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A Fundamental Transformation of Sustainable Business Model: Roles of Islamic Banking in Accelerating MSMEs Industry

Dini Maulana Lestari[1]; Reni Furwanti[2]

[1]State Islamic University of Sunan Kalijaga, Yogyakarta, Indonesia
email: dini.lestari@uin-suka.ac.id (Corresponding)
[2]State Islamic Institute of Bone, South Sulawesi, Indonesia, email: renifurwanti@iain-bone.ac.id

Abstract

Background: This study analyzes the role of Islamic banking in supporting and accelerating MSME industries in Indonesia, remembering this industry holds a significant role in sustaining Indonesia's national economic growth. Nevertheless, several challenges remain steady, such as limited access to financial products, lack of financial and digital literacy, and so forth, making this industry difficult to be agile.
Objectives: This study aims to examine and analyze the role of ESG in the Islamic banking industry in Indonesia to boost the portion of financing for MSMEs by considering the role of green bonds as a moderating variable.
Novelty: This study tries to examine the ESG performances by integrating it with the moderating effect of green bonds, remembering that most previous research only focuses on the financial performance of the Islamic banking industry to increase its contribution to MSME agility.
Research Methodology / Design: This is explanatory research with a quantitative approach and documentation method, employing panel data from 15 Islamic banks registered by the Financial Services Authority (OJK) from 2020 to 2024 as the main sample, obtained from annual reports. Furthermore, Moderated Regression Analysis (MRA) is used to analyze the data and figure out the most suitable estimation model.
Findings: The finding reveals that environmental performance shows a negative impact on increasing the amount of financing for MSMEs. However, the other performances, such as social and governance, show the opposite.
Implication: The result is expected to shed light on the essential role of ESG and green bonds representing the goals of the Indonesia Sustainable Finance Taxonomy to support sustainable finance behavior among the Islamic banking industry as financial institutions and MSMEs enhancing national economic growth.

Keywords:
Sustainable Business, Sustainable Finance, MSME Agility.

JEL Classifications:
G20, G21, G24

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A. Introduction

The portion of financing form for Micro, Small and Medium Enterprises (MSMEs) sector in Indonesia has been experiencing a tremendous decline nowadays, making this industry difficult to get the amount of capital to expand and accelerate their business. Although the MSMEs play an essential role to the national GDP reaching for about 61.07% or equivalent to 8.57 trillion rupiahs, succeeds in employing well over 100 million workers, which is 97% of the total existing national workforce, and contributes to 60.4% of the total investment (Kementerian Keuangan RI, 2024), this sector is still facing several persistent challenges, particularly in accessing capital. According to Otoritas Jasa Keuangan (OJK), this is occurred due to the high level of non-performing loans (NPLs) contributed by the MSMEs through financing from, reaching about 4.02% (Otoritas Jasa Keuangan, 2025), leading to a small portion of financing from financial institution, reaching only 25.29% of total financing portion. In addition, lack of financial literacy, legal and regulatory barriers, and the limited banking infrastructure in certain regions exacerbated the difficulty of MSMEs in securing funding from financial institutions (ICSP, 2024) which ultimately weaken the competitiveness of MSMEs, hindering their ability to innovate and expand their businesses (Gusti Grehenson, 2024; Raman et al., 2025). These conditions lead the small portion of sustainable financing from Islamic bank, reaching only 25.29% of total financing portfolio in 2025.

Furthermore, one of reason why MSMEs industry seems difficult to get into financial product form financial industry, including Islamic bank recently is because of their lack of awareness regarding their concern on environmental and social impacts. MSMEs contribute are responsible for a substantial portion of carbon dioxide (CO_2) emissions into the atmosphere (Olarewaju et al., 2023), accounting for more than 50% of global pollution (Appiah-Kubi et al., 2024). This phenomenon reveals that MSMEs in Indonesia are still lacking of awareness in practicing friendly-business model, leading them to have limited access to broaden financing products from financial institutions remembering that nowadays the trend of business model has shifted to sustainable mode (Saygili et al., 2022a; Yu & Xiao, 2022a), reinforcing all industries to have responsibilities in terms of environmental aspect aligns with sustainable development framework (Elkington, 1997).

As financial institution, Islamic banking plays a pivotal role in providing financing product for public, including MSMEs. Nonetheless, since the trend of business has shifted in terms of paradigm where majority internal and external stakeholders are more concerning not only to the role of financial performance, but they expect that organizations also have to go beyond purely disclosing their non-financial performance which represents Environmental, Social and Governance (ESG), encouraging organizations to adopt more sustainable and responsible practices (Arie Pratama, 2025; Saygili et al., 2022). Stakeholder and Sharia Enterprise Theories emphasize that corporate responsibility extends beyond shareholders to include the broader spectrum of stakeholders such as the community, environment, and governance (R.E Freeman, 1984; Tang & Luo, 2016).

According to several researches implementing ESG performance in business model can attract investors' interest (Aouadi & Marsat, 2018; Pedersen et al., 2021; Yu & Xiao, 2022b; Yudaruddin et al., 2025). Entities with strong ESG performance tend to reduce exposure to reputational scandals, litigation, and compliance cost, providing more stable and long-term returns aligns with modern portfolio theory that value risk-adjusted returns rather than short-term profit. In terms of sustainable finance practices, Islamic banking has responsibility to provide financing products for MSMEs that support ESG practices, reinforcing their business development.

