Journal of Islamic Economics Lariba
(P-ISSN 2477-4839 E-ISSN 2528-3758)
2026, Vol. 12, No. 2, 481-510
https://doi.org/10.20885/jielariba.vol12.iss2.art17

Does Islamic finance enhance innovation capacity among Indonesian MSMEs? Evidence from a Multivariate Probit Approach

Maimun Sholeh[1], Anisah Novi Karunia[2], Ardhana Reswari Hasna Pratista[3], & Tejo Nurseto[4]

[1]Program Studi Manajemen (S2), Universitas Negeri Yogyakarta, Kota Yogyakarta, Indonesia
[2]Program Studi Sarjana Terapan Akuntansi (D4), Universitas Negeri Yogyakarta, Kota Yogyakarta, Indonesia
[3]Program Studi Akuntansi (S1), Universitas Negeri Semarang, Kota Semarang, Indonesia
[4]Program Studi Pendidikan Ekonomi (S1), Universitas Negeri Yogyakarta, Kota Yogyakarta, Indonesia

ABSTRACT

Introduction

Innovation capacity is essential for strengthening the competitiveness, productivity, and long-term sustainability of micro, small, and medium enterprises in developing economies. However, many Indonesian micro, small, and medium enterprises continue to face financing constraints that limit their ability to develop new products, improve business processes, reorganize internal capabilities, and adopt new marketing practices. Islamic finance offers a potentially relevant financing mechanism because it is based on Sharia-compliant principles, risk-sharing, asset-backed transactions, and real-sector orientation.

Objectives

This study examines whether Islamic finance enhances innovation capacity among micro, small, and medium enterprises in Indonesia. Specifically, it analyzes the relationship between Islamic finance and four dimensions of innovation: product innovation, process innovation, organizational innovation, and marketing innovation.

Method

This study uses a quantitative approach based on primary survey data collected from micro, small, and medium enterprises in Yogyakarta and Central Java, Indonesia. The sample consists of Islamic finance users and non-users. Innovation capacity is measured through four binary indicators covering product, process, organizational, and marketing innovation. The data are analyzed using a multivariate probit model, which allows the four innovation

JEL Classification:
C35, G21, L26, O31, Z12

KAUJIE Classification:
H23, H42, I16, J3, K1

ARTICLE HISTORY:

Submitted: April 3, 2026
Revised: May 5, 2026;
May 12, 2026
Accepted: May 15, 2026
Published: May 17, 2026

KEYWORDS:

Islamic finance; marketing innovation; micro, small, and medium enterprises; multivariate probit; organizational innovation; process innovation; product innovation.

Contact: Maimun Sholeh ✉ maimunsholeh@uny.ac.id

outcomes to be estimated jointly while accounting for possible correlations among innovation decisions.

Results

The findings show that Islamic finance is positively and significantly associated with product innovation, process innovation, and organizational innovation. The marginal effects indicate that Islamic finance users have a higher probability of introducing new or improved products, improving operational methods, and adopting organizational changes. However, Islamic finance is not significantly associated with marketing innovation, suggesting that financing alone may be insufficient to stimulate market-oriented changes such as branding, digital promotion, pricing, and distribution strategies.

Implications

The results imply that Islamic financial institutions should move beyond capital provision and support micro, small, and medium enterprises through mentoring, product development assistance, operational upgrading, halal ecosystem support, and digital capability building.

Originality/Novelty

This study contributes to the Islamic finance and innovation literature by analyzing multiple innovation dimensions simultaneously in the Indonesian micro, small, and medium enterprise context using a multivariate probit approach.

CITATION: Sholeh, M., Karunia, A. N., Pratista, A. R. H., & Nurseto, T. (2026). Does Islamic finance enhance innovation capacity among Indonesian MSMEs? Evidence from a Multivariate Probit Approach. *Journal of Islamic Economics Lariba, 12*(2), 481-510. https://doi.org/10.20885/jielariba.vol12.iss2.art17

INTRODUCTION

Innovation has become a central driver of economic development, particularly for micro, small, and medium enterprises (MSMEs) operating in developing economies. MSMEs contribute substantially to employment creation, income generation, poverty reduction, and local economic resilience, yet their long-term competitiveness increasingly depends on their ability to introduce new products, improve production processes, reorganize internal routines, and reach markets through new channels. In this sense, innovation is not merely a technological activity but a strategic capability that enables smaller firms to adapt to changing demand, competitive pressure, and institutional uncertainty (Gherghina et al., 2020; Nursini, 2020; Surya et al., 2021; Firdaus et al., 2022). This argument is consistent with Schumpeterian innovation theory, which views innovation as the creation of new combinations, and with endogenous growth theory, which emphasizes knowledge accumulation and technological progress as foundations of long-term economic growth (Romer, 1990; Aghion et al., 1998; Schumpeter & Swedberg, 2021).

The importance of innovation is also embedded in the global development agenda, especially Sustainable Development Goal 9, which highlights inclusive industrialization, resilient infrastructure, and innovation-driven growth (United Nations, 2015). Recent studies show that innovation improves MSME productivity, competitiveness, and survival, particularly in developing economies where firms must respond to globalization, digital transformation, and post-pandemic recovery pressures(Alheet & Hamdan, 2020; Wang & Tan, 2021; Birdthistle & Hales, 2022; Herispon & Anuar, 2023). Studies on MSMEs further indicate that product development, process improvement, organizational learning, and marketing innovation are closely linked to firm performance, export readiness, and competitive advantage (De Fretes, 2020; Chege & Wang, 2020; Audretsch et al., 2020; Wellalage & Locke, 2020; Smallbone et al., 2022; Hurdawaty & Tukiran, 2024).

Despite this strategic importance, MSME innovation remains constrained by limited access to finance. Innovation is typically costly, uncertain, and characterized by long gestation periods, making it difficult for small firms to finance through retained earnings alone (Mittal & Raman, 2021; Nawrocki & Jonek-Kowalska, 2022). Conventional banks often perceive MSMEs as high-risk borrowers because of information asymmetry, insufficient collateral, weak accounting records, and limited credit histories (Giannetti & Jentzsch, 2013; Harisandi et al., 2023; Haruna et al., 2024). These constraints are particularly severe when innovation involves intangible investments such as product design, digitalization, organizational upgrading, market research, or branding. Recent evidence confirms that financial constraints continue to restrict MSME innovation across developing economies, including Indonesia, Nigeria, Ghana, and Colombia (Okoli et al., 2021; Okijie & Effiong, 2024; Aminullah et al., 2024; Asiedu et al., 2024).

A general solution proposed in the finance–innovation literature is to broaden MSME access to inclusive, flexible, and innovation-oriented financing mechanisms. Formal credit, digital finance, crowdfunding, and financial technology can reduce funding barriers, lower transaction costs, and expand firms' capacity to invest in new products, production technologies, organizational systems, and marketing channels (Adegboye & Iweriebor, 2018; Wellalage & Locke, 2020; Aminullah et al., 2024; Asiedu et al., 2024). However, finance alone is rarely sufficient. Studies emphasize that funding must be complemented by human capital, digital readiness, absorptive capacity, knowledge transfer, managerial capability, and supportive institutions if it is to be transformed into actual innovation outcomes (Hamdan, 2021; Ardito et al., 2022; Tran et al., 2025).

Within this broader discussion, Islamic finance offers a distinctive financing logic for MSME innovation. Unlike conventional debt-based finance, Islamic finance prohibits riba, gharar, and maysir, while emphasizing profit-and-loss sharing, risk-sharing, asset-backed transactions, ethical investment, and real-sector orientation (Eyerci, 2021; Nor & Fidhayanti, 2022; Ismail & Majid, 2024; Kuyateh, 2025; Septyanun et al., 2025; Uluyol, 2026). These principles are theoretically relevant for innovation because they connect financial returns to real business performance rather than fixed interest obligations. Partnership-based contracts such as mudarabah and musharakah can be more consistent with uncertain and intangible innovation projects, while asset-based

contracts such as murabahah, salam, istisna, and ijarah may support tangible investments in equipment, inventory, production facilities, and business upgrading (Hakeem, 2019; Ramli et al., 2024)

Empirical studies increasingly suggest that Islamic finance can support MSME development, entrepreneurship, and business upgrading, although the evidence remains context-specific. Islamic crowdfunding and Islamic financial technology have been associated with improvements in asset accumulation, sales growth, and financing access among MSMEs and startups in Indonesia, Malaysia, and Singapore (Hendratmi et al., 2019; Abdeldayem & Aldulaimi, 2023; Jamal & Motani, 2024; Ramli et al., 2024; Halim, 2024). Studies on halal industry–finance linkages and Islamic banking also indicate that Sharia-compliant finance can strengthen MSME resilience, risk management, and market expansion when supported by financial literacy, governance, and regulatory clarity (Cipta & Hatamar, 2023; Choiruddin et al., 2025; Rokhlinasari et al., 2025). These findings imply that Islamic finance may enhance innovation not only through capital provision but also through incentive alignment, ethical governance, and real-sector engagement.

Indonesia provides a particularly important empirical setting for examining this relationship. It has one of the world's largest Muslim populations, a large and diverse MSME sector, and a dual banking system in which Islamic and conventional financial institutions operate simultaneously. These characteristics make Indonesia a relevant context for studying whether Sharia-compliant financing can address the innovation constraints faced by MSMEs in a developing economy. Recent Indonesia-focused studies highlight the growing role of Islamic banking, Sharia fintech, Islamic crowdfunding, halal industry ecosystems, and financial inclusion policies in expanding MSME access to productive finance (Hasan et al., 2021; Hartanto et al., 2023; Fajri et al., 2023; Fidhayanti et al., 2024; Azwar & Jamaluddin, 2024). Nevertheless, the literature still lacks sufficient firm-level evidence on how Islamic finance relates to different innovation dimensions simultaneously.

This study addresses that gap by examining whether Islamic finance is associated with product, process, organizational, and marketing innovation among Indonesian MSMEs. Its novelty lies in three aspects. First, it shifts the finance–innovation discussion from conventional finance toward Islamic finance as an ethical, risk-sharing, and real-sector-oriented financing mechanism. Second, it situates the analysis in Indonesia, where the interaction between Islamic finance, MSME development, and innovation remains underexplored despite strong policy relevance. Third, it employs a multivariate probit approach to analyze four binary innovation outcomes jointly, rather than treating each innovation type as an isolated decision. This approach is appropriate because MSMEs may pursue several forms of innovation at the same time, and unobserved capabilities or constraints may correlate across innovation choices (Rohmania et al., 2023; Haruna et al., 2024; Sreen et al., 2024; Saifurrahman & Kassim, 2024; Septyanun et al., 2026).

