

Measuring the Dimensions of Success in Halal Food Business Sustainability: E-commerce Adoption, Halal Food Certificates, and Islamic Entrepreneurship Spirituality

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ABSTRACT

The sustainability of the halal food business is faced with several crucial challenges. E-commerce adoption is a vital aspect that is often hampered by infrastructure limitations. Food certification is often hampered by complex bureaucratic processes that take a long time. Islamic entrepreneurial spirituality has not been deeply integrated into business practices. This study aims to examine the correlation between e-commerce adoption aspects, halal food certifications, and Islamic entrepreneurial spirituality in promoting the sustainability of the Halal Food Business in Lampung Province, Indonesia. The research methodology used in this research is quantitative, using SmartPLS 3.0 software. Primary data collection was carried out by taking a sample of respondents, namely Halal Food MSME business actors in Lampung Province, Indonesia, using a purposive sampling method. A total of 300 samples were used for this research. Data was obtained through the use of a Google Form, with indicator assessment carried out using a Likert scale. Research findings show that there is a relationship between the dimensions of e-commerce adoption, halal food certificates and Islamic entrepreneurial spirituality on the sustainability of halal food businesses in Lampung Province, Indonesia.

Keywords: e-commerce adoption, halal food certificate, islamic entrepreneurship spirituality, business sustainability, halal food.

INTRODUCTION

The halal food industry in Indonesia has experienced rapid growth, and this phenomenon continues with increasingly mature and structured developments. As a country with a majority Muslim population, Indonesia views the importance of developing a halal food business not only as an economic opportunity but also as a religious and social commitment. The sustainability of the halal food business in Indonesia no longer only focuses on fulfilling halal standards but also on integration with broader sustainability principles, including economic, social, technological, and environmental aspects. In the

context of economic sustainability, the halal food business in Indonesia is experiencing product diversification and market expansion. Business actors are starting to combine innovation in production with compliance with Islamic law. The sustainability of the halal food business also focuses on increasing public awareness about the importance of consuming halal products¹. Consumer education is not only focused on the Muslim community but also the wider community, which is starting to pay attention to health, hygiene, and ethical aspects in food production. This phenomenon reflects not only economic growth, but also profound social and cultural changes in society. Aspects of globalization and market integration also play an important role in the development of the halal food business. Indonesia is not only focusing on the domestic market but also intensifying efforts to export halal food to international markets. This is marked by an increase in the number of Indonesian companies participating in various international halal food exhibitions as well as an increase in halal certification to enter the global market. This strategy not only increases the visibility of Indonesian halal products but also opens up wider market opportunities.²

The sustainable development of the halal food business in Lampung Province reflects a strategic integration of religious values and economic sustainability. Responding to global and local demand for ethical food production, Lampung has aligned its industry with diverse market needs through government initiatives, private sector collaboration, and community support. This synergy has driven notable growth in the region's halal food sector, mirroring national trends while maintaining its distinct regional character.³ As one of the provinces in Sumatra with strategic access to export markets and abundant natural resources, Lampung has taken advantage of its position to develop a sustainable halal food industry. This has not only attracted the attention of the domestic market but also internationally, especially in ASEAN and Middle Eastern countries. The halal food industry in Lampung is supported by strong local production, all of which is processed in accordance with Islamic law. From an economic perspective, the halal food business in Lampung has become a catalyst for regional economic growth. The local government has identified the halal food sector as one of the economic drivers and has provided incentives for entrepreneurs to develop or start businesses in this sector.⁴

¹ Andry Alamsyah, Naufal Hakim, and Ratih Hendayani, "Blockchain-Based Traceability System to Support the Indonesian Halal Supply Chain Ecosystem," *Economies* 10, no. 6 (2022).

² Junaid Akbar et al., "Global Trends in Halal Food Standards: A Review," *Foods* 12, no. 23 (2023): 1-15.

³ Hashed Mabkhot, "Factors Affecting the Sustainability of Halal Product Performance: Malaysian Evidence," *Sustainability (Switzerland)* 15, no. 3 (2023).

⁴ La Ode Nazaruddin and Maria Fekete-farkas, "The Future Direction of Halal Food Additive and Ingredient Research in Economics and Business: A Bibliometric Analysis," *Multidisciplinary Digital Publishing Institute (MDPI)* 15, no. 2 (2023).

In Lampung Province, the sustainability of the halal food business faces a number of complex issues across various socio-economic and environmental aspects. Food business sustainability is a complex and multidimensional concept that refers to the capacity of a business in the food industry to survive and thrive in the long term, while ensuring that its operations and business strategies do not harm the environment, society and the economy. This concept is integrated with broader sustainable development principles, which emphasize the importance of meeting the needs of the current generation without compromising the ability of future generations to meet their needs. Economic issues related to price volatility and market access⁵. Halal food producers in Lampung often face volatility in raw material prices which can disrupt production and damage the financial stability of small businesses. In addition, although there is a wide market for halal products, many local producers find it difficult to penetrate the wider market due to limited production and marketing capacity. Furthermore, there are also social issues related to employment in the halal food industry. Many workers in this sector work in less than optimal conditions, with little job protection and limited access to professional training. This not only affects workers' well-being but also the quality of the products produced, which can hinder the industry's ability to develop⁶.

The sustainability of the halal food business is multidimensional, shaped by interrelated factors such as e-commerce adoption, halal certification, and Islamic entrepreneurial spirituality. Each plays a crucial role in ensuring business success and resilience in the competitive halal industry. Among them, e-commerce adoption serves as a major catalyst for transformation, enabling businesses to expand market reach, attract wider consumers, and improve operational efficiency at lower costs. By integrating digital technology and online platforms, halal food enterprises can modernize their operations and enhance customer interaction, reflecting a global shift in how companies conduct and sustain their business activities.⁷

E-commerce allows halal food businesses to expand their markets beyond traditional geographic boundaries. With the online platform, halal food products can be accessed by global consumers who are looking for food alternatives that comply with Islamic law, without being limited by the physical location of the store. This is very important considering the large and widespread global Muslim population, as well as the increasing interest of non-Muslim consumers

⁵ Andi Maryam and Sumar'in Sumar'in, "Analysis of Halal Literacy Level on Halal Awareness and Use of Halal Products," *IQTISHODUNA: Journal of Islamic Economics* 11, no. 1 (2022): 85.