Meanwhile, to achieve the sustainable business development, a large flow of capital is needed to transform the MSMEs towards sustainable business model and practices. Thus, Islamic banking should increase its sustainability performance to get more attentions from investors trough out several investment products offered by the banks, because the better sustainable performance the higher trust and attention from shareholder, leading them to allow their capital invested to the banks, which then ultimately increase the capability of Islamic bank (Brooks & Dunn, 2020) in providing more financing form for MSMEs. Nevertheless, most of MSMEs actors are still face major challenges in dealing with the green economy transition. This situation occurs due to lack of awareness of MSMEs actors regarding the goals and significance of sustainability-oriented business (ICSP, 2024). A large proportion of MSMEs remain unaware of the importance of accessing green finance and the value of offering environmentally friendly products or services for the long-term viability of their businesses, leading them to a limited access to affordable and sustainable financing. Enforcing sustainable business practices can help MSMEs to increase competitiveness and sustainability of businesses, gaining larger financing products to develop its business model competing in a global market (Elkington, 1997). Additionally, the Islamic banking also holds a significant role in monitoring the capital flow that given to the MSMEs for business activity that aligns with sustainable development goals, which then turn into sustainable behavior among these two industries in running new-business framework.

Furthermore, to create sustainable finance behavior, it is to be done to create such a holistic value chain in term of business model to achieve sustainable finance behavior. Recently, green bond emerges as one of keys financial instrument in advancing sustainable development, indicating as one of the fastest-growing green financing instruments, with annual issuances exceeding USD 500 billion since 2021 (Climate Bonds Initiative, 2022). For banking institutions, including Islamic banks, green bonds offer a strategic opportunity to access international funding sources at a lower cost. Green bonds also can enhance the reputation and credibility of banks by demonstrating compliance with ESG frameworks (Wang et al., 2023). Banks with green bond portfolios are considered capable of attracting global funding. This expanded capacity enables banks to finance environmentally friendly projects, including MSMEs to promote inclusive and sustainable business practices (Appiah-Kubi et al., 2024). Such initiatives are expected to foster behavior aligned with universal well-being (Le, 2022). Several scholars have argued that supporting sustainable business practices enhances both competitiveness and organizational reputation (Nguyen et al., 2023; Wang et al., 2023).

The issuance of green bond by the bank also demonstrates a strong commitment in terms of finding financial sources that aligns with the principles of sustainability. This strategy might strength market trust and access to global investors. This commitment is further evidenced through the regular publication of sustainability reports (Crocco & Zicari, 2024; Wang et al., 2023). Accordingly, green bond has strategic implications for banking institutions, including increased access to global funding, portfolio diversification, improved ESG reputation, and greater capacity for sustainable financing (Martiradonna et al., 2023). Thus, when Islamic banking able to maintains its business chain from upstream to downstream, awakening sustainable finance behavior in every business model is easier.

As majority studies relating to sustainable finance practice are focused on multinational companies, this study aims to leveraging the course of green financing practices in MSMEs sector. Furthermore, to bridge the gap, this study also explores the role of green bond as moderating variable, representing a potential source of funding for Islamic banks that aligns with sustainability principles. Moreover, this study also tries to looking up the implementation of green finance practices from Islamic outlook as it aligns with *maqashid syariah* concept that commands all organization to performs under Islamic compliance, emphasizing universal wellbeing for public, entities and environment. This study aims to investigate the role of Environmental, Social, and Governance (ESG) principles in the Islamic banking sector as a financial service institution in promoting the growth of Micro, Small, and Medium Enterprises (MSMEs) through the quality of business capital financing.

B. Literature Review

B.1. Theoretical framework

Sustainable Development and ESG Frameworks

The concept of **sustainable development** was first formally defined in the *Brundtland Report* (1987) by the World Commission on Environment and Development (WCED). Sustainable development defines as a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This condition emphasizes that balancing economic, social and environmental become the main priority that must be carried out in the current and future development process. In relation to this, Elkington (1997) introduced 3 main pillars of sustainable development known as the Triple Buttom Line approach, consisting of; (1) People, representing social justice, public empowerment, and poverty alleviation. Where, this first pillar is aimed at creating social welfare. (2) planet, representing the wise management of natural resources and maintaining the quality of the environment. This is clearly emphasized to achieve benefits for the environment and natural resources. (3) profit, representing inclusive and productive economic growth.

However, as time has evolved, these three pillars are considered less representative in realizing the sustainable development goals (SDGs) which began to be initiated in 2015 by the United Nations (UN) as a normative framework in global development policy and research, including the financial sector and MSMEs. The UN introduced 17 goals and 169 targets with 5 main goals; ending poverty, decent work and economic growth, infrastructure innovation, climate action, and partnerships to achieve the goals. With the existence of these five main goals, there is the development of the pillars of sustainable development itself which originally consisted of 3P to 5P (people, planet, prosperity, partnership and peace). This is created to form a value chain of sustainable development activities.

Sustainable development also has an important role in the context of the financial industry. This is aimed at creating sustainable finance within the scope of the financial industry, including Islamic finance. Where, problems related to sustainability and environmental become a broader and contentious topic. Thus, with this in mind, the Association of Chartered Certified Accountants (ACCA) approaches these issues from the perspective of its long-running mission to guide and inform financial professionals on how to produce reports that provide transparency on the performance of organizations, including financial industries to disclose their business activities toward social and environmental aspects aligns with sustainable development goals. This condition is in line with Indonesia, where sustainable development is the main direction in the National Medium-Term Development Plan for 2020-2024 which is contained in the Indonesia Sustainable Finance Taxonomy, and is described in sectoral policies such as the OJK's National Strategy for Sustainable Finance, the MSME and Green Industry Roadmap, and the commitment to reduce carbon emissions through the National Determined Contribution (NDC).

