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Halal-Sustainability Business Cognitive Drivers toward Sustainable Competitive Advantage and Performance of Surabaya Halal MSMEs: A PLS-SEM Study

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ABSTRACT

This study examines the role of halal–sustainability cognitive drivers in enhancing sustainable competitive advantage and business performance among halal MSMEs in Surabaya. The topic is relevant due to the rapid growth of the global halal industry and the increasing integration of sustainability in business practices. However, many halal MSMEs still face limitations in cognitive capabilities and strategic orientation, which hinder sustainable competitiveness. The research investigates how halal literacy and sustainability literacy influence Sustainable Halal Business Model Innovation (SHBMI), and how SHBMI contributes to competitive advantage and business performance. This study proposes an integrative model linking these variables, which remains underexplored, particularly in developing countries like Indonesia. Using a quantitative cross-sectional approach, data were collected from 250 halal MSMEs and analyzed with PLS-SEM using SmartPLS 4. The results show that both halal literacy and sustainability literacy have a positive and significant effect on SHBMI. Furthermore, SHBMI enhances sustainable competitive advantage and improves business performance, both directly and indirectly.In conclusion, SHBMI serves as a key mechanism connecting cognitive drivers with competitiveness and performance. Strengthening halal and sustainability literacy is therefore essential for MSMEs and policymakers to support long-term business sustainability in the halal sector.

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INTRODUCTION

The global halal industry is experiencing rapid growth as the world's Muslim population increases to around 1.8-2 billion people and as demand for ethical, halal-certified products from non-Muslim consumers grows. The global halal industry market value is estimated to reach USD 2.3 trillion in 2023 and is projected to continue to increase to USD 7.7 trillion by 2025, with the food, cosmetics, pharmaceutical, and financial sectors as the main contributors (Consultancy Asia, 2025). This development places the halal industry as an essential driver of global trade and economic growth, especially in the countries of the Organization of Islamic Cooperation (OIC) (Hidayah & Solihah, 2025).

In line with that, the trend of sustainability-oriented business is strengthening through the integration of Sustainable Development Goals (SDGs) in business strategies, sustainability reporting, as well as ESG and CSR practices that are proven to support the company's competitiveness and long-term performance (Pillai, Slutsky, Wolf, Duthler, & Stever, 2017; van Zanten & van Tulder, 2021; Venkatesan, Elsewedy, Vummadising, & Gunasti, 2024). However, in the midst of global competition, MSMEs still face significant challenges in achieving sustainable competitive advantage and business performance due to limited resources, technological capabilities, and strategic orientation for sustainability (Behl, Gaur, Pereira, Yadav, & Laker, 2022; Bisht & Singh, 2020).

Halal MSMEs have a strategic position as a driver of the local and national economy, especially in Indonesia, through their contribution to GDP, job creation, and strengthening consumer trust based on halal certification and sustainable business practices (Hussin, Muhammad, Razak, Gamal, & Soon, 2026). Halal MSMEs play a strategic role in the Indonesian economy, making significant contributions to gross domestic product (GDP), exports, and labor absorption, in line with the dominance of the Muslim population and the increasing demand for global halal products. Nationally, MSMEs account for around 60% of GDP with more than 65 million business units, while strengthening halal certification is seen as an essential instrument to increase competitiveness and international market access (Hidayah & Solihah, 2025; Hussin et al., 2026). In the regional context, Surabaya, as a metropolitan city and the economic center of East Java, plays a key role in developing the halal MSME ecosystem through mass certification programs, business mentoring, and promotional initiatives such as the Surabaya Halal Festival (Pemkot Surabaya, 2024).

Halal MSMEs in Surabaya are dominated by the food and beverage sector, followed by fashion, cosmetics, and handicrafts, which are generally micro-scale with simple production processes and dependence on halal local raw materials (Gapura Surabaya, 2024; Halal MUI, 2023). Despite having significant market potential, halal MSMEs still face considerable problems in the form of limited cognitive capabilities of business actors, low financial and digital literacy, and a lack of adoption of strategically integrated halal-sustainability practices (Adiba, Amir, & Abbas, 2025; Cahyono et al., 2023). This condition creates a gap between the significant economic potential of halal MSMEs and their suboptimal performance, underscoring the need for a cognitive-based approach and a sustainability strategy to strengthen their competitive advantage and performance.

Departing from the context of Surabaya's halal MSMEs, this study grounds its analysis in cognitive drivers as the primary theoretical foundation for understanding the strategic behavior of sustainability-oriented halal business actors. Business cognitive drivers refer to a set of knowledge, awareness, and mental frameworks that shape the way MSME actors understand, interpret, and respond to halal and sustainability business demands. The four main cognitive dimensions that are relevant in this context include halal literacy, sustainability literacy, entrepreneurial cognition, and strategic awareness.

First, halal literacy reflects the level of understanding of business actors on halal principles, production standards, material selection, and the importance of halal certification as a mechanism for sharia compliance and consumer protection. Halal literacy has proven to play an essential role in building trust, reputation, and legitimacy of halal products in the market (Amer, 2024; Fahrullah & Musafak, 2025; Maulidia, Rofi'ah, & Santoso, 2024). Second, sustainability literacy refers to the cognitive ability to understand the economic, social, and environmental impacts of business activities and integrate sustainable practices into business strategies. This literacy encourages green innovation, operational efficiency, and MSME readiness to face the demands of sustainable development (Del Gesso & Parravicini, 2025; Gröschl, 2024).

Furthermore, entrepreneurial cognition is the mental framework of business actors for recognizing opportunities, managing risks, and responding to uncertainty, shaped by experience, cognitive biases, and environmental context (Mostafiz, Ahmed, Ahammad, & Rahman, 2025; Roessler, Schneckenberg, & Velamuri, 2022). Meanwhile, strategic awareness emphasizes the ability to understand market dynamics, competition, and internal capabilities in a sustainable way to support long-term strategic change (Laukkanen & Liñán, 2022).

In a resource-based perspective, halal and sustainability orientation, supported by cognitive drivers, function as intangible resources that are difficult to replicate. The combination of the two allows MSMEs to build a sustainable competitive advantage through halal-sustainable product differentiation, strengthening ethical reputations, and increasing consumer trust (Jaiyeoba, Abdullah, & Khalid, 2025). This competitive advantage further has a positive impact on the performance of MSMEs, both financially, such as sales growth and profitability, as well as non-financial, such as brand image, customer loyalty, and business sustainability (Arshad et al., 2023; Hussein, Rahayu, Rosita, & Ayuni, 2018).

