

ISLAMIC FINANCIAL TECHNOLOGY ADOPTION AND MSME PERFORMANCE: INTEGRATING LITERACY, COMPLIANCE, ACCESSIBILITY, AND LEADERSHIP

Zulfadli Hamzah^{1*}, Astri Ayu Purwati², Rosyidi Hamzah³

Sharia Banking Study Program, Faculty of Islamic Studies, Universitas Islam Riau, Pekanbaru-Riau, Indonesia¹

Management Study Program, Faculty of Business, Institut Bisnis dan Teknologi Pelita Indonesia, Pekanbaru-Riau, Indonesia²

Law Study program, Faculty of Law, Universitas Islam Riau, Pekanbaru-Riau, Indonesia³

zulfadli.hamzah@fis.uir.ac.id^{1*}, astri.ayu@lecturer.pelitaindonesia.ac.id²,

rosyidi.hamzah@fh.uir.ac.id³

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*Corresponding Author

ABSTRACT

This study aimed to analyze the effect of Sharia financial literacy, Sharia compliance, technology accessibility, and Islamic leadership on the performance of MSMEs in Riau – Indonesia, with the mediation of Sharia Financial Technology Adoption and the moderation of government regulations. This research employed a quantitative study approach using a survey methodology. The sample consisted of 500 MSMEs in Riau that had used services from Sharia financial institutions and had been operating for at least one year. The analytical technique employed was Structural Equation Modeling (SEM) with the assistance of SmartPLS 4 software. The results showed that Sharia financial literacy, technological accessibility, and Islamic leadership had a significant effect on Sharia financial technology adoption and MSME Business performance. Furthermore, Sharia fintech adoption significantly mediated the effect of these three variables on the performance of MSMEs. Conversely, the effect of Sharia compliance on Sharia financial technology adoption and MSME performance was not significant, nor was the moderating effect of government regulations, which failed to strengthen the relationship between Sharia financial technology adoption and MSME business performance.

Keywords : *Islamic Financial Literacy, Sharia Compliance, Technological Accessibility, Islamic Financial Technology Adoption, Islamic Leadership*

1. Introduction

The digital transformation has brought various innovations to the financial sector, including Sharia-based financial technology, also known as Islamic Financial Technology (i-Fintech). Islamic fintech (i-Fintech) integrates digital technology with the principles of the Islamic financial system, emphasizing fairness, transparency, and adherence to the prohibitions of interest, gambling, and excessive uncertainty (Winarto, 2020; Rosalin et al., 2025). The presence of i-Fintech offers a promising strategic alternative for Micro, Small, and Medium Enterprises (MSMEs) to gain financial access that is not only fast and efficient but also aligned with the ethical and religious principles embraced by the majority of business actors in Indonesia (Haris, 2020).

MSMEs play a fundamental role in the national economy. According to the Ministry of Cooperatives and SMEs, more than 99% of business units in Indonesia are MSMEs, employing over 97% of the national workforce (Cahyawati et al., 2023). On the other hand, classic challenges faced by MSMEs include limited access to financing, low levels of financial literacy, and insufficient capacity to adopt technology. With the development of Sharia financial technology, opportunities have emerged for MSMEs to bridge these gaps. According to data from the Indonesian Fintech Association, the adoption of Sharia financial technology by MSMEs increased by 30% over the past year. Moreover, a World Bank report shows that investments in Sharia fintech in Muslim-majority countries have risen by 40% over the past two years. These figures reflect the substantial potential of i-Fintech to accelerate inclusive and sustainable growth in the MSME sector (Pratama et al., 2023; Ritonga et al., 2025; Purwati et al., 2025).

Nevertheless, an increase in Islamic financial technology adoption does not automatically guarantee improved MSME performance. One key prerequisite is Sharia financial literacy—MSME owners' understanding of the fundamental principles of Islamic finance and the available Sharia-compliant financial instruments. Previous studies have demonstrated that Sharia financial literacy plays a crucial role in promoting prudent and ethical financial decision-making, as well as influencing overall business efficiency and performance (Basrowi et al., 2020; Irman et al., 2021; Pratama et al., 2023). While various studies have highlighted the role of financial literacy in business management and decision-making, findings on its impact on the performance of MSMEs remain mixed. Some studies have found a weak or insignificant influence due to mediating factors such as access to financing (Priyantoro et al., 2025), entrepreneurial motivation (Rapina et al., 2023; Purwaningtyas & Sari, 2025), or market conditions (Wahyono & Hutahayan, 2021). A study in the Yogyakarta Special Region reported that, although MSME financial literacy levels were still low, they had a positive and significant impact on business development, increasing by 36.1% (Cahyawati et al., 2023). In addition, most research has focused on specific sectors or regions, without fully considering the socio-economic context and development levels of MSMEs in different areas.