Furthermore, as a strategic framework, Environmental, Social and Governance (ESG) represents a tangible manifestation of an organization's commitment to sustainable development. The ESG framework is utilized to evaluate how an entity manages risks and capitalizes on opportunities associated with environmental, social, and governance-related issues. In addition, the ESG framework has become a fundamental basis for making critical decisions in the realm of sustainable business, as it provides a comprehensive perspective on how organizations manage both financial and non-financial risks (Arie Pratama, 2025). Practically, the ESG framework comprises three core pillars: (1) **Environmental**, reflects an organization's performance in addressing environmental risks and opportunities, such as carbon emissions, energy efficiency, resource conservation, and waste management; (2) **Social**, represents the organization's performance in ensuring social well-being, both internally and externally, including labor rights, community relations, consumer protection, and community development; and (3) **Governance**, reflects the effectiveness of corporate governance in terms of disclosing organizational performance, encompassing transparency and accountability of information, board structure composition, and organizational integrity (Arie Pratama, 2025; Saygili et al., 2022).

Legitimacy and Stakeholder Theory

Legitimacy theory (Dowling & Pfeffer, 1975) explains whether the value system applied within an entity aligns with the value system prevailing in the social environment in which the entity operates. If there is a discrepancy, either actual or potential, it threatens the legitimacy of the entity. There is a social contract between the company and the public, creating an obligation for the company to fulfill public expectations. Holistic corporate reporting, which integrates financial, social, and Environmental Performance, is a strategy for companies to build their image and gain public legitimacy (Maama & Mkhize, 2020). Sustainability reporting provides companies with an opportunity to enhance legitimacy and trust from stakeholders, allowing entities to manage their risks and opportunities holistically, while demonstrating their long-term actions.

Freeman, (1984) stated that shareholders are one of many stakeholders. He emphasized the company's obligation to consider the interests and relationships of all stakeholders including shareholders, customers, employees, suppliers, environmental groups, and government. Thus, stakeholder theory supports corporate strategies that balance diverse interests between management and stakeholders to ensure business continuity (Vitolla et al., 2019). Freeman, (1984) offers a more holistic view of the company's role in society and the environment, highlighting how interactions with various stakeholders contribute to the company's long-term success. This concept has become a crucial foundation in broadening the company's perspective on its social responsibilities and the importance of considering the wider impact of its business activities. Based on this view, stakeholder theory presents three distinct approaches: descriptive, instrumental, and normative (Donaldson & Preston, 1995). Descriptive relates to how companies concretely maintain stakeholder interests, instrumental concerns whether the company's business strategy includes the interests of all stakeholders, and normative addresses ethical and moral aspects.

From a descriptive perspective, stakeholder theory is useful in understanding the importance of a company's motivation to disclose high-quality reporting that integrates financial, environmental, social, and governance information (Tweedie et al., 2018). From a normative perspective, stakeholder theory illustrates how managers recognize the rights of stakeholders, not only to be informed but also to receive balanced, complete, clear, and effective information (Vitolla et al., 2019). The pressure from stakeholders influences the quality of financial disclosure, making stakeholders a key determinant of the company's business continuity (Vitolla & Raimo, 2018).

B.2. Hypothesis Development

The Relationship of Islamic Banking ESG Performance, Green Bond and Sustainable for Sustainable SMEs

Islamic banking, by its foundational principles, is not only driven by profit but also by social and environmental responsibility. One of the emerging aspects in contemporary Islamic banking is the commitment to **Environmental Performance**, which then it becomes a crucial dimension under the broader Environmental, Social, and Governance (ESG) framework. The integration of environmental concerns within Islamic banking operations serves as a response to the global push toward sustainability and aligns closely with the values of stewardship (*khalifah*), prohibition of harm (*la darar wa la dirar*), and public interest (*maslahah*). Islamic banking environmental performance refers to the bank's ability to manage its environmental impacts through internal policies, green product development, energy efficiency initiatives, and environmental disclosure. Higher environmental performance often signals strong governance, long-term orientation, and a commitment to sustainable economic development values that are also consistent with Islamic ethics.

Environmental performance in Islamic banks can be reflected through various mechanisms such as internal environmental policies, green bond and investment portfolios, reduced carbon footprint operations, and the integration of ESG standards in risk assessments. When Islamic banks actively engage in environmental stewardship they stimulate the ecosystem of **sustainable SMEs**. This creates a dual impact: supporting MSMEs development and addressing environmental externalities through responsible financing (Arie Pratama, 2025; Halawi, 2021; Saygili et al., 2022b). From a sustainability finance perspective, the environmental performance of Islamic banks positively influences their ability to design and offer **shariah-**compliant instruments, such as *Green Sukuk, Ijarah*-based financing for renewable technologies, or *mudharabah* funds earmarked for clean energy startups. These instruments facilitate Islamic banking to the green capital as one of their income which then it disbursed to the customers, including MSMEs with ethical and environmental considerations financing, lowering entry barriers for small businesses engaged in sustainable practices (Nguyen et al., 2023; Wang et al., 2023)**.** This situation reflected the great value chain, reinforcing sustainable behavior in Islamic finance circumstance where access to capital from upstream to downstream is aligned with the principle of sustainable development.

Furthermore, considering green financing into MSME financing schemes holds the potential to enhance both green financial literacy and inclusion, as well as to improve the competitiveness and sustainability of MSME businesses (Detik Finance, 2022). This is particularly important given that, within the scope of sustainable finance, a significant number of MSME actors still lack awareness regarding the objectives and importance of sustainable finance (ICSP, 2024). Many remain unaware of the value of accessing green financing or the relevance of producing environmentally friendly goods and services to ensure the long-term viability of their businesses.

