinitiv ESG database for each bank per year (GRI, 2016; Bosetti, 2022; Ahmad et al., 2023).	Continuous variable (0–100)	Refinitiv ESG
Independent Variables (SSB Characteristics)			
SSB Sharia Qualification (SSBSQ)	Percentage of SSB members with formal Sharia-related academic degrees (bachelor/master/PhD in Islamic law, fiqh muamalah, or Sharia economics) or holding official fatwa positions (e.g., DSN-MUI or AAOIFI) (Farook et al., 2011; Ardianto et al., 2024).	Score of 1 if more than 50% of SSB members hold at least a bachelor's degree in Shari'ah studies; otherwise 0.	Annual Report
SSB Financial Expertise (SSBFE)	Percentage of SSB members with academic or professional qualifications in finance, accounting, or auditing. Reflects technical capability in financial oversight (Peters & Romi, 2013; Moats et al., 2024; Ben Abdallah & Bahloul, 2021).	Score of 1 if at least one SSB member has qualifications in banking and finance.	Annual Report
SSB Gender Diversity (SSBG)	Representation of female members within the SSB structure (Luh et al., 2024; Wijayanti & Setiawan, 2022; Jabari & Muhamad, 2020).	Score of 1 if there is at least one female member on the SSB.	Annual Report
SSB Nationality Diversity (SSBN)	Existence of SSB members with foreign citizenship (Harjoto et al., 2018; García-Meca et al., 2015; M. Jizi, 2017).	Score of 1 if there is nationality diversity among SSB members.	Annual Report
SSB Size (SSBS)	Number of SSB members in each bank. Indicates overall supervisory capacity and resource availability.	Score of 1 if the number of SSB members ranges from 3 to 8 persons (Farook et al., 2011; Esa & Ghazali, 2012; Rao & Tilt, 2016).	Annual Report
Control Variables			
Company Size (SIZE)	Bank's total assets, transformed using natural logarithm. Indicates firm scale and visibility (Louie et al., 2019; Amyulianthy & Azizah, 2019).	ln (Total Assets)	Refinitiv
Return on Equity (ROE)	Bank profitability from shareholders' perspective (Arifin	Net Income / Total Equity	BankFocus



& Wardani, 2016; Farook et al., 2011).

Return on Assets (ROA)	Efficiency in generating profit from total assets (Khan et al., 2017; Ben Abdallah & Bahloul, 2021).	Net Income / Total Assets	BankFocus
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Source: Data processed by researcher (2025)

Empirical Model

The study employs a multivariate panel data regression technique as a means to discern the impact of SSB characteristics on the environmental disclosure of Islamic banks. The analyses are constructed on the basis of a stepwise modeling approach. Specifically, in Models 1-5, SSB characteristics are examined one-on-one with environmental disclosure in order to obtain the individual impact of the Shariah qualification, the financial expertise, the gender board diversity, the nationality board diversity, and the board size. Model 6 then adds all SSB characteristics at once, as well as the control variables, to obtain the marginal, distinct, and independent impact of the SSB characteristics with all the relevant control variables, thereby accounting for all possible isolations and interdependencies that might exist and serve as potential modifiers to the governance attributes. This methodology facilitates both marginal and global assessments of environmental disclosures in Islamic banks.

The period from 2019 to 2023 has heterogeneous Islamic Banks. Thus, a Panel Regression model, which controls for firm-specific, temporal, and unobserved factors, has to be used to obtain unbiased estimations. The model's validity has been confirmed already via the Variance Inflation Factor (VIF) test, which shows no severe multicollinearity problem. The model's results are further confirmed via a Lag-1 specification robustness test, which shows that outcomes have not changed over the period. The addition of the lagged independent variables (to the model) will show a more complex relationship and will diminish the problem of endogeneity (Octavio et al., 2025). The following (Equation 1) overall empirical model is formulated.

$$\begin{aligned} EDI_{i,t} = & \beta_0 + \beta_1 SSBSQ_{i,t} + \beta_2 SSBFE_{i,t} + \beta_3 SSBG_{i,t} + \beta_4 SSBN_{i,t} + \beta_5 SSBS_{i,t} \\ & + \beta_6 SIZE_{i,t} + \beta_7 ROE_{i,t} + \beta_8 ROA_{i,t} \end{aligned} \quad (i)$$

Legend: environmental disclosure index(EDI); SSB sharia qualification (SSBSQ); financial expertise of SSB (SSBFE); gender of SSB (SSBG); nationality of SSB (SSBN); size of SSB (SSBS); company size (SIZE); profitability of equity (ROE); profitability of assets (ROA).