Beyond literacy, compliance with Sharia principles also forms a crucial foundation for Islamic-based business operations. This compliance entails not only administrative adherence to regulations but also integrity in conducting transactions in accordance with Islamic law (Alnori & Alqahtani, 2019). Research has shown that MSMEs consistently applying Sharia principles tend to have higher customer loyalty and stronger business reputations (Basov & Bhatti, 2014; Usman et al., 2021). However, other studies have found that Sharia compliance does not always have a significant effect, particularly on MSMEs' intention to use Sharia financing when they lack access to broader Sharia markets (Hendratmoko et al., 2024).

Equal access to i-Fintech services enables MSMEs to obtain Sharia-compliant financing, manage cash flows, and plan investments more efficiently and transparently (Susilawati et al., 2021). Although several studies confirm that access to digital financial services such as mobile banking, e-wallets, QRIS, and fintech lending can improve MSME financial efficiency and performance (Susilawati et al., 2021; Wardani et al., 2026), research gaps remain regarding the effectiveness of these technologies, which often depend on the owners' levels of digital and financial literacy. In some cases, financial technology has not had a significant impact on performance—for instance, findings from Yogyakarta showed that fintech had no significant positive effect on micro-MSMEs (Pranisya et al., 2024). Moreover, the level of digital financial inclusion in Indonesia remains low, with only about one-quarter of business actors integrated into the digital economy ecosystem (Hakim & Ningsih, 2020; Martini et al., 2022; Purnamasari et al., 2020). In reality, limitations in digital infrastructure, service costs, and technical barriers are significant obstacles preventing many MSMEs from maximizing i-Fintech services (Cahyawati et al., 2023).

Equally important is Islamic leadership, a dimension that has not been extensively explored in the literature. Leadership grounded in Islamic values, such as justice, trustworthiness, consultation, and excellence, is believed to foster an ethical and innovative organizational culture (Faris & Parry, 2011). In the MSME context, leaders who internalize Sharia values can foster productive and innovative work behaviors, encouraging technology adoption for business sustainability. Studies on Muslim entrepreneur communities have shown that Islamic leadership influences the performance of MSMEs through the mediation of financial technology used and innovative work behavior (Faris & Parry, 2011; Febriani & Sa'diyah, 2021; Javid et al., 2024).

Although many studies have examined the relationships between financial literacy, Sharia compliance, technological accessibility, and Islamic leadership on business performance, previous research has often investigated these variables individually rather than in an integrated framework. Several studies have emphasized the importance of financial literacy in enhancing financial management (Cahyawati et al., 2023; Pranisya et al., 2024; Rapina et al., 2023; Srisusilawati et al., 2022; Wijaya et al., 2026), but without integrating it comprehensively with Sharia compliance. Similarly, studies on access to technology and financial services have tended to focus on conventional platforms (Kurniawan et al., 2023; Lestari et al., 2023), while the

potential of Sharia financial technology adoption remains underexplored. Moreover, research on Islamic leadership has primarily concentrated on exploring its ethical and moral foundations, emphasizing principles such as justice, integrity, trustworthiness, and accountability as central to leadership practices (Bagis et al., 2022; Judijanto et al., 2023; Lestari et al., 2023), without linking them to the use of digital media for strengthening business performance.

Therefore, this study seeks to fill this gap by placing Sharia financial technology adoption as a mediating variable that bridges the limitations of literacy, ensures Sharia compliance, expands technological accessibility, and strengthens Islamic leadership, thereby contributing significantly to the improvement of sustainable business performance. Sharia Financial Technology Adoption refers to the process by which individuals or business actors accept and utilize financial technology based on Islamic principles to support their financial and business activities (Zakaria Andi, 2025). In this research context, the adoption of Sharia financial technology is influenced not only by technical factors such as ease of use and transaction speed, but also by value-based factors, including adherence to DSN-MUI fatwas, trust in the system, and alignment with Islamic business ethics.

In this study, the government's role is positioned as a moderating variable that can strengthen the relationship between Sharia fintech utilization and the business performance of MSMEs. Government support through clear regulations, tax incentives, provision of digital infrastructure, and Sharia-based financial literacy programs can create a conducive ecosystem for Sharia fintech development (Graafland, 2020; Xiang et al., 2022). Regulations aligned with Sharia principles and consumer protection will increase MSME actors' trust in adopting these services, while technical assistance and facilitated access to funding can broaden their utilization (Nugraha et al., 2022). With effective government intervention, the positive impact of Sharia fintech on operational efficiency, market expansion, and MSME profitability can be maximized, thereby reinforcing the relationship between these two variables.