In this context, Islamic banking is expected to play a strategic role in promoting sustainable financing practices among MSMEs. The implementation of sustainable finance provides several key benefits for MSMEs. First, from an environmental perspective, it encourages MSMEs to adopt eco-friendly practices, thereby increasing the added value of their products and services in global markets. Second, the social dimension fosters more ethical and inclusive business relationships, strengthening consumer trust and workforce sustainability. Third, the governance aspect can enhance operational efficiency and supports effective business risk mitigation. This also aligns with stakeholder theory, revealing that the intersection between stakeholder expectations in terms of environmental responsibility and Islamic objectives of welfare and preservation of environment (*hifdz al-bi'ah*) implies that the Islamic banks should respond by embedding environmental performance into their financing decision. Thus, it can be argued that Islamic banking environmental performance acts as a strategic enabler for sustainable SME financing**.** By embedding environmental values and sustainability principles in their operations, Islamic banks enhance their ability and willingness to serve SMEs that contribute to environmental goals. This is not only consistent with Islamic ethical finance but also positions Islamic banking as a key driver in achieving inclusive green economic development.

H_1: Environmental performance brings positive effect on the increasing amount of sustainable financing for MSMEs

Social performance in Islamic banking plays a pivotal role in advancing sustainable financing for Micro, Small and Medium Enterprises (MSMEs), particularly in economies where financial inclusion and ethical finance are critical to long-term development aligns with the framework of *Maqasid Shariah*, which emphasizes socio-economic justice, financial inclusion, and equitable resource distribution (Alghafes et al., 2024a). Differ with conventional financial institutions that primarily focus on profitability, Islamic banks are intrinsically designed to balance profit generation with social responsibility, thereby aligning naturally with the goals of sustainable development. Through instruments such as qard al-hasan (benevolent loans)**,** profit-and-loss sharing contracts (e.g., *mudarabah and musharakah*)**, and** zakat-based social funds, Islamic banks are positioned to support underserved and financially excluded MSMEs often the backbone of local economies (Fakhrunnas et al., 2025). These instruments not only provide ethical financing solutions but also reduce dependency on interest-based debt, thus minimizing the financial vulnerability of MSMEs. In doing so, Islamic banks enhance the resilience and long-term viability of small businesses, particularly in rural and emerging markets (Yudaruddin et al., 2025). By prioritizing underserved segments, including micro and small enterprises, women entrepreneurs, and rural communities, Islamic banks effectively channel resources to sectors that are often neglected by conventional banks. This social intermediation fosters economic resilience and supports job creation, thereby contributing directly to several Sustainable Development Goals (SDGs), including poverty reduction, decent work, and reduced inequality.

Empirical studies have shown that higher social performance scores in Islamic financial institutions are positively associated with the volume and quality of MSME financing, as well as with repayment discipline and customer loyalty (Alghafes et al., 2024; Menne et al., 2023). Furthermore, socially driven Islamic banks are more likely to invest in capacity-building initiatives, financial literacy programs, and responsible lending practices, which enhance the long-term sustainability of SME clients. Therefore, institutionalizing social performance indicators in the evaluation frameworks of Islamic banks is not only aligned with ethical imperatives but also serves as a strategic tool to strengthen the sustainability of Islamic finance ecosystems. This makes social performance a critical enabler of inclusive, ethical, and sustainable financing pathways for MSMEs.

H_2: Social Performance brings positive effect on the increasing amount of sustainable financing for MSMEs

Governance performance within Islamic banking institutions plays a pivotal role in shaping the sustainability and inclusiveness of financing for Micro, Small, and Medium Enterprises (MSMEs) (Saygili et al., 2022b; Yudaruddin et al., 2025). As MSMEs represent the backbone of many developing economies, including in Muslim-majority countries, ensuring sustainable financing mechanisms is a national and global imperative. Thus, governance performance within Islamic banking plays an instrumental role in aligning the objectives of financial inclusion, ethical financing, and long-term socio-economic development (Addink, 2017).

Grounded in the principles of Shariah, Islamic banking emphasizes ethical conduct, risk-sharing, transparency, and social justice values that inherently align with the objectives of sustainable finance (Wang et al., 2023). Effective governance frameworks ensure that these principles are operationalized through robust internal controls, Shariah compliance assurance, stakeholder engagement, and responsible risk management (Ikechukwu et al., 2019). In the context of MSME financing, Effective governance enables Islamic banks to develop inclusive financing models (Romadhonia & Kurniawati, 2022) that prioritize shared prosperity and minimize exploitation. Instruments such as *mudarabah* (profit-sharing) and ***musharakah*** (joint venture) can be structured to serve MSMEs in a way that balances profit with social impact (Almeyda & Darmansya, 2019; Yaya et al., 2021). Strong governance ensures these instruments are deployed with due diligence, risk mitigation, and equitable distribution of value, thereby increasing MSME resilience and sustainability. Moreover, governance performance contributes to greater transparency and trust among critical elements for fostering MSME participation in formal financial system.through environmental, social, and governance (ESG) considerations into lending decisions, well-governed Islamic banks can identify and support MSMEs that adopt sustainable business practices.

Furthermore, by ensuring accountability, transparency, and social responsibility, Islamic banks can channel funds towards MSMEs engaged in sustainable economic activities, fostering a circular economy and reducing environmental and social vulnerabilities. Empirical studies have demonstrated a positive correlation between good governance in Islamic banking and improved MSME financing performance, particularly in terms of credit accessibility, portfolio quality, and socio-economic impact. This suggests that regulators and policymakers should prioritize governance reform and capacity building in Islamic financial institutions to optimize their role in sustainable development. Therefore, enhancing governance quality is not merely a regulatory requirement, but a strategic imperative for Islamic banks to become effective agents of sustainable finance for MSMEs.

