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Halal MSME Sustainability: Digital Marketing, Innovation, and Islamic Economics Synergy

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Abstract

This study examines the effects of digital marketing strategy and halal innovation on the sustainability of halal micro, small, and medium enterprises (MSMEs), with Islamic economic implementation as a mediating variable and Sustainable Development Goals (SDGs) orientation as a moderating variable. The research was conducted among 160 halal-certified MSMEs in six regions of Central Java (Banyumas, Purbalingga, Banjarnegara, Cilacap, Kebumen, and Brebes), using a quantitative approach and Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings provide mixed empirical support. Halal innovation demonstrates a positive and statistically significant effect on MSME sustainability. In contrast, the digital marketing strategy shows a positive but statistically insignificant direct relationship. Islamic economic implementation plays a limited, marginal mediating role in the relationship between halal innovation and sustainability. Furthermore, SDGs orientation does not significantly moderate the proposed structural relationships. These results suggest that halal innovation serves as the primary driver of sustainability. In contrast, digitalization and alignment with global sustainability appear not yet strongly embedded in the strategic practices of the sampled halal MSMEs. The study contributes by clarifying the empirical boundaries of integrating digital strategies, halal innovation, and Islamic economic values within MSME sustainability frameworks in emerging economies.

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INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are widely recognized as the backbone of economic development, particularly in emerging economies such as Indonesia. These enterprises account for more than 97% of business establishments and contribute significantly to GDP growth, employment creation, and poverty reduction. Beyond their economic contributions, MSMEs also play a pivotal role in fostering social inclusion, supporting local communities, and enhancing national resilience during crises (Deku, Wang, and Preko, 2024).

Within this broad sector, halal MSMEs occupy a special position due to the unique intersection of religious, ethical, and market-driven dimensions. The global halal economy is no longer restricted to food and beverages but has expanded into cosmetics, pharmaceuticals, tourism, finance, and even creative industries (Mahliza, 2022). This expansion is supported by the growing global Muslim population and increasing consumer awareness of ethical and sustainable consumption, making halal products increasingly attractive to both Muslim and non-Muslim markets (Noor, 2025).

Indonesia, as the largest Muslim-majority country, has significant potential to develop halal MSMEs. This commitment has been institutionalized through the Indonesian Sharia Economy Masterplan 2019–2024, which outlines a national strategy to strengthen halal value chains, accelerate digital integration, and enhance the competitiveness of Islamic-based enterprises. Despite this structured policy framework, many halal MSMEs continue to encounter challenges related to technological readiness, innovation capability, and sustainable business practices (Isna Khairani, Imsar, and Nasution, 2023). This discrepancy between macro-level strategic direction and micro-level enterprise performance suggests that policy support alone may not automatically translate into sustainable outcomes, thereby necessitating empirical investigation at the firm level. These obstacles limit their ability to seize opportunities in global halal markets and, more importantly, to contribute effectively to the Sustainable Development Goals (SDGs). The alignment between halal principles (halal and tayyib) and the SDGs is conceptually strong, as both emphasize fairness, justice, environmental stewardship, and social welfare. However, this alignment remains underutilized in practice (Iskandar and Sulaiman, 2025).

Halal MSMEs in Indonesia continue to struggle with technological readiness, innovation capacity, and the effective integration of Islamic economic values. These shortcomings reduce their competitiveness in increasingly globalized and digitalized markets and weaken their ability to contribute to sustainable development. The rapid advancement of digital technologies has transformed the way enterprises interact with markets. Digital marketing, which encompasses social media engagement, e-commerce platforms, search engine optimization, and targeted online advertising, is now a crucial enabler of competitiveness in the Fourth Industrial Revolution (Deku, Wang, and Preko, 2024). Globally, SMEs that adopt digital marketing tools report higher customer engagement, enhanced brand visibility, and improved market expansion (Deku, Wang, and Preko, 2024).

