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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 effect of halal–sustainability cognitive drivers on the competitive advantage and business performance of halal MSMEs in Surabaya. This topic is timely given the rapid growth of the global halal industry and the rise of sustainability in business. However, many halal MSMEs lack cognitive abilities and strategic direction, hindering competitiveness. The research explores how halal and sustainability literacy influence Sustainable Halal Business Model Innovation (SHBMI). It also assesses how SHBMI affects competitive advantage and business performance. This study proposes an integrative model linking these variables, an area largely unexplored, especially in developing countries like Indonesia. A quantitative cross-sectional approach collected data from 250 halal MSMEs and was analyzed using PLS-SEM in SmartPLS 4. Results show that halal and sustainability literacy positively affect SHBMI. SHBMI, in turn, boosts competitive advantage and business performance, directly and indirectly. In conclusion, SHBMI connects cognitive drivers with competitiveness and performance. Strengthening halal and sustainability literacy is key for MSMEs and policymakers to ensure long-term business sustainability.

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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. Demand for ethical, halal-certified products from non-Muslim consumers is also growing. The global halal industry market value is estimated at USD 2.3 trillion in 2023 and is projected to grow to USD 7.7 trillion by 2025. The food, cosmetics, pharmaceutical, and financial sectors are 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).

At the same time, the trend toward sustainability-oriented business is strengthening. More companies are integrating Sustainable Development Goals (SDGs) into their strategies, sustainability reporting, and ESG and CSR practices. These practices are proven to support competitiveness and long-term performance (Pillai, Slutsky, Wolf, Duthler, & Stever, 2017; van Zanten & van Tulder, 2021; Venkatesan, Elsewedy, Vummadising, & Gunasti, 2024). However, MSMEs still face significant challenges in global competition. Limited resources, technological capabilities, and a lack of strategic orientation toward sustainability continue to affect their sustainable competitive advantage and business performance (Behl, Gaur, Pereira, Yadav, & Laker, 2022; Bisht & Singh, 2020).

Halal MSMEs have a strategic position as drivers of the local and national economy, especially in Indonesia. They contribute to GDP and job creation and reinforce consumer trust through halal certification and sustainable business practice (Hussin, Muhammad, Razak, Gamal, & Soon, 2026). Halal MSMEs play a key role in the Indonesian economy, contributing to GDP, exports, and labor absorption. Their importance aligns with the country's large Muslim population and increasing global demand for halal products. MSMEs nationally account for approximately 60% of GDP with more than 65 million business units. Strengthening halal certification is seen as critical for increasing competitiveness and international market access (Hidayah & Solihah, 2025; Hussin et al., 2026). In the regional context, Surabaya, as a metropolitan city and East Java's economic center, is pivotal in developing the halal MSME ecosystem. This is achieved through mass certification programs, business mentoring, and 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.

Starting from the context of Surabaya's halal MSMEs, this study uses cognitive drivers as the main theoretical foundation to understand the strategic behavior of sustainability-oriented halal business actors. Business cognitive drivers refer to the knowledge, awareness, and mental frameworks that shape how MSME actors understand, interpret, and respond to halal and sustainability business demands. Four key cognitive dimensions are relevant here: halal literacy, sustainability literacy, entrepreneurial cognition, and strategic awareness.

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

Furthermore, entrepreneurial cognition is the mental framework that helps business actors recognize opportunities, manage risks, and respond to uncertainty. It is shaped by experience, cognitive biases, and the environment (Mostafiz, Ahmed, Ahammad, & Rahman, 2025; Roessler, Schneckenberg, & Velamuri, 2022). Strategic awareness is the ability to understand market dynamics, competition, and internal capacities in a sustainable way. It supports long-term strategic change (Laukkanen & Liñán, 2022). From a resource-based perspective, halal and sustainability orientation—supported by cognitive drivers—serves as an intangible resource that is hard to replicate. Combining both allows MSMEs to create a sustainable competitive advantage through halal-sustainable product differentiation, a strong ethical reputation, and increased consumer trust (Jaiyeoba, Abdullah, & Khalid, 2025). This advantage boosts MSME performance, both financially—such as sales growth and profitability—and non-financially —such as brand image, customer loyalty, and business sustainability (Arshad et al., 2023; Hussein, Rahayu, Rosita, & Ayuni, 2018).