⁶ Silvana Secinaro and Davide Calandra, "Halal Food: Structured Literature Review and Research Agenda," *British Food Journal* 123, no. 1 (2021): 225–243.

⁷ Wei Hung Chen et al., "Influence Factors of Small and Medium-Sized Enterprises and Micro-Enterprises in the Cross-Border E-Commerce Platforms," *Journal of Theoretical and Applied Electronic Commerce Research* 18, no. 1 (2023): 416–440.

in halal products because they are considered more hygienic and ethical. E-commerce supports higher operational efficiency. By using a digital inventory management system, halal food businesses can optimize their stock, reduce waste, and adjust production based on observed demand trends.⁸ Additionally, e-commerce reduces the need for physical retail space, which can reduce significant overhead costs such as rent, utilities, and building maintenance, allowing for more efficient allocation of resources. Adoption of e-commerce helps halal food businesses strengthen brand reputation and trust. The online platform provides a space for businesses to present complete information about their products' compliance with halal standards, manufacturing processes and raw material sources. This Transparency is highly appreciated by consumers who care about the authenticity and integrity of halal products. Additionally, a strong online presence through a professional website and social media helps build a strong and trustworthy brand image.⁹

The adoption of e-commerce enhances market reach and efficiency for halal food businesses, yet it also introduces new challenges. Strict halal regulations require careful validation, which becomes complex in online platforms involving multiple vendors. This complexity increases the risk of non-halal products entering the market and can undermine consumer trust in halal labels within e-commerce environments.¹⁰ Consumer trust is vital in the halal food industry, encompassing both product authenticity and compliance with halal standards. However, the impersonal nature of e-commerce often reduces consumer confidence due to limited interaction and verification of sellers. This can weaken loyalty and threaten business sustainability. Moreover, the digital shift creates social and economic disparities, as small traditional traders lacking digital resources struggle to compete, leading to potential market polarization favoring larger, tech-savvy businesses.¹¹

Halal certification is a key element in the halal food industry, serving not only as proof of sharia compliance but also as a driver of business sustainability. It builds consumer trust, ensures regulatory adherence, expands market access, and promotes ethical and innovative business practices. Thus, halal certificates function as both a religious guarantee and a strategic tool for long-term

⁸ Georgeta Soava, Anca Mehedintu, and Mihaela Sterpu, "Analysis and Forecast of the Use of E-Commerce in Enterprises of the European Union States," *Sustainability (Switzerland)* 14, no. 14 (2022): 1–29.

⁹ Adrian Liviu Scutariu et al., "A Cluster Analysis Concerning the Behavior of Enterprises with E-Commerce Activity in the Context of the Covid-19 Pandemic," *Journal of Theoretical and Applied Electronic Commerce Research* 17, no. 1 (2022): 47–68.

¹⁰ Lavinia Javier Cueto et al., "Digital Innovations in MSMEs during Economic Disruptions: Experiences and Challenges of Young Entrepreneurs," *Administrative Sciences* 12, no. 1 (2022).

¹¹ Saffira Annisa Bening et al., "E-Commerce Technologies Adoption Strategy Selection in Indonesian SMEs Using the Decision-Makers, Technological, Organizational and Environmental (DTOE) Framework," *Sustainability (Switzerland)* 15, no. 12 (2023).

competitiveness in the halal food sector.¹² Consumers in the halal food market are often very concerned about product compliance with sharia law. A halal certificate provides a guarantee that the product is produced in accordance with Islamic law, thereby increasing consumer trust and satisfaction. This trust is essential for retaining repeat customers and attracting new ones, which in turn supports the long-term growth and stability of the business. Halal certification opens up access to new markets, especially in countries with significant Muslim populations. Countries such as Indonesia, Malaysia, the Middle East, and several countries in Africa and Europe have strict regulations regarding the import of halal products.¹³ Halal certification allows companies to qualify for entry into this market and compete in the global arena, expanding their geographic and demographic reach, and increasing revenue potential. From a sustainability and ethical perspective, companies that obtain halal certification typically must follow production practices that not only meet halal standards, but are also often more ethical and sustainable. This process includes efficient use of resources, responsible waste processing, and attention to animal welfare and the environment. These practices not only increase operational efficiency but also strengthen a positive image in the eyes of consumers who are increasingly aware of sustainability issues¹⁴.

Despite its vital role, halal certification is not always effective in ensuring long-term business sustainability. The presence of multiple certifying bodies with inconsistent standards creates confusion and weakens consumer trust, as differing criteria between countries or institutions blur the definition of what is truly halal, reducing the overall credibility of certification systems.¹⁵ The absence of global halal certification standards hinders companies from competing in international markets. Differing national guidelines complicate global marketing, limit market access, and weaken business sustainability. Moreover, inconsistent monitoring and weak enforcement in some countries undermine the integrity and credibility of halal certificates, reducing their effectiveness in supporting long-term consumer trust and business growth.¹⁶

¹² Ali Abdallah, "Has the Lack of a Unified Halal Standard Led to a Rise in Organized Crime in the Halal Certification Sector?," *Forensic Sciences* 1, no. 3 (2021): 181–193.

¹³ Christian Bux et al., "Halal Food Sustainability between Certification and Blockchain: A Review," *Sustainability (Switzerland)* 14, no. 4 (2022): 1–18.

¹⁴ Haruna Babatunde Jaiyeoba, Moha Asri Abdullah, and Abdul Razak Dzuljastri, "Halal Certification Mark, Brand Quality, and Awareness: Do They Influence Buying Decisions of Nigerian Consumers?," *Journal of Islamic Marketing* 11, no. 6 (2020): 1657–1670.

¹⁵ Muhammad Masyhuri and Arie Risdiyanti, "Halal Certification Challenges for Javanese Muslim Entrepreneurs in a Phenomenological Perspective," *IQTISHODUNA: Journal of Islamic Economics* 11, no. 2 (2022): 181–194.

¹⁶ Abid Haleem, Mohd Imran Khan, and Shahbaz Khan, "Halal Certification, the Inadequacy of Its Adoption, Modeling and Strategising the Efforts," *Journal of Islamic Marketing* 11, no. 2 (2020): 393–413.