Although the literature shows that halal literacy, sustainability literacy, entrepreneurial cognition, and strategic awareness play essential roles in strategic decision-making and MSME performance, empirical studies that integrate all halal-sustainability business cognitive drivers into a single conceptual framework remain very limited. Most previous studies have tended to test partial influences, such as halal orientation on performance or sustainability practices on competitiveness, without explaining the cognitive mechanisms underlying the formation of sustainable competitive advantage, especially in the context of halal MSMEs at the local level. In addition, studies that simultaneously link cognitive drivers, sustainable competitive advantage, and financial and non-financial performance with PLS-SEM-based quantitative approaches are still rare, especially in halal MSME-based metropolitan cities such as Surabaya.

Based on these gaps, this study aims to analyze the influence of halal literacy, sustainability literacy, entrepreneurial cognition, and strategic awareness on sustainable competitive advantage and halal MSME performance in Surabaya, and to test the mediating role of sustainable competitive advantage in strengthening MSME performance. Theoretically, this study enriches the literature on strategic management and halal entrepreneurship by developing an integrative model of halal-sustainability business cognitive drivers that connects the mental capabilities of MSME actors, sustainable competitive advantage, and business performance within a single empirical framework using PLS-SEM. This study also expands the perspective of the resource-based view by placing halal orientation and sustainability as intangible, cognitive-based resources. Practically, the findings of this study provide strategic guidance for halal MSME actors, local governments, and companion institutions in designing programs to improve halal literacy, sustainability, and cognitive capabilities, thereby strengthening the competitiveness and performance of halal MSMEs in a sustainable manner.

METHOD, DATA, AND ANALYSIS

This study adopts a quantitative research approach using a cross-sectional design to examine the cognitive drivers of halal and sustainability-oriented business practices and their influence on sustainable competitive advantage and business performance of halal MSMEs in Surabaya. A quantitative approach is appropriate, as the study aims to test theoretically grounded relationships among latent constructs through statistical modeling. The cross-sectional design allows the capture of perceptions and behavioral tendencies of MSME actors at a single point in time, which is consistent with prior studies on business cognition, innovation, and performance in MSMEs.

The unit of analysis in this study is halal-oriented Micro, Small, and Medium Enterprises (MSMEs) operating in Surabaya, covering various sectors such as food and beverages, fashion, cosmetics, services, and creative industries. Surabaya was selected as the research setting due to its strategic role as an economic hub in East Java and its growing halal MSME ecosystem. This study proposes five hypotheses developed based on the empirical results of previous studies, which form the research model in the following figure 1.

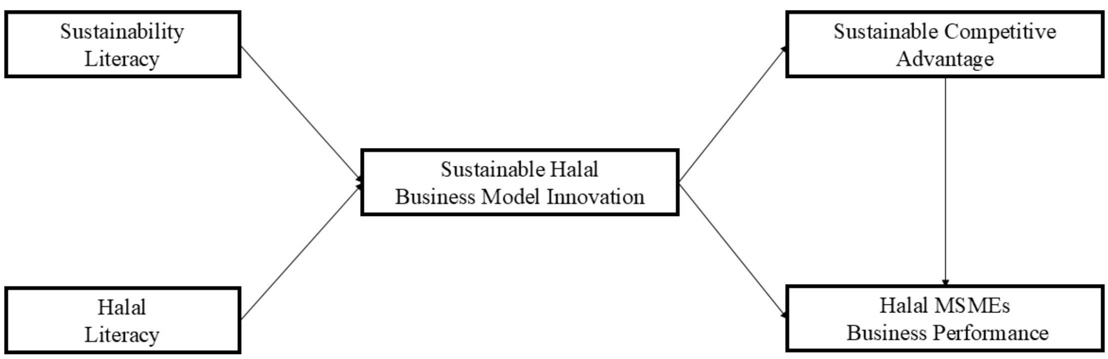


Figure 1. Proposed Research Model

Sumber: (Adiba et al., 2025; Ahmadi-Gh & Bello-Pintado, 2022; Ahmed, Aman, & Ansari, 2025; Haseeb, Hussain, Kot, Androniceanu, & Jermsittiparsert, 2019; Luo & Cheng, 2023; Mujiatun, Trianto, & Cahyono, 2023; Wardana et al., 2023)

Hypothesis 1: Sustainability Literacy has a significant positive effect on Sustainable Halal Business Model Innovation

Hypothesis 2: Halal Literacy has a significant positive effect on Sustainable Halal Business Model Innovation

Hypothesis 3: Sustainable Halal Business Model Innovation has a significant positive effect on Sustainable Competitive Advantage

Hypothesis 4: Sustainable Halal Business Model Innovation has a significant positive effect on Halal MSMEs Business Performance

Hypothesis 5: Sustainable Competitive Advantage has a significant positive effect on Halal MSMEs Business Performance

Data were collected using a structured questionnaire developed specifically for this study. The questionnaire items were adapted from established literature on sustainability literacy, halal literacy, business model innovation, sustainable competitive advantage, and MSME performance, ensuring content validity and theoretical alignment. To strengthen contextual relevance, the development of the instrument was supported by a Focus Group Discussion (FGD) involving halal industry practitioners, Islamic economics scholars, and undergraduate students from the Islamic Economics Study Program. This process helped refine wording, ensure clarity, and enhance the construct's representativeness in the Indonesian halal MSME context.

All variables in this study were measured using a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Each construct was operationalized using a reflective measurement model, which is appropriate given that the variables capture behavioral tendencies and perceptual evaluations. Sustainability Literacy is conceptualized as a multidimensional construct encompassing knowledge, skills, attitudes, and behavior. It reflects the extent to which MSME actors understand sustainability concepts, integrate them into decision-making, and demonstrate commitment through responsible business practices such as resource efficiency and sustainable partner selection (Kwofie et al., 2024; Moosavi & Bush, 2024; Saarna & Laius, 2025).

Halal Literacy refers to the ability of business actors to comprehend and implement halal principles in their operations. This construct includes halal knowledge, literacy on certification procedures, digital and financial halal literacy, and halal-oriented attitudes and behavior. It captures both cognitive understanding and practical adherence to halal standards, including awareness of certification systems and the use of Islamic financial principles (Alam et al., 2025; Bhutto et al., 2024; Fahrullah & Musafak, 2025; Khoirunnisa et al., 2025; Selvakumar et al., 2025). Sustainable Halal Business Model Innovation (SHBMI) represents the firm's capability to innovate business models that align with halal values and sustainability principles. This construct includes economic-oriented innovation, social and ethical innovation, environmental innovation, and the integration of halal compliance with financial strategies. It emphasizes profitability, ethical transparency, eco-friendly practices, and the strategic role of halal certification in business differentiation (Bamiro et al., 2023; Dariah et al., 2025; Elgharbawy et al., 2023; Masood et al., 2025; Raimi et al., 2025; Ratushnyak & Shapovalov, 2023).