Although research shows that halal literacy, sustainability literacy, entrepreneurial cognition, and strategic awareness are essential for decision-making and MSME performance, few studies integrate these cognitive drivers into a single framework. Most past studies examined only partial influences, such as halal orientation on performance or sustainability practices on competitiveness. They rarely explain how cognitive mechanisms shape sustainable competitive advantage in halal MSMEs at the local level. Also, studies that connect cognitive drivers, sustainable competitiveness, and both financial and non-financial performance using PLS-SEM remain scarce, especially in metropolitan halal MSME hubs 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. It also examines the mediating role of sustainable competitive advantage in strengthening MSME performance. Theoretically, this study enriches strategic management and halal entrepreneurship literature by developing an integrative model of halal-sustainability business cognitive drivers. This model connects MSME mental capabilities, sustainable competitive advantage, and business performance in a single empirical framework using PLS-SEM. The study expands the resource-based view by placing halal orientation and sustainability as intangible, cognitive-based resources. In practice, the findings provide strategic guidance for halal MSME actors, local governments, and institutions to design programs that improve halal literacy, sustainability, and cognitive capabilities. This strengthens halal MSME competitiveness and performance in a sustainable way.

METHOD, DATA, AND ANALYSIS

This study adopted 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 enabled the capture of perceptions and behavioral tendencies of MSME actors at a single point in time, consistent with prior studies on business cognition, innovation, and performance in MSMEs.

The unit of analysis in this study was 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 proposed five hypotheses developed based on the empirical results of previous studies, which form the research model in Figure 1.

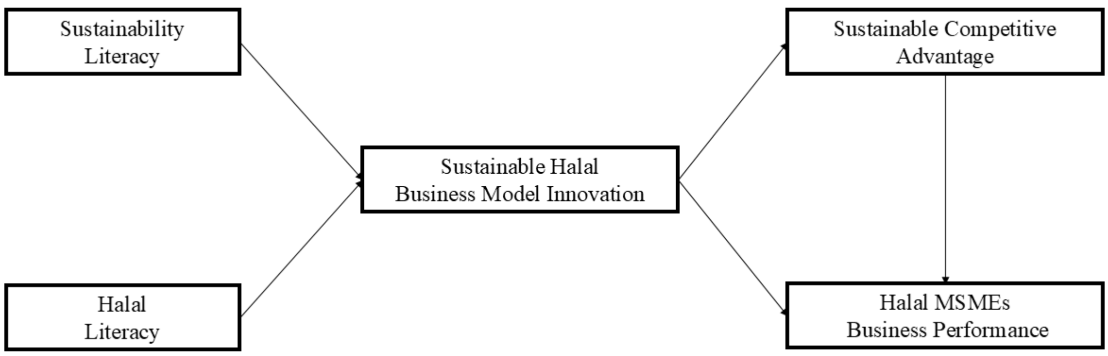


Figure 1. Proposed Research Model

Source: (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 for this study. The items, adapted from established literature on sustainability literacy, halal literacy, business model innovation, sustainable competitive advantage, and MSME performance, ensured content validity and theoretical alignment. To further strengthen contextual relevance, a Focus Group Discussion (FGD) involving halal industry practitioners, Islamic economics scholars, and undergraduate students refined the instrument. This collaborative process improved wording, clarified items, and enhanced representativeness for 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"), and each construct was operationalized using a reflective measurement model. This approach is appropriate, as the variables capture behavioral tendencies and perceptual evaluations. Building on this, Sustainability Literacy is conceptualized as a multidimensional construct comprising 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 is the ability of business actors to understand and apply halal principles in their operations. This construct covers halal knowledge, halal certification literacy, digital and financial halal literacy, and halal-oriented attitudes and behavior. It involves both cognitive understanding and practical adherence, 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). Building on this foundation, Sustainable Halal Business Model Innovation (SHBMI) reflects a firm’s ability to develop business models that align with halal values and sustainability. It includes economic, social, ethical, and environmental innovation, as well as integrating halal compliance with financial strategies. SHBMI emphasizes profitability, ethical transparency, eco-friendly practices, and the 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) is a firm’s ability to achieve long-term superiority. It is based on unique value, inimitability, and capability-based advantages. SCA highlights differentiation using halal and sustainability attributes and strong internal capabilities. Innovation and learning also help maintain competitiveness (Heriyanto et al., 2021; Kazemi et al., 2024; Uddin et al., 2025). Halal MSMEs Business Performance includes financial, operational, innovation, and sustainability outcomes. This involves greater profitability, market share, and improved operational efficiency through halal practices. It also reflects continuous innovation and increased stakeholder trust, along with long-term social and environmental responsibility (Amelia et al., 2025; Nur Azizah et al., 2025; Susiang et al., 2024). The study's population is active MSMEs operating in Surabaya City. Since there is no updated sampling frame of halal MSMEs, a purposive sampling technique was used.