RESULTS

There is a four-stage process for the data obtained from 33 Islamic banks from 2019 to 2023, which aims to analyze how the characteristics of SSB affect the EDI. The stages include performing descriptive statistical analysis, bivariate correlation analysis, and multivariate regression analysis followed by robustness testing. Table 2 show the descriptive data analysis.

The average score of the Environmental Disclosure Index (EDI) is 13.69, with a standard deviation of 21.68 and a maximum score of 87. Based on these figures, the overall level of environmental disclosure is low in Islamic banks, though there is a high level of delinquency between banks. For Sharia Supervisory Board members, the average percentage of those who hold formal qualifications in Sharia is 48.5%, and for those who are specialized in finance, the percentage is 42.4%. The percentage of females in the SSB is merely 6.1%, indicating that the inclusion of women in the SSB is still very low. Moreover, the percentage of SSB members who are foreigners accounts for 16.4% of the total SSB members. The size of the SSB is measured by the total number of members averaged 55.2% with a standard deviation of 0.499, this could be an indication of the level of standard diversity in the SSB size of each bank in the sample, However, in general, the number of SSB members tends to adhere to the minimum standard requirements set by the authority.

Regarding the control variable of total assets, the average of USD 20.3 million, with a standard deviation of 34.7 million, suggests a considerable difference in the operational scales of the Islamic banks. The financial performance (ROA) has a mean value of 0.764%, with a minimum of -6% and a maximum of 3%. On the other hand, ROE has a mean value of 8.667%, with a minimum of -15% and a maximum of 52%, indicating the stark contrast in the profitability levels of the banks. All in all, such descriptive statistics imply that there is variation in the characteristics of the SSB.

Table 2. Descriptive Statistics Results

Variable	Observations	Mean	Std. Dev.	Min	Max
EDI	165	13.691	21.683	0	87
SSBSQ	165	0.485	0.501	0	1
SSBFE	165	0.424	0.496	0	1
SSBG	165	0.061	0.239	0	1
SSBN	165	0.164	0.371	0	1
SSBS	165	0.552	0.499	0	1
SIZE	165	20,300,000	34,700,000	0	215,000,00
ROA	165	0.764	1.081	-6	3
ROE	165	8.667	9.643	-15	52

Source: Data processed by researcher (2025)



The descriptive statistics illustrate that SSB characteristics positively relate to worldwide environmental disclosure in Islam banks, per the bivariate regression results from Table 3, albeit at differing levels. Out of the variables, SSBSQ with 0.2063, and SSBN at 0.2011, the correlation is of a much weaker nature, whereas SSBFE with score 0.2568, SSBS with score 0.2769, and SSBG at 0.3937, all display stronger correlation to the environmental disclosure. In contrast, the control variables SIZE, with 0.4485, ROA at 0.3105, and ROE at 0.4682, establish a high positive correlation and, thus, affirm the influence of a company's size and profitability in environmental disclosure enhancement. All independent variables also have fairly low values of VIF (1.1-3.46); hence, the absence of the multicollinearity problem for this regression model. This suggests that, rather than Sharia's qualification and nationality, the other factors that more influence the environmental disclosure are the SSB size and the SSB members' gender diversity and financial expertise.

Table 4 displays various models for the multivariate panel data regression analysis. Models 1-5 are used in order to determine the individual impacts of the SSB characteristics and to create benchmarks for the total models in model 6, which is used for hypothesis testing. Hence, the results from the panel regression testing indicate that not all SSB characteristics have impacts on the worldwide environmental disclosures of Islamic banks. The Sharia qualification (SSBSQ) is insignificant in the various models, but in the complete model, it has an adverse impact that is significant, thus leading to the acceptance of H1. This shows that SSB members, who have their education in Sharia, are not the ones who drive an increase in the environmental disclosures. On the contrary, SSBG has shown to impact all the relevant models significantly, positively to verify the contributory impact of SSB women on the transparency and environmental stewardship. The same is the case for the SSBN, where it significantly and positively impacts, which shows that the diversity in the nationalities of the board members enhances the governance and sustainability level, particularly in environmental disclosures.