Sustainable Competitive Advantage (SCA) reflects the firm's ability to achieve long-term superiority through unique value creation, inimitability, and capability-based advantages. It highlights differentiation based on halal and sustainability attributes, internal strengths that are difficult to replicate, and the role of innovation and learning capabilities in sustaining competitiveness (Heriyanto et al., 2021; Kazemi et al., 2024; Uddin et al., 2025). Finally, Halal MSMEs Business Performance captures outcomes across financial, operational, innovation, and sustainability dimensions. This includes improvements in profitability and market share, operational efficiency through halal practices, continuous innovation, and enhanced stakeholder trust alongside long-term social and environmental responsibility (Amelia et al., 2025; Nur Azizah et al., 2025; Susiang et al., 2024). The study's population consists of active MSMEs operating in Surabaya City. Given the absence of a fully updated and comprehensive sampling frame of halal MSMEs, this study employed a purposive sampling technique.

This method was selected to ensure that respondents met specific criteria relevant to the research objectives. The inclusion criteria were as follows:

1. MSMEs must be actively operating in Surabaya during the data collection period;
2. MSMEs must produce halal products or services or demonstrate a clear orientation toward halal principles;
3. Business owners or managers must be directly involved in strategic and operational decision-making; and
4. Respondents must be willing to provide informed consent.

The minimum sample size was determined based on the guidelines proposed by (Joseph F Hair, Black, Babin, & Anderson, 2019) for PLS-SEM, which recommends a minimum sample of five times the total number of indicators used in the research model. Given that this study employs 34 measurement indicators, the minimum required sample size is 170 respondents (34 × 5). This threshold ensures adequate statistical power and robustness for model estimation and hypothesis testing in PLS-SEM analysis. Data collection was conducted entirely online using Google Forms to ensure accessibility and efficiency. The questionnaire link was disseminated through social media platforms such as WhatsApp, Instagram, and Telegram, as well as through direct visits to MSMEs where respondents were assisted in completing the online form. The data collection process was carried out throughout December 2025. Ethical considerations were strictly observed. Participation was voluntary, respondents were informed of the study's purpose, and the confidentiality of responses was guaranteed. No personal identifiers were collected, and all data were used solely for academic research purposes.

The collected data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS version 4. PLS-SEM was chosen due to its suitability for exploratory and predictive research, its ability to handle complex models with multiple latent constructs, and its robustness when dealing with non-normal data and relatively small sample sizes (J F Hair, Risher, Sarstedt, & Ringle, 2019). The analysis followed a two-stage approach (Khan et al., 2019): evaluation of the measurement model (including reliability and validity tests) and assessment of the structural model (path coefficients, coefficient of determination, and predictive relevance). This approach enables a comprehensive examination of the relationships between halal-sustainability cognitive drivers, sustainable competitive advantage, and MSME performance.

RESULTS AND DISCUSSION

Table 1. Characteristics of Halal MSME Respondents in the City of Surabaya (n = 250)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender of Owner/Manager	Male	132	52.8
	Female	118	47.2
Age of Owner/Manager	< 25 years	18	7.2
	25 – 34 years	62	24.8
	35 – 44 years	88	35.2
	45 – 54 years	56	22.4
	≥ 55 years	26	10.4
Highest Education Level	Junior High School or equivalent	22	8.8
	Senior High School/Vocational School	98	39.2
	Diploma (D3)	44	17.6
	Bachelor's Degree (S1)	74	29.6
	Master's Degree (S2)	12	4.8
Type of Halal Business	Food & Beverages	146	58.4
	Muslim Fashion	38	15.2
	Cosmetics & Personal Care Products	26	10.4
	Halal Services	22	8.8
	Other Halal Products	18	7.2
Length of Business Operation	< 2 years	36	14.4
	2 – 5 years	84	33.6
	6 – 10 years	78	31.2
	> 10 years	52	20.8
Number of Employees	1 – 4 persons	128	51.2
	5 – 9 persons	66	26.4
	10 – 19 persons	38	15.2
	≥ 20 persons	18	7.2
Monthly Turnover	< IDR 25 million	72	28.8
	IDR 25 – 50 million	84	33.6
	IDR 50 – 100 million	56	22.4
	> IDR 100 million	38	15.2
Halal Certification Status	Halal Certified	178	71.2
	In the Process of Halal Certification	72	28.8
Business Scale	Micro Enterprise	112	44.8
	Small Enterprise	92	36.8
	Medium Enterprise	46	18.4

Data source: Data processing results, 2026

This study involved 250 owners or managers of halal MSMEs in Surabaya, with a relatively balanced gender composition: 52.8% men and 47.2% women. The majority of respondents were in the 35–44 years age group (35.2%), followed by 25–34 years (24.8%) and 45–54 years (22.4%), indicating the dominance of experienced owners who are productive in business. In terms of education, most have high school/vocational level (39.2%), followed by Bachelor of S1 (29.6%) and Diploma D3 (17.6%), while 8.8% have junior high school education or equivalent. The most widely run type of halal business is food and beverage (58.4%), followed by Muslim fashion (15.2%) and cosmetics/care products (10.4%). The majority of MSMEs have been operating for 2-10 years (64.8%) with a workforce of 1-4 people (51.2%). Monthly turnover is mainly in the range of IDR 25-50 million (33.6%). As many as 71.2% of respondents already have halal certification, and most of them include micro and small businesses (81.6%).

Validity and Reliability Testing

Validity and reliability testing in this study were carried out as part of the outer measurement model using the PLS-SEM approach. This stage aims to ensure that the indicators used truly represent the measured construct and are free of multicollinearity. The criteria used include outer loadings, where a value of ≥0.70 indicates good convergence; Average Variance Extracted (AVE) ≥0.50 indicates adequate convergent validity; and Composite Reliability (CR) and Cronbach's Alpha (CA) ≥0.70 to assess internal reliability (J F Hair et al., 2019). In addition, the outer VIF was analyzed to check the multicollinearity between the indicators, with a threshold of <5 being buffered as safe (Kock, 2015). Based on Table 2, all indicators show outer loadings between 0.769–0.879, meeting the convergent validity criteria. The AVE for all constructs ranges from 0.634–0.701, while CA and CR are in the range of 0.881–0.912 and 0.912–0.927, respectively, confirming the high reliability of the constructs. The outer VIF values for each indicator were also below 5 (1.87–2.52), indicating no significant multicollinearity.