Spirituality in Islamic entrepreneurship guides ethical business conduct in the halal food industry by integrating core Islamic values honesty, justice, and social responsibility into daily operations. Beyond ensuring halal compliance, it promotes transparency and ethical integrity in all business processes, reinforcing both consumer trust and long-term sustainability.¹⁷ Transparency fosters consumer trust and loyalty, forming the foundation of sustainable business. Social responsibility, expressed through philanthropy and community empowerment, enables halal businesses to align profitability with societal welfare, strengthening their public image. Moreover, the principle of justice in wealth distribution promotes fairness and employee motivation, creating an ethical and balanced work environment that supports long-term operational sustainability.¹⁸

While Islamic entrepreneurial spirituality strengthens ethical business foundations, its effectiveness faces challenges. Value conflicts, inconsistent implementation, and market diversity can limit its impact on sustainability. In particular, the tension between fairness and profit-driven competition reflects the difficulty of balancing spiritual principles with modern business demands.¹⁹ Halal businesses often face tensions between efficiency and fairness, where cost-cutting decisions may compromise ethics and harm long-term reputation. The lack of universal Islamic standards—due to diverse sharia interpretations—creates inconsistency across markets, complicating global operations. Moreover, strict adherence to spiritual principles may limit appeal to non-Muslim consumers, reducing market potential and hindering sustainable business growth.²⁰

Lampung Province, strategically located between Sumatra and Java with a large Muslim population, holds strong potential as a halal food industry hub. However, this potential remains underutilized, particularly in digitalization and e-commerce market expansion. Hence, research is urgently needed to examine how e-commerce adoption, halal certification, and Islamic entrepreneurial spirituality interact to enhance business sustainability while maintaining

¹⁷ Awal Fuseini, Phil Hadley, and Toby Knowles, "Halal Food Marketing: An Evaluation of UK Halal Standards," *Journal of Islamic Marketing* 12, no. 5 (2020): 977–991.

¹⁸ Achmad Sani and Vivin Maharani Ekowati, "Spirituality at Work and Organizational Commitment as Moderating Variables in the Relationship between Islamic Spirituality and OCB IP and Influence toward Employee Performance," *Journal of Islamic Marketing* 11, no. 6 (2020): 1777–1799.

¹⁹ Abu Hanifah Ayob and Abrar Ali Saiyed, "Islam, Institutions and Entrepreneurship: Evidence from Muslim Populations across Nations," *International Journal of Islamic and Middle Eastern Finance and Management* 13, no. 4 (2020): 635–653.

²⁰ Donard Games, Geoffrey Soutar, and Joanne Sneddon, "Personal Values and SME Innovation in a Muslim Ethnic Group in Indonesia," *Journal of Entrepreneurship in Emerging Economies* 13, no. 5 (2021): 1012–1032.

consumer trust and halal compliance.²¹ Halal certification plays a crucial role in expanding market access and building consumer trust. In Lampung's developing halal industry, understanding its impact on consumer behavior and business sustainability is essential for improving certification practices. Meanwhile, integrating Islamic entrepreneurial spirituality—rooted in ethics and social responsibility—into business models aligns with Lampung's strong community and religious values, enhancing both acceptance and long-term success of halal food enterprises.²² Research on how Islamic values are applied in daily business practices is essential to promote a holistic and sustainable approach. The interaction among e-commerce, halal certification, and Islamic entrepreneurial spirituality can create powerful synergies that enhance efficiency, reduce costs, and improve consumer satisfaction. However, these relationships remain underexplored. Deeper investigation will not only clarify their integration but also guide policy formulation and infrastructure development to strengthen local economic growth and ensure the sustainable advancement of the halal food industry in Lampung.²³

E-commerce adoption expands market reach for halal food businesses, enabling efficient operations and broader consumer access with minimal infrastructure costs. However, maintaining compliance with halal regulations remains a key challenge, highlighting the crucial role of halal certification in ensuring product authenticity and sustaining consumer trust.²⁴ Halal certification is essential for building consumer trust and credibility, ensuring compliance with Islamic law, improving market penetration, and providing a competitive advantage through guaranteed quality and safety. Meanwhile, Islamic entrepreneurial spirituality—anchored in honesty, transparency, social responsibility, and environmental concern—strengthens ethical business conduct and brand reputation. This value-based approach enhances consumer loyalty and supports sustainable growth in the halal food industry.²⁵ The integration of e-commerce, halal certification, and Islamic entrepreneurial spirituality forms a synergistic ecosystem that enhances halal business sustainability. E-commerce expands market access, certification builds trust and compliance, while spirituality strengthens ethics and reputation. Together, they

²¹ Arsalan Hussain, Arfan Shahzad, and Rohail Hassan, "Organizational and Environmental Factors with the Mediating Role of E-Commerce and SME Performance," *Journal of Open Innovation: Technology, Market, and Complexity* 6, no. 4 (2020): 1-21.

²² Haleem, Khan, and Khan, "Halal Certification, the Inadequacy of Its Adoption, Modeling and Strategizing the Efforts."

²³ Dwi Suhartanto et al., "Loyalty Formation toward Halal Food: Integrating the Quality-Loyalty Model and the Religiosity-Loyalty Model," *British Food Journal* 122, no. 1 (2020): 48-59.

²⁴ José Manuel Santos-Jaén et al., "The Business Digitalization Process in SMEs from the Implementation of E-Commerce: An Empirical Analysis," *Journal of Theoretical and Applied Electronic Commerce Research* 18, no. 4 (2023): 1700-1720.