In contrast, SSB financial expertise (SSBFE) and SSB size (SSBS) did not show any significant effect, indicating that board quality and diversity get more relevant attention than board quantity or type. Thus, it can be inferred that hypotheses H2 and H4 have been rejected. Control (or nuisance) variables also serve to yield some valuable insights. Firm size (SIZE) consistently exerts a statistically significant positive effect ($p < 0.01$), which corroborates the extant debate that larger firms possess larger capacities to carry out environmental disclosures. Profitability, measured through equity (ROE), also exerts a statistically significant positive effect across the models ($p < 0.01$). This suggests that profit-advantaged firms are assumed to increase their



disclosures as a means to legitimize their public accountability. This is the opposite of asset-based profitability as measured through ROA, which is statistically insignificant. Hence, it is not justifiable to conclude that it exerts any form of influence on the surrounding environmental disclosure. These results confirm that SSB diversity and control variables, particularly the size of the firm and profitability of equity, are the main predictors of global environmental disclosures among Islamic banks, while the sharia and technical competencies did not have any relevant contribution.

Robustness Test

This research performs a robustness check employing a one period lag (Lag 1) strategy as contained in Table 5 in order to establish the persistence and dependability of the principal empirical results. Specifically, all independent variables associated with the SSB characteristics are lagged one year, while the environmental disclosure index stays in the same period. This enables the analysis to incorporate potential proponents and lessens the likelihood of reverse causality, as governance characteristics are presumed to impact disclosure decisions with a time lag. The lagged model is estimated using the same panel data regression framework and fixed effects specification as in the main analysis to ensure comparability of results. The correspondence in coefficient signs and significance between the baseline model and the lagged model suggests that the principal results are not the consequence of sensitivity to a particular specification of the model. Consequently, the robustness test establishes that the devised relationships between SSB characteristics and environmental disclosure are consistent over time and are not a consequence of transient fluctuations. This further attests to the accuracy of the empirical findings.

Discussion

The Effect of Sharia Qualification on Environmental Disclosure

The results indicate that Sharia qualifications of Sharia Supervisory Board members (SSBSQ) adversely influence environmental disclosure. Thus, it indicates that Islamic banks with a larger share of *Sharia*-qualified members are less likely to disclose environmental information. According to Upper Echelon Theory (Hambrick & Mason, 1984), top management's educational and cognitive grounding influences their perception and strategic choice. SSB members with eminent Sharia qualifications are predominantly concerned with *fiqh muamalah* and halal assurance and are less likely to consider issues about sustainability. This legalistic attitude, in turn, diminishes their exposure to the more challenging accountability. Concerning the respondents, given



Table 3. Bivariate Analysis

	EDI	SSBSQ	SSBFE	SSBG	SSBN	SSBS	SIZE	ROA	ROE
EDI	1								
SSBSQ	0.2063	1							
SSBFE	0.2568	0.4432	1						
SSBG	0.3937	0.2618	0.1417	1					
SSBN	0.2011	0.2265	0.2501	0.1623	1				
SSBS	0.2769	0.6798	0.7001	0.178	0.3001	1			
SIZE	0.4485	0.2909	0.2676	-0.0471	-0.0558	0.4049	1		
ROA	0.3105	0.3139	0.4043	0.0557	0.2033	0.5144	0.4213	1	
ROE	0.4682	0.5029	0.4456	0.1013	0.2352	0.581	0.3793	0.6701	1
VIF		2.08	1.99	1.1	1.18	3.46	1.39	2.06	2.27

Source: Data processed by researcher (2025)