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 et al. (2019) for PLS-SEM, which recommends a minimum sample size of 5 times the total number of indicators 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 for 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), followed by assessment of the structural model (path coefficients, coefficient of determination, and predictive relevance). This approach enables a comprehensive examination of the relationships among 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

Characteristic	Category	Frequency (n)	Percentage (%)
	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. Regarding educational background, 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. In terms of business type, food and beverage is the most widely run halal business (58.4%), followed by Muslim fashion (15.2%) and cosmetics/care products (10.4%). When looking at business tenure and workforce, the majority of MSMEs have been operating for 2-10 years (64.8%) with a workforce of 1-4 people (51.2%). Additionally, monthly turnover is mainly in the range of IDR 25-50 million (33.6%). Furthermore, 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 assess multicollinearity among the indicators; values <5 were considered safe (Kock, 2015). Based on Table 2, all indicators show outer loadings between 0.769 and 0.879, meeting the convergent validity criteria. The AVE for all constructs ranges from 0.634 to 0.701, while CA and CR are in the range of 0.881 to 0.912 and 0.912 to 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
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

Construct	Indicator	Outer Loading	AVE	CA	CR	Outer VIF
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 ensures constructs are distinct and measure different concepts. This study uses the Heterotrait-Monotrait Ratio (HTMT) as the indicator, with a threshold of <0.90 (Henseler, Ringle, & Sarstedt, 2015) Table 3 shows HTMT values for the constructs range from 0.599 to 0.797. The highest values are found in BP-SCA (0.746) and HL-BP (0.797) relationships. The lowest value appears in the SL-BP (0.599) relationship. All HTMT values are below 0.90, indicating that each construct remains distinct and that there is no substantive multicollinearity. Overall, the results for convergent validity, discriminant validity, reliability, and multicollinearity confirm that the instrument is valid, reliable, and suitable for further structural testing.

Table 3. Results of the Discriminant Validity Test-HTMT

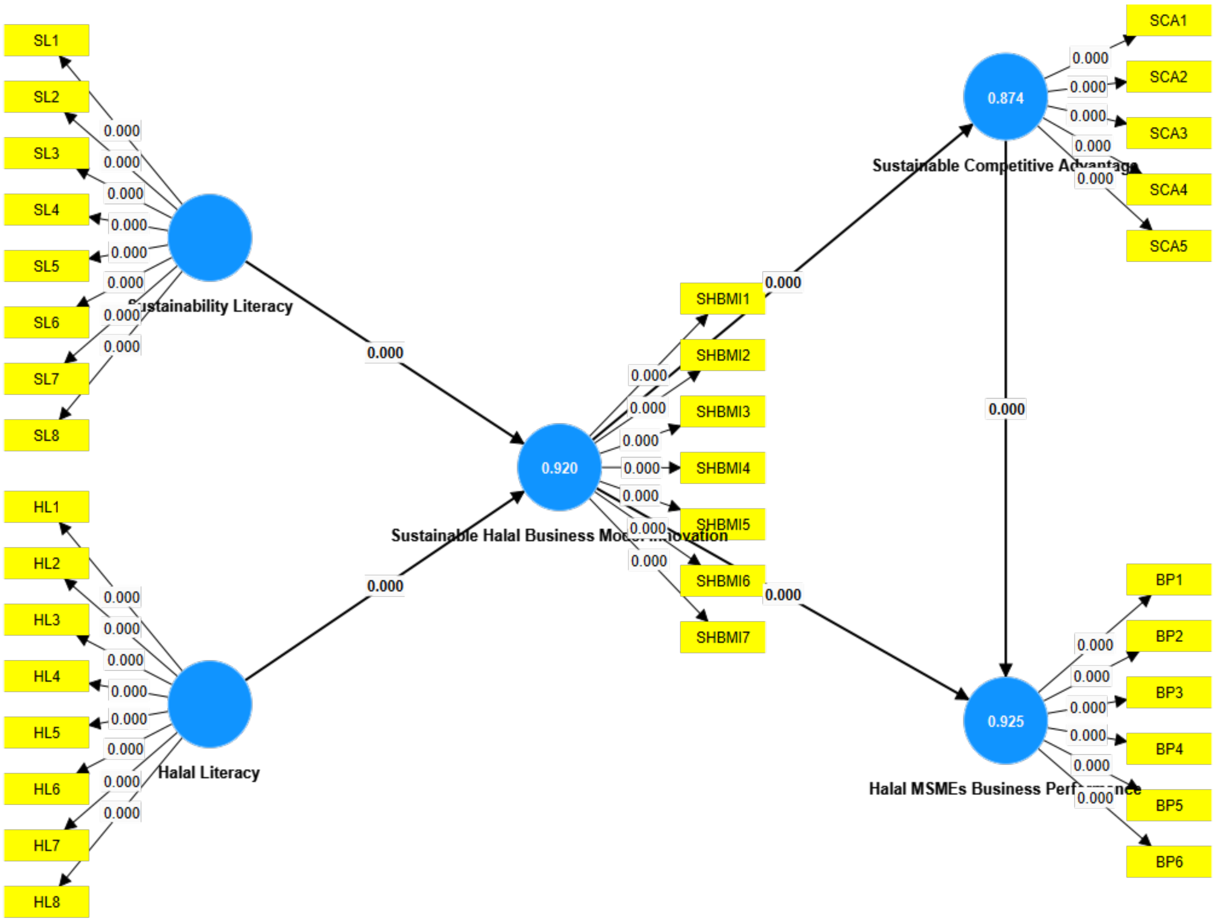
	HL	BP	SL	SCA	SHBMI
HL					
BP	0.797				
SL	0.603	0.599			
SCA	0.712	0.746	0.695		
SHBMI	0.698	0.709	0.716	0.689	