LITERATURE REVIEW

Innovation Theory and MSME Innovation Capacity

Innovation has long been regarded as a central mechanism through which firms build competitiveness, adapt to environmental change, and sustain growth. Schumpeter & Swedberg (2021) conceptualized innovation as the creation of "new combinations," including new products, new production methods, new markets, new sources of supply, and new organizational arrangements. This view remains highly relevant for MSMEs because smaller firms often survive not through scale advantages, but through flexibility, adaptation, and the ability to respond quickly to changing market conditions. Innovation therefore represents a strategic capability that enables MSMEs to improve productivity, strengthen market position, and create new value in uncertain business environments.

The importance of innovation is further supported by endogenous growth theory, which emphasizes technological progress, knowledge accumulation, and firm-level learning as drivers of long-term economic growth (Romer, 1990; Aghion et al., 1998). From this perspective, innovation undertaken by MSMEs does not only benefit individual firms but may also generate wider productivity spillovers. However, innovation is rarely costless. It requires investment in technology, skills, experimentation, knowledge acquisition, and organizational change. MSMEs in developing economies frequently face constraints that limit their ability to make such investments, including weak collateral, limited managerial capacity, information asymmetry, and restricted access to formal finance (Nawrocki & Jonek-Kowalska, 2022; Haruna et al., 2024).

The Oslo Manual provides a useful framework for categorizing innovation into product, process, organizational, and marketing innovation (Mairesse & Mohnen, 2010; OECD, 2018). Product innovation refers to new or significantly improved goods and services; process innovation relates to improved production, delivery, or operational methods; organizational innovation involves new managerial routines, workplace structures, or external relations; and marketing innovation concerns new methods in promotion, pricing, distribution, packaging, or market positioning. This multidimensional classification is important because firms do not always innovate in one domain only. MSMEs may simultaneously improve products, reorganize internal processes, and adopt new marketing channels, making innovation a bundle of interrelated firm decisions rather than isolated actions.

Resource-Based View, VRIO, and Financial Resources

The Resource-Based View (RBV) provides a suitable grand theory for linking finance, internal capability, and innovation. RBV argues that firms achieve competitive advantage by controlling resources that are valuable, rare, difficult to imitate, and effectively organized (Osobajo & Bjeirmi, 2021; Lukovszki et al., 2021; Varadarajan, 2023). The VRIO framework extends this logic by explaining how resources become strategic only when firms can deploy them through appropriate organizational systems. In MSMEs, financial resources, human capital, financial literacy, managerial competence,

digital capability, and governance routines may jointly determine whether firms can transform capital into innovation outcomes (Kasim et al., 2024; Djuanita & Zamzamiyatul, 2024; Widyakto et al., 2024).

From an RBV perspective, access to finance is not merely liquidity support. It can become a strategic resource when it enables firms to acquire technology, develop products, improve processes, strengthen organizational routines, and expand markets. However, the innovation effect of finance depends on how well the firm organizes and absorbs that resource. This explains why two MSMEs with similar access to capital may produce different innovation outcomes. Financial resources become valuable when they support productive investment, rare when access is limited or distinctive, difficult to imitate when embedded in unique relationships or governance structures, and effective when supported by organizational routines, learning orientation, and managerial capability (Kaukab et al., 2020; Lantz et al., 2024).

This theoretical lens is particularly relevant for Islamic finance. Sharia-compliant financing can be understood as a distinctive financial resource because it combines capital provision with ethical governance, risk-sharing principles, asset linkage, and real-sector orientation. Islamic finance may therefore contribute to MSME innovation when it is embedded in capabilities such as Islamic financial literacy, Sharia governance, digital readiness, and entrepreneurial learning. Recent studies suggest that Islamic-finance-related resources can support asset accumulation, resilience, sales growth, and business upgrading, although these effects depend strongly on firm-level capabilities and institutional support (Hartanto et al., 2023; Kasim et al., 2024).

Access to Finance and the Four Dimensions of Innovation

The literature generally supports the argument that access to finance enables MSMEs to pursue innovation, but its effects may differ across innovation dimensions. Product innovation usually requires funds for research and development, design, prototyping, quality improvement, raw materials, certification, and market testing. Without external finance, MSMEs may be forced to postpone product development even when market opportunities exist. Prior studies show that formal credit and financial inclusion improve firms' ability to introduce new or improved products, although the effect often depends on complementary capabilities such as financial literacy, entrepreneurial orientation, and market knowledge (Adegboye & Iweriebor, 2018; Wellalage & Locke, 2020; Mittal & Raman, 2021; Charfeddine & Zaouali, 2022).

Process innovation is also closely related to financial access because operational improvement often requires investment in machinery, equipment, software, logistics systems, automation, and quality-control procedures. MSMEs with better financing access can modernize production and reduce operational inefficiencies. However, finance alone does not guarantee process innovation; firms must also possess absorptive capacity, technical knowledge, and organizational discipline to convert new assets into improved routines. Studies on MSMEs in developing economies indicate that operational upgrading is shaped by a combination of capital availability, knowledge

transfer, digital capability, and internal learning mechanisms (Kaukab et al., 2020; Oswari et al., 2023; Aminullah et al., 2024).

Organizational and marketing innovation require somewhat different resource configurations. Organizational innovation depends on managerial capability, governance reform, learning orientation, employee engagement, and collaboration networks. Access to finance may enable training, new management systems, and improved coordination, but it must be supported by leadership and institutional capacity (Djuanita & Zamzamiyatul, 2024; Kasim et al., 2024). Marketing innovation, by contrast, often requires investments in branding, digital promotion, e-commerce, customer analytics, packaging, distribution, and pricing strategy. These activities are frequently intangible and capability-intensive, which may explain why financial access alone does not always produce strong marketing innovation effects (Mariani & Nambisan, 2021; Kirom et al., 2022).

Islamic Finance Principles and Innovation Capacity

Islamic finance differs from conventional finance because it is governed by Sharia principles that prohibit riba, gharar, and maysir while emphasizing risk-sharing, asset-backed transactions, ethical investment, and real economic activity (Eyerci, 2021; Nor & Fidhayanti, 2022; Ismail & Majid, 2024; Kuyateh, 2025) These principles are theoretically relevant to innovation because they connect financial returns to productive activity rather than predetermined interest obligations. By linking finance to business performance and real-sector investment, Islamic finance may reduce excessive debt pressure and provide a more supportive structure for firms undertaking uncertain innovation projects.

Profit-and-loss-sharing instruments, particularly mudarabah and musharakah, offer a strong theoretical basis for innovation financing. Under these arrangements, financiers and entrepreneurs share risks and returns, creating incentives for cooperation, monitoring, and long-term value creation (Ben Amar & O. El Alaoui, 2023; Fahamsyah et al., 2023). Such instruments may be especially relevant for innovation because new products, process redesign, organizational restructuring, and market experimentation involve uncertain returns. When financiers participate in both risk and reward, MSMEs may face less pressure than under fixed-interest debt. Nevertheless, the literature also notes that these instruments remain underdeveloped in practice because of monitoring costs, information asymmetry, and institutional capacity constraints (Ahmed et al., 2019; Poon et al., 2020; Nassim et al., 2025; Taufik Syamlan et al., 2026).

Asset-backed instruments such as murabahah and ijarah also have potential relevance for MSME innovation. Murabahah can finance the acquisition of productive assets through cost-plus sale, while ijarah enables access to equipment or facilities through leasing. These instruments may support product and process innovation by financing machinery, tools, inventory, production systems, and technology upgrades (Ahmed et al., 2019; Abdeldayem & Aldulaimi, 2023; Asyiqin & Alfurqon, 2024). However, their innovation effect may be stronger for tangible investments than for intangible

activities such as branding, digital marketing, or market research. This distinction is important because different Islamic contracts may affect different innovation domains in different ways.

Islamic Financial Instruments and MSME Upgrading

Beyond mudarabah, musharakah, murabahah, and ijarah, Islamic finance also includes salam, istisna, and qard hasan. Salam and istisna are forward-type contracts that can support pre-production financing, agricultural supply, manufacturing orders, and customized production. These contracts may enable product and process innovation by providing early-stage liquidity for materials, design, and production planning (Ahmed et al., 2019; Abubakar et al., 2022; Asyiqin & Alfurqon, 2024). Qard hasan, as an interest-free benevolent loan, may provide liquidity for experimentation, early-stage business activity, and market testing, particularly for financially excluded MSMEs (Aderemi & Ishak, 2020, 2023).

Islamic crowdfunding and Islamic fintech have also emerged as important channels for MSME financing and upgrading. Studies in Indonesia, Malaysia, and Southeast Asia suggest that Sharia-compliant crowdfunding platforms can improve MSME access to capital, asset accumulation, sales growth, and business expansion(Hendratmi et al., 2019; Ishak & Mohammad Nasir, 2024; Muhamed et al., 2026; Syarif & Aysan, 2026). These platforms may support product development, digital marketing, and market testing by reducing barriers to finance and broadening the investor base. However, adoption depends on perceived usefulness, perceived ease of use, product knowledge, religiosity, digital literacy, and trust in Sharia-compliant financial platforms.

Empirical evidence from Indonesia and other Muslim-majority economies further indicates that Islamic finance can contribute to entrepreneurship, resilience, and business upgrading, although the findings are not uniform. Some studies show that Islamic banking, halal industry ecosystems, and Sharia fintech support MSME performance and market expansion, while others emphasize the importance of literacy, governance, regulation, and institutional readiness (Dewi & Adinugraha, 2023; Cipta & Hatamar, 2023; Mujiatun et al., 2023). These findings suggest that Islamic finance should not be treated as a single homogeneous instrument, but as a diverse set of mechanisms whose innovation effects depend on contract type and context.