Table 2. Convergent Validity, Reliability, and Multicollinearity Test Results

Construct	Indicator	Outer Loading	AVE	CA	CR	Outer VIF
Sustainability Literacy (SL)	SL1	0.812	0.634	0.901	0.918	2.14
	SL2	0.798				2.06
	SL3	0.821				2.32
	SL4	0.836				2.41
	SL5	0.784				1.98
	SL6	0.807				2.09
	SL7	0.769				1.87
	SL8	0.825				2.28

Construct	Indicator	Outer Loading	AVE	CA	CR	Outer VIF
Halal Literacy (HL)	HL1	0.834	0.658	0.912	0.927	2.36
	HL2	0.817				2.21
	HL3	0.842				2.48
	HL4	0.801				2.19
	HL5	0.776				1.94
	HL6	0.809				2.07
	HL7	0.854				2.52
	HL8	0.823				2.33
Sustainable Halal Business Model Innovation (SHBMI)	SHBMI1	0.861	0.672	0.905	0.923	2.44
	SHBMI2	0.832				2.31
	SHBMI3	0.814				2.17
	SHBMI4	0.847				2.39
	SHBMI5	0.789				2.02
	SHBMI6	0.825				2.26
	SHBMI7	0.806				2.11
Sustainable Competitive Advantage (SCA)	SCA1	0.873	0.689	0.887	0.916	2.28
	SCA2	0.851				2.17
	SCA3	0.823				2.04
	SCA4	0.812				1.98
	SCA5	0.846				2.13
Halal MSMEs Business Performance (BP)	BP1	0.864	0.701	0.881	0.912	2.36
	BP2	0.847				2.21
	BP3	0.812				2.04
	BP4	0.836				2.18
	BP5	0.879				2.42
	BP6	0.821				2.09

Data source: Data processing results, 2026

Discriminant validity is tested to ensure that the constructs in the model are distinct and measure different concepts. This study uses the Heterotrait-Monotrait Ratio (HTMT) as an indicator of discriminant validity, with a threshold of <0.90, which indicates no significant overlap between constructs (Henseler, Ringle, & Sarstedt, 2015). Based on Table 3, the HTMT values for the constructs range from 0.599 to 0.797. The highest values were found in the BP-SCA (0.746) and HL-BP (0.797) relationships, while the lowest was recorded in the SL-BP (0.599) relationship. All HTMT values remain below 0.90, indicating that each construct retains distinct characteristics and that there is no substantive multicollinearity among them. Overall, the results of convergent validity, discriminant validity, reliability, and multicollinearity confirm that the research instrument is valid, reliable, and suitable for subsequent structural testing of the model.

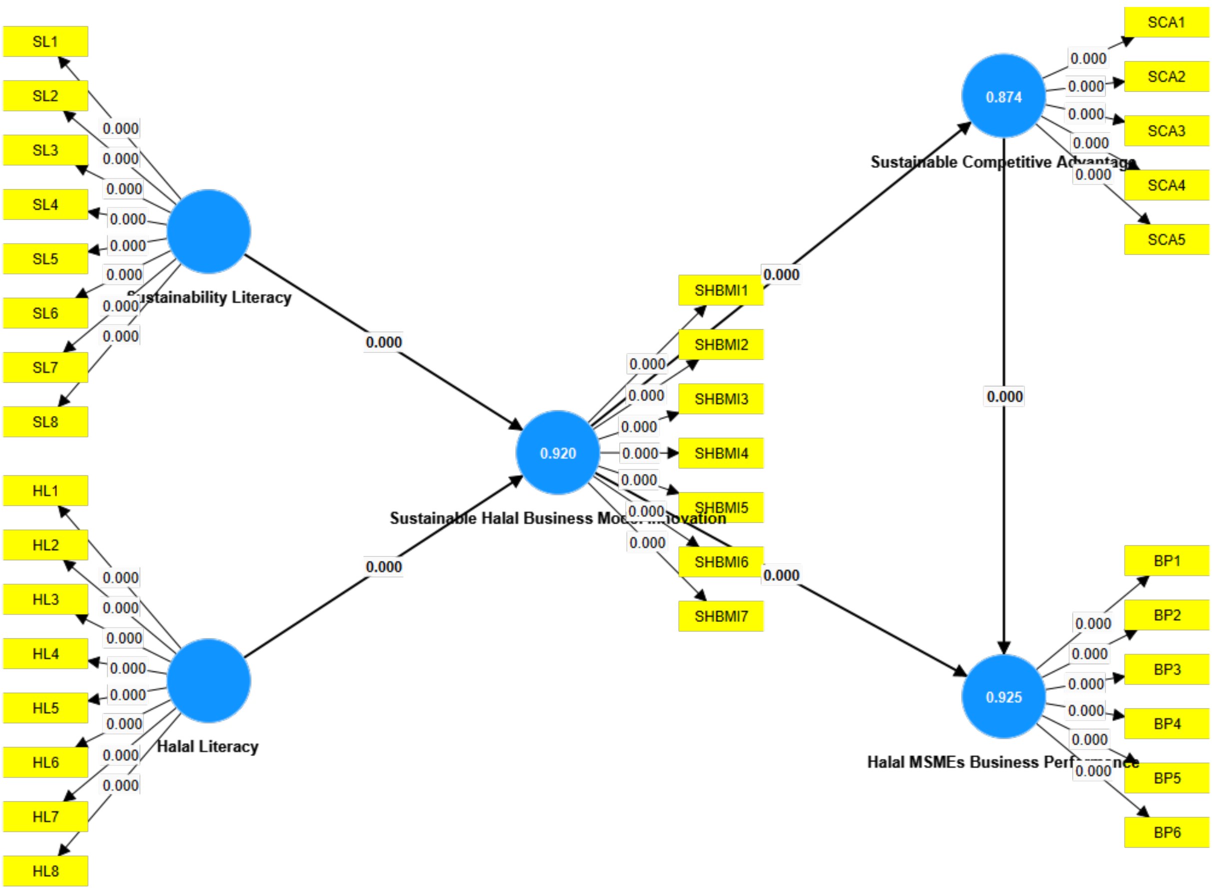
Table 3. Results of the Discriminant Validity Test-HTMT

	HL	BP	SL	SCA	SHBMI
HL					
BP	0.797				
SL	0.603	0.599			
SCA	0.712	0.746	0.695		
SHBMI	0.698	0.709	0.716	0.689	

Data source: Data processing results, 2026

Hypothesis Testing

Hypothesis testing was conducted using the inner (structural) model in PLS-SEM with 5,000 bootstrap resamples to assess path significance and ensure coefficient stability. This analysis evaluates causal relationships among constructs and their contributions to dependent variables. The results show high explanatory power, with R^2 values of 0.920 for Sustainable Halal Business Model Innovation (SHBMI), 0.874 for Sustainable Competitive Advantage (SCA), and 0.925 for Business Performance (BP), indicating strong predictive capability of the model.