H_3: Governance Performance brings positive effect on the increasing amount of sustainable financing for MSMEs

In recent years, the ESG performance has gained global recognition as a critical framework for ensuring long-term financial stability, environmental integrity, and social responsibility. In the realm of MSME sector, particularly in emerging markets such as Indonesia, sustainable financing remains a key challenge due to structural limitations in access to capital and general lack of environmental compliance capacity (Arie Pratama, 2025; Yu & Xiao, 2022a). ESG adoption in banking and financial institutions is aimed at prompting responsible investment behavior, the mere existence of ESG framework may be insufficient without a concrete financing instrument that can translate ESG commitments into accountable funding for MSMEs (Ong et al., 2025).

In this context, green bonds emerge as a strategic moderating instrument that not only reinforce ESG compliance but also facilitates the flow of capital toward environmentally sustainable and socially inclusive MSME financing (Azhgaliyeva et al., 2020; Huang, 2024). Green bonds, by definition are debt instruments specifically earmarked to fund project with positive environmental and climate benefits. By integrating ESG framework strategies, they serve as a catalytic financial tool that aligns investors' sustainability goals with the real sector in facing needs, particularly for MSMEs engaged in sectors such as renewable energy, sustainable agriculture, eco-tourism, and green manufacturing. Empirically, the issuance of green bonds can strength the transmission mechanism between ESG performance and sustainable MSME financing by enhancing investor confidence in ESG portfolios, lowering the cost of capital for green MSME initiatives, and creating market initiatives for MSMEs to adopt green practices (Bhutta et al., 2022; Huang, 2024; Martiradonna et al., 2023). Moreover, green bonds can bridge the financing gap often faced by MSMEs that are ESG-compliance but lack adequate collateral or credit history. Therefore, the **moderating role of green bonds** is not merely financial but also structural, institutional, and behavioral. It reinforces ESG performance as a credible pathway toward sustainability by offering targeted funding that rewards environmental and social compliance. This not only accelerates the mainstreaming of sustainable finance within the MSMEs **ecosystem** but also strengthens the resilience and competitiveness of MSMEs in the global green economy.

H_4: Green Bond can moderate the environmental performance to the increasing amount of sustainable financing for MSMEs

H_5: Green Bond can moderate the social performance to support the increasing amount of sustainable financing for MSMEs

H_6: Green Bond can moderate the government performance to the increasing amount of sustainable financing for MSMEs

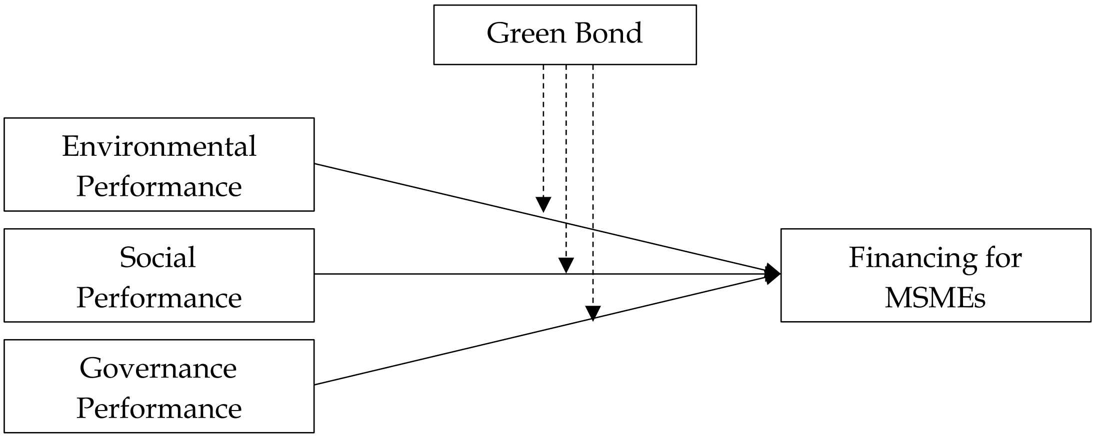

Figure 1. Research Framework

C. Research Methodology

This is explanatory research with quantitative approach and documentation method. The documentation method was employed to collect data from financial and sustainability reports of 15 Islamic banks registered by Financial Services Authority (OJK), covering the reporting period from 2020 to 2024. The selection of Islamic bank as the research sample is based on its nature as Islamic financial institutions, which inherently possess a social and sustainability-oriented DNA. This characteristic leads the Islamic banking as one financial industry that not only pursues profit, but also inherently obligated to align with sharia principles. The reporting period from 2020 to 2024 was chosen due to the emergence of sustainability reporting trends and mandatory disclosure requirements that began in 2020s. Then, the collected data is subsequently analyzed using the Moderated Regression Analysis (MRA) method with E-Views as statistical software. The following section presents the proxies used for each variable measurement as well as the research model employed in this study:

Table 1. Variable Measurements

Variable	Proxy	Source
Environmental Performance	Carbon Footprint Reduction	Financial Report; Sustainable Report
Social Performance	Social Funds Portfolio (Ziswaf)	
Governance Performance	Good Corporate Governance Score	
Financing for MSMEs	Growth of Green Financing Portfolio	
Green Bond	Number of green bonds issued	

$$FMSME = \beta_0 + \beta_1 Env_{it} + \beta_2 Soc_{it} + \beta_3 Gov_{it} + e_{it} \quad (1)$$

$$FMSME = \beta_0 + \beta_4 GB*Env_{it} + \beta_5 GB*Soc_{it} + \beta_6 GB*Gov_{it} + e_{it} \quad (2)$$

D. Result & Discussion

D.1 Result

Panel Regression Test

This study employs a panel data, comprising observations from 15 Islamic banks listed in Otoritas Jasa Keuangan (OJK) over 2020-2024 periods. To analyse these issues, this study employs Moderated Regression Analysis (MRA) with panel regression. This method accounts for unobserved heterogeneity factors that vary across entities but remain constant over time, mitigating potential biases arising from omitted variables. Since this study employed panel data, three parameters estimation model are considered: Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM) (Winarno, 2017). The following is presented the panel regression estimation result. Table 2 displays the result of the Chow test, which was conducted to determine the optimal panel regression model between Common Effect Model (CEM) and Fixed Effect Model (FEM). The finding delineates that FEM becomes the best estimated model. This is due to the p-value of cross-section f reaching about 0.000 < 0.05 (Wing Wahyu Winarno, 2017).