Islamic Finance and Domain-Specific Innovation Hypotheses

The literature provides a clear basis for examining the effect of Islamic finance on product innovation. Product innovation requires resources for design, prototyping, quality improvement, halal certification, and market entry. Islamic finance can support these activities through risk-sharing instruments that allow experimentation and asset-backed instruments that finance inputs and production capacity. From an RBV perspective, Islamic finance becomes valuable when it is combined with internal capabilities that transform funds into new or improved products. Studies on Islamic crowdfunding, financial literacy, and MSME upgrading provide supporting evidence that

Sharia-compliant finance may contribute to product development and market expansion (Widyakto et al., 2024; Faizi, 2024; Widagdo et al., 2026).

Islamic finance may also support process innovation by financing machinery, equipment, logistics systems, production facilities, and digital tools. Asset-backed contracts such as murabahah and ijarah are particularly relevant because they are tied to tangible productive assets. Salam and istisna may also support process improvements by financing production before delivery and encouraging supply-chain coordination. However, process innovation requires more than asset acquisition; firms must organize new technologies into routines, improve worker skills, and develop operational discipline. Prior studies suggest that technology adoption, financial literacy, and digital readiness strengthen MSME upgrading, making process innovation a plausible outcome of Islamic finance (Abdeldayem & Aldulaimi, 2023; Hanfan et al., 2023)

Organizational innovation may arise when Islamic finance encourages new governance practices, collaboration with financiers, improved accountability, and Sharia-compliant business routines. Risk-sharing contracts require closer interaction between financiers and entrepreneurs, which may stimulate monitoring, knowledge exchange, and managerial learning. Islamic finance may also introduce Sharia governance mechanisms that shape decision-making, ethical standards, and organizational structures. These features are consistent with RBV logic, which emphasizes that organizational routines and governance capabilities are essential for converting resources into innovation. Studies on leadership, innovative work behavior, financial literacy, and Islamic business practices support the argument that Islamic finance can be linked to organizational upgrading (Febriani & Sa'diyah, 2021; Widyakto et al., 2024)

The relationship between Islamic finance and marketing innovation is theoretically plausible but more complex. Marketing innovation requires investment in branding, digital promotion, customer analytics, e-commerce, packaging, pricing, distribution, and halal market positioning. Islamic finance may support these activities by providing liquidity and by connecting firms to halal-oriented market ecosystems. Nevertheless, marketing innovation often involves intangible expenditures that are less easily financed through asset-backed contracts. Its success also depends heavily on digital literacy, marketing knowledge, customer insight, and managerial capability. Studies on Islamic fintech, financial inclusion, and MSME performance suggest that finance may support marketing innovation when accompanied by digital readiness and market-oriented capacity building (Mujiatun et al., 2023; Widyakto et al., 2024).

Research Gap and the Significance of the Study

Although the literature increasingly recognizes the importance of finance for MSME innovation, several gaps remain. First, many studies focus on conventional finance, while fewer examine Islamic finance as a distinct theoretical and institutional mechanism for innovation. Second, existing Islamic finance studies often emphasize entrepreneurship, performance, sales growth, or asset accumulation rather than

directly measuring product, process, organizational, and marketing innovation. Third, many studies treat innovation as a single outcome, even though the Oslo framework shows that innovation is multidimensional. As a result, the specific ways in which Islamic finance may affect different innovation domains remain insufficiently understood (Hartanto et al., 2023; Haruna et al., 2024).

This study is significant because it addresses these gaps in the Indonesian MSME context. Indonesia provides an important setting because it has a large Muslim population, a dual banking system, a substantial MSME sector, and an expanding Islamic financial inclusion agenda. By examining product, process, organizational, and marketing innovation simultaneously, this study provides a more nuanced understanding of the Islamic finance–innovation relationship. The use of a multivariate probit model is also appropriate because MSMEs may adopt multiple innovations at the same time, and unobserved capabilities may correlate across innovation decisions. This approach extends prior research and strengthens the empirical basis for policy recommendations on Islamic finance and MSME innovation.

METHOD

Research Design

This study adopts a quantitative research design to examine the association between Islamic finance and innovation capacity among micro, small, and medium enterprises (MSMEs) in Indonesia. A quantitative approach is appropriate because the study seeks to test theoretically derived relationships between Islamic finance usage and four measurable innovation outcomes: product, process, organizational, and marketing innovation. The analysis is based on cross-sectional primary survey data, which allow the study to capture firm-level characteristics, financing behavior, and innovation activities during the observation period. Although cross-sectional data cannot establish definitive causality, they are suitable for identifying statistically meaningful associations and for comparing innovation outcomes between MSMEs that use Islamic finance and those that do not. This approach is consistent with survey-based empirical research in management, finance, and MSME studies (Hair et al., 2019; Sekaran & Bougie, 2020)

Research Setting and Sample

The empirical setting of this study is Indonesia, with data collected from MSMEs located in Yogyakarta and Central Java. These regions were selected because they represent active MSME environments and provide a relevant institutional context for examining Islamic finance. The selection also reflects several considerations, including the presence of Muslim-majority communities, the availability of Islamic and conventional financial institutions, and the concentration of business activities. These characteristics make the regions suitable for observing differences in financing access and innovation behavior among MSMEs. The study focuses on registered and operational MSMEs because active business engagement is necessary for evaluating whether firms have

introduced new products, improved processes, adopted new organizational practices, or implemented new marketing methods during the observation period.

The sampling strategy combines purposive and quota sampling. Purposive sampling was used to ensure that respondents met the study criteria, namely being MSME owners or managers who were actively involved in business decision-making. Quota sampling was then applied to obtain a comparative distribution between MSMEs that use Islamic finance and those that do not. Based on the available data structure, the usable sample consists of 447 MSME respondents, including 250 Islamic finance users and 197 non-users. This classification enables the study to compare innovation behavior across financing groups. For consistency, the final manuscript should report one sample figure throughout the abstract, method, results, tables, and appendices.

Data Collection Procedure

Primary data were collected through a structured questionnaire administered to MSME owners or managers. The use of a questionnaire is appropriate because the study measures firm-level innovation activities and financing behavior that are best obtained directly from business actors. Trained surveyors administered the instrument to improve consistency in data collection, reduce misunderstanding of survey items, and minimize response bias. Respondents were asked about their use of Islamic financial products or services, their innovation activities, and several firm and owner characteristics. The survey was designed to generate binary variables suitable for econometric analysis, particularly because the dependent variables indicate whether a firm introduced a specific type of innovation during the observation period.

Measurement of Variables

The dependent variables consist of four binary indicators of innovation capacity based on the Oslo Manual framework (Mairesse & Mohnen, 2010; OECD, 2018). Product innovation is coded 1 if the MSME introduced a new or significantly improved product, including improvements in product appearance or characteristics, and 0 otherwise. Process innovation is coded 1 if the firm introduced new or significantly improved production, logistics, maintenance, or distribution methods, and 0 otherwise. Organizational innovation is coded 1 if the firm adopted new management practices, new work-organization methods, or new approaches to managing external relations, and 0 otherwise. Marketing innovation is coded 1 if the firm implemented new communication media, sales or distribution methods, pricing strategies, packaging, or market-positioning practices, and 0 otherwise.

The main independent variable is Islamic finance usage. This variable is coded 1 if the MSME uses Islamic financial products or services and 0 otherwise. Islamic finance refers to Sharia-compliant financing mechanisms, including instruments such as mudarabah, musharakah, murabahah, salam, istisna, ijarah, and qard hasan, which are offered through Islamic financial institutions or other Sharia-based financing channels (Iqbal & Mirakhor, 2011; Gonne & Mohamadou, 2022; Haruna et al., 2024). The study also includes control variables that may influence innovation behavior:

collaboration, competition, business size, business age, market demand, gender, marital status, education level, and owner age. These controls follow prior MSME innovation studies and help reduce omitted-variable bias in estimating the relationship between Islamic finance and innovation.

Econometric Model

The study employs a multivariate probit model because the four innovation outcomes are binary and may occur simultaneously within the same firm. MSMEs rarely make innovation decisions in isolation. A firm that introduces a new product may also improve its production process, change its organizational routines, or adopt new marketing methods. Estimating separate probit or logit models would ignore possible correlations among these innovation decisions and may produce less efficient estimates. The multivariate probit model addresses this issue by jointly estimating the four innovation equations and allowing the error terms to be correlated across equations. This method is therefore suitable for analyzing multiple, non-mutually exclusive innovation choices (Maddala, 1983; Agwu et al., 2020; Aggarwal & Joshi, 2024).

Formally, for each firm *i* and innovation type *j*, the latent innovation propensity is specified as: $y_{ij}^* = X_i\beta_j + \varepsilon_{ij}$. The observed innovation outcome equals 1 when the latent propensity is greater than zero and equals 0 otherwise. In this study, the four observed outcomes are process innovation, product innovation, organizational innovation, and marketing innovation. The vector X_i includes Islamic finance usage and the control variables, while β_j represents the parameters estimated for each innovation equation. The model assumes that the error terms across the four equations follow a multivariate normal distribution, allowing the study to test whether unobserved factors jointly shape different innovation decisions.

Estimation Strategy and Interpretation

The estimation reports both coefficient estimates and marginal effects. Coefficients indicate the direction and statistical significance of the relationship between Islamic finance and each innovation outcome, while marginal effects provide a more interpretable measure of how Islamic finance usage is associated with changes in the probability of adopting each innovation type. Because the data are cross-sectional, the interpretation should remain cautious. The findings should be described as evidence of association rather than definitive causal effects. Statistical significance is assessed using conventional thresholds, and the likelihood-ratio test of correlated errors is used to evaluate whether the multivariate probit specification is preferable to separate binary models. A significant test supports the argument that innovation decisions are interdependent and should be modeled jointly.

Empirical values below are drawn from the manuscript's multivariate probit table and mean-comparison appendix; I also incorporated reviewers' requests to interpret marginal effects, clarify control variables, and use cautious wording for cross-sectional results.

RESULTS

Sample Profile and Descriptive Patterns

The empirical analysis uses MSME-level survey data to examine whether the use of Islamic finance is associated with innovation capacity across four dimensions: process, product, organizational, and marketing innovation. The classified sample consists of 447 MSMEs, comprising 250 Islamic finance users and 197 non-users. This classification allows a direct comparison between firms that have accessed Sharia-compliant financial products and those that have not. Since the data are cross-sectional, the findings should be interpreted as evidence of statistical association rather than definitive causality. Nevertheless, the comparison provides an initial indication of whether Islamic finance users display stronger innovation engagement than non-users.