Gambar 2. Inner Model Output

Based on Table 4, all hypotheses were tested and found to be significant. H1 showed that Sustainability Literacy had a significant positive effect on SHBMI ($\beta = 0.532$, $t = 8.611$, $p < 0.001$, $f^2 = 0.312$), while H2 confirmed the positive impact of Halal Literacy on SHBMI ($\beta = 0.438$, $t = 7.025$, $p < 0.001$, $f^2 = 0.219$). SHBMI directly affects SCA (H3, $\beta = 0.935$, $t = 154.127$, $p < 0.001$, $f^2 = 7.624$) and BP (H4, $\beta = 0.588$, $t = 14.402$, $p < 0.001$, $f^2 = 0.486$), demonstrating the central role of SHBMI in creating competitive advantage and halal business performance. In addition, SCA makes a significant contribution to BP (H5, $\beta = 0.389$, $t = 9.332$, $p < 0.001$, $f^2 = 0.214$), underscoring that competitive advantage partially mediates improvements in the performance of halal MSMEs. All Inner VIF values below 5 indicate the absence of multicollegial problems between constructs in the model.

Table 4. Hypothesis Testing Results

Hyp	Structural Path	Path Coefficient (β)	CI (2.5% – 97.5%)	t-Statistic	p-Value	f^2	Inner VIF	Interpretation
H1	Sustainability Literacy → SHBMI	0.532	[0.409 – 0.649]	8.611	0.000	0.312	2.21	Supported
H2	Halal Literacy → SHBMI	0.438	[0.318 – 0.562]	7.025	0.000	0.219	2.21	Supported
H3	SHBMI → Sustainable Competitive Advantage	0.935	[0.923 – 0.946]	154.127	0.000	7.624	1.00	Supported
H4	SHBMI → Business Performance	0.588	[0.509 – 0.669]	14.402	0.000	0.486	2.34	Supported
H5	Sustainable Competitive Advantage → Business Performance	0.389	[0.306 – 0.469]	9.332	0.000	0.214	2.34	Supported

Data source: Data processing results, 2026

Importance-Performance Mapping Analysis (IPMA) Testing

Importance-Performance Mapping Analysis (IPMA) testing is used to evaluate not only the importance of a construct relative to its target, but also its performance in practice. In theory, IPMA helps researchers and practitioners identify strategic priority areas where performance improvements will have the most significant impact on the achievement of targets (Hauff, Richter, Sarstedt, & Ringle, 2024). In the context of this study, this approach is essential because it allows for a deeper understanding of the literacy aspects that must be strengthened to encourage Sustainable Halal Business Model Innovation (SHBMI).

Based on Table 6, the IPMA results show that Sustainability Literacy has the highest level of importance to SHBMI (0.532), followed by Halal Literacy (0.438). However, in terms of performance, Halal Literacy is slightly superior (65,181) compared to Sustainability Literacy (64,679). These findings indicate that although sustainability literacy has a greater influence on halal business model innovation, its performance remains slightly below that of halal literacy. Therefore, the MSME development strategy should focus on improving Sustainability Literacy performance to maximize sustainable halal business innovation. This IPMA analysis provides practical guidance for MSME managers on allocating resources effectively and prioritizing interventions with significant impact.

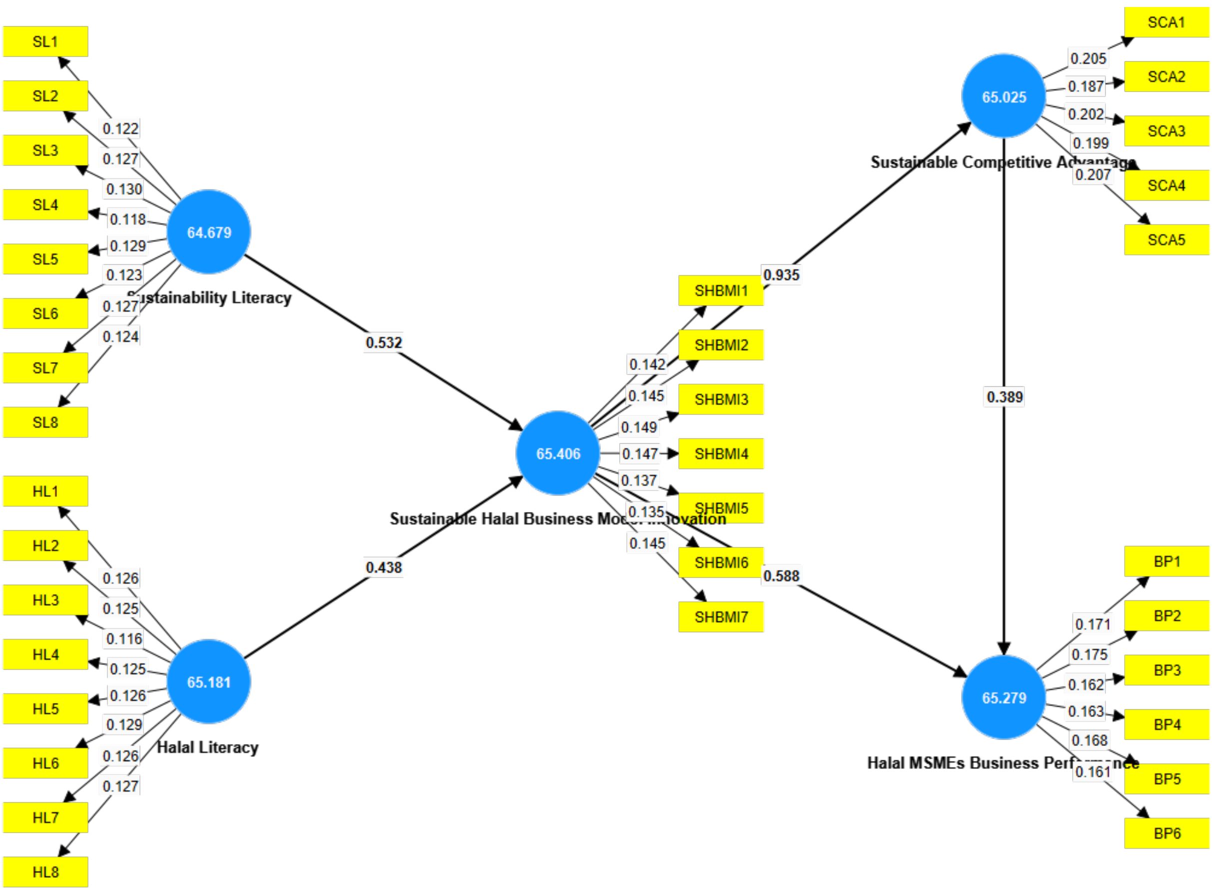


Figure 3. IPMA Modeling (Sustainable Halal Business Model Innovation Construction Target)