Table 4. Multivariate Analysis

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	t	P> t										
SSBSQ	-1.170	0.244									-2.360	0.020
SSBFE			0.460	0.649							0.970	0.333
SSBG					6.460	0.000					7.080	0.000
SSBN							2.350	0.020			2.400	0.018
SSBS									-0.860	0.391	-1.380	0.169
SIZE	4.750	0.000	4.560	0.000	5.750	0.000	5.050	0.000	4.700	0.000	6.870	0.000
ROA	-1.270	0.206	-1.240	0.217	-1.370	0.171	-1.450	0.148	-1.040	0.299	-1.700	0.092
ROE	4.720	0.000	4.370	0.000	4.520	0.000	4.250	0.000	4.640	0.000	5.400	0.000

Source: Data processed by researcher (2025)



Table 5. Robustness test (Lag-1)

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	t	P> t										
SSBSQ	-1.370	0.172									-1.430	0.156
SSBFE			0.300	0.767							1.130	0.260
SSBG					4.360	0.000					4.670	0.000
SSBN							2.240	0.027			2.260	0.026
SSBS									-1.650	0.101	-2.040	0.044
SIZE	3.950	0.000	3.770	0.000	4.480	0.000	4.180	0.000	4.060	0.000	5.680	0.000
ROA	-1.190	0.238	-1.070	0.285	-0.940	0.348	-0.970	0.332	-0.840	0.403	-0.900	0.368
ROE	3.700	0.000	3.210	0.002	2.980	0.003	2.740	0.007	3.820	0.000	3.640	0.000

Source: Data processed by researcher (2025)



that the large number of SSB members of the sample are from Islamic jurisprudence and theology, it means they have no environmental management training, leading to a narrower focus on sustainability, which is consistent with Ardianto et al. (2024) and Farook et al. (2011), describing that SSB members with the primary religious focus are likely to give greater attention to sharia compliance and social values, without promoting environmental disclosure. Consequently, the findings imply that, in the context of fostering sustainability transparency, a Sharia perspective of the domain is insufficient without the other dimensions of environmental consciousness and interdisciplinary knowledge.

The Effect of Financial Expertise on Environmental Disclosure

As per the regression results, environmental disclosure has no influence from financial expertise (SSBFE) implies that having some of the technical skills in accounting and finance could not help in attaining higher environmental disclosure. Using the Upper Echelon Theory, Technical expertise would only influence performance positively, in conjunction with the organization's strategic and moral systems. Financial experts concern themselves with control of risks, accuracy of audits, and reliability of reports. Thus, they may be less inclined to participate in financial disclosure of the non-(environmental) responsibility. Concerning the features of respondents, most SSB members with financial expertise have worked in accounting or auditing, so naturally, they would focus on regulatory compliance and profitability, leaving out the sustainability. This demonstrates that financial literacy in isolation, with no fusion with ethics and sustainability, is unable to drive environmental disclosure. Moats et al. (2024) and Parker et al. (2021) report similarly that finance or audit experts are more inclined to reinforce the financial oversight of an organization than the governance of sustainability. This is to say that SSBs having high financial competence are more likely to control and ensure profitability and, to some extent, improve the quality of environmental reporting, which has been verified by Ben Abdallah and Bahloul (2021).

The Effect of Gender Diversity on Environmental Disclosure

The findings indicate that the SSBG's gender diversity positively contributes to the improvement of environmental disclosure. Islamic banks with women on their supervisory boards demonstrate a higher degree of transparency concerning their environmental disclosure reports. Applying Upper Echelon Theory, diversity of gender within a board may positively influence ethical sensitivity, the tendency to empathize more with others, and



cooperative decision making. Regarding these factors, the positive outcome is social and environmental accountability. It is a common societal belief that women are more socially conscious and are morally more responsible. Thus, their presence contributes to a more socially responsible governance of the institution. Although the average representation of women on SSBs is relatively low (6.1%), their presence is sufficient to positively affect the disclosure of sustainability reporting. The findings suggest that women supervisors, within Islamic leadership principles of social accountability and stewardship, balance ethical considerations of the social dimension and finances, thus diversifying the theory of Islamic leadership. These findings corroborate the works of Luh et al. (2024), Wijayanti and Setiawan (2022), and Jabari and Muhamad (2020), who highlighted the positive impact of women on boards, especially within Islamic finance, on the disclosure of ESG (environmental, social, and governance) information. As a result, increasing the SSB's gender representation must be an effective and ideal first step to enhance sustainability practices in Islamic Banking.