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 evaluated causal relationships among constructs and their contributions to dependent variables. The results showed 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.



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	f²	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) is used to evaluate not only a construct's importance 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 greatest impact on target achievement (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).

Table 6 shows that Sustainability Literacy is most important to SHBMI (0.532), followed by Halal Literacy (0.438). In performance, Halal Literacy is slightly higher (65,181) than Sustainability Literacy (64,679). These data show that sustainability literacy influences halal business model innovation more, but its performance lags slightly. MSME development should thus focus on boosting Sustainability Literacy performance to support sustainable halal business innovation. The IPMA analysis guides MSME managers in allocating resources and prioritizing impactful interventions.

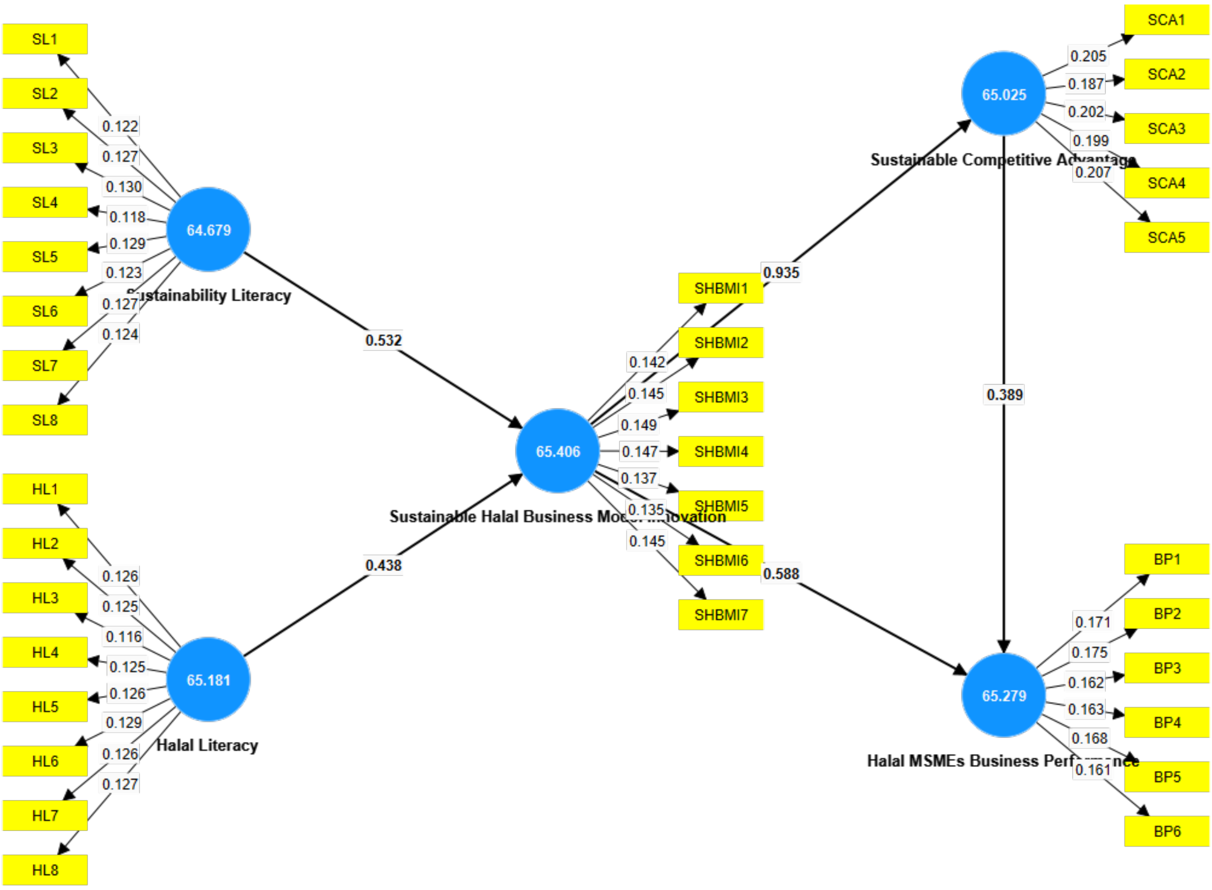


Figure 3. IPMA Modeling (Sustainable Halal Business Model Innovation Construction Target)

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 emphasized that the halal MSME development strategy must focus on improving attitudes, behaviors, and procedural understanding in both halal and sustainability literacy, as the combination of importance and performance will maximize the impact on sustainable halal business innovation. Detailed indicator-level analysis provides MSME managers with concrete guidance for effective resource allocation and intervention.