Table 2. Chow Test Output

Redundant Fixed Effect Test Equation: Untitled Test Cross-Section Fixed Effect			
Effects Test	**Statistic**	**D.F**	**Prob.**
Cross-Section F	41.875056	(4,16)	0.0000
Cross-Section Chi-Square	60.990679	4	0.0000

Source: Data Proceed by E-Views, 2025

Following the chow test result that FEM was chosen as the best estimated model, the Hausman test is performed. This test is conducted to determine the best estimated model by comparing the FEM and Random Effect Model (REM). Refers to the table 3, it can be clearly seen that the p-value of Chi-Square reaching about 0.000 < 0.05, which means that the FEM selected as the best estimated regression model (Wing Wahyu Winarno, 2017).

Table 3. Hausman Test Output

Correlated Hausman Test Equation: Untitled Test Cross-Section Random Effect			
Test Summary	**Chi-Sq.Stat**	**Chi.Sq. D.F**	**Prob.**
Cross-Section Random	167.500225	4	0.0000

Source: Data Proceed by E-Views, 2025

Table 4. Moderated Regression Analysis Output

Variables	Equation I		Equation II	
	Coefficient	Prob	Coefficient	Prob
C	41.32101	0.0000		
ENV → FMSME	-0.043983	0.0000		
SOC → FMSME	0.295917	0.0000		
GOV → FMSME	0.010433	0.0140		
Adj. R2	0.8090			
Prob. (F. Stat)	0.0000			
ENV *GB→ FMSME			0.012230	0.0003
SOC *GB→ FMSME			0.004209	0.0000
GOV *GB→ FMSME			0.001764	0.0009
Adj. R2	0.797321			
Prob. (F. Stat)	0.0000			

Source: Data Proceed by E-Views, 2025

MRA Regression Test

As FEM chosen as the best regression model, this study picks it to proceed into MRA. Table 4 shows the result of MRA consisting of two equations (Equation I and Equation II). The former represents the direct effect, while the latter describes the moderating effect. Refers to the Equation I, it is evidence that the coefficient number of Environmental performance at Islamic bank reaches -0.043984 (-4.39%) with p-value of 0.000 < 0.005, which means that Environmental performance gives a negative impact on the increasing amount of financing for MSMEs. The more Islamic bank complies to Environmental performance index, the more financing form declines, contributing to approximately 4.39%. Nevertheless, social and governance performance demonstrate conversely, reaching coefficient numbers of 0.295917 and 0.010433, as well as p-values of about 0.000 and 0.140 respectively. These are indicating that both social and governance performances bring positive and significant effect on the increasing of financing form for MSMEs, contributing to approximately 29.59% and 1.04% respectively.

Furthermore, the existence of green bonds as moderating variable gives positive and significant impact strengthening the relationship of Islamic banking ESG performances toward the inclining amount of financing for MSMEs business development. This situation supported by the result given by table 4, particularly Equation II revealing that all the p-values exceed under the threshold 0.05. Additionally, the model that proposed by this study considers as a strong model depicting the whole issue. This is due to the number of Adj.R^2 handing over 0.797321, which means that all the variables that used by this study can explain for about 79.73% in addressing the research problem, while another 20.27% is influenced by other factors outside this study.

D.2 Discussion

The Direct Effect of Islamic Banking ESG Performances on The Increasing Sustainable Financing for MSMEs Business Development

Refers to the table 4, it can be clearly seen that environmental performance of Islamic bank brings negative effect on the increasing amount of sustainable finance for MSMEs business development. This finding represents that the more Islamic bank complies with environmental disclosure regulation, the more diminishes the portion of financing provided by Islamic bank for MSMEs to develop its business. Implementing environmental performance standards at Islamic banking often increases short-term costs, leading the bank allocates more resources for strengthening compliance with green standards, environmental risk assessments, and monitoring mechanism. Additionally, when Islamic bank prioritizes environmental compliance, it might restrict financing to only eco-friendly projects, which narrows the pool of profitable ventures, signaling lower financial returns and deterring conventional investors seeking high yield. This situation makes some investors see as lowering profitability decreasing their interest to the Islamic bank.

From finance perspective, the finding absolutely contrary with the IFRS 1, commanding entities including Islamic bank to comply with ESG framework. Moreover, the finding also against stakeholder theory stating that companies have responsibilities to exceed investors' expectation in order to foster their positive image stakeholders (Villiers et al., 2022; Freeman, 1984; Wirba, 2023). Although the finding does not in line with the stakeholder theory and IFRS 1, agency theory reveals conversely stating that lowering environmental standard is part of companies' responsibility to maintain investors' interest regarding the profits., because declining in profitability may be perceived by shareholders as a negative signal, potentially leading to a drop company's stock price (jyoti & khanna, 2021; saygili et al., 2022), remembering that one of entities primary responsibility is maximizing shareholder wealth (Friedman M, 1970; Wirba, 2023). This situation absolutely affects the amount of capital obtained Islamic bank, leading to the limited operational activity including the proportion of sustainable financing for MSMEs.