The Effect of Nationality Diversity on Environmental Disclosure

The sample also confirms that environmental disclosure (clause level) is influenced by both primary and secondary group national diversity (SSBN) positively and significantly. This means that members of the SSB of multiple nationalities have a positive influence in broadening the scope of sustainability reporting. One would assume the upper echelon theory combined with the resource-dependence theory (Pfeffer & Salancik, 1978). Holding to the above, SSB members with diversity of backgrounds can enrich the cognitive resources in terms of connection to the resource external to the system, and awareness of practices deemed as best (to systems that have best practices) in the environment. SSB members with such diversified backgrounds may import global sustainability frameworks like GRI or IFRS-ISSB to the governance culture of the Islamic banks. To start with, only 16.4% of SSB members are foreigners, as per the respondents of the profile, but even with that, there is a strong positive correlation with environmental accountability. This is because the foreign members are likely to come from countries that are environmentally highly regulated. This insight would make the internal policies opaque inasmuch as environmental impact is concerned. This adds to the support of Harjoto et al. (2018) and García-Meca et al. (2015) in that nationality diversity is a cornerstone for enhancing the effectiveness of a board in terms of overseeing sustainability. This is true, and as highlighted by M. Jizi (2017), board members who have international exposure are best placed to support the firms in meeting global standards on disclosure that are required.



This means that the foreign scholars or professionals who are members of the SSB constitute a vital link in Islamic governance and the global sustainability standards.

The Effect of SSB Size on Environmental Disclosure

What we know about the SSB Size does not appear to have any bearing on the environmental disclosure. This implies that mere membership on the SSB does not mean that there will be any disclosure on environmental matters. With regard to the Resource-Dependence Theory, it does state that larger boards have access to more resources and different viewpoints, while the Upper Echelon Theory, however, posits that the cognitive ability and the skills to organize of the members are more important when it comes to instituting change. Larger boards have the problem of not being able to reach a consensus, and not being able to control a line of continuous attentive engagement on the issue of providing oversight on complex entities, such as the sustainability reporting. In the context of the respondents, the SSBs in the sample had uniformly the same average size and only carried out the minimal SSB that was required, which limited the size and the impact that it was able to have. The supportive studies by Esa and Ghazali (2012) and Farook et al. (2011) pointed out that there was the same conclusion that the size of the board was not enough to ensure that there was disclosure that was expected. Rao and Tilt (2016) noted that larger boards tend to have the problem of diluting control by the members at the head of the board, which means that effective governance is not about the head count of the board, which, as they noted, needs to be complemented by the diversity of discipline and skills that the board has. Therefore, there needs to be emphasis on the composition of the board and the training of the members.

CONCLUSION

This study refines the Islamic financial SSB characteristics and expands the SSB composition to globally licensed Islamic banks. There were positive relationships for disclosures with the inclusion of diverse SSB members across gender and nationality. There were contrasts with Sharia attributes of SSB members as having a negative effect on disclosures, as compared to Sharia and religious commitments to sustainability engagement. There appeared to be no influence as well for financial directorates, and for the size of SSB on environmental disclosures, where it may have been assumed that the results were indicative of more technical structural attributes or cognitive diversities of ethical framing. Results of the control variables reinforced the findings, where it appeared banks with greater size and profitability of banks



(measured as ROE legislative requirements) disclosed environmental information to a greater degree, and it implied ROA had no influence.

The findings contribute to the Upper Echelon Theory through stakeholders' identification of Islamic governance in the dimensions of SSB diversity. Therein, the ethical consciousness and under the Islamic principles, graduates of higher educational attainment are no substitute for the religious and moral. Therein lies the practical nature of Islamic finance and banking as it goes *maqāṣid al-shari‘ah* when integrated with the environmental sustainability characteristics and best practices of governance globally.

Further studies may also attempt to include qualitative measures of SSB dynamics such as board independence, active leadership, and cultures of decision-making. Moreover, a combination of qualitative and quantitative methods through interviews and statistical data analysis would shed light on SSB traits and their interplay with institutional and cultural elements in governance for sustainable practices in Islamic finance.

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