In Indonesia, the growth of digital platforms, such as Tokopedia, Shopee, TikTok Shop, and Instagram, has created unprecedented opportunities for MSMEs to reach broader audiences. Studies show that digital adoption increases market access, reduces transaction costs, and strengthens resilience against market fluctuations (Wiweko & Anggara, 2025). However, barriers persist; many MSMEs lack digital skills, struggle with unstable internet infrastructure, or face capital constraints in adopting advanced marketing tools.

While digital marketing has been proven to enhance MSME performance, existing research often focuses on short-term outcomes, such as sales growth or customer satisfaction (Muttaqin and Fitriyah, 2023). Few studies have examined its role in fostering long-term sustainability, especially when it is integrated with Islamic business values. The relationship between digital marketing and the sustainability of halal MSMEs remains underexplored, particularly in contexts where ethical and religious values mediate consumer and business practices.

Innovation is widely acknowledged as a driver of competitive advantage. In the halal industry, innovation not only ensures compliance with religious standards but also addresses consumer demands for eco-friendly, safe, and traceable products. For example, halal traceability systems using QR codes or blockchain are increasingly adopted in the food and cosmetic sectors to ensure transparency and build consumer trust (Sayogo, 2018). Halal MSMEs in Indonesia are beginning to adopt innovations in packaging, product diversification, and branding. Eco-friendly packaging and green halal practices are gradually gaining popularity, especially in urban markets (Mahliza, 2022). However, many MSMEs remain reliant on traditional production methods and show limited capacity for research and development investment, which restricts their ability to differentiate themselves in competitive markets.

Systematic reviews emphasize that halal branding and innovation significantly affect consumer loyalty and purchase intention (Noor, 2025). However, most empirical studies focus on consumer behavior outcomes and overlook the broader enterprise-level sustainability dimension. Innovation is often studied in isolation, without considering its interaction with ethical business principles or sustainability frameworks. The long-term impact of halal innovation on the sustainability of halal MSMEs remains insufficiently studied.

Islamic economics provides a comprehensive ethical framework that extends beyond compliance with halal standards. Its principles, such as fairness/ʿadl, trust/amanah, social responsibility/maslahah, and the prohibition of exploitation/riba, offer guidelines for business conduct that promote both individual and collective well-being (Asutay and Yilmaz, 2020). Research shows that Islamic economic values enhance trust and legitimacy, which are critical for sustaining consumer relationships and strengthening community support for enterprises (Isna Khairani, Imsar, and Nasution, 2023). Conceptual works further highlight the compatibility between Islamic economic principles and the SDGs, particularly in promoting inclusive growth and responsible consumption (Iskandar and Sulaiman, 2025).

Despite these insights, empirical research has seldom positioned Islamic economics as a mediating mechanism linking managerial strategies, such as digital marketing and halal innovation, to sustainable outcomes. The mediating role of Islamic economics in connecting strategies to sustainability has not been systematically tested, particularly in the context of halal MSMEs. The SDGs provide a universal framework for addressing economic, social, and environmental challenges. Firms that align with the SDGs often improve performance, legitimacy, and stakeholder trust (Rosamartina et al., 2022). However, the degree of engagement varies, with SMEs often constrained by resource limitations (Acuti et al., 2022).

In halal industries, scholars argue that halal and tayyib principles inherently align with the SDGs, particularly in ensuring sustainable production and responsible consumption (Idris et al., 2022). Yet, in practice, many halal MSMEs remain unaware of this alignment and fail to strategically position their businesses as contributors to global sustainability. Few empirical studies have tested SDGs orientation as a moderator influencing the strength of relationships between strategic practices, such as digital marketing and innovation, and sustainability outcomes. The moderating role of SDGs orientation in halal MSME sustainability remains underexplored. Therefore, this study aims to examine the direct effects of digital marketing and halal innovation on halal MSME sustainability, test the mediating role of Islamic economics, and assess the moderating effect of SDGs orientation on these relationships. This study offers three main novelties. First, it positions Islamic economics as an empirically tested mediating construct rather than a purely normative framework. Second, it shifts the focus of digital marketing and halal innovation from short-term performance outcomes to long-term MSME sustainability. Third, it integrates SDGs orientation as a boundary condition within a halal MSME context, which remains underexplored in emerging economies.