The novelty of this research lies in integrating these variables into a comprehensive model. This approach not only tests the direct relationships between the independent variables and MSME business performance but also examines how Sharia financial technology adoption serves as a mediating mechanism, bridging the effects of literacy, compliance, accessibility, and leadership on performance. Meanwhile, government regulation is placed as a moderating factor that can strengthen or weaken the influence of technology adoption on MSME performance. Accordingly, this study is expected to provide deeper insights into the dynamics of factors influencing Sharia-based MSME performance, as well as theoretical and practical contributions to the development of a more inclusive and sustainable Islamic financial ecosystem.

2. Methodology

a. Research Model

The approach and problem-solving strategy in this study involved an in-depth literature review on the concept of Sharia financial technology adoption and MSME business performance, as well as the factors influencing it, as illustrated in the following conceptual framework:

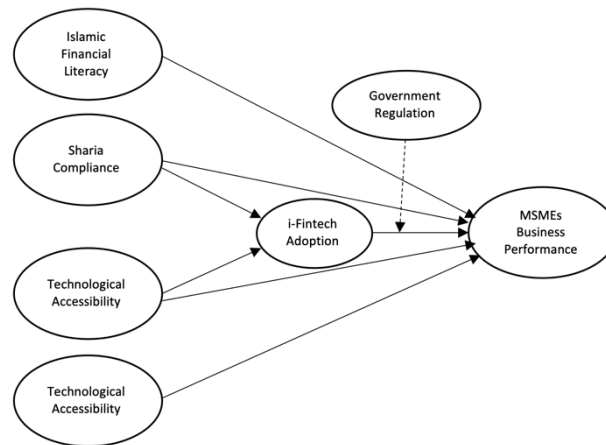


Fig. 1. Research Model Conceptual

Based on the following research model, the research hypotheses were formulated as follows:

- H1. Sharia financial literacy has a significant positive effect on MSME performance.
- H2. Sharia compliance has a significant positive effect on MSME performance.
- H3. Technological accessibility has a significant positive effect on MSME performance.
- H4. Islamic leadership has a significant positive effect on MSME performance.
- H5. Sharia financial literacy has a significant positive effect on Sharia Fintech Adoption.
- H6. Sharia compliance has a significant positive effect on Sharia Fintech Adoption.
- H7. Technological accessibility has a significant positive effect on Sharia Fintech Adoption.
- H8. Islamic leadership has a significant positive effect on Sharia Fintech Adoption.
- H9. Sharia financial literacy has a significant positive effect on MSME performance through Sharia Fintech Adoption.
- H10. Sharia compliance has a significant positive effect on MSME performance through Sharia Fintech Adoption.
- H11. Technological accessibility has a significant positive effect on MSME performance through Sharia Fintech Adoption.
- H12. Islamic leadership has a significant positive effect on MSME performance through Sharia Fintech Adoption.
- H13. Sharia Financial Technology Adoption has a significant positive effect on business performance, moderated by government regulation.

b. Research Population and Sample

The population of this study consisted of all Micro, Small, and Medium Enterprises (MSMEs) in Riau Province that use services provided by Sharia financial institutions. Based on projections for the number of MSMEs in Riau Province in 2025, there are approximately 520,000 to 600,000 business units spread across various sectors. Considering research effectiveness and efficiency, the sample size was determined using Cochran's formula, which is commonly applied in large-scale quantitative studies. Based on the calculation results, a sample size of 500 MSMEs was obtained. This figure was selected as the maximum estimate to enhance the generalizability of the research findings.

The sampling technique employed was purposive sampling, a method of selecting respondents based on specific criteria relevant to the research objectives. In this context, the inclusion criteria comprised two main requirements:

1. MSMEs must have demonstrably used services from Sharia financial institutions such as Islamic banks, Sharia cooperatives, or Sharia fintech platforms; and
2. MSMEs must have been operating for at least one year.

These requirements aimed to ensure that respondents possessed sufficient operational experience and active engagement with the Sharia financial system.

c. Data Collection Procedures and Research Instruments

The data were obtained by distributing structured questionnaires employing a 5-point Likert scale, in which respondents indicated their level of agreement with statements based on the indicators of each research variable. The instrument was developed based on validated indicators from previous literature, with the addition of several novelty-based indicators tailored to the context of this study.