Table 5. Construction Level IPMA Test Results (Sustainable Halal Business Model Innovation Construction Target)

	Importance	Performance
Halal Literacy	0.438	65.181
Sustainability Literacy	0.532	64.679

Data source: Data processing results, 2026

The indicator-level IPMA analysis provides a more detailed picture of each indicator's contribution to Sustainable Halal Business Model Innovation (SHBMI) and its performance in halal MSME practices. Based on the data in Table 5 and figure 4, it shows that Sustainability Literacy (SL) has a higher importance value than Halal Literacy (HL), with the highest indicators SL2 and SL3 (importance 0.077), which reflects the importance of understanding the relationship between halal principles and sustainable business practices as well as the ability to apply sustainability principles in operational decision-making. Meanwhile, the SL1 (basic knowledge) indicator also showed high importance (0.076), confirming the role of theoretical knowledge in supporting sustainable halal business innovation. In terms of performance, several SL indicators, such as SL1 (66,143) and SL7 (65,238), showed relatively high performance, but SL5 (62,667) and SL6 (63,238) remained lower, indicating that sustainability attitudes and commitments need to be strengthened in MSME operational practices. For Halal Literacy, indicators HL5 (66,048) and HL6 (66,238) showed high performance in halal digital literacy and finance, while HL3 (62,810), related to understanding halal certification procedures, had lower performance, although importance remained significant.

These results emphasize that the halal MSME development strategy must focus on improving the performance of indicators related to attitudes, behaviors, and procedural understanding in halal literacy and sustainability, because the combination of importance and performance will maximize the impact on sustainable halal business innovation. Detailed analysis at the indicator level provides more concrete guidance for MSME managers to allocate resources and interventions effectively. These findings highlight that strategies for developing halal MSMEs should prioritize improving indicators related to attitudes, behaviors, and procedural understanding in both halal and sustainability literacy.

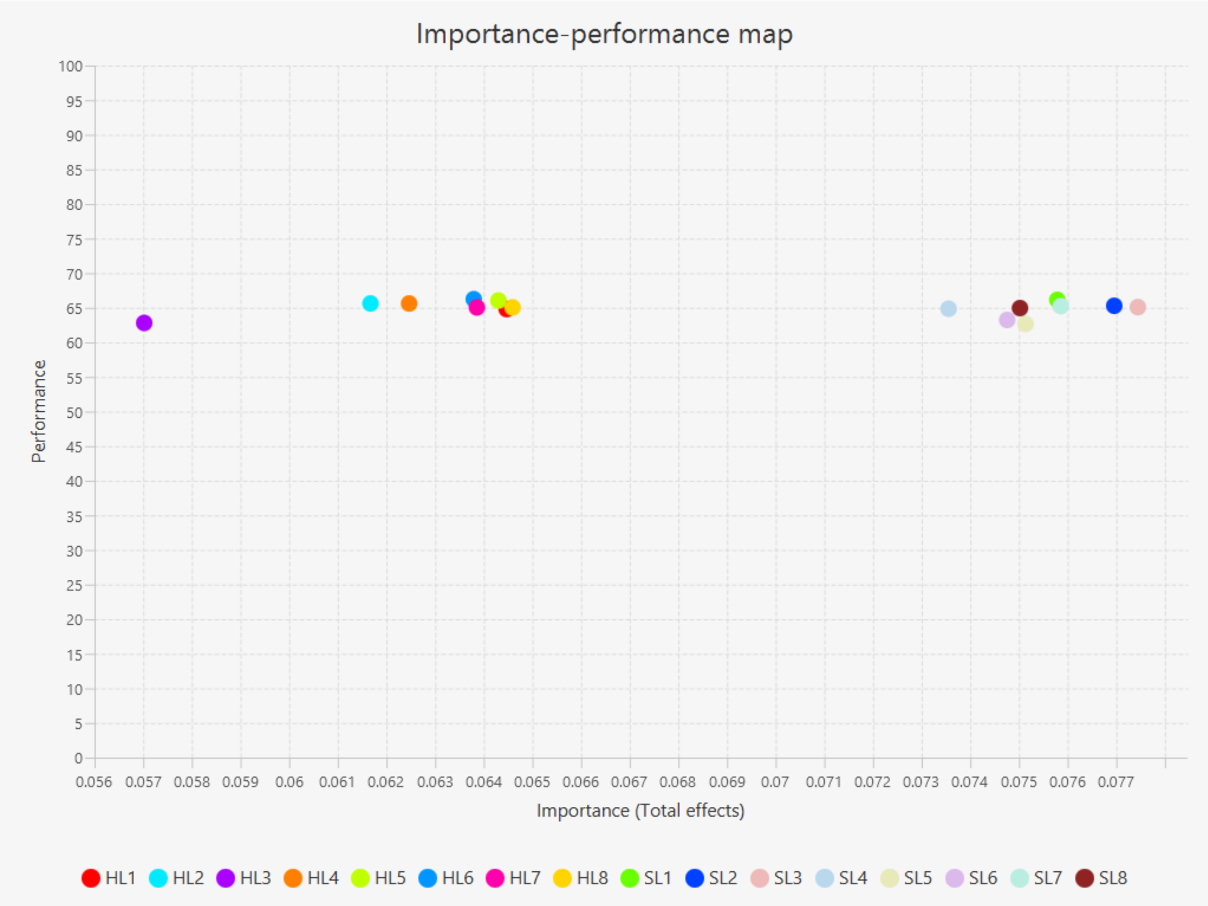


Figure 4. IPMA Matrix Level Indicator (Construction Target Sustainable Halal Business Model Innovation)

Figure 4 presents the Importance–Performance Map Analysis (IPMA) at the indicator level for the construct of Sustainable Halal Business Model Innovation (SHBMI). The horizontal axis represents the importance (total effect) of each indicator in influencing SHBMI, while the vertical axis reflects the performance (average score) of each indicator. Overall, the indicators are clustered within a relatively high performance range (around 60–70), indicating that respondents generally perceive the implementation of SHBMI indicators to be satisfactory. However, there is variation in the level of importance across indicators. Several indicators located on the right side of the map (higher importance) demonstrate stronger contributions to SHBMI, making them critical priorities for improvement and strategic focus.