The descriptive comparison shows that Islamic finance users report higher mean values across all four innovation outcomes. Process innovation among Islamic finance users reaches 0.91, compared with 0.72 among non-users. Product innovation records a mean of 0.87 for users and 0.53 for non-users. The largest difference appears in organizational innovation, where Islamic finance users record 0.96 compared with 0.47 among non-users. Marketing innovation also differs substantially, with a mean of 0.91 for users and 0.46 for non-users. These differences are statistically significant and suggest that Islamic finance users are more likely to engage in innovation-related activities.

Table 1

Mean Comparison between Islamic Finance Users and Non-Users

Variable	Islamic Finance Users	Non-Users	Difference
Process innovation	0.91	0.72	0.19***
	(0.018)	(0.032)	
Product innovation	0.87	0.53	0.34***
	(0.021)	(0.036)	
Organizational innovation	0.96	0.47	0.49***
	(0.013)	(0.036)	
Marketing innovation	0.91	0.46	0.45***
	(0.018)	(0.036)	

Source: Primary data. Authors' estimation. Note: Standard errors are reported in parentheses. *** $p < 0.01$.

Multivariate Probit Estimation

To examine whether these descriptive differences remain after controlling for firm and owner characteristics, the study estimates a multivariate probit model. This specification is appropriate because MSMEs may adopt several innovation types simultaneously. The likelihood-ratio test is statistically significant, indicating that the four innovation equations are not independent. The estimated correlations among the innovation equations are also positive and significant, with reported rho values of 0.452,

0.375, 0.457, and 0.380. This supports the use of a joint estimation framework rather than separate binary models, since unobserved factors may simultaneously influence multiple innovation choices.

The main results show that Islamic finance is positively and significantly associated with process innovation, product innovation, and organizational innovation. The coefficient for Islamic finance is 2.263 for process innovation, 1.181 for product innovation, and 1.729 for organizational innovation, all statistically significant at the 1% level. In contrast, the coefficient for marketing innovation is 0.002 and statistically insignificant. These results indicate that the strongest estimated associations of Islamic finance are found in innovation activities related to production methods, product development, and organizational change, while its relationship with marketing innovation is not statistically distinguishable from zero.

Table 2

Multivariate Probit Model and Marginal Effects

Variable	Process	Product	Organizational	Marketing	Process ME	Product ME	Organizational ME	Marketing ME
Islamic Finance	2.263***	1.181***	1.729***	0.002	0.327***	0.388***	0.295***	0.000
	(0.526)	(0.465)	(0.433)	(0.535)	(0.076)	(0.096)	(0.069)	(0.111)
Collaboration	-0.154	0.624***	0.960***	0.854***	-0.022	0.134***	0.164***	0.178***
	(0.252)	(0.200)	(0.203)	(0.182)	(0.036)	(0.042)	(0.031)	(0.038)
Competition	-2.300***	-1.560***	-0.564	0.784	-0.332***	-0.334***	0.096	0.163
	(0.558)	(0.488)	(0.426)	(0.537)	(0.080)	(0.102)	(0.721)	(0.112)
Business Size	0.796***	0.200	1.152***	0.922***	0.115***	0.043	0.197***	0.192***
	(0.225)	(0.196)	(0.212)	(0.186)	(0.033)	(0.042)	(0.032)	(0.036)
Business Age	2.306***	0.181	0.145	-0.088	0.333***	0.039	0.025	-0.018
	(0.328)	(0.188)	(0.228)	(0.216)	(0.047)	(0.040)	(0.039)	(0.045)
Demand	-0.684***	1.519***	-0.424*	-0.119	-0.099**	0.326***	0.072*	-0.025
	(0.328)	(0.193)	(0.222)	(0.198)	(0.047)	(0.034)	(0.037)	(0.041)
Gender	-0.088	-0.685*	0.142	0.248	-0.013	0.147*	0.024	0.052
	(0.557)	(0.399)	(0.416)	(0.378)	(0.081)	(0.085)	(0.071)	(0.079)
Marital Status	0.181	-0.284	0.123	-0.385	0.026	-0.061	0.021	-0.080
Education Level	-0.466	0.399	-0.125	-0.365	-0.067	0.086	-0.021	0.076
Owner's Age	0.043	0.341	-0.205	0.444	0.006	0.073	-0.035	0.092

Source: Primary data. Authors' estimation. Note: Standard errors are reported in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.10. ME = marginal effect.

Interpretation of Marginal Effects

The marginal effects provide a clearer interpretation of the magnitude of the estimated relationships. Islamic finance is associated with a 32.7 percentage-point increase in the probability of process innovation, holding other variables constant. It is also associated with a 38.8 percentage-point increase in the probability of product innovation and a 29.5 percentage-point increase in the probability of organizational innovation. These magnitudes are substantively meaningful and suggest that Islamic finance is most strongly associated with innovation activities involving product upgrading, operational improvement, and organizational adjustment.

By contrast, the marginal effect of Islamic finance on marketing innovation is effectively zero and statistically insignificant. This result implies that Islamic finance usage, as measured in this study, is not associated with a higher probability of marketing innovation after accounting for other firm characteristics. The finding does not mean that Islamic finance is irrelevant to marketing activities. Rather, it suggests that financial access alone may not be sufficient to generate changes in branding, pricing strategy, digital promotion, customer engagement, or distribution methods. These activities may require additional capabilities beyond financing, such as market intelligence, digital literacy, branding knowledge, and managerial readiness.

Results for Control Variables

The control variables provide additional insight into the conditions associated with MSME innovation. Collaboration is positively and significantly associated with product, organizational, and marketing innovation. Its marginal effects indicate increases of 13.4 percentage points for product innovation, 16.4 percentage points for organizational innovation, and 17.8 percentage points for marketing innovation. This suggests that firms engaged in partnerships or external networks are more likely to access knowledge, resources, and market information that support innovation. However, collaboration is not significantly associated with process innovation, indicating that operational upgrading may depend more on internal capabilities or asset investment than on external cooperation alone.

Competition shows a negative and statistically significant association with process and product innovation. The marginal effects indicate that competition is associated with a 33.2 percentage-point lower probability of process innovation and a 33.4 percentage-point lower probability of product innovation. This result suggests that competitive pressure may not always stimulate innovation among MSMEs. In resource-constrained settings, competition may force smaller firms to prioritize short-term survival, price adjustment, or cost minimization rather than longer-term innovation investment. The coefficients for competition are not statistically significant for organizational and marketing innovation, indicating that its association varies across innovation domains.

Business size is positively associated with process, organizational, and marketing innovation. The marginal effects show that business size increases the probability of process innovation by 11.5 percentage points, organizational innovation by 19.7

percentage points, and marketing innovation by 19.2 percentage points. This finding suggests that firms with greater resource capacity are better positioned to introduce operational changes, reorganize managerial practices, and adopt new marketing methods. Business age is positively and significantly associated only with process innovation, with a marginal effect of 33.3 percentage points. This may indicate that more experienced firms accumulate operational knowledge that enables them to modify production or delivery systems more effectively.

Market demand also shows differentiated effects. It is negatively associated with process innovation, positively associated with product innovation, and weakly associated with organizational innovation. The positive marginal effect for product innovation, 32.6 percentage points, suggests that demand conditions may encourage MSMEs to introduce new or improved products. However, the negative association with process innovation may reflect the possibility that firms serving certain demand conditions rely on existing operational routines rather than investing in process redesign. Gender is weakly significant only in the product innovation equation, while marital status, education level, and owner's age do not show consistent statistically significant associations with innovation outcomes.

Hypothesis Evaluation

Overall, the results provide support for three of the four hypotheses. The positive and statistically significant coefficient of Islamic finance on product innovation supports H1. The positive and statistically significant coefficient on process innovation supports H2. The positive and statistically significant coefficient on organizational innovation supports H4. However, H3 is not supported because Islamic finance is not significantly associated with marketing innovation. These findings show that the relationship between Islamic finance and MSME innovation is not uniform across innovation types. Islamic finance appears more strongly linked to product, process, and organizational upgrading than to market-oriented innovation.

Taken together, the findings indicate that Islamic finance is associated with several important dimensions of MSME innovation capacity in Indonesia. The results are consistent with the argument that Sharia-compliant finance can support productive investment, operational improvement, and organizational development. At the same time, the insignificant result for marketing innovation highlights the limits of financing as a stand-alone innovation driver. The evidence suggests that financing mechanisms may need to be integrated with non-financial support, including marketing training, digital capability development, mentorship, and market-access programs. Therefore, Islamic finance may be most effective when positioned not only as a funding channel but also as part of a broader MSME innovation ecosystem.

DISCUSSION

Impact of Islamic Finance on Product Innovation

The findings indicate that Islamic finance is positively and significantly associated with product innovation among MSMEs. The multivariate probit estimation shows that

Islamic finance has a coefficient of 1.181 at the 1% significance level, while the marginal effect indicates that Islamic finance users have a 38.8 percentage-point higher probability of introducing product innovation than non-users, holding other variables constant. This result suggests that Sharia-compliant financing may help MSMEs mobilize resources for developing new products, improving product design, enhancing product quality, or modifying existing product features. Since product innovation often requires upfront investment in materials, equipment, certification, advertising, and market testing, access to Islamic finance may reduce financial barriers that otherwise prevent MSMEs from pursuing innovation.

This finding is consistent with studies showing that access to finance strengthens firms' ability to introduce new or improved products. Akcigit & Kerr (2018) and Braguinsky et al. (2021) emphasize that product innovation is essential for firm growth, product diversification, and competitive survival. Granja & Moreira (2023) show that credit-constrained firms tend to introduce less novel products, suggesting that financing frictions directly limit product development. In the Islamic finance literature, Sharia-compliant instruments such as mudarabah, musharakah, murabahah, ijarah, salam, and istisna are argued to support product innovation through risk-sharing, asset-backed financing, forward production, and real-sector orientation (Abubakar et al., 2022; Ahmed et al., 2019; Humaidi et al., 2023; Supriadi et al., 2023).

Theoretically, this result supports the Resource-Based View by showing that Islamic finance can function as a strategic financial resource when MSMEs are able to transform it into product development capability. Practically, the finding suggests that Islamic financial institutions should not limit their role to providing capital, but should also support product design, halal certification, packaging improvement, prototyping, and market testing. From a policy perspective, the result implies that Islamic finance programs for MSMEs should be integrated with innovation support schemes, including product development training, halal value-chain facilitation, digital platform access, and mentoring. Such integration may allow Islamic finance to move beyond financial inclusion and become a more direct instrument for MSME innovation and competitiveness.