²⁵ Marco Tieman, "Measuring Corporate Halal Reputation: A Corporate Halal Reputation Index and Research Propositions," *Journal of Islamic Marketing* 11, no. 3 (2020): 591-601.

boost market resilience, support long-term sustainability, and promote a profitable yet responsible halal food industry.²⁶

This study aims to examine the relationship between e-commerce adoption, halal certification, and Islamic entrepreneurial spirituality in sustaining halal food businesses in Lampung Province. Unlike previous studies with broader scopes, this research focuses on Lampung's unique local context – a region with strong economic potential and a large Muslim population – offering deeper insights into how these dimensions interact to support business sustainability.²⁷ This study fills an existing gap by integrating e-commerce, halal certification, and Islamic entrepreneurial spirituality into a single analytical model to assess their combined impact on halal business sustainability. Unlike prior studies that examined these factors separately, this research provides a comprehensive understanding of their interconnection and collective role in strengthening sustainability within the halal food sector.²⁸

Theoretically, this research deepens understanding of how digital technology and Islamic ethical values interact to promote business sustainability within a sharia framework, revealing both synergies and tensions between innovation, regulation, and ethics. It shows how halal businesses in Lampung adapt traditional principles to modern digital contexts for sustainable growth. Practically, the study offers guidance for entrepreneurs and policymakers to strengthen the halal industry by integrating e-commerce, upholding certification credibility, and applying Islamic ethics. It recommends strategies such as digital support, certification reform, and ethical entrepreneurship training, while promoting collaboration to enhance competitiveness and long-term sustainability in Lampung and beyond.

METHODS

The research adopts a quantitative design and an associative approach in seeing cause and effect relationships²⁹. There is an independent variable or influence variable, namely e-commerce adoption(X1), halal food certificate (X2) and Islamic spiritual entrepreneurship (X3) as well as the dependent variable as the influenced variable, namely the sustainability of the halal food business (Y). The research was conducted in Lampung Province, Indonesia. Primary data is data collected directly from individuals participating in research and

²⁶ Emiliya Ahmadova and Khatai Aliyev, "Determinants of Attitudes towards Halal Products: Empirical Evidence from Azerbaijan," *Journal of Islamic Marketing* 12, no. 1 (2021): 55-69.

²⁷ Tomo Kawane et al., "Digitization as an Adaptation and Resilience Measure for MSMEs amid the COVID-19 Pandemic in Japan: Lessons from the Food Service Industry for Collaborative Future Engagements," *Sustainability (Switzerland)* 16, no. 4 (2024).

²⁸ Shuko Takeshita, "Halal Certification or Ingredient Disclosure: A Comparative Analysis of Serving Food in Japanese Tourist Destinations," *Journal of Islamic Marketing* 11, no. 3 (2020): 765-781.

²⁹ Sugiyono, *Quantitative, Qualitative and Combination Research Methods* (Bandung: Alphabeta, 2017).

subsequently used. Using purposive sampling technique with certain considerations, namely: MSMEs have operated in Lampung Province for a minimum of 3 years, MSMEs are focused on selling halal food, MSMEs have integrated an e-commerce platform, MSMEs have a halal certificate from the Halal Product Guarantee Agency (BPJH), the MSME actor is a Muslim which explicitly applies Islamic entrepreneurial principles such as justice, honesty and social responsibility. Bougie and Now (2019)³⁰ and Roscoe (1975)³¹ states that a suitable sample size in research is between 30 and 500 samples. Therefore, based on these sampling techniques and theories, the sample used and representative in this research is as many as 300 respondents MSME actors in Lampung Province who run a halal food business. Access to Google Forms was used for the data collection process, and a Likert Scale was used to evaluate the indicators. This research used SmartPLS 3.0 to analyze data through the Partial Least Squares (PLS) method, suitable for small or non-normal samples. The analysis focused on testing validity and reliability to ensure data accuracy. Convergent validity was assessed through factor loadings, where values above 0.70 indicate strong correlation between indicators and latent variables. Reliability testing used Cronbach's Alpha and Composite Reliability to measure internal consistency, with values above 0.70 considered acceptable. Composite Reliability is preferred for producing more precise estimates, especially when data deviate from normal distribution or involve complex constructs. Overall, this analytical approach ensures the research model's measurement accuracy, consistency, and structural validity.³².

In Partial Least Squares (PLS) analysis, inner model testing evaluates the strength and validity of relationships among latent variables to determine how well the model fits the data. The main indicator is the R-Square value, which shows how much variance in the dependent variable is explained by independent variables—higher values indicate better model fit. Additionally, hypothesis testing using p-values and t-statistics assesses the significance of each relationship. A p-value < 0.05 and t-statistic > 1.96 (at a 95% confidence level) indicate a statistically significant link between variables. Together, R-Square, p-values, and t-statistics in SmartPLS 3.0 provide a robust framework for validating the reliability and predictive power of the proposed structural model.³³

RESULTS AND DISCUSSION

Validity testing is a verification process that is very important in research to ensure that the measuring instruments used can measure what they are

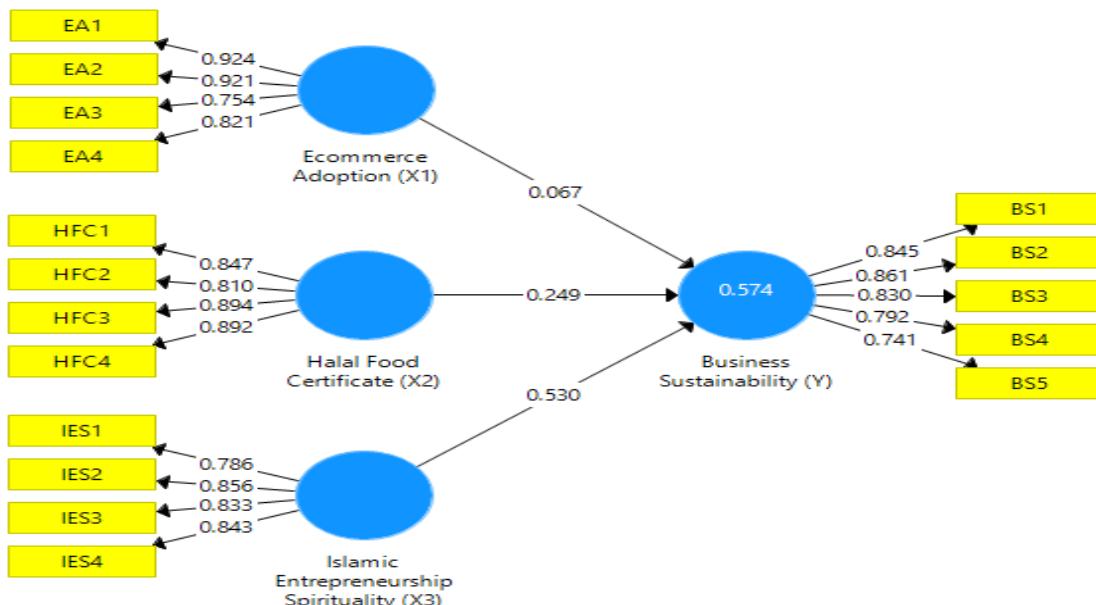
³⁰ Bougie and Now (2019)

³¹ Roscoe (1975)

³² Rahmad Solling Hamid, Variant-Based Structural Equation Modeling (SEM) Basic Concepts and Applications of the Smart PLS Program 3.2.8. In Business Research (Indonesian Writers Incubator, 2019).