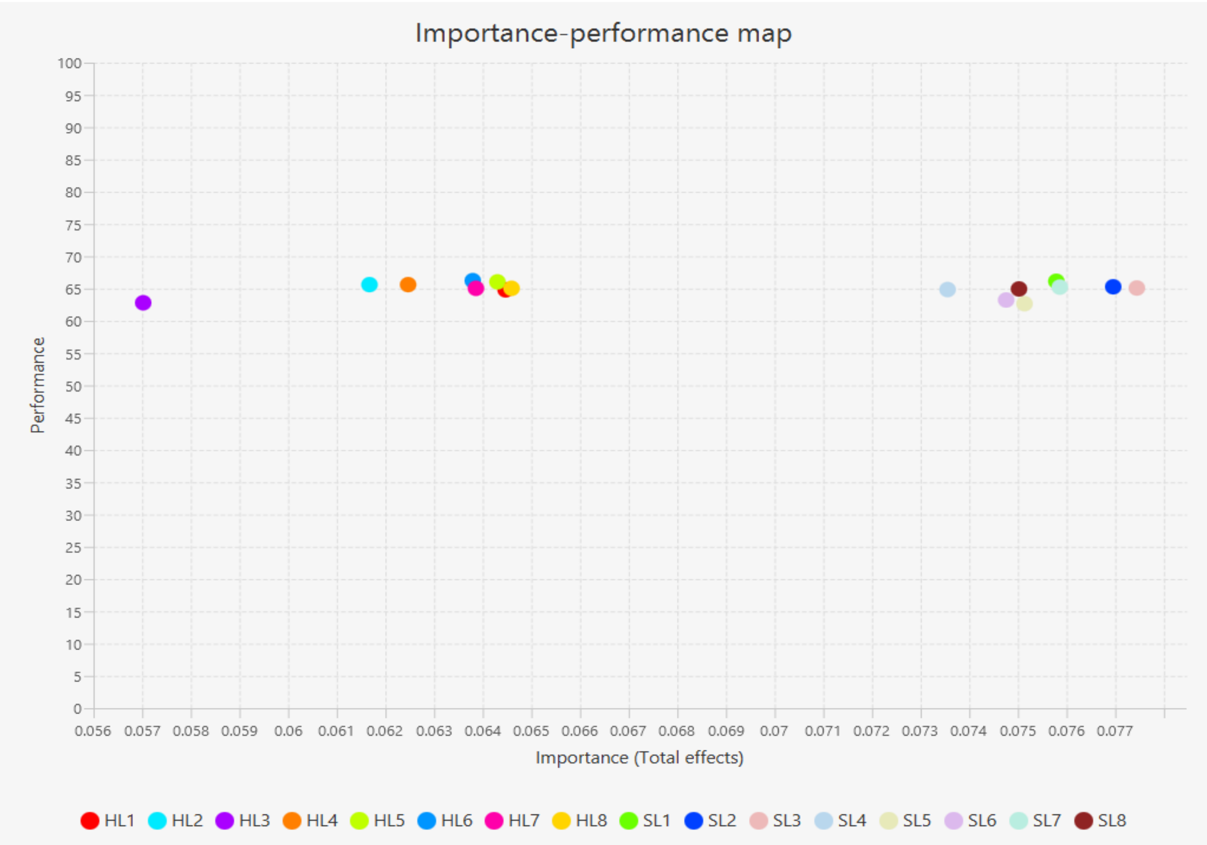


Figure 4. IPMA Matrix Level Indicator (Construction Target Sustainable Halal Business Model Innovation)

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

Indicators that combine high importance with only moderate performance represent key areas for improvement, as improving them 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, thereby enhancing 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 the 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 result implies that sustainability literacy not only enhances adaptability and innovation but also equips MSMEs to meet evolving market needs. Previous literature supports this, showing 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). The significant influence of Sustainability Literacy on SHBMI suggests that targeted training and educational programs can effectively boost halal business innovation, providing a clear strategy for policymakers and MSME support institutions. These findings also verify the importance of the owner mindset in building business models that deliver both profitability and broader sustainability.

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. Clear implications include the need for targeted education and mentoring programs on halal standards and certification, as well as strategies for integrating halal principles into operations to boost MSMEs' innovation capacity. In practice, strong halal literacy enables MSMEs to better respond to market trends demanding safe, sustainable, high-quality halal products, thereby enhancing competitiveness. Therefore, halal literacy is identified not just as important knowledge, but as a practical foundation for developing sustainable, competitive halal business models in the contemporary market.

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) ($\beta = 0.588$, $t = 14.402$, $p < 0.001$; $f^2 = 0.486$). Practically, this demonstrates that integrating sustainability and halal compliance into business models strengthens competitive positions and directly improves multiple aspects of business performance, such as financial returns, operational efficiency, and consumer loyalty. For MSMEs, adopting SHBMI could lead to increased turnover and profitability, thereby providing a concrete strategy for success in the halal business sector. This aligns with the literature indicating that sustainable business innovation is crucial for superior performance in small and medium-sized businesses (Bashir, Alfalih, & Pradhan, 2022; Chen, Li, & Shahid, 2024; De Chiara, 2021; Sumarsono, Kasali, & Ezni Balqiah, 2023). Additionally, implementing halal principles in innovation fosters trust and legitimacy, directly translating into lasting business growth.