Impact of Islamic Finance on Process Innovation

The findings show that Islamic finance is positively and significantly associated with process innovation among MSMEs. The multivariate probit result reports a coefficient of 2.263 at the 1% significance level, while the marginal effect indicates that Islamic finance users have a 32.7 percentage-point higher probability of introducing process innovation than non-users, holding other variables constant. This suggests that Sharia-compliant financing may help MSMEs improve production techniques, logistics, operational routines, equipment use, and service delivery methods. Since process innovation often requires investment in machinery, software, workflow redesign, quality control, and distribution systems, Islamic finance may reduce financial constraints that otherwise prevent MSMEs from improving efficiency and productivity.

This result is consistent with the view that process innovation is a key driver of productivity and firm competitiveness, even though it is sometimes treated as secondary to product innovation (Reichstein & Salter, 2006; Poon et al., 2020). The finding also aligns with studies arguing that innovation projects are often constrained by uncertainty, complexity, information asymmetry, and limited access to reasonably priced capital. In the Islamic finance literature, asset-backed contracts such as murabahah and ijarah are especially relevant because they can finance tangible productive assets, including machinery, equipment, production facilities, and technology upgrades (Ebrahim & Abdelfattah, 2021; Humaidi et al., 2023).

Theoretically, this finding supports the Resource-Based View by suggesting that Islamic finance can operate as a strategic resource when MSMEs convert financial access into operational capability. Practically, Islamic financial institutions should design financing schemes that explicitly support equipment upgrading, digital process adoption, quality-control systems, inventory management, and logistics improvement. From a policy perspective, the result indicates that Islamic finance programs should be integrated with technical assistance, production training, halal supply-chain support, and digitalization initiatives. Such integration would help ensure that financial access is not limited to capital provision, but becomes part of a broader process-upgrading ecosystem that strengthens MSME productivity, resilience, and long-term competitiveness.

Impact of Islamic Finance on Organizational Innovation

The findings indicate that Islamic finance is positively and significantly associated with organizational innovation among MSMEs. The multivariate probit estimation reports a coefficient of 1.729 at the 1% significance level, while the marginal effect shows that Islamic finance users have a 29.5 percentage-point higher probability of introducing organizational innovation than non-users, holding other variables constant. This result suggests that Sharia-compliant financing may support changes in managerial routines, workplace coordination, decision-making systems, external relations, and resource governance. Organizational innovation is important because firms must not only obtain resources but also organize them effectively to improve productivity, technical capacity, and innovation efficiency (Taufik Syamlan et al., 2026).

This finding is consistent with studies suggesting that Islamic finance can shape how firms manage resources, govern operations, and develop human capital. Kurniasari et al. (2023) shows that MSME competitiveness is linked to digital technology and sustainable business models, both of which require organizational adaptation. Malik et al. (2020) further argue that Islamic finance introduces distinctive Sharia governance mechanisms, including the Sharia Supervisory Board and knowledge exchange between Islamic scholars and managers. Related studies also indicate that Islamic leadership, financial literacy, learning orientation, and fintech-enabled finance can promote organizational change through innovative work behavior, business-model adjustment, and improved governance routines (Febriani & Sa'diyah, 2021; Srisusilawati et al., 2021; Widyakto et al., 2024; Ramli et al., 2024).

Theoretically, this result supports the Resource-Based View by showing that Islamic finance can function as an organizationally embedded resource when MSMEs transform financial access into governance, learning, and coordination capabilities. Practically, Islamic financial institutions should combine financing with advisory services, governance training, halal-management guidance, and mentoring so that MSMEs can reorganize internal routines and external partnerships more effectively. From a policy perspective, Islamic finance programs should be integrated with capacity-building schemes, digitalization assistance, and Sharia governance support. Such integration would help Islamic finance move beyond capital provision and become an institutional mechanism for strengthening MSME organizational capability, innovation readiness, and long-term competitiveness.

Impact of Islamic Finance on Marketing Innovation

The findings show that Islamic finance is not significantly associated with marketing innovation among MSMEs. Although the estimated coefficient is positive, its magnitude is very small and statistically insignificant, while the marginal effect is effectively zero. This result indicates that the use of Islamic finance does not meaningfully increase the probability that MSMEs adopt new marketing methods, pricing strategies, distribution channels, promotional media, or market-positioning practices. Unlike product, process, and organizational innovation, marketing innovation may depend less on financing access alone and more on managerial capability, digital literacy, customer analytics, branding knowledge, and market intelligence. Therefore, the result suggests that Islamic finance may not automatically translate into market-oriented innovation without complementary non-financial support.

This finding partly contrasts with studies suggesting that Islamic finance and Islamic FinTech can support marketing innovation through digital platforms, crowdfunding, e-commerce, halal branding, and customer engagement mechanisms (Mustafida et al., 2021; Mujiatun et al., 2023; Supriadi et al., 2023; Ramli et al., 2024). However, it is also consistent with literature emphasizing that marketing innovation is highly capability-dependent and cannot be generated by financing alone (Srisusilawati et al., 2021; Hartanto et al., 2023; Widyakto et al., 2024). In Sharia-compliant business contexts, firms may also face tension between maintaining ethical and halal standards and adopting aggressive marketing strategies, especially in digital environments where branding, promotion, and consumer targeting must remain aligned with Sharia values (Izzuddin & Adinugraha, 2022; Qizwini & Purnama, 2024; Samudra & Tamamudin, 2025; Taufik Syamlan et al., 2026).

Theoretically, this result refines the Resource-Based View by showing that Islamic finance is a valuable resource only when firms possess the organizational and marketing capabilities needed to convert funding into innovation. Practically, Islamic financial institutions should not assume that financing automatically improves MSME marketing performance; they need to complement financing with digital marketing training, halal branding assistance, customer analytics support, and e-commerce facilitation. From a policy perspective, Islamic finance programs should be integrated

with market-access initiatives, halal certification support, digital platform development, and mentoring. Such integration may help MSMEs transform Sharia-compliant financing into stronger marketing innovation, particularly in sectors where halal identity and digital visibility are central to competitiveness.

CONCLUSION

This study examined the relationship between Islamic finance and the innovation capacity of MSMEs in Indonesia by considering four innovation dimensions: product, process, organizational, and marketing innovation. The findings show that Islamic finance is positively and significantly associated with product, process, and organizational innovation. These results suggest that Sharia-compliant financing may help MSMEs mobilize resources for product development, operational improvement, and organizational upgrading. However, Islamic finance does not show a statistically significant association with marketing innovation, indicating that financing alone may be insufficient to stimulate changes in promotion, pricing, distribution, branding, or market positioning.

The discussion suggests that Islamic finance can support innovation through several mechanisms, including risk-sharing, asset-backed financing, real-sector orientation, and Sharia-based governance. Product innovation may benefit from financing for design, prototyping, certification, and market testing. Process innovation may be strengthened through investment in machinery, logistics, digital tools, and quality-control systems. Organizational innovation may emerge through improved governance, learning routines, collaboration, and managerial adaptation. Marketing innovation, however, appears to require additional capabilities such as digital literacy, customer analytics, halal branding knowledge, and market intelligence. Therefore, Islamic finance should be understood as an enabling resource rather than a complete innovation solution.

This study contributes to the literature by extending the finance–innovation discussion into the context of Islamic finance and Indonesian MSMEs. It also contributes methodologically by using a multivariate probit model to examine interrelated innovation outcomes simultaneously rather than treating each innovation type as an isolated decision. Practically, the findings imply that Islamic financial institutions should move beyond capital provision and act as partners in MSME capability development. Policymakers should integrate Islamic finance programs with innovation training, halal ecosystem development, digitalization support, and market-access initiatives. Future studies should examine specific Islamic financial instruments and use longitudinal designs to better clarify causal mechanisms.

Limitation of the Study

This study has several limitations that should be considered when interpreting the findings. First, the analysis is based on cross-sectional survey data, which limits the ability to draw strong causal conclusions. Although the multivariate probit model captures the interdependence among several innovation outcomes, it cannot fully

determine whether Islamic finance leads to innovation or whether more innovative MSMEs are more likely to access Islamic finance. Second, the study measures Islamic finance as a binary variable, distinguishing users from non-users. This approach is useful for initial comparison, but it does not capture differences among specific Islamic contracts such as mudarabah, musharakah, murabahah, ijarah, salam, istisna, or qard hasan.

Another limitation concerns the measurement of innovation. The study follows a binary approach by identifying whether MSMEs introduced product, process, organizational, or marketing innovation. While this is consistent with survey-based innovation research, it does not measure the intensity, quality, novelty, or economic value of each innovation. In addition, the sample is limited to MSMEs in Yogyakarta and Central Java, which may restrict the generalizability of the findings to other Indonesian regions with different industrial structures, financial ecosystems, or levels of Islamic financial penetration. Unobserved factors such as entrepreneurial orientation, managerial ability, digital readiness, halal literacy, and informal financing may also influence innovation outcomes.

Recommendations for Future Research

Future research should examine the relationship between Islamic finance and MSME innovation using longitudinal or panel data. Such designs would allow researchers to observe how access to Islamic finance influences innovation over time and whether its effects differ across business life cycles, sectors, or regional contexts. Future studies may also apply stronger causal identification strategies, such as propensity score matching, instrumental variables, treatment-effect models, or quasi-experimental approaches. These methods would help address potential endogeneity and reverse causality between Islamic finance usage and innovation behavior. Expanding the sample to other Indonesian provinces would also improve external validity and allow comparative analysis across different Islamic finance ecosystems.

Further research should disaggregate Islamic finance into specific instruments to identify which contracts are most effective for each innovation type. Risk-sharing instruments such as mudarabah and musharakah may be more suitable for uncertain innovation projects, while asset-backed instruments such as murabahah and ijarah may be more relevant for process and product upgrading. Future studies should also include non-financial mediating variables such as Islamic financial literacy, digital capability, halal certification readiness, managerial competence, collaboration networks, and Sharia governance. Finally, marketing innovation deserves deeper investigation because this study found no significant relationship. Future research should examine whether Islamic finance affects marketing innovation indirectly through digital adoption, halal branding, e-commerce participation, or market-access support.

Authors Contributions

Conceptualization	M.S., A.N.K., A.R.H.P., & T.N.	Resources	M.S., A.N.K., A.R.H.P., & T.N.