The Sharia financial literacy variable comprised seven indicators (Pratama et al., 2023; Priyantoro et al., 2025), such as understanding 1). Sharia principles, 2). Sharia financial products, 3). risk, 4). accounting, 5). zakat and infaq, 6). the ability to apply Sharia principles, and 7). knowledge of Sharia fintech.

The Sharia compliance variable consisted of five indicators (Hendratmoko et al., 2024), including 1). compliance with the prohibition of riba, 2). profit-sharing transparency, 3). prohibition of maysir and gharar, 4). Islamic business ethics, and 5). Sharia legal and environmental aspects.

The technological accessibility variable comprised seven indicators (Siahaan, 2022; Purwati & Hamzah, 2022), such as 1). internet access, 2). digital devices, 3). business applications, 4). e-commerce, 5). digital payment systems, 6). information security, and 7). technological skills.

The Islamic leadership variable was measured using five indicators (Febriani & Sa'diyah, 2021), including 1). justice, 2). transparency, 3). ethical commitment, 4). employee empowerment, 5). Islamic vision and mission.

The Sharia financial technology adoption variable included eight aspects, there are (Basrowi et al., 2020; Purnamasari et al., 2020) : 1). Use of Sharia-compliant financial applications, 2). Implementation of cashless transactions, 3). Utilization of Sharia fintech-based financing services, 4). Participation in Sharia-compliant investment instruments, 5). Application of digital data security systems. 6). Utilization of digital marketing strategies. 7). Use of mobile payment systems. 8). Integration of Sharia fintech services with business operations.

Meanwhile, MSME business performance was measured through five indicators reflecting financial and operational performance (Febriani & Sa'diyah, 2021), such as 1). Perceived growth in business revenue. 2). Perceived increase in business profit. 3). Perceived improvement in sales volume and market reach. 4). Perceived efficiency in business operations. 5). Perceived adequacy of available business funds.

Government regulation in this study is reflected through the clarity of regulations (Graafland, 2020), related to 1). business operations, 2). the ease of complying with the applicable rules, 3). the extent to which regulations support business growth, and 4). the consistency as well as stability in their implementation.

d. Data Analysis Technique

The data in this research were processed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method, facilitated by the SmartPLS application. This approach was selected due to its suitability for analyzing complex relationships among multiple latent variables, handling reflective measurement models, and accommodating relatively small to medium sample sizes without requiring strict normality assumptions. The analysis procedure included several stages (Hair et al., 2019) : (1) Assessment of the measurement model by conducting convergent validity, discriminant validity, and reliability tests to verify that each construct and its indicators satisfied the necessary statistical requirements; (2) Examination of the structural model to determine the strength and significance of the relationships among variables, using path coefficients, t-statistics, and p-values derived from the bootstrapping process; and (3) Evaluation of the model's predictive capability by analyzing the coefficient of determination (R^2) for endogenous variables. The criteria for statistical significance were set at a p-value below 0.05 and a t-statistic greater than 1.96. This analytical framework enabled the testing of both direct and

indirect effects, as well as moderation analysis, to comprehensively understand the relationships between the variables under study.

3. Results

a. Responden Demography

This study involved 400 Micro, Small, and Medium Enterprises (MSMEs) in Riau Province that utilize facilities provided by Islamic financial institutions. Respondents' demographic data were collected to provide a general overview of the characteristics of the business actors included in the research sample. This demographic information is essential for understanding the contextual background of respondents and its relevance to the adoption of Islamic financial products, business sustainability, and technological readiness.

Table 1 - Responden Demography

Category	Frequency	Percentage (%)
Gender		
Male	191	47.8
Female	209	52.3
Age		
< 25 years	19	4.8
25–35 years	147	36.8
36–45 years	182	45.5
> 45 years	52	13.0
Type of Business		
Processed Food & Beverages	142	35.5
Groceries	43	10.8
Fashion & Accessories	43	10.8
Small Shops & Daily Stores	29	7.3
Printing, Stationery, and Others	143	35.8
Years in Operation		
< 1 year	22	5.5
1–3 years	196	49.0
4–7 years	163	40.8
> 7 years	18	4.5
Annual Business Revenue		
< IDR 300 million	266	66.5
≥ IDR 300 million	134	33.5
Eco-Friendly Certification		
Yes	170	42.5
No	229	57.3
Green Innovation Training		
Yes	178	44.5
No	222	55.5
Main Sales Channel		
Online	39	9.8
Offline	197	49.3
Combination of Online & Offline	164	41.0
Technology Use in Operations		
Low	123	30.8
Medium	211	52.8
High	64	16.0