Indicators that combine high importance but only moderate performance represent key areas for enhancement, as improving these will yield the greatest impact on strengthening SHBMI. Conversely, indicators with high performance but lower importance may be considered well-managed but less critical in driving innovation outcomes. Thus, the IPMA results suggest that halal MSMEs in Surabaya should prioritize improving high-importance indicators to optimize sustainable halal business model innovation, which in turn can enhance their competitiveness and long-term business performance.

Table 6. IPMA Indicator Level Test Results (Sustainable Halal Business Model Innovation Construction Target)

	Importance	MV performance
HL1	0.064	64.810
HL2	0.062	65.619
HL3	0.057	62.810
HL4	0.062	65.619
HL5	0.064	66.048
HL6	0.064	66.238
HL7	0.064	65.048
HL8	0.065	65.048
SL1	0.076	66.143
SL2	0.077	65.286
SL3	0.077	65.095
SL4	0.074	64.857
SL5	0.075	62.667
SL6	0.075	63.238
SL7	0.076	65.238
SL8	0.075	64.952

Data source: Data processing results, 2026

DISCUSSION

The results of hypothesis 1 showed that Sustainability Literacy had a positive and significant influence on Sustainable Halal Business Model Innovation (SHBMI), with a path coefficient of $\beta = 0.532$, $t = 8.611$, and $p < 0.001$. These findings confirm that MSME owners' understanding of sustainability principles. including economic, social, and environmental aspects directly drives their ability to develop innovative and sustainable halal business models. The effect size $f^2 = 0.312$ indicates a moderate to strong effect, suggesting that sustainability literacy is a key driver of business model innovation among halal MSMEs in Surabaya. In practice, these results indicate that improving knowledge, skills, attitudes, and behaviors related to sustainability can enhance the effectiveness of halal business innovation strategies.

For example, MSME owners who understand the relationship between halal practices and sustainability principles can adjust the production process to be more efficient, resource-efficient, and environmentally friendly without reducing the product's halal value. This aligns with previous literature that emphasizes that sustainability literacy improves adaptability and innovation in small and medium-sized businesses (Kurniasari, Lestari, & Tannady, 2023; Luo & Cheng, 2023; Parmitasari & Rusnawati, 2023; Wardana et al., 2023). In addition, the significant influence of Sustainability Literacy on SHBMI shows that training interventions, workshops, or educational programs that emphasize sustainable business practices can be an effective strategy for the government and MSME support institutions to strengthen halal business innovation. These findings also affirm the role of business owner cognition as an essential foundation in building business models that are not only economically profitable but also socially and environmentally sustainable.

The results of hypothesis 2 testing showed that Halal Literacy had a positive and significant influence on Sustainable Halal Business Model Innovation (SHBMI) with a path coefficient of $\beta = 0.438$, t-statistics = 7.025, and $p < 0.001$. The effect size $f^2 = 0.219$ indicates a moderate influence, suggesting that halal literacy is an essential factor in encouraging halal business model innovation among MSMEs in Surabaya. These findings confirm that MSME owners' or managers' understanding of halal principles, certification procedures, and halal compliance practices consistently impacts their ability to design and implement innovative, ethical, and sustainable business models.

In practice, halal literacy includes knowledge of halal standards and certification procedures, as well as the ability to integrate halal principles throughout the entire business value chain. Indicators such as understanding certification procedures (HL3) and operational compliance (HL8) have a significant contribution, emphasizing that business owners who master these aspects can ensure products and services not only meet regulations, but also increase consumer confidence and market differentiation (Said et al., 2019; Hashim & Othman, 2020) (Adiba et al., 2025; Aisyah, Pratikto, Wardoyo, & Restuningdiah, 2024; Mujiatun et al., 2023; Wahab, Budi, & Amanda, 2024). Thus, halal literacy not only strengthens business legitimacy but also encourages the adoption of innovative business practices aligned with sustainability principles.

These results are essential for halal industry players and policymakers. Education and mentoring programs on halal standards, certification, and integrating halal principles into operational strategies can enhance MSMEs' innovation capacity. At the same time, strong halal literacy allows MSMEs to adapt to market trends that increasingly demand safe, sustainable, and high-quality halal products. In other words, halal literacy is a critical foundation for building a competitive, sustainable business model in the modern halal economic era.

The results of hypothesis 3 test showed that Sustainable Halal Business Model Innovation (SHBMI) had a positive and very significant influence on Sustainable Competitive Advantage (SCA) with a path coefficient of $\beta = 0.935$, t-statistic = 154.127, and $p < 0.001$. The effect size, $f^2 = 7.624$, indicates a powerful influence, confirming that sustainable halal business model innovation is the primary driver of MSMEs' competitive advantage in Surabaya. These findings highlight that MSMEs that integrate halal principles with sustainable business practices including resource efficiency, halal standard compliance, and social and environmental responsibility will gain a competitive advantage that is difficult for competitors to replicate. Theoretically, this aligns with the Resource-Based View (RBV), which emphasizes that sustainable competitive advantage is achieved through the management of unique and valuable resources (Al-Khatib, 2022; Barney & Arikan, 2008; Xiao, Arikan, & Barney, 2018). SHBMI's innovative approach is a strategic asset, as it not only enhances the quality of products and services, but also strengthens reputation and differentiation in the increasingly competitive halal market.

Furthermore, hypothesis 4 confirms that SHBMI also has a positive and significant effect on Halal MSMEs Business Performance (BP) ($\beta = 0.588$, $t = 14.402$, $p < 0.001$; $f^2 = 0.486$). These findings show that business model innovations that integrate sustainability and halal compliance not only strengthen their competitive position but also directly improve business performance, both financially and non-financially. MSMEs that implement SHBMI can improve operational efficiency, product quality, customer satisfaction, and consumer loyalty, thereby driving turnover growth and profitability. These results are in line with previous literature that emphasizes that sustainable business innovation is an essential mechanism for achieving superior performance in the small and medium-sized business sector (Bashir, Alfalih, & Pradhan, 2022; Chen, Li, & Shahid, 2024; De Chiara, 2021; Sumarsono, Kasali, & Ezni Balqiah, 2023). In addition, applying halal principles to business model innovation strengthens business legitimacy, thereby fostering consumer trust that directly improves performance.