The slight percentage of sustainable financing for MSMEs also caused by the actor of MSMEs itself which still lack of awareness regarding the implementation of green business model and comply with environmental disclosure. They are often lack the technical expertise and financial literacy regarding the green business model. This is due to insufficiency of their awareness towards green financing and sustainability in their business strategy, leading them difficult to prepare bankable proposals that meet the complex requirements of green financing which makes Islamic bank hard to accept their financing proposal. Additionally, as financial institution, Islamic bank also perceives MSMEs as high-risk borrowers due to their limited collateral, irregular cash flow, and small market share.

Moreover, according to the Otoritas Jasa Keuangan (OJK), MSME is largely attributed to the high level of non-performing loans (NPLs) reached 4.02% (Otoritas Jasa Keuangan, 2025). Therefore, Islamic bank tends to allocate the financing form to large corporates as they have an establish, eligible, and strong ESG performances allowing the bank to demonstrate measurable progress (Yudaruddin et al., 2025). This condition makes Islamic bank more selective and risk-averse in extending financing form to the MSME sector. It also aligns with agency theory commanding that companies have a responsibility to the shareholder interest (Eisenhardt, 1989; Panda & Leepsa, 2017). Thus, maximizing the principals' wealth becomes more crucial retaining their trust to the bank, and it absolutely aligns with the *maqashid sharia* concept, particularly *jalb al-maslahah*, reinforcing the public welfare by maximizing financial performance to create well-being for every partner of Islamic bank. Respond this situation, the government should take action to solve this problem. As they command to every industry to comply and implement the sustainable development framework in order to achieve the green economy, the government should provide strong and feasible policy frameworks and standards for MSMEs industry. Without clear policies, standards, and financial supports this industry will still face systemic barriers in transitioning to sustainable practice. Certainly, the government have set the standards for company to implement sustainable business practice. Nevertheless, this regulation tends to focus on large and multinational company neglecting the MSMEs. Thus, it seems reasonable when lots of MSMEs still do not aware in practicing sustainable and friendly business model.

The social performance of Islamic bank shows positive and significant impact on the increasing number of sustainable financings for MSMEs, which means that the more Islamic bank accelerates social performance, the more sustainable financing form rise. Strong social performance can enhance Islamic bank creating positive image in the eyes of public, particularly investors (Menne et al., 2023; Yudaruddin et al., 2025). This positive reputation becomes an important intangible asset, enhancing public perception of the Islamic banks' performance. Consequently, this improves the banks' ability to gain stakeholders trust and establish a competitive advantage. Alghafes et al. (2024) and Menne et al. (2023) argued the great social performance scores of Islamic financial institutions are positively associated shareholder trust. Investors in the Islamic finance ecosystem, perceive bank with a track record of contributing to **community welfare**. This is condition signalling investors that the bank operates under a value-driven framework that goes beyond more profit maximization. Thus, when investors perceive Islamic bank as institution that actively contribute to community welfare, they seem them not only as financially sound but also as ethically resilient, socially legitimate, and strategically sustainable, leading to the perception which directly translates into stronger capital inflow and broader investor engagement.

By the rising of capital inflow, Islamic bank can easily distribute the amount aof that capital through numerous financing form, including sustainable financing such as *qard al-hasan* financing, profit and loss sharing financing, and micro financing scheme (Fakhrunnas et al., 2025) transmitting to enhance the accessibility for underserving MSMEs that traditionally still face financing constrain. These instruments help the MSMEs to reduce barriers to entry and enable boarder participation in the ethical financial system, fostering inclusivity, resilience and long-term viability, and emerging markets (Alghafes et al., 2024b). By prioritizing financial inclusion and social equity, Islamic bank's channel more resources into MSME financing as part of itssocial mission. With increased investor capital attracted by social performance, Islamic bank can expand its outreach to MSMEs, offering them affordable and accessible financing option that promote both business growth and sustainable community development, leading to shape sustainable finance behavior among these two industries. Therefore, it is evidence that Islamic banking social performance enhances **investment inflows** by signalling trust, ethical responsibility, and alignment with sustainable principles and frameworks (Menne et al., 2023; Yudaruddin et al., 2025).. This additional capital enables bank to scale up sustainable financing for MSMEs**,** promoting inclusive growth, economic resilience, and long-term sustainability. Thus, social performance serves as a bridge between attracting investors and fulfilling the developmental role of Islamic finance in empowering MSMEs and communities.

The similar condition also reveals by the Islamic bank's governance performance showing positive and significant impact on the increasing amount of sustainable financing for MSMEs. As good governance at Islamic bank represents transparent, sharia compliance, and clear management, it provides assurance to investors that their capital is being managed responsibly, leading to attract their confidence and trust to the bank (Fakhrunnas et al., 2025; Halawi, 2021).This condition proves the ability of Islamic bank in minimizing mismanagement, fraud, and sharia non-compliance which directly enhance investor confidence and willingness to invest. Furthermore, good governance performs by Islamic bank can strength the bank's institutional legitimacy, depicting the its' responsibility aligns with sustainable finance framework and principle (Arie Pratama, 2025; Aslam & Haron, 2021; Saygili et al., 2022).

A high standard of governance makes the bank easier to rise fund through several financial instruments such as green bonds, sukuk issuances, or cross-border financing (Wang et al., 2023). This is due to the tendency of investor who more likely to purchase sukuk or equity from the bank with strong governance voiding concerns over default, mismanagement, or misuse of capital, which is potentially lower the cost of capital and increases capital flow. In turn, MSMEs gain more reliable access to financing which fuels local economic growth and job creation. By receiving more sustainable financing MSMEs can adopt green technologies, eco-friendly production process, and halal compliance standards (Saygili et al., 2022b; Yudaruddin et al., 2025). This allows them to remain competitive in both domestic and global market where demand for sustainable and halal products is increasing, leading to posits the MSMEs as key players in green economy and strengthens their role in global supply chains. Moreover, accessible sustainable finance for the MSMEs also allows them to scale up operation which directly translates into business development. Thus, it is evidence that strong governance from Islamic bank can help in scaling up the opportunity for MSMEs business development in this green economy era through several sustainable financing form which then awakening the MSMEs actor to comply with sustainable framework and principle in their business, leading to reinforcing sustainable finance behavior among financial industry and MSME.