³³ Suryani Hendriyadi, Structural Equation Modeling: *CB-SEM and PLS-SEM Lisrel and Smart PLS applications* (Yogyakarta: Magistra Insania Press, 2019).

supposed to measure. This process is essential to ensure accuracy and trust in research results. This verification process not only helps in identifying and minimizing potential bias, but also strengthens the theoretical basis of the measurements used in the research. Through the implementation of a comprehensive validity testing process, researchers can significantly increase confidence in the instruments used and the results produced.



Source: Data Processing Results (2024)

Figure 1. Test results from the measurement model

Validity testing of questionnaire questions is an essential critical step in the research process to ensure the integrity and reliability of the data collected. Questionnaire validity determines the extent to which the instrument is able to accurately measure the desired variable without being contaminated by irrelevant factors. This process aims to confirm that the questions asked truly reflect and measure the targeted concepts in accordance with the research objectives. Without adequate validity, research results may be unreliable and misleading, thereby reducing the effectiveness and usefulness of the research. Through the methodical implementation of these validity tests, researchers can increase confidence in questionnaires as a data collection tool. This process ensures that the data produced is valid and can be used to conclude the phenomenon under study. High validity of questionnaires not only increases the reliability of research results but also helps in maintaining the overall scientific integrity of the research process.

Table 1. Results of Validity Test Implementation

Variable	Indicator	Loading Value	Information
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	EA.1	0.924	Valid
Ecommerce Adoption (X1)	EA.2	0.921	Valid
	EA.3	0.754	Valid
	EA.4	0.821	Valid
	HFC.1	0.847	Valid
Halal Food Certificate (X2)	HFC.2	0.810	Valid
	HFC.3	0.894	Valid
	HFC.4	0.892	Valid
	IES.1	0.786	Valid
Islamic Entrepreneurship Spirituality (X3)	IES.2	0.856	Valid
	IES.3	0.833	Valid
	IES.4	0.843	Valid
	BS.1	0.845	Valid
	BS.2	0.861	Valid
Business Sustainability (Y)	BS.3	0.830	Valid
	BS.4	0.792	Valid
	BS.5	0.741	Valid

Source: Data Processing Results (2024)

In a study that explores the relationship between the dimensions of e-commerce adoption (X1), halal food certificates (X2), Islamic spiritual entrepreneurship (X3) and halal food business sustainability (Y), the importance of validity testing is crucial. The results of this validity test are presented in Table 4, where the indicators for each variable show a value above 0.70, which is a strong indication that the questions in the survey or questionnaire are able to measure the targeted construct well. A validity value above 0.70 indicates that each item in the questionnaire is very relevant to the construct being measured. This means that the responses given by respondents effectively reflect the specific dimensions of e-commerce adoption, halal food certificates, and Islamic spiritual entrepreneurship in the context of halal food business sustainability.

With this high validity, it can be assumed that the data collected will provide reliable and valid insight into the influence of independent variables on the dependent variable, namely business sustainability. The importance of achieving high validity values in this research is not only related to methodological integrity but also to the applicability of the results. With valid instruments, this research is able to provide evidence-based recommendations to stakeholders in the halal food industry. This includes more effective policies to increase e-commerce adoption, strategies for wider implementation of halal food certificates, and integrating Islamic entrepreneurial values into daily business practices. Furthermore, this in-depth validity verification process also gives researchers and readers confidence that the conclusions drawn based on data analysis will have high practical relevance. Thus, strategic decisions made by halal food MSME owners can be informed by data that is not only accurate but also highly relevant to their operational context.

Table 2. Results of Reliability Test Implementation

Variable	Cronbach's Alpha	Composite Reliability
Ecommerce Adoption (X1)	0.881	0.917
Halal Food Certificate (X2)	0.884	0.920
Islamic Entrepreneurship Spirituality (X3)	0.849	0.898
Business Sustainability (Y)	0.873	0.908

Source: Data Processing Results (2024)

Reliability testing is an important component that seeks to verify that the measuring instrument used can provide consistent results when applied to the same subject or object under comparable circumstances. This procedure ensures that measurements can be replicated with consistent results, thereby increasing confidence in the analysis and conclusions derived from the data. Variable stability plays an important role in determining the validity of overall research results, especially in the fields of social and business research. In research that focuses on the sustainability of halal food MSME businesses in Lampung Province, the reliability test, the results of which are listed in Table 5, shows a high level of consistency for each variable measured, as indicated by the Cronbach's Alpha and Composite Reliability coefficients. These two metrics help assess how well the items in each questionnaire scale work together to consistently measure a complex, multidimensional concept. The e-commerce adoption variable (X1) recorded a Cronbach's Alpha coefficient of 0.881 and a Composite Reliability coefficient of 0.917, indicating a very good level of reliability. This value indicates that the items in the e-commerce adoption scale have high internal consistency, so that respondents who provide consistent responses to one item tend to be consistent across other items in the same category. This is vital in the e-commerce context, where measurements must accurately describe the level of technology utilization and acceptance by MSMEs. Meanwhile, the halal food certificate variable (X2) achieved a Cronbach's Alpha coefficient of 0.884 and a Composite Reliability coefficient of 0.920, which shows that the questionnaire is able to measure reliably how well MSMEs implement and understand the need and benefits of halal certification. This high reliability score is essential to ensure that the data collected truly reflects compliance and the impact of halal certification on business operations.