Data curation	M.S., A.N.K., A.R.H.P., & T.N.	Software	M.S., A.N.K., A.R.H.P., & T.N.
Formal analysis	M.S., A.N.K., A.R.H.P., & T.N.	Supervision	M.S., A.N.K., A.R.H.P., & T.N.
Funding acquisition	M.S., A.N.K., A.R.H.P., & T.N.	Validation	M.S., A.N.K., A.R.H.P., & T.N.
Investigation	M.S., A.N.K., A.R.H.P., & T.N.	Visualization	M.S., A.N.K., A.R.H.P., & T.N.
Methodology	M.S., A.N.K., A.R.H.P., & T.N.	Writing – original draft	M.S., A.N.K., A.R.H.P., & T.N.
Project administration	M.S., A.N.K., A.R.H.P., & T.N.	Writing – review & editing	M.S., A.N.K., A.R.H.P., & T.N.

All authors have read and agreed to the published version of the manuscript.

Funding

This study received no direct funding from any institution.

Institutional Review Board Statement

The study was approved by Program Studi Manajemen (S2), Universitas Negeri Yogyakarta, Kota Yogyakarta, Indonesia.

Informed Consent Statement

Informed consent was obtained before respondents filled out the questionnaire for this study.

Data Availability Statement

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

Acknowledgments

The authors thank Program Studi Manajemen (S2), Universitas Negeri Yogyakarta, Kota Yogyakarta, Indonesia for administrative support for the research that this article was based on.

Conflicts of Interest

The authors declare no conflicts of interest.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work the authors used ChatGPT, DeepL, Grammarly, and PaperPal in order to translate from Bahasa Indonesia into American English, and to improve clarity of the language and readability of the article. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

REFERENCES

Abdeldayem, M., & Aldulaimi, S. (2023). Developing an Islamic crowdfunding model: A new innovative mechanism to finance SMEs in the Middle East. *International Journal of Organizational Analysis*, *31*(6), 2623–2644. https://doi.org/10.1108/IJOA-02-2022-3159

Abubakar, A. U., Yusuf, A. M., & Yau, M. H. (2022). Islamic banking products awareness among Islamic banks' customers in Northen Nigeria. *Gusau Journal of Accounting and Finance*, *3*(2), 18. https://doi.org/10.57233/gujaf.v3i2.143

Adegboye, A. C., & Iweriebor, S. (2018). Does access to finance enhance SME innovation and productivity in nigeria? Evidence from the world bank enterprise survey. *African Development Review*, *30*(4), 449–461. https://doi.org/10.1111/1467-8268.12351

Aderemi, A. M. R., & Ishak, M. S. I. (2020). Crowdfunding as an alternative mode of financing for micro and small enterprises: A proposed qard-al-hasan contract. *International Journal of Islamic Economics and Finance (IJIEF)*, *3*(3), 95–118. https://doi.org/10.18196/ijief.3235

Aderemi, A. M. R., & Ishak, M. S. I. (2023). Qard Hasan as a feasible Islamic financial instrument for crowdfunding: Its potential and possible application for financing micro-enterprises in Malaysia. *Qualitative Research in Financial Markets*, *15*(1), 58–76. https://doi.org/10.1108/QRFM-08-2021-0145

Aggarwal, A., & Joshi, N. (2024). MSMEs' innovation: A barrier approach. *Journal of Small Business and Enterprise Development*, *31*(3), 552–573. https://doi.org/10.1108/JSBED-07-2023-0304

Aghion, P., Howitt, P., Brant-Collett, M., & García-Peñalosa, C. (1998). *Endogenous growth theory*. MIT Press.

Agwu, G. A., Agbanike, T., Uwajumogu, N., & Ogbuagu, R. A. (2020). How do firms combine different types of innovation? A multivariate probit approach. *African Journal of Science, Technology, Innovation and Development*, *12*(2), 173–185. https://doi.org/10.1080/20421338.2019.1624312

Ahmed, H., Ariffin, F. A. T., Karbhari, Y., & Shafii, Z. (2019). Diverse accounting standards on disclosures of Islamic financial transactions: Prospects and challenges of narrowing gaps. *Accounting, Auditing & Accountability Journal*, *32*(3), 866–896. https://doi.org/10.1108/AAAJ-10-2015-2266

Akcigit, U., & Kerr, W. R. (2018). Growth through heterogeneous innovations. *Journal of Political Economy*, *126*(4), 1374–1443. https://doi.org/10.1086/697901

Alheet, A. F., & Hamdan, Y. (2020). Evaluating innovation-driven economic growth: A case of Jordan. *Entrepreneurship and Sustainability Issues*, *7*(3), 1790–1802. https://doi.org/10.9770/jesi.2020.7.3(23)

Aminullah, E., Fizzanty, T., Nawawi, N., Suryanto, J., Pranata, N., Maulana, I., Ariyani, L., Wicaksono, A., Suardi, I., Azis, N. L. L., & Budiatri, A. P. (2024). Interactive components of digital MSMEs ecosystem for inclusive digital economy in Indonesia. *Journal of the Knowledge Economy*, *15*(1), 487–517. https://doi.org/10.1007/s13132-022-01086-8

Ardito, L., Cerchione, R., Mazzola, E., & Raguseo, E. (2022). Industry 4.0 transition: A systematic literature review combining the absorptive capacity theory and the data–information–knowledge hierarchy. *Journal of Knowledge Management*, *26*(9), 2222–2254. https://doi.org/10.1108/JKM-04-2021-0325

Asiedu, E., Pasca, N., Boakye, A. N., & Malcalm, E. (2024). Assessing the moderation effect of financial technology on the development and growth of MSMEs. *International Journal of Religion*, *5*(11), 1429–1444. https://doi.org/10.61707/akd4n473

Asyiqin, I. Z., & Alfurqon, F. F. (2024). Musyarakah mutanaqisah: Strengthening islamic financing in indonesia and addressing murabahah vulnerabilities. *Jurnal Media Hukum*, *31*(1), 1–18. https://doi.org/10.18196/jmh.v31i1.20897

Audretsch, D. B., Belitski, M., Caiazza, R., & Lehmann, E. E. (2020). Knowledge management and entrepreneurship. *International Entrepreneurship and Management Journal*, *16*(2), 373–385. https://doi.org/10.1007/s11365-020-00648-z

Azwar, A., & Jamaluddin, J. (2024). Securities crowdfunding as a source of capital and alternative investment in the Maqāṣid al-Sharī'ah perspective: Indonesian case. *Journal of Management and Muamalah*, *14*(2), 99–118. https://doi.org/10.53840/jmm.v14i2.198

Ben Amar, A., & O. El Alaoui, A. (2023). Profit- and loss-sharing partnership: The case of the two-tier mudharaba in Islamic banking. *International Journal of Islamic and Middle Eastern Finance and Management*, *16*(1), 81–102. https://doi.org/10.1108/IMEFM-12-2020-0630

Birdthistle, N., & Hales, R. (Eds.). (2022). *Family business on a mission: Attaining the 2030 sustainable development goal of industry, innovation and infrastructure* (First edition). Emerald Publishing.

Braguinsky, S., Ohyama, A., Okazaki, T., & Syverson, C. (2021). Product innovation, product diversification, and firm growth: Evidence from Japan's early industrialization. *American Economic Review*, *111*(12), 3795–3826. https://doi.org/10.1257/aer.20201656

Charfeddine, L., & Zaouali, S. (2022). The effects of financial inclusion and the business environment in spurring the creation of early-stage firms and supporting established firms. *Journal of Business Research*, *143*, 1–15. https://doi.org/10.1016/j.jbusres.2022.01.014

Chege, S. M., & Wang, D. (2020). The influence of technology innovation on SME performance through environmental sustainability practices in Kenya. *Technology in Society*, *60*, 101210. https://doi.org/10.1016/j.techsoc.2019.101210

Choiruddin, M. N., Pratikto, H., F. Danardana Murwani, & Nurika Restuningdiah. (2025). Financial literacy, FinTech, and contemporary innovation in Islamic economic law: An analysis of MSME performance sustainability in Indonesia and Malaysia. *MILRev: Metro Islamic Law Review*, *4*(2), 976–1008. https://doi.org/10.32332/milrev.v4i2.10164

Cipta, H. & Hatamar. (2023). The potential synergy of halal industry and Islamic banking in Bangka Belitung Province: SWOT analysis. *Integrated Journal of Business and Economics*, *7*(1), 309. https://doi.org/10.33019/ijbe.v7i1.510

De Fretes, Mercy. S. D. (2020). The role of creativity and innovation in business competition: A phenomenology of micro small and medium entreprises in East Indonesia. *South Asian Research Journal of Humanities and Social Sciences*, *02*(01), 10–17. https://doi.org/10.36346/sarjhss.2020.v02i01.003

Dewi, I. S., & Adinugraha, H. H. (2023). The role of sharia fintech in improving halal financial inclusion in MSMEs in Indonesia. *Likuid: Jurnal Ekonomi Industri Halal*, *3*(1), 18–29. https://doi.org/10.15575/likuid.v3i1.18693

Djuanita, M. K., & Zamzamiyatul, E. (2024). Analysis of the external and internal environment at the fire and rescue training centre of DKI Jakarta Province. *BASKARA: Journal of Business and Entrepreneurship*, *6*(2), 165–178. https://doi.org/10.54268/baskara.v6i2.20019

Ebrahim, A., & Abdelfattah, T. (2021). The substance and form of islamic finance instruments: An accounting perspective. *Journal of Islamic Accounting and Business Research*, *12*(6), 872–886. https://doi.org/10.1108/JIABR-10-2019-0200

Eyerci. (2021). *The causes and consequences of interest theory: Analyzing interest through conventional and islamic economics*. Springer International Publishing AG.