Category	Frequency	Percentage (%)
Use of Islamic Finance		
Yes	218	54.5
No	182	45.5
Islamic Finance/Fintech Training		
Yes	178	44.5
No	222	55.5

Based on a survey of 400 MSME actors in Riau Province, the majority of respondents were female (52.3%), while males accounted for 47.8%. In terms of age, most individuals were in the 36–45 age group (45.5%) and the 25–35 age group (36.8%), indicating a predominance of individuals in their productive years who are engaged in entrepreneurial activities. The types of businesses operated were diverse, with processed food and beverage enterprises being the most dominant (35.5%), followed by groceries (10.8%), fashion and accessories (10.8%), and small shops or daily stores (7.3%). Most respondents had been running their businesses for 1–3 years (49%) and 4–7 years (40.8%), suggesting that the majority of MSMEs are in a growth phase.

In terms of revenue, 66.5% reported annual earnings below IDR 300 million, reflecting a relatively small business scale. Regarding sustainability, only 42.5% had eco-friendly certification, and 44.5% had participated in green innovation training, indicating the need to enhance awareness of sustainable business practices. Sales channels were divided between offline (49.3%), a combination of offline and online (41%), and fully online (9.8%), while technology use in operations was predominantly at a medium level (52.8%).

From an Islamic finance perspective, 54.5% utilized Sharia-compliant financial products, and 44.5% had attended related training, highlighting a significant potential for expanding literacy and the utilization of Islamic finance among MSME actors. Overall, this data provides a comprehensive overview of respondent characteristics, serving as a crucial basis for analyzing business sustainability, technology adoption, and Islamic financial inclusion in the MSME sector.

b. Validity Test

Convergent Validity

Convergent validity is a form of construct validity that indicates the extent to which indicators within a single construct are highly correlated. The convergent validity test in this model employed two main measures: the outer loading value and the Average Variance Extracted (AVE). An acceptable outer loading value should preferably be above 0.7; however, values between 0.5 and 0.7 may still be considered acceptable in exploratory research (Hair et al., 2017). Meanwhile, an AVE value of at least 0.5 is deemed to meet the convergent validity requirement, as it indicates that more than 50% of the variance of the indicators is explained by the construct (Hair et al., 2017). The following presents the results of convergent validity measurements for each research construct:

Table 2 - Outer Loading and AVE

Construct	Indicator	Outer Loading	AVE
Business Performance	BP1	0,712	0,538
	BP2	0,744	
	BP3	0,814	
	BP4	0,552	
	BP5	0,814	
Sharia Financial Technology Adoption	SFTA1	0,801	0,585
	SFTA2	0,671	

Construct	Indicator	Outer Loading	AVE
Sharia Financial Literacy	SFTA3	0,694	0,532
	SFTA4	0,813	
	SFTA5	0,786	
	SFTA6	0,757	
	SFTA7	0,783	
	SFTA8	0,802	
	SFL1	0,718	
	SFL2	0,682	
Sharia Compliance	SFL3	0,762	0,616
	SFL4	0,639	
	SFL5	0,796	
	SFL6	0,723	
	SFL7	0,773	
	SC1	0,763	
	SC2	0,892	
Technological Accessibility	SC3	0,576	0,532
	SC4	0,761	
	SC5	0,891	
	TA1	0,713	
	TA2	0,780	
	TA3	0,676	
	TA4	0,764	
Islamic Leadership	TA5	0,748	0,513
	TA6	0,697	
	TA7	0,721	
	IL1	0,774	
	IL2	0,699	
Government Regulation	IL3	0,694	0,676
	IL4	0,702	
	IL5	0,708	
	GR1	0,797	
GR × SFTA (Interaction Term)	GR2	0,794	-
	GR3	0,835	
	GR4	0,859	
	-	1,000	

Based on the results in the table above, all constructs in this study demonstrate adequate convergent validity. All AVE values exceed the minimum threshold of 0.5, indicating that the latent variables consistently explain more than 50% of the variance of their respective indicators. The construct with the highest AVE value is Government Regulation (0.676), reflecting a very strong measurement quality. All indicators have loading values above 0.5, with most exceeding 0.7, which further strengthens the validity of the indicators as representations of their respective constructs. Therefore, this measurement model meets the requirements for further analysis, such as testing relationships among variables or conducting structural model assessments.