The Islamic entrepreneurial spiritual variable (X3), with a Cronbach's Alpha coefficient of 0.849 and a Composite Reliability coefficient of 0.898, also shows strong reliability. Although slightly lower than the other two variables, this value is still considered high and indicates that the spiritual aspects of Islamic entrepreneurship, which are more subjective and diverse in interpretation, are measured in a consistent and reliable way by the research instrument. Finally, the halal food business sustainability variable (Y) in

Lampung Province also shows a very adequate level of reliability with a Cronbach's Alpha coefficient of 0.873 and a Composite Reliability coefficient of 0.908. This confirms that the scales used to measure business sustainability are capable of producing consistent data across multiple measurements, which is crucial for analyzes that rely on accurate and repetitive responses from the same sample under similar conditions. Overall, the high reliability test results for all these variables indicate that the instruments used in this study are adequate for the stated research objectives. This consistency allows researchers to have high confidence in interpreting results and making recommendations based on the data collected, with confidence that variability in responses is caused by valid individual or conditional differences, rather than by instability of the measuring instrument.

Table 3. Structural Model Test Results

Hypothesis	Original Sample	T - Statistics	P - Value
Ecommerce Adoption (X1) -> Business Sustainability (Y)	0.667	3,071	0,000
Halal Food Certificate (X2) -> Business Sustainability (Y)	0.849	3,252	0,000
Islamic Entrepreneurship Spirituality (X3) -> Business Sustainability (Y)	0.730	4,520	0,000

Source: Data Processing Results (2024)

In the context of research conducted in Lampung Province to examine the relationship between e-commerce adoption, halal food certificates, spiritual Islamic entrepreneurship and the sustainability of halal food businesses (Y), structural model testing shows significant and informative findings. Table 6 which presents the results of the analysis shows that there is a relationship between e-commerce adoption (X1) and the sustainability of the halal food business (Y) in Lampung Province, showing a very high coefficient of 0.667. This indicates that e-commerce adoption has a strong and positive influence on business sustainability. With a t-statistic value of 3.07 which far exceeds the critical threshold of 1.96, and a p-value of 0.000 which indicates high significance, these results confirm that the application of e-commerce technology is an important factor in supporting the sustainability of halal food businesses in the Lampung Province area. . Meanwhile, the halal food certificate variable (X2) also shows a very strong relationship with business sustainability, with a coefficient of 0.849. This confirms that the existence of a halal food certificate greatly influences the operational sustainability and growth of the halal food business. The strength of this relationship is supported by a t-statistic value of 3.252 and a p-value of 0.000, both of which strengthen the validity of the findings.

Furthermore, the Islamic entrepreneurial spiritual variable (X3) produces a coefficient of 0.730, indicating a significant and positive influence on the sustainability of the halal food business. With a very high t-statistic value of 4.520, which far exceeds the critical value, as well as a very low p-value, these results indicate that the integration of Islamic spiritual values in business practices not only strengthens business identity and values but also helps in extending the lifespan and success of the business in market competition. This structural model analysis provides strong empirical evidence that the adoption of e-commerce, halal food certificates, and spirituality in Islamic entrepreneurship are the three main pillars that support the sustainability of halal food businesses in Lampung Province. These findings are not only useful for stakeholders in the halal food industry but also for policy makers and business practitioners who seek to understand the factors that influence business sustainability in this sector.

Table. 7 Test Results from R-Square Values on Endogenous Variables

Variable	R Square	Adjusted R Square
Business Sustainability (Y)	0.774	0.762

Source: Data Processing Results (2024)

The test results presented in Table 7 of this study highlight an R-square value of 0.774, which is a significant indicator of a high level of correlation and determination between the variables studied. The finding of an R-square value of 0.774 or 77.4% in this study is a very significant indicator of the strength and relevance of the model being tested. This value indicates that the adoption of e-commerce (X1), halal food certificates (X2), and Islamic spiritual entrepreneurship (X3) together make a major contribution to the variability in the sustainability of halal food businesses (Y) in Lampung Province. In other words, around 77.4% of the variation in halal food business sustainability can be explained by these three independent variables, which reflects the existence of a strong and significant relationship between these variables and business sustainability. This determination level of 77.4% shows that the model developed has a very good predictive capacity for the phenomenon being studied. This provides high confidence in the validity of the theoretical model which proposes that the adoption of e-commerce technology, compliance with halal food standards, and the application of the spiritual principles of Islamic entrepreneurship are key factors influencing the sustainability of halal food businesses. The power of this model is critical in providing reliable insights for stakeholders and policymakers in devising effective strategies to support sustainable growth in the sector.

However, the remaining 22.6% of the variation not explained by this model underscores the importance of other factors that may influence the sustainability of halal food businesses. These variables may include external factors such as macroeconomic conditions, changes in government policy, or market trends that are not included in the research model. This shows that

although the model developed is robust, there is room for further refinement and integration of additional variables that could provide a more complete explanation of the phenomenon under study. This understanding is important for advanced researchers who may wish to expand this model or adapt it in different contexts. They need to consider the influence of other variables such as socio-economic factors, market competition, or changes in consumer preferences that may affect the sustainability of halal food businesses. Adding these variables can not only increase the precision of the model but also its relevance in various market or geographic conditions. Overall, the high R-square values in this study provide a significant contribution to the academic literature by confirming that e-commerce adoption, halal food certificates, and Islamic spiritual entrepreneurship are important determinants of the sustainability of halal food businesses.

E-commerce Adoption and Halal Food Business Sustainability

The research provides evidence that e-commerce adoption significantly enhances the sustainability of halal food businesses in Lampung Province. Strengthening technological infrastructure—including stable internet and accessible platforms—enables MSMEs to reach wider markets, manage transactions efficiently, and improve customer service. Moreover, product management and diversification through e-commerce increase business flexibility, reduce risks, and open new revenue opportunities, supporting long-term sustainability.

E-commerce adoption strengthens halal MSMEs in Lampung through effective digital marketing strategies—including social media, content marketing, and SEO—to enhance visibility, engagement, and brand awareness. Building online trust and security is equally crucial, as it shapes purchasing decisions and fosters long-term customer loyalty. By integrating technology, product management, and secure digital practices, halal food businesses gain strategic advantages for sustainable growth. Thus, e-commerce integration emerges not merely as a trend but as a strategic necessity for business sustainability.