Hypothesis 5 confirms that Sustainable Competitive Advantage also has a positive and significant influence on Business Performance ($\beta = 0.389$, $t = 9.332$, $p < 0.001$; $f^2 = 0.214$). These findings indicate that the competitive advantage derived from SHBMI partially mediates the relationship between business model innovation and business performance. In other words, not only does innovation directly improve business performance, but it also, through the creation of sustainable competitive advantages, enables MSMEs to maintain long-term growth and profitability. This is consistent with the dynamic capabilities theory approach, which states that the organization's ability to integrate, build, and reconfigure internal competencies on an ongoing basis is key to achieving superior performance (Otache & Usman, 2024; Ritahi & Echaoui, 2025; Setyaningrum, Kholid, & Susilo, 2023; Teece, Pisano, & Shuen, 1997).

Thus, the H3–H5 test results show a clear pattern of relationships: Sustainability Literacy and Halal Literacy drive SHBMI, which, in turn, results in competitive advantage and higher business performance. The most significant impact was observed in the relationship between SHBMI → SCA ($\beta = 0.935$), indicating that sustainable halal business model innovation is the dominant factor shaping the competitive advantage of halal MSMEs in Surabaya. Furthermore, SHBMI also had a direct impact on business performance ($\beta = 0.588$). At the same time, competitive advantage contributed additionally ($\beta = 0.389$), indicating that the combination of innovation and competitive position had a synergistic effect on business performance.

Theoretical Implication

Based on the overall results of the hypothesis, this study provides several significant theoretical implications for the literature on halal MSME management and sustainable innovation. First, these findings confirm that Sustainability Literacy and Halal Literacy are crucial cognitive drivers of SHBMI development. This reinforces the theories of business literacy and context-specific halal literacy, showing that a deep understanding of the principles of sustainability and halal compliance not only enhances innovation capabilities but also provides a strategic basis for competitive advantage.

Second, SHBMI's powerful influence on Sustainable Competitive Advantage (SCA) (β = 0.935) emphasizes that sustainable halal business model innovation is not just an operational practice, but a unique and unparalleled resource that is in accordance with the Resource-Based View (RBV) perspective. This shows that combining halal compliance with sustainability principles creates dynamic capabilities that underpin long-term competitive advantage. Third, SHBMI also has direct and indirect impacts on Business Performance, underscoring the causal relationships among cognitive literacy, business model innovation, competitive advantage, and Business Performance. Thus, this study extends the literature on integrating literacy, sustainable innovation, and dynamic capabilities theory in the context of halal MSMEs, while providing a robust conceptual framework for future research on cognitive management, innovation strategies, and competitive value creation in the halal economy.

Practical-Policy Implication

Based on the overall results of the hypothesis testing, this study provides several strategic managerial and policy implications for halal MSME managers, supporting institutions, and policymakers in Surabaya and other areas with similar halal economic ecosystems. First, sustainability literacy and halal literacy have proven to be the main drivers of sustainable halal business model innovation (SHBMI). Therefore, MSME actors need to be empowered through integrated education programs that combine an understanding of sustainability principles, halal compliance, and efficient operational management practices. For example, interactive workshops on implementing green supply chains, energy efficiency, waste management, and integrating halal principles at every stage of production can enhance MSME owners' innovation capacity. In addition, the use of digital platforms and e-learning based on halal sustainability can expand the reach of education at a low cost.

Second, the study's results confirm that SHBMI directly enhances competitive advantage (SCA) and business performance (BP). From a managerial perspective, this means that MSME managers must focus on developing business models that not only emphasize halal compliance but are also innovative, adaptive, and responsive to global halal market trends. For example, MSMEs can develop sustainable halal products with eco-friendly packaging or use digital technology to track halal compliance for consumers transparently. The competitive advantage created by these innovations can also be maximized through halal branding and sustainability strategies, such as integrating halal certification with eco-friendly labels, which increase product value and customer loyalty.

In terms of policy, city governments, certification bodies, and MSME associations can facilitate sustainable halal business incubation programs. This program can include assistance with halal certification procedures, technical guidance on applying sustainability principles, and access to the digital market or to halal e-commerce. The IPMA results show that sustainability literacy is more critical than halal literacy, though it still lags slightly. This underscores the need for interventions that emphasize the development of behavioral competencies and sustainable practices, such as energy management, the selection of environmentally friendly raw materials, and waste mitigation, to truly innovate business models.

Furthermore, the combination of SHBMI and SCA, which has been proven to improve business performance, offers an opportunity to develop long-term business strategies grounded in data and technology. MSMEs can use a cloud-based management system to track production processes, product quality, and halal compliance, enabling faster, more accurate decision-making. On the other hand, the government can use data from MSMEs to design fiscal policies or special incentives for MSMEs that implement halal and sustainable practices, such as tax reductions, green energy subsidies, or access to sharia-based financing.

CONCLUSION AND SUGGESTIONS

This study is to analyze the role of halal-sustainability business cognitive drivers, especially Sustainability Literacy and Halal Literacy, in encouraging Sustainable Halal Business Model Innovation (SHBMI) and its impact on the Sustainable Competitive Advantage (SCA) and Business Performance (BP) of halal MSMEs in Surabaya with the PLS-SEM approach. The results of the study show that these two forms of literacy have a positive and significant effect on SHBMI, underscoring that the cognitive factors of MSME owners or managers are the primary foundation for the development of sustainable halal business model innovations. Sustainable halal business model innovation has proven to play a dominant role in creating sustainable competitive advantages and improving the business performance of MSMEs, both directly and through its role as a partial SCA. These findings reinforce the Resource-Based View and dynamic capabilities perspective that integrating halal knowledge and sustainability results in strategic capabilities that are difficult to replicate and have long-term value. Thus, SHBMI is a key mechanism that bridges cognitive literacy with competitive advantage and halal MSME business performance.

Based on these results, several recommendations can be submitted. First, halal MSME actors are advised to actively improve sustainability and halal literacy through training, mentoring, and practice-based learning to integrate halal and sustainability principles across the entire business value chain. Second, local governments, MSME support institutions, and halal certification bodies need to design capacity-building programs that integrate halal education, sustainable business practices, and business model innovation. Third, policy support in the form of incentives, access to sharia financing, and facilitation of sustainable halal business digitalization needs to be strengthened to encourage the creation of competitive advantages and improve the performance of halal MSMEs in a sustainable manner. Further research is suggested to expand the scope of the region and add other contextual variables to enrich the understanding of the dynamics of halal MSMEs in Indonesia.

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