Discriminant Validity Test Results Using the Heterotrait-Monotrait Ratio (HTMT)

Discriminant validity is an essential requirement to ensure that the constructs used in the study truly measure distinct concepts. One modern and more sensitive approach compared to the Fornell-Larcker criterion is the Heterotrait-Monotrait Ratio (HTMT) method. Discriminant

validity is considered established when the HTMT value between two constructs falls below 0.85 for a conservative criterion or below 0.90 for a more lenient criterion (Hair et al., 2019). An HTMT value exceeding this threshold indicates that the two constructs may not be discriminantly distinct or that there is an overlap between them.

Tabel 3 - HTMT Between Construct

Construct	BP	GR	SFTA	SFL	IL	SC
Business Performance	–					
Government Regulation	0.683	–				
Sharia Fintech Adoption	0.705	0.762	–			
Sharia Financial Literacy	0.655	0.728	0.751	–		
Islamic Leadership	0.642	0.713	0.684	0.677	–	
Sharia Compliance	0.711	0.745	0.773	0.688	0.729	–
Technology Accessibility	0.684	0.709	0.765	0.703	0.698	0.741

Based on the HTMT table above, all inter-construct ratio values are below the maximum threshold of 0.90, with most even falling below 0.75. The highest values are observed between Sharia FinTech Adoption and Sharia Compliance (0.773) and between Government Regulation and Sharia FinTech Adoption (0.762), both of which remain within acceptable limits. Therefore, it can be concluded that each construct in this model possesses good discriminant validity, with no overlap in measurement between constructs. This strengthens the reliability of the structural model used in the study, allowing for a further valid analysis of the relationships among latent variables.

c. Reliability Test

The reliability test aimed to evaluate how consistently and stably the indicators within each construct could measure the intended concept. In this study, the reliability of each construct was assessed through two primary metrics: Cronbach's Alpha and Composite Reliability (CR). Cronbach's Alpha assesses the degree of internal consistency between items in a construct, where a threshold value of 0.70 or higher is generally considered indicative of satisfactory reliability (Hair et al., 2019). Meanwhile, Composite Reliability also measures the level of construct reliability but provides a more accurate assessment as it takes into account the contribution of each indicator. A good CR value is also indicated by a score above 0.70 (Hair et al., 2017).

Table 4 - Cronbach's Alpha and Composite Reliability

Construct	Cronbach's Alpha	Composite Reliability
Business Performance	0,782	0,798
Sharia Fintech Adoption	0,766	0,775
Sharia Financial Literacy	0,838	0,855
Sharia Compliance	0,898	0,902
Islamic Leadership	0,853	0,861
Technology Accessibility	0,853	0,856
Government Regulation	0,839	0,842

Table 4 shows that every construct achieves Cronbach's Alpha and Composite Reliability scores exceeding 0.70. This result demonstrates that the indicators for each construct exhibit strong internal consistency and dependable measurement quality. Consequently, the constructs in this study are deemed reliable and appropriate for subsequent procedures, including validity assessment and structural modeling.

d. Coefficient of Determination (R Square)

The coefficient of determination (R Square / R^2) serves to measure how much of the variation in the dependent variable can be accounted for by the independent variables within a structural model. A higher R^2 value indicates that a greater portion of the dependent variable's variance is explained by the independent variables (Hair et al., 2017). In this study, the tested model produced the following R Square values:

Table 5 - R Square

Dependent Variable	R Square
Sharia Fintech Adoption	0,712
MSME Business Performance	0,693

From table 5, R^2 value of 0.712 for the Sharia FinTech Adoption variable indicates that the combination of Sharia Financial Literacy, Sharia Compliance, Technology Accessibility, and Islamic Leadership collectively explains 71.2% of the variance in Sharia fintech adoption. Meanwhile, an R^2 value of 0.693 for the MSME Business Performance indicates that Sharia Financial Literacy, Sharia Compliance, Technology Accessibility, and Islamic Leadership, as well as Sharia fintech adoption, explain 69.3% of the variation in MSME business performance.

Hypothesis Test Results

Hypothesis testing was performed to assess the direct and indirect effects among variables through the PLS-SEM method. Statistical significance is determined when the t-statistic is greater than 1.96 and the p-value is less than 0.05 (Hair et al., 2019). The results for each proposed hypothesis are presented as follows:

Table 6 - Hypothesis Test

No	Hypothesis	O	T Statistics	P Value	Decision
H1	Sharia Financial Literacy → MSME Business Performance	0.152	2.138	0.033	Accepted (Significant)
H2	Sharia Compliance → MSME Business Performance	0.014	0.227	0.820	Rejected (Not Significant)
H3	Technological Accessibility → MSME Business Performance	0.283	3.550	0.000	Accepted (Significant)
H4	Islamic Leadership → MSME Business Performance	0.056	2.294	0.022	Accepted (Significant)
H5	Sharia Financial Literacy → Sharia FinTech Adoption	0.234	4.740	0.000	Accepted (Significant)
H6	Sharia Compliance → Sharia FinTech Adoption	0.005	0.135	0.892	Rejected (Not Significant)
H7	Technological Accessibility → Sharia FinTech Adoption	0.607	13.171	0.000	Accepted (Significant)
H8	Islamic Leadership → Sharia FinTech Adoption	0.119	2.861	0.004	Accepted (Significant)
H9	Sharia Financial Literacy → Sharia FinTech Adoption → MSME Business Performance	0.109	2.761	0.006	Accepted (Significant)
H10	Sharia Compliance → Sharia FinTech Adoption → MSME Business Performance	0.002	0.132	0.895	Rejected (Not Significant)
H11	Technological Accessibility → Sharia FinTech Adoption → MSME Business Performance	0.283	3.550	0.000	Accepted (Significant)

H12	Islamic Leadership → Sharia FinTech Adoption → MSME Business Performance	0.056	2.294	0.022	Accepted (Significant)
H13	Sharia FinTech Adoption → MSME Business Performance moderated by Government Regulation	0.045	0.994	0.320	Rejected (Not Significant)

Based on the direct hypothesis testing results, Sharia financial literacy (H1), technological accessibility (H3), and Islamic leadership (H4) have a positive and significant effect on MSME business performance. Additionally, Sharia financial literacy (H5), technological accessibility (H7), and Islamic leadership (H8) also show a significant positive effect on Sharia FinTech adoption. In contrast, Sharia compliance has no significant effect on either Sharia FinTech adoption (H6) or MSME business performance (H2). Furthermore, the moderating effect of government regulation on the relationship between Sharia FinTech adoption and MSME business performance (H13) is not significant, indicating that government regulation does not strengthen this relationship.

Regarding the indirect effects of Sharia FinTech adoption through the mediation of Sharia financial literacy (H9), technological accessibility (H11), and Islamic leadership (H12), these factors significantly influence MSME business performance via Sharia FinTech adoption. This indicates that these three variables can enhance MSME performance primarily by encouraging the adoption of Sharia FinTech. On the other hand, the indirect effect of Sharia compliance on MSME performance through Sharia FinTech adoption (H10) is not significant, mainly because Sharia compliance does not directly affect Sharia FinTech adoption.

Overall, most of the direct and indirect hypotheses are supported, except for those involving Sharia compliance and the moderating role of government regulation.

4. Discussion

The results of this study demonstrate that Sharia financial literacy plays a crucial role in enhancing both Sharia FinTech adoption and the performance of MSMEs, with effects observed both directly and indirectly. This form of literacy equips MSME actors with the ability to understand, manage, and utilize financial services in accordance with Islamic principles such as justice, transparency, and the prohibition of *riba*. By possessing adequate knowledge and comprehension, MSME owners are better equipped to make informed financial decisions and avoid practices that are both morally and financially detrimental (Rahmansyah et al., 2023; Supriadi et al., 2023). These findings reinforce prior research which states that higher levels of Sharia financial literacy increase user trust in Sharia financial products and strengthen investment decision-making (Priyantoro et al., 2025). Similarly, other studies have shown that MSME owners with strong financial literacy are better prepared to navigate financial challenges and are more likely to achieve sustainable growth (Amailiya et al., 2025). Financial literacy also plays a role in reducing the perceived complexity of i-FinTech, which is often considered challenging by micro-entrepreneurs, thereby increasing accessibility and usage (Silalahi et al., 2023; Vania et al., 2024).

Another key finding is the significant influence of technological accessibility on both Sharia FinTech adoption and MSME performance. Technological accessibility in this context refers not only to the availability of digital networks and affordability of devices but also to the ease of use of FinTech applications and the availability of technical assistance for users (Siahaan, 2022), (Lita et al., 2023). The easier it is for MSME owners to access and operate technology, the greater their likelihood of adopting digital solutions for business processes such as financing, financial recordkeeping, and Sharia-compliant marketing platforms (Putri et al., 2023; Lumintang et al., 2024; Umam et al., 2025). This improved accessibility directly supports the acceleration of Sharia-compliant digital financial inclusion in the MSME sector (Song et al., 2025).