The findings align with Fred Davis's Technology Acceptance Model (TAM, 1989), which highlights Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) as key factors influencing technology adoption. In the halal food context, entrepreneurs who perceive e-commerce as beneficial—improving efficiency, market reach, and performance—are more likely to adopt and integrate it to optimize sales and operations.³⁴ This directly contributes to business sustainability as it increases their capacity to access wider markets and meet

³⁴ Guych Nuryyev et al., "Blockchain Technology Adoption Behavior and Sustainability of the Business in Tourism and Hospitality SMEs: An Empirical Study," *Sustainability* (Switzerland) 12, no. 3 (2020).

customer needs more effectively and efficiently. Meanwhile, Perceived Ease of Use describes how easy it is for halal food entrepreneurs to use e-commerce solutions. If an e-commerce platform is perceived as easy and intuitive, entrepreneurs are more likely to adopt and continue using this technology. This ease of use lowers the barrier to entry for business owners who may not have a high level of technical expertise, allowing them to focus more on product development and customer service rather than troubleshooting technical issues.³⁵.

The adoption of e-commerce among halal food businesses is also strengthened by market dynamics and growing consumer demand for online accessibility. In this case, Perceived Usefulness and Perceived Ease of Use collaborate to increase adoption intentions and sustainable use of e-commerce technology. TAM theory provides a coherent explanation of how these perceptions influence business decisions and how this, in turn, affects the long-term sustainability of the business³⁶. Thus, the application of the Acceptance Model (TAM) Theory in the interpretation of the results of this research not only validates the relevance of the theory in the modern context but also underlines the importance of understanding end users' perceptions of new technologies. This understanding is critical for e-commerce platform developers and policy makers to design and implement solutions that are not only technically adequate but also tailored to the needs and convenience of users in the halal food industry, thereby maximizing adoption potential and supporting long-term business sustainability³⁷.

This finding is in line with research conducted (A. Hussain, 2022) showing that the relationship between e-commerce use and company performance is significantly positive. In addition, e-commerce use mediates the positive relationship between technology readiness, adoption costs, and firm performance³⁸. Research (J. Gao, 2023) provides evidence that e-commerce has a significant relationship with the financial performance and sustainability of MSMEs amidst the pandemic. Digital marketing strategies also appear to have a

³⁵ Sheshadri Chatterjee et al., "Adoption of Social Media Marketing for Sustainable Business Growth of Smes in Emerging Economies: The Moderating Role of Leadership Support," *Sustainability* (Switzerland) 13, no. 21 (2021).

³⁶ Umair Akram et al., "Impact of Digitalization on Customers' Well-Being in the Pandemic Period: Challenges and Opportunities for the Retail Industry," *International Journal of Environmental Research and Public Health* 18, no. 14 (2021).

³⁷ Mohd Nor Hakimin Bin Yusoff et al., "Psychological Traits and Intention to Use E-Commerce among Rural Micro-Entrepreneurs in Malaysia," *Journal of Theoretical and Applied Electronic Commerce Research* 16, no. 5 (2021): 1827–1843.

³⁸ Arsalan Hussain et al., "E-Commerce and SME Performance: The Moderating Influence of Entrepreneurial Competencies," *Administrative Sciences* 12, no. 13 (2022), <https://doi.org/10.3390/admsci1201001>.

major impact on the financial performance of MSMEs³⁹. Empirical studies (Y. Yang, 2023) show that digital platform service capabilities include supply chain communication and cost management. These capabilities also mediate the relationship between the convenience of digital platform services and the success of cross-border e-commerce companies. In addition, digital platform service proficiency and the ability to undergo digital transformation in cross-border e-commerce companies have an important and constructive influence on the company's success.

Halal Food Certificate and Halal Food Business Sustainability

The study confirms that halal certification significantly enhances the sustainability of halal food businesses in Lampung Province. Compliance with halal regulations not only fulfills legal requirements but also builds consumer trust and ensures adherence to ethical production standards. This credibility strengthens brand reputation and differentiates businesses in competitive markets, increasing customer loyalty, sales, and long-term sustainability.

Halal certification promotes market expansion, enabling access to local and global markets with strong halal demand, thus driving sales and reducing business risk. It also fosters customer loyalty, as consistent compliance builds trust, encourages repeat purchases, and generates positive word-of-mouth. Beyond legal compliance, halal certificates serve as a strategic marketing asset that enhances reputation, opens new opportunities, and supports the long-term sustainability of halal food businesses in Lampung's dynamic market.

The findings of this research are strengthened by theory Market Orientation, introduced and developed by John C. Narver and Stanley F. Slater in the early 1990s and combined with work by Ajay K. Kohli and Bernard J. Jaworski, provides an important framework for understanding how market orientation can influence success and success. business sustainability. This theory outlines three main components of market orientation: customer orientation, competitor orientation, and inter-functional coordination. This market orientation emphasizes the importance of understanding and meeting customer needs and monitoring competitor activity while ensuring that all parts of the organization are moving in harmony toward the same goals.⁴⁰ Based on market orientation theory, halal certification reflects a business's responsiveness to consumer needs for guaranteed halal products. It demonstrates customer orientation by aligning with consumers' religious and ethical values, while also enhancing competitive positioning. Certified businesses can better differentiate their products, gain

³⁹ Jianli Gao et al., "Impact of E-Commerce and Digital Marketing Adoption on the Financial and Sustainability Performance of MSMEs during the COVID-19 Pandemic: An Empirical Study," *Sustainability* (Switzerland) 15, no. 2 (2023).

⁴⁰ Marek Vokoun and Romana Píchová, "Market Orientation and Marketing Innovation Activities in the Czech Manufacturing Sector," *International Journal of Financial Studies* 8, no. 1 (2020).

consumer trust, and strengthen their advantage in an increasingly halal-conscious market, supporting overall business sustainability.⁴¹

Coordination between functions is also important in the context of halal certification. The process of earning and maintaining this certification requires good integration between various departments in the business, from production to marketing. Every aspect of business operations must be aligned with halal standards, demonstrating that coordination between functions not only strengthens internal operations but also builds external trust and credibility. Implementing market orientation in a halal food business with halal certification can improve business sustainability by strengthening relationships with customers, increasing market competition, and ensuring that internal operations run effectively⁴². This certification is not only a symbol of compliance with religious rules but also a business strategy that shows understanding and response to dynamic market needs. Thus, the relationship between Market Orientation Theory and the influence of halal food certificates on the sustainability of halal food businesses in Lampung Province confirms that a deep understanding of markets and customers, along with the ability to integrate these insights into business strategy and operations, is the key to success in this environment, a highly competitive and value-oriented market⁴³.