RESEARCH METHODS

This study employed a quantitative research design using a cross-sectional survey to examine the relationships among digital marketing, halal innovation, Islamic economics, SDG orientation, and the sustainability of halal micro, small, and medium enterprises (MSMEs). The survey method was selected because it is suitable for testing hypotheses and examining relationships among latent constructs, even with a relatively large number of respondents (Sekaran and Boogie, 2020). The population consisted of halal-certified MSMEs operating in six regions of Central Java, Indonesia: Banjarnegara, Purbalingga, Banyumas, Cilacap, Kebumen, and Brebes. These regions were chosen because they represent areas that have experienced significant development in the halal industry, yet MSMEs in these areas continue to face challenges related to digital adoption, innovation, and sustainability practices (Isna Khairani, Imsar, nd Nasution, 2023). The sample was selected using purposive sampling, with the criteria that respondents had to be owners or managers of halal-certified MSMEs that had operated for at least one year and had used digital marketing to promote their businesses. A total of 160 valid responses were collected, which is considered sufficient for structural equation modeling analysis according to the “10-times rule” and is supported by statistical power calculations using GPower (Hair, 2014). To provide a more rigorous justification of sample adequacy, a statistical power analysis was conducted using G*Power 3.1. Assuming a medium effect size ($f^2 = 0.15$), a significance level of 0.05, and a maximum of three predictors for the most complex endogenous construct in the model, the minimum required sample size to achieve a statistical power of 0.80 was 77 respondents. With 160 valid responses, the sample size substantially exceeds this threshold, indicating adequate statistical power to detect medium structural effects, including interaction terms within the PLS-SEM framework. Furthermore, PLS-SEM is particularly appropriate for models incorporating mediation and moderation effects with moderate sample sizes, as it relies on variance-based estimation rather than covariance-based assumptions.

Data were collected through structured questionnaires administered both offline, accompanied by short interviews, and online via Google Forms to reach MSMEs located in remote areas. The questionnaire employed a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), which is widely used in management and behavioral research to capture perceptions and attitudes (Podsakoff, MacKenzie and Podsakoff, 2016). The items were adapted from validated scales in prior studies and contextualized to the halal MSME environment. A pilot test involving 30 respondents was conducted to ensure validity and reliability before the main data collection.

Table 1. Measurement of Variables and Indicators

Variable	Operational Definition	Indicators	Source
Digital Marketing Strategy (DMS)	The extent to which MSMEs utilize digital platforms and online tools to promote products, engage customers, and expand market reach.	Social media utilization; E-commerce platform adoption; Online advertising; Customer engagement; Platform diversification	Deku Wang and Preko (2024)
Halal Innovation (HI)	The firm’s capability to develop and improve halal products through innovation in processes, packaging, and product attributes aligned with halal and tayyib principles.	Product diversification; Eco-friendly packaging; Halal traceability; Branding innovation; Product quality enhancement	Dedi S Sayogo (2018); Fitria Mahliza (2022)

Variable	Operational Definition	Indicators	Source
Islamic Economic Implementation (IEI)	The degree to which MSMEs apply Islamic ethical principles in business operations, including fairness, transparency, and social responsibility.	Fairness (ʿadl); Transparency; Trust (amanah); Social responsibility; Accountability	Mehmet Asutay and Ibrahim Yilmaz (2020)
SDGs Orientation (SDGs)	The extent to which MSMEs align their business practices with sustainable development principles across economic, social, and environmental dimensions.	Sustainable production; Responsible consumption; Community welfare; Environmental awareness; Social responsibility	Daniela Acuti et al. (2022); Silvia Rosamartina et al. (2022)
MSME Sustainability (MSME)	The ability of MSMEs to maintain long-term business performance through economic resilience, social contribution, and environmental responsibility.	Economic resilience; Social contribution; Environmental responsibility	Eka Iskandar and E Sulaiman (2025)