Hypothesis 5 confirms that Sustainable Competitive Advantage also has a positive and significant influence on Business Performance ($\beta = 0.389$, $t = 9.332$, $p < 0.001$; $f^2 = 0.214$). This implies that competitive advantage derived from SHBMI partially mediates the relationship between innovation and performance, enabling MSMEs to sustain growth and long-term profitability by leveraging unique capabilities. For practitioners, this highlights the importance of focusing not just on innovation but also on building and maintaining competitive advantages for continued success. These findings align with dynamic capabilities theory, underscoring the need for organizations to continually adapt and reconfigure core competencies to remain competitive (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 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 theories of business literacy and context-specific halal literacy. A deep understanding of sustainability and halal compliance principles not only enhances innovation capabilities but also provides a strategic basis for competitive advantage.

Second, SHBMI's strong influence on Sustainable Competitive Advantage (SCA) (β = 0.935) highlights that sustainable halal business model innovation is more than an operational practice. It is a unique resource that aligns with the Resource-Based View (RBV) perspective. This shows that combining halal compliance with sustainability principles creates dynamic capabilities that support long-term competitive advantage. Third, SHBMI directly and indirectly impacts Business Performance. This underscores 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. It also provides 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 transparently track halal compliance for consumers. 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 the dynamic capabilities perspective, suggesting that integrating halal knowledge and sustainability yields 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 findings, three priorities are recommended. First, halal MSME actors should strengthen their sustainability and halal literacy through targeted training, mentoring, and practical learning to fully apply these principles in their operations. Second, relevant institutions should create integrated programs that combine halal education, sustainable business practice, and model innovation. Third, policies should prioritize incentives, sharia-compliant financing, and support for digitalization to enhance competitive advantage and long-term business performance. Future studies should explore additional regions and variables to deepen the understanding of halal MSME dynamics in Indonesia.

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