Fahamsyah, M. H., Laila, N., Rakhmat, A. S., & Shabbir, M. S. (2023). Profit-loss sharing in Islamic banking: Global insights from a systematic review. *Economica: Jurnal Ekonomi Islam*, *14*(2), 175–203. https://doi.org/10.21580/economica.2023.14.2.26021

Faizi, F. (2024). How are Islamic banking products developed? Evidence from emerging country. *Cogent Economics & Finance*, *12*(1), 2378961. https://doi.org/10.1080/23322039.2024.2378961

Fajri, M. Z. N., Rofiqo, A., Rizqon, A. L., & Hasan, R. (2023). The impact of MSMEs financing in Islamic bank on unemployment in Indonesia. *Jurnal Ekonomi Syariah Teori Dan Terapan*, *10*(5), 443–454. https://doi.org/10.20473/vol10iss20235pp443-454

Febriani, R., & Sa'diyah, C. (2021). Exploring Islamic leadership on SME performance: Mediated by innovative work behavior and financial technology. *Jurnal Aplikasi Manajemen*, *19*(3), 495–506. https://doi.org/10.21776/ub.jam.2021.019.03.04

Fidhayanti, D., Mohd Noh, M. S., Ramadhita, R., & Bachri, S. (2024). Exploring the legal landscape of Islamic fintech in Indonesia: A comprehensive analysis of policies and regulations. *F1000Research*, *13*(21), 21. https://doi.org/https://doi.org/10.12688/f1000research.143476.2

Firdaus, Sari, S. K., & Deva Dwi Anggara. (2022). Impact of Islamic financing on working capital management of micro, small, and medium enterprises in Tanjungpinang City, Indonesia. *Journal of Islamic Economics Lariba*, *8*(2), 327–340. https://doi.org/10.20885/jielariba.vol8.iss2.art5

Gherghina, Ștefan C., Botezatu, M. A., Hosszu, A., & Simionescu, L. N. (2020). Small and medium-sized enterprises (SMEs): The engine of economic growth through investments and innovation. *Sustainability*, *12*(1), 347. https://doi.org/10.3390/su12010347

Giannetti, C., & Jentzsch, N. (2013). Credit reporting, financial intermediation and identification systems: International evidence. *Journal of International Money and Finance*, *33*, 60–80. https://doi.org/10.1016/j.jimonfin.2012.10.005

Gonne, J., & Mohamadou, Y. (2022). Determinants of the adoption of Islamic finance by cameroonian SMEs: Case study from a psycho-sociological characteristics of managers. *The Journal of Entrepreneurial Finance*, *24*(3), 18–32. https://doi.org/10.57229/2373-1761.1442

Granja, J., & Moreira, S. (2023). Product innovation and credit market disruptions. *The Review of Financial Studies*, *36*(5), 1930–1969. https://doi.org/10.1093/rfs/hhac064

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hakeem, M. M. (2019). Innovative solutions to tap "micro, small and medium enterprises" (MSME) market: A way forward for Islamic banks. *Islamic Economic Studies*, *27*(1), 38–52. https://doi.org/10.1108/IES-05-2019-0002

Halim, Md. A. (2024). Does crowdfunding contribute to digital financial inclusion? *Research in Globalization*, *9*, 100238. https://doi.org/10.1016/j.resglo.2024.100238

Hamdan. (2021). Analysis of the sustainability of MSMEs in the COVID-19 pandemic era. *JEJAK: Jurnal Ekonomi Dan Kebijakan*, *14*(1), 183–199. https://doi.org/10.15294/jejak.v14i1.26342

Hanfan, A., Hapsari, I. M., Setiawan, A. I., & Nupus, H. (2023). Building religious product advantage to increase marketing performance of micro, small and medium halal industry in Central Java—Indonesia. *Jurnal Dinamika Manajemen*, *14*(2), 191–204. https://doi.org/10.15294/jdm.v14i2.42272

Harisandi, P., Sari, M., & Yulandri, E. (2023). Market microstructure and financing efficiency in MSMEs in Indonesia: Comparison of Sharia and conventional sectors. *Finansha: Journal of Sharia Financial Management*, *4*(2), 160–175. https://doi.org/10.15575/fjsfm.v4i2.30801

Hartanto, S., Suparyanto, T., & Azwar. (2023). Islamic finance practices in micro, small, and medium enterprises in Indonesia: A systematic literature review. *Millah: Journal of Religious Studies*, *22*(2), 435–464. https://doi.org/10.20885/millah.vol22.iss2.art6

Haruna, A., Oumbé, H. T., Kountchou, A. M., & Pilag Kakeu, C. B. (2024). Can Islamic finance enhance the innovation capacity of Cameroonian SMEs? Empirical evidence based on a multivariate probit approach. *Borsa Istanbul Review*, *24*(1), 187–200. https://doi.org/10.1016/j.bir.2023.11.006

Hasan, A., Nurkholifah, M., Mujadid, R., & Agustian, F. (2021). Sharia venture capital as alternative capital for MSMEs in Indonesia. *Al-Masharif: Jurnal Ilmu Ekonomi Dan Keislaman*, *9*(2), 302–315. https://doi.org/10.24952/masharif.v9i2.4767

Hendratmi, A., Sukmaningrum, P. S., Ryandono, M. N. H., & Ratnasari, T. (2019). The role of islamic crowdfunding mechanisms in business and business development. *GATR Journal of Business and Economics Review*, *4*(1), 10–23. https://doi.org/10.35609/jber.2019.4.1(2)

Herispon, H., & Anuar, S. (2023). The pressure of the COVID-19 pandemic, digitalization, and the classic problems of MSMEs in Indonesia. *ADPEBI International Journal of Business and Social Science*, *3*(1), 50–62. https://doi.org/10.54099/aijbs.v3i1.531

Humaidi, M., Syamsuri, S., & Khoirunnisa, F. (2023). The role of cash waqf linked sukuk based on mudarabah contract (trustee-partnership) as MSME capital solution. *El Barka: Journal of Islamic Economics and Business*, *6*(1), 108–131. https://doi.org/10.21154/elbarka.v6i1.3550

Hurdawaty, R., & Tukiran, M. (2024). Strategies to increase the competitiveness of micro, small and medium enterprises (MSMEs): A narrative literature review. *South Asian Journal of Social Studies and Economics*, *21*(1), 112–125. https://doi.org/10.9734/sajsse/2024/v21i1768

Iqbal, Z., & Mirakhor, A. (2011). *An introduction to Islamic finance: Theory and practice* (1st ed.). Wiley. https://doi.org/10.1002/9781118390474

Ishak, M. S. I., & Mohammad Nasir, N. S. (2024). The applicability of Islamic crowdfunding as an alternative funding for micro-entrepreneurs in Malaysia. *Qualitative Research in Financial Markets*, *16*(3), 548–564. https://doi.org/10.1108/QRFM-12-2022-0202

Ismail, A. G., & Majid, M. Z. A. (2024). *Economic capital and risk management in Islamic finance*. Routledge.

Izzuddin, M., & Adinugraha, H. H. (2022). A literature review potential development of halal industry in Indonesia. *LIKUID: Jurnal Ekonomi Industri Halal*, *2*(1), 1–16. https://doi.org/10.15575/likuid.v2i1.14915

Jamal, A. A., & Motani, H. (2024). Islamic wealth management: Prospects, challenges, and the case of Singapore. *Capital Markets Law Journal*, *19*(3), 260–279. https://doi.org/10.1093/cmlj/kmae008

Kasim, S., Hamzah, Muh. N., Kadir, A., & Abdullah, M. W. (2024). Resilience of micro, small, and medium enterprises based on Islamic entrepreneurship. *IQTISHODUNA: Jurnal Ekonomi Islam*, *13*(1), 211–232. https://doi.org/10.54471/iqtishoduna.v13i1.2333

Kaukab, M. E., Adawiyah, W. R., Setyanto, R. P., & Suroso, A. (2020). Accelerating small firms' production process improvement through international market knowledge and valuable, rare, inimitable, and organized resources and capabilities. *Business: Theory and Practice*, *21*(1), 322–328. https://doi.org/10.3846/btp.2020.11652

Kirom, N. R., Sudarmiatin, S., & Hermawan, A. (2022). E-commerce strategy for MSME innovation development in the new normal era. *International Journal of Environmental, Sustainability, and Social Science*, *3*(1), 169–178. https://doi.org/10.38142/ijesss.v3i1.125

Kurniasari, F., Lestari, E. D., & Tannady, H. (2023). Pursuing long-term business performance: Investigating the effects of financial and technological factors on digital adoption to leverage SME performance and business sustainability—evidence from Indonesian SMEs in the traditional market. *Sustainability*, *15*(16), 12668. https://doi.org/10.3390/su151612668

Kuyateh, M. A. (2025). Shariah compliance prohibitions in islamic banking and finance: The case of riba, gharar and maysir. *Journal of Islamic Banking & Finance*, *42*(2), 51.

Lantz, J.-S., Lacaze, D., Braune, E., & Sahut, J.-M. (2024). Innovation in the artificial intelligence sector: An exploratory study of the structure of co-inventor networks. *Management International*, *28*(6), 101–114. https://doi.org/10.59876/a-es2g-vy4a

Lukovszki, L., Rideg, A., & Sipos, N. (2021). Resource-based view of innovation activity in SMEs: An empirical analysis based on the global competitiveness project. *Competitiveness Review: An International Business Journal*, *31*(3), 513–541. https://doi.org/10.1108/CR-01-2020-0018

Maddala, G. S. (1983). *Limited-dependent and qualitative variables in econometrics*. Cambridge University Press. https://doi.org/10.1017/CBO9780511810176

Mairesse, J., & Mohnen, P. (2010). *Using innovations surveys for econometric analysis* (No. W15857; p. w15857). National Bureau of Economic Research. https://doi.org/10.3386/w15857

Malik, A., Ullah, K., & Ullah, S. (2020). *Knowledge diffusion process & common islamic banking governance principles: Integrative perspective (s) of managers and Shariah scholars* (Version 1). arXiv. https://doi.org/10.48550/ARXIV.2002.04067

Mariani, M. M., & Nambisan, S. (2021). Innovation analytics and digital innovation experimentation: The rise of research-driven online review platforms. *Technological Forecasting and Social Change*, *172*, 121009. https://doi.org/10.1016/j.techfore.2021.121009

Mittal, V., & Raman, T. V. (2021). Financing woes: Estimating the impact of MSME financing gap on financial structure practices of firm owners. *South Asian Journal of Business Studies*, *11*(3), 316–340. https://doi.org/10.1108/SAJBS-07-2020-0228

Muhamed, N. A., Kamaruddin, M. I. H., Wan Mohamad Nazarie, W. N. F., Mat Radzi, R., Kamarubahrin, A. F., & Zaimi, S. M. (2026). Shariah governance and financial management framework for Islamic donation-based crowdfunding (IDCF). *Qualitative Research in Financial Markets*, *18*(3), 790–807. https://doi.org/10.1108/QRFM-09-2024-0245

Mujiatun, S., Trianto, B., Cahyono, E. F., & Rahmayati. (2023). The impact of marketing communication and islamic financial literacy on islamic financial inclusion and MSMEs performance: Evidence from halal tourism in indonesia. *Sustainability*, *15*(13), 9868. https://doi.org/10.3390/su15139868

Mustafida, R., Fauziah, N. N., & Kurnia, Z. N. (2021). The development of Islamic crowdfunding in Indonesia and its impact towards SMEs. *Hasanuddin Economics and Business Review*, *4*(3), 20. https://doi.org/10.26487/hebr.v4i3.2547

Nassim, I., Nassim, S., & Moussa, A. (2025). Financial leverage and firm performance in Moroccan agricultural SMEs: Evidence of nonlinear dynamics. *International Journal of Financial Studies*, *13*(3), 164. https://doi.org/10.3390/ijfs13030164

Nawrocki, T. L., & Jonek-Kowalska, I. (2022). Is innovation a risky business? A comparative analysis in high-tech and traditional industries in Poland. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(3), 155. https://doi.org/10.3390/joitmc8030155

Nor, M. S. bin M., & Fidhayanti, D. (2022). Riba and gharar on digital payment applications: Comparison between Malaysia and Indonesia. *Jurisdictie: Jurnal Hukum Dan Syariah*, *13*(1), 40–62.