Prior to hypothesis testing, data screening procedures were conducted to ensure data quality. The dataset was examined for missing values, and no incomplete responses were identified because only fully completed questionnaires were included in the analysis. Outliers were assessed using standardized residual values and Mahalanobis distance criteria, and no extreme multivariate outliers were detected. These procedures helped ensure the robustness and reliability of the subsequent PLS-SEM estimation. As PLS-SEM does not require the assumption of multivariate normality, normality testing was not treated as a strict prerequisite; however, the skewness and kurtosis values were within acceptable ranges.

Common method bias was assessed using the full collinearity test based on variance inflation factor (VIF) values, as recommended in the PLS-SEM literature. This approach evaluates whether each latent construct is excessively correlated with the others by examining collinearity statistics, where VIF values below the conservative threshold of 3.3 indicate that common method bias is unlikely to be a serious concern. The results showed that all constructs exhibited VIF values well below the recommended cut-off, suggesting that the observed relationships were not driven by measurement artifacts arising from the use of a single data source. This procedure is considered a robust and comprehensive diagnostic for common method bias in variance-based structural equation modeling and has been widely applied in reputable empirical studies (Kock, 2015; Hair et al., 2014). The VIF values reported in Table 2 represent full collinearity statistics used to assess common method bias, following Kock (2015). These statistics differ from inner model collinearity, or predictor-to-predictor VIF, and outer model indicator collinearity, as they evaluate whether any latent construct is excessively correlated with others due to common method variance. VIF values below 3.3 indicate the absence of critical collinearity and common method bias.

Item	VIF
Digital 5	1.707
Digital1	2.765
Digital2	2.696
Halal 1	2.625
Halal 2	2.248
Halal 3	3.278
Halal 4	2.340
Halal 5	2.342
Inovasi 1	2.967
Inovasi 2	2.980
Inovasi 3	2.590
Inovasi 4	2.030
Inovasi 5	1.893
SDGs 1	1.834
SDGs 2	2.641
SDGs 4	1.664
SDGs 5	2.545

Item	VIF
Syariah 1	3.083
Syariah 2	3.252
Syariah 4	2.380
Syariah 5	1.782
SDGs Achievement x Halal Innovation	1.000
SDGs Achievement x Digital Marketing Strategy	1.000

Source: Author calculation (2025)

The use of PLS-SEM was deemed appropriate given the study's objective of examining complex relationships involving mediation and moderation effects within a predictive research framework. Unlike covariance-based SEM, PLS-SEM is suitable for exploratory model development, theory extension, and situations in which data distribution assumptions may not be strictly met. Additionally, the model's predictive orientation aligns with the variance-based nature of PLS-SEM, which prioritizes explained variance (R^2) over overall model fit indices. The data were analyzed using SmartPLS version 4, which is recommended for testing complex models with mediating and moderating variables and is particularly suitable for small to medium sample sizes (Hair, 2014). Data analysis was carried out in several stages. First, descriptive statistics were used to summarize respondent characteristics. Second, the measurement model was evaluated by testing the convergent validity, discriminant validity, and composite reliability of the constructs. Third, the structural model was tested by examining path coefficients, R^2, effect size (f^2), and predictive relevance (Q^2). Bootstrapping with 5,000 resamples was performed to test the significance of the hypothesized relationships.

Mediation effects were assessed using the bootstrapping procedure recommended in the PLS-SEM literature. Indirect effects were examined by evaluating the significance of the product of path coefficients ($a \times b$). Mediation was established when the indirect effect was statistically significant based on bias-corrected confidence intervals. The type of mediation, whether full, partial, or complementary, was determined by comparing the significance and direction of both direct and indirect effects, following the guidelines proposed by Hair et al. (2014).