This finding is in line with a new study (M. Giyanti, 2021) showing that implementing halal standards will greatly improve operational performance. Improving operational efficiency can also stimulate improved market performance and financial results in small and medium enterprises (SMEs) in the food manufacturing industry⁴⁴. Research (M. Amer, 2023) shows that halal certification has a positive correlation with the financial and operational success of small and medium enterprises (SMEs). Additionally, operational performance can act as a mediator between certification and financial performance.⁴⁵

Islamic Entrepreneurship Spirituality and Sustainability of Halal Food Business

The research shows that the spiritual dimension of Islamic entrepreneurship significantly supports the sustainability of halal food

⁴¹ Yun Hee Cho and Joo Heon Lee, "A Study on the Effects of Entrepreneurial Orientation and Learning Orientation on Financial Performance: Focusing on Mediating Effects of Market Orientation," *Sustainability (Switzerland)* 12, no. 11 (2020): 1-19.

⁴² Zhiwen Li et al., "Ghanaian Smes amidst the Covid-19 Pandemic: Evaluating the Influence of Entrepreneurial Orientation," *Sustainability (Switzerland)* 13, no. 3 (2021): 1-27.

⁴³ Shiaw Tong Ha et al., "Knowledge Management Process, Entrepreneurial Orientation and Performance in SMS: Evidence from an Emerging Economy," *Sustainability (Switzerland)* 13, no. 17 (2021).

⁴⁴ Ida Giyanti et al., "Halal Standard Implementation in Food Manufacturing SMEs: Its Drivers and Impact on Performance," *Journal of Islamic Marketing* 12, no. 8 (2021): 1577-1602.

⁴⁵ Mahmoud Amer, "Linkage between Halal Quality Standard Certification and SME's Performance: Palestinian Food Halal Certified SME's Context," *Arab Gulf Journal of Scientific Research* (2023).

businesses in Lampung Province. Rooted in Islamic values, it emphasizes health, safety, risk management, and human welfare, ensuring product integrity and consumer trust. Ethical principles such as honesty, justice, and transparency strengthen stakeholder relationships and business reputation, while social responsibility – through zakat, charity, and community involvement – enhances public support. Collectively, these values foster customer loyalty, community trust, and long-term business stability, making Islamic spirituality a crucial foundation for sustainable growth in the halal food industry.

This study is supported by Mark Granovetter's Strength of Ties Theory (1973), which explains how interpersonal relationship strength affects information flow, opportunities, and resource access. In the context of Islamic entrepreneurial spirituality, the theory is relevant as it shows how social networks and trust-based ties facilitate the spread of innovation and best practices. Ethical and spiritual values in entrepreneurship reinforce strong ties within business networks through shared trust and social responsibility, enhancing collaboration and business sustainability.⁴⁶ The spiritual dimension of Islamic entrepreneurship strengthens business sustainability through the development of social networks built on shared values. Businesses grounded in spiritual ethics tend to attract like-minded individuals, fostering trust, information exchange, and mutual support. In line with Granovetter's tie strength theory, strong social and interpersonal relationships enhance collaboration and resilience, underscoring the vital role of social-spiritual synergy in sustaining halal food businesses.⁴⁷

This finding aligns with Y. Kurt's study, which highlights the unique role of religion and spirituality in strengthening business networks and promoting global growth among Turkish SMEs. Similarly, A. Islam's research underscores that Islamic-based spiritual leadership functions as an effective non-financial motivator for SMEs during and after crises. By integrating spiritual leadership with innovation strategies, SMEs can achieve sustainable success through the application of Islamic spiritual values that enhance leadership and organizational performance.⁴⁸

CONCLUSION

The study concludes that e-commerce adoption, halal certification, and Islamic entrepreneurial spirituality significantly influence the sustainability of

⁴⁶ Larissa M. Batrincea et al., "Sources of SMEs Financing and Their Impact on Economic Growth across the European Union: Insights from a Panel Data Study Spanning Sixteen Years," *Sustainability* (Switzerland) 14, no. 22 (2022).

⁴⁷ Ana T. Ejarque and Vanessa Campos, "Assessing the Economy for the Common Good Measurement Theory Ability to Integrate the SDGs into MSMEs," *Sustainability* (Switzerland) 12, no. 24 (2020): 1–17.

⁴⁸ Ariful Islam, Nur Fadiah Mohd Zawawi, and Sazali Abd Wahab, "Rethinking Survival, Renewal, and Growth Strategies of SMEs in Bangladesh: The Role of Spiritual Leadership in Crisis Situation," *PSU Research Review* (2023).

halal food businesses in Lampung Province. Strengthening technological infrastructure—such as stable internet access and user-friendly e-commerce platforms—enhances market reach, transaction efficiency, and customer service, which are vital for business continuity. Compliance with halal certification standards not only fulfills legal obligations but also builds strong consumer trust. Meanwhile, Islamic entrepreneurial spirituality, emphasizing ethics, health, and social responsibility, reinforces product integrity and consumer confidence. Theoretically, this research integrates three domains—technology, regulation, and spirituality—into a holistic framework illustrating how digital innovation and Islamic values interact to sustain business growth within a sharia context. Practically, the findings guide entrepreneurs to utilize e-commerce strategically, leverage halal certification as a competitive advantage, and embed Islamic ethics into operations. These integrated approaches enhance market competitiveness, community trust, and long-term sustainability. Overall, the study contributes both conceptually and practically by promoting an ethical, technology-driven, and faith-based model for the sustainable development of halal food businesses.

Author's Contribution

Erike Anggraeni: Contribute to formulating research ideas, collecting data, processing data, and interpreting data

Khavid Normasyhuri: Contributing to writing systematics and researchmethods

Ishfaq Ahmed: Contributing to analyzing interpretation results

Tri Atmaja Pramudita Wisnu Kusuma: Contributing to collecting data and compiling a literature review and to the language proofread.

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Declaration of Competing Interest

The author declares that there is no conflict of interest.

Ethical Approval

Ethical approval No patient-identifying parts in this paper were used or known to the authors. Therefore, no ethical approval was requested.

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