Nursini, N. (2020). Micro, small, and medium enterprises (MSMEs) and poverty reduction: Empirical evidence from Indonesia. *Development Studies Research*, *7*(1), 153–166. https://doi.org/10.1080/21665095.2020.1823238

OECD. (2018). *Oslo manual 2018: Guidelines for collecting, reporting and using data on innovation, 4th edition*. OECD Publishing. https://doi.org/10.1787/9789264304604-en

Okijie, S. R., & Effiong, U. E. (2024). Financing and successful micro, small and medium scale enterprise development in Nigeria. *East African Finance Journal*, *3*(1), 1–26. https://doi.org/10.59413/eafj/v3.i1.1

Okoli, I. E. N., Nwosu, K. C., & Okechukwu, M. E. (2021). Entrepreneurial orientation and performance of selected SMEs in Southeast, Nigeria. *European Journal of Business and Management Research*, *6*(4), 108–115. https://doi.org/10.24018/ejbmr.2021.6.4.946

Osobajo, O. A., & Bjeirmi, B. (2021). Aligning tacit knowledge and competitive advantage: A resource-based view. *International Journal of Knowledge Management Studies*, *12*(3), 203. https://doi.org/10.1504/IJKMS.2021.116391

Oswari, T., Judijanto, L., & Destiana, R. (2023). Social capital, financial capital, and entrepreneurial orientation: Keys to performance in indonesia's MSME clothing industry. *International Journal of Business, Law, and Education*, *4*(2), 1011–1029. https://doi.org/10.56442/ijble.v4i2.277

Poon, J., Chow, Y. W., Ewers, M., & Ramli, R. (2020). The role of skills in islamic financial innovation: Evidence from Bahrain and Malaysia. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(3), 47. https://doi.org/10.3390/joitmc6030047

Qizwini, J., & Purnama, D. G. (2024). Future trends in halal food: How innovative Islamic business models are redefining the Indonesian market. *Jurnal of Middle East and Islamic Studies*, *11*(2), 1–22. https://doi.org/10.7454/meis.v11i2.184

Ramli, R., Salikhov, I., Saad, R. A. J., Zulpahmi, & Abu Bakar, A. (2024). Shariah contracts in private equity and its prospect for small and medium enterprises (SME). *PaperASIA*, *40*(5b), 165–179. https://doi.org/10.59953/paperasia.v40i5b.217

Reichstein, T., & Salter, A. (2006). Investigating the sources of process innovation among UK manufacturing firms. *Industrial and Corporate Change*, *15*(4), 653–682. https://doi.org/10.1093/icc/dtl014

Rohmania, A. S., Sholihah, E., & Nurhapsari, R. (2023). Developing Islamic financial literacy in improving Islamic financial behavior towards the financial well-being of MSMEs: The moderating effect of e-payment usage. *Journal of Islamic Economics Lariba*, *9*(2), 293–310. https://doi.org/10.20885/jielariba.vol9.iss2.art2

Rokhlinasari, S., Widagdo, R., & Agus Irwandi, S. (2025). Ethical finance and MSME resilience: Shariah banking contribution to Indonesia's economic growth. *Banks and Bank Systems*, *20*(3), 91–104. https://doi.org/10.21511/bbs.20(3).2025.07

Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, *98*(5), S71–S102. https://doi.org/10.1086/261725

Saifurrahman, A., & Kassim, S. H. (2024). Regulatory issues inhibiting the financial inclusion: A case study among Islamic banks and MSMEs in Indonesia. *Qualitative Research in Financial Markets*, *16*(4), 589–617. https://doi.org/10.1108/QRFM-05-2022-0086

Samudra, D., & Tamamudin, T. (2025). Sharia-compliant digital marketing: Trends and challenges in Indonesia's financial sector (2024-2025). *Neo Journal of Economy and Social Humanities*, *4*(3), 358–368. https://doi.org/10.56403/nejesh.v4i3.342

Schumpeter, J. A., & Swedberg, R. (2021). *The theory of economic development*. Routledge. https://doi.org/10.4324/9781003146766

Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (Eighth edition). Wiley.

Septyanun, N., Martini, D., Harun, R. R., Erwin, Y., Suhaidi, A., & Jaya, I. (2026). Legal governance of Islamic financial intermediation for sustainable agriculture: Regulatory fragmentation in Indonesia. *Contrarius Series: Law & Social Justice*, *1*(1), 192–204. https://doi.org/10.53955/cslsj.v1i1.47

Septyanun, N., Shalihah, F., Absori, Wahyudi, I., & Masum, A. (2025). Legal implications of Islamic banking in advancing sustainable finance for Indonesia's net-zero-emission programme. *Jambe Law Journal*, *8*(2), 551–588. https://doi.org/10.22437/txgw8142

Smallbone, D., Saridakis, G., & Abubakar, Y. A. (2022). Internationalisation as a stimulus for SME innovation in developing economies: Comparing SMEs in factor-driven and efficiency-driven economies. *Journal of Business Research*, *144*, 1305–1319. https://doi.org/10.1016/j.jbusres.2022.01.045

Sreen, N., Sharma, V., Alshibani, S. M., Walsh, S., & Russo, G. (2024). Knowledge acquisition from innovation failures: A study of micro, small and medium enterprises (MSMEs). *Journal of Knowledge Management*, *28*(4), 947–970. https://doi.org/10.1108/JKM-03-2023-0184

Srisusilawati, P., Kurniawan, C. S., Silviany, I. Y., Mustika, R., Putri, I., & Nurfitria, A. (2021). The influence of self-efficacy and Islamic financial literacy on the performance of micro, small, and medium-sized enterprises. *Economica: Jurnal Ekonomi Islam*, *12*(2), 221–238. https://doi.org/10.21580/economica.2021.12.2.6937

Supriadi, I., Maghfiroh, R. U., Abadi, R., & Yudowati, D. M. (2023). The role of Sharia financial innovation and literacy in improving the performance of MSME actors. *Journal of Islamic Economic and Business Research*, *3*(2), 214–229. https://doi.org/10.18196/jiebr.v3i2.193

Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic growth, increasing productivity of SMEs, and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 20. https://doi.org/10.3390/joitmc7010020

Syarif, M. F., & Aysan, A. F. (2026). Sharia crowdfunding in Indonesia: A regulatory environment perspective. *Journal of Science and Technology Policy Management*, *17*(4), 944–967. https://doi.org/10.1108/JSTPM-07-2023-0108

Taufik Syamlan, Y., Wahyuni, S., Heruwasto, I., & Hamsal, M. (2026). Exploring sharia compliance parameters in marketing to foster innovation and collaboration within Islamic finance. *Journal of Islamic Marketing*, *17*(1), 96–136. https://doi.org/10.1108/JIMA-04-2024-0172

Tran, D. V., Nguyen, P. V., Nguyen, S. T. N., Huynh, T. N., & Ma, K. V. (2025). Determining the antecedents of digital transformation and performance: The roles of social capital, open social innovation, absorptive capacity and government support. *European Journal of Innovation Management*, *28*(8), 4202–4224. https://doi.org/10.1108/EJIM-08-2024-0917

Uluyol, B. (2026). Beyond prohibitions: Unveiling the hidden dynamics of Islamic economics and finance. *Journal of Islamic Monetary Economics and Finance*, *12*(1), 81–106. https://doi.org/10.21098/jimf.v12i1.2781

United Nations. (2015, October 21). Transforming our world: The 2030 agenda for sustainable development [HTML]. *Department of Economic and Social Affairs Sustainable Development*. https://sdgs.un.org/2030agenda

Varadarajan, R. (2023). Resource advantage theory, resource based theory, and theory of multimarket competition: Does multimarket rivalry restrain firms from leveraging resource advantages? *Journal of Business Research*, *160*, 113713. https://doi.org/10.1016/j.jbusres.2023.113713

Wang, R., & Tan, J. (2021). Exploring the coupling and forecasting of financial development, technological innovation, and economic growth. *Technological Forecasting and Social Change*, *163*, 120466. https://doi.org/10.1016/j.techfore.2020.120466

Wellalage, N. H., & Locke, S. (2020). Formal credit and innovation: Is there a uniform relationship across types of innovation? *International Review of Economics & Finance*, *70*, 1–15. https://doi.org/10.1016/j.iref.2020.07.004

Widagdo, R., Rokhlinasari, S., & Wartoyo, W. (2026). Islamic fintech, financial inclusion, and MSME sustainability: Evidence from a mixed-method study in Indonesia's digital economy. *Journal of Islamic Economics Lariba*, *12*(1), 313–336. https://doi.org/10.20885/jielariba.vol12.iss1.art11

Widyakto, A., Souisa, J., Kusumawati, C. A., & Widyarti, E. T. (2024). Analyzing the impact of Islamic literacy, technology, and experience on MSME performance: The role of spirituality as a moderating variable. *Jurnal Manajemen Bisnis*, *15*(1), 226–240. https://doi.org/10.18196/mb.v15i1.19859