The Role Green Bonds in Moderating the Relationship of Islamic Banking ESG Performances on The Increasing Sustainable Financing for MSMEs Business Development

The integration of Environmental, Social, and Governance (ESG) performance at Islamic banking has emerged as a crucial determinant in promoting sustainable financing practices. Islamic bank, with its inherent ethical and shariah-compliant foundation are expected to play a pivotal role in addressing sustainability challenges while enhancing financial inclusion. However, the realization of sustainable financing goals requires not only from the robust ESG practices, but also innovative financial instruments that can strengthen the linkage between Islamic finance and sustainable development. Green bonds have emerged as a critical financial instrument for the promotion of sustainable development from the upstream side. This represents one of capitals that obtained by the Islamic bank as financial institution to lead its business. Recently, green bond emerges as one of keys financial instrument in advancing sustainable development, indicating as one of the fastest-growing green financing instruments, with annual issuances exceeding USD 500 billion since 2021 (Climate Bonds Initiative, 2022). For banking institutions, including Islamic banks, green bonds offer a strategic opportunity to access. Financial institutions that have green bonds portfolio are regarded as having the ability to attract worldwide finance, which ultimately results in an increasing number of their capital capacity.

According to Appiah-Kubi et al. (2024), this increased capacity allows Islamic bank to finance environmentally friendly initiatives, such as MSME financing, in order to encourage sustainable and inclusive business practices. These initiatives are anticipated to encourage behavior aligns with the concept of universal well-being (Le, 2022). According to numerous academicians, the promotion of sustainable business practices improves both the competitiveness and the reputation of an organization (Nguyen et al., 2023; Wang et al., 2023). However, issuing green bonds shows that Islamic bank is committed to sustainability, which boost market confidence and open up access to international investors. This commitment is additionally demonstrated by the consistent issuance of sustainability reports (Crocco & Zicari, 2024; Wang et al., 2023). Thus, green bonds strengthen Islamic banking institution's global funding, portfolio diversity, ESG reputation, and sustainable financing capacity. The favorable influence of ESG standards on MSME financing is increased when the bank has access to sustainable funding sources. This mechanism is crucial for creating an effective value chain that embodies sustainable practices in the financial sector, ensuring that capital flows from upstream to downstream are consistent with the core principles of sustainability.

In this context, green bonds as a shariah-compliant financial innovation, functioning as a moderating mechanism that increased the relationship between ESG performance and the increasing amount of sustainable financing for MSMEs. *First*, green bonds serve as a capital mobilization tool, channelling funds directly into environmentally and socially responsible projects, reinforcing the environmental and governance dimensions. *Second*, the issuance of green bonds enhances transparency and accountability, as it strictly tied to green and sustainable projects, which fosters trust among stakeholders and legitimizes Islamic bank’s role in sustainable finance. Moreover, green bonds can help Islamic bank overcomes financing gaps that commonly faced by MSMEs, particularly those who seek to transition toward sustainable business models. While ESG performance reflects the internal commitment of banks toward sustainability, the presence of green bonds provides external financing leverage, enabling MSMEs to access more affordable and longer-term financing options for renewable energy adoption, clean production processes, and ethical supply chains. This not only accelerates MSMEs’ alignment with the Sustainable Development Goals (SDGs) but also strengthens their competitiveness in the global halal and sustainable market. Thus, the moderated effect of green bonds underscores the synergistic relationship between ESG performance and sustainable financing outcomes. Without the green bond, Islamic banks’ ESG initiatives may remain limited in scope due to resource constraints and risk-averse lending practices. With green bonds in place, however, Islamic banking institutions can transform ESG commitments into tangible sustainable financing strategies that directly benefit MSMEs and foster broader socio-economic welfare.

E. Conclusions & Policy Recommendation

Reinforcing sustainable finance behavior in the Islamic banking industry requires more than compliance, it needs a transformative alignment of financial practices with ethical, social, and environmental imperatives. ESG performance provides the normative foundation, while green bonds act as an enabling instrument to accelerate the impact. By synergizing these two dimensions, Islamic banking can play a pivotal role in empowering MSMEs, advancing financial inclusion, and promoting a resilient, inclusive, and ecologically balanced economy, as well as creating value chain in MSMEs industry by ensuring that capital flows from upstream to downstream remain aligned with the foundational philosophy of sustainability itself. Furthermore, as the finding shows that environmental performance gives negative impact on the increasing amount of sustainable financing for MSMEs at Islamic bank, this study argues that this condition occurs due to lack of regulation, clear guideline, and policy regarding the implementation of sustainable framework which specifically intended for the MSMEs, leading to such diminishing awareness of MSME actors to implement green business model and comply with environmental disclosure. This condition absolutely declines the opportunity and portion of sustainable financing for MSMEs, making them difficult in accessing financial instrument, particularly for participating and competing in green economy era. Therefore, this study highlights the need of policy intervention from government to create guidance and regulation regarding sustainability reporting that specific for the MSMEs. Besides, green capacity-building programs, blended finance mechanism, and regulatory incentives also require that allow Islamic bank to maintain strong environmental performance empowering MSMEs to solve the structural trade-off among Islamic bank and MSMEs industry.

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