The study also finds that Islamic leadership has a significant effect on both Sharia FinTech adoption and MSME performance. Leaders who embody Islamic values such as *amanah* (trustworthiness), *ihsan* (excellence), *shura* (consultation), and *honesty* create an organizational culture that fosters innovation, adaptability to technology, and ethical decision-making (Rahim et

al., 2019). Such leadership not only strengthens team loyalty and integrity but also encourages openness to change—an essential factor in the digital transformation of MSMEs (Rangkuti, 2023; Sodik et al., 2024). Leaders who integrate spiritual values into business operations are more likely to successfully guide their organizations through technological adoption and long-term performance improvements. In this way, financial literacy, technological accessibility, and Islamic collectivism together provide a strong foundation to effectively adopt Sharia-compliant financials.

In contrast, the findings suggest that Sharia compliance has no significant impact on either Sharia FinTech adoption or MSME performance, whether directly or indirectly. This suggests that mere awareness or acknowledgment of Sharia principles, without the support of strong financial literacy and practical application, is insufficient to drive meaningful behavioral changes in financial practices. Previous studies have shown that while many MSME owners express a desire to operate in line with Sharia principles, they often lack comprehensive knowledge of how to implement these principles in financial transactions (Irman et al., 2021; Purwati et al., 2023). Consequently, compliance tends to remain at a symbolic level, with limited impact on operational efficiency or profitability.

The study further reveals that government regulation does not significantly moderate the relationship between Sharia FinTech adoption and MSME performance, despite the introduction of various policies and legal frameworks intended to support Sharia FinTech. These measures appear to have limited practical influence on strengthening or weakening the impact of adoption on business outcomes. This may be due to factors such as limited dissemination, suboptimal implementation, and regulations that do not fully address the specific technical needs of MSME owners (Graafland, 2020; Susilawati et al., 2021). These findings suggest that regulatory measures alone are insufficient to achieve the desired transformation in the MSME sector.

Taken together, the results imply that Sharia-based digital transformation in the MSME sector cannot rely solely on top-down policy interventions or normative appeals. Instead, a more holistic approach is needed one that strengthens internal capacities within MSMEs through targeted education, improved technological access, and values-driven leadership. A participatory and responsive regulatory approach, which provides tangible incentives for digitalization, delivers practical training in both technological and Sharia financial literacy (Purwati & Hamzah, 2022), and integrates i-FinTech solutions into the local MSME ecosystem, would be far more effective. This integrated strategy, combining education, technology, Islamic ethics, and public policy, is crucial for establishing an inclusive, ethical, and sustainable Shariah financial ecosystem in Indonesia.

5. Conclusion

This study reveals that Sharia financial literacy, technological accessibility, and Islamic leadership have a significant influence on Sharia Financial Technology (i-Fintech) adoption, which in turn positively impacts MSME performance. Sharia FinTech adoption also serves as an important mediator, bridging the indirect effects of these three variables on business performance improvement. In contrast, Sharia compliance shows no significant effect, either directly or through mediation, on MSME performance. Furthermore, government regulation fails to moderate the relationship between Sharia FinTech adoption and MSME performance, indicating the need for policies that are more responsive to the needs of micro and small business actors. Overall, these findings highlight the importance of an approach that integrates financial literacy, Islamic values, and the utilization of digital technology in driving Shariah financial transformation within Indonesia's MSME sector.

The results of this research carry several practical implications. For MSME actors, improving Sharia financial literacy and digital skills is a strategic step toward maximizing the benefits of Sharia-based FinTech services (Purwati & Hamzah, 2022). For i-Fintech platform developers, simplifying features and providing continuous education are necessary to make these services more accessible to small business owners. On the other hand, the government needs to formulate more participatory policies, including mentoring programs and incentives for MSMEs that adopt digital Sharia financial services. Additionally, Sharia financial institutions and Islamic

educational organizations are expected to actively contribute to strengthening Islamic leadership within the MSME environment, thereby fostering an ethical, productive, and long-term-oriented business ecosystem. These implications support the creation of a more inclusive and sustainable Sharia economy, aligned with national agendas to strengthen the MSME sector.

This study also has several limitations that open opportunities for further research. First, the quantitative approach employed in this study may not fully capture the deeper social and cultural contexts, suggesting that future studies should integrate qualitative methods to gain a richer contextual understanding. Second, moderating variables such as government regulation should be explored further with more specific indicators, for example, based on business sectors, geographical regions, or access to fiscal and digitalization policies. Third, future research could explore new dimensions, such as financial inclusion, FinTech user behavior, or the role of Islamic boarding schools (*pesantren*) and zakat institutions as literacy agents and facilitators of Shariah financial technology adoption. Lastly, comparative studies across regions or Muslim-majority countries could enrich the global literature on the digital transformation of Sharia in the MSME sector.

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