Moderation effects were tested using the product indicator approach in SmartPLS, in which interaction terms were created by multiplying standardized indicators of the independent variables by those of the moderator construct. The significance of moderation was evaluated through the bootstrapped path coefficients of the interaction terms. A significant interaction coefficient indicates that the strength or direction of the relationship between the predictor and the outcome variable varies depending on the level of the moderator. Interaction effects were interpreted based on the sign and magnitude of the path coefficient. Effect sizes (f^2) were also examined to assess the practical relevance of the interaction terms.

Ethical considerations were prioritized by ensuring voluntary participation, anonymity, and confidentiality of the collected data. Respondents provided informed consent before completing the questionnaire, and it was emphasized that their responses would be used solely for academic purposes. By following these design, measurement, and analysis procedures, the study provides sufficient technical clarity for replication by future researchers investigating halal MSMEs or similar enterprise contexts in other emerging economies.

Based on the identified gaps, this study developed a conceptual framework that integrates digital marketing, halal innovation, Islamic economics, and SDGs orientation to explain halal MSME sustainability. The model is presented in Figure 1, which illustrates the direct, mediating, and moderating relationships among the variables. This framework guides the research design, variable measurement, and data analysis techniques.

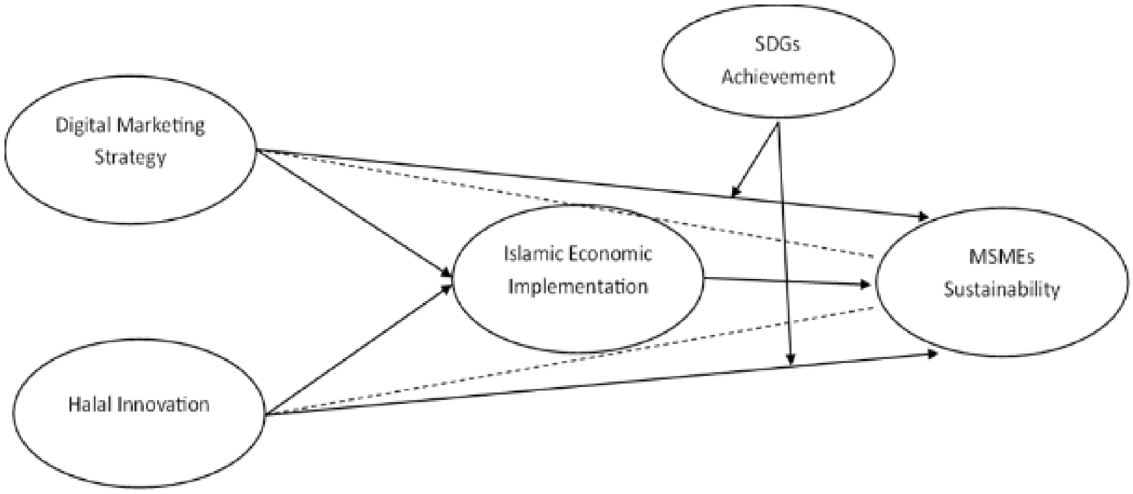

Figure 1. Research Model
Source: Adopted from Deku et al. (2024), Sayogo (2018), Mahliza (2022), Asutay & Yilmaz (2020), Khairani et al. (2023), Acuti et al. (2022), Rosamartina et al. (2022), Iskandar & Sulaiman (2025)

RESULTS AND DISCUSSION

The survey covered 160 halal MSMEs distributed across six districts: Banjarnegara, Brebes, Purbalingga, Banyumas, Cilacap, and Kebumen. Table 3 summarizes the profile by district, including the number of respondents, average business age, rate of halal certification, and use of social media for marketing.

Table 3. Profile of Halal MSMEs by District

District	Respondent	Use Digital Marketing (%)
Banjarnegara	29	100
Banyumas	49	100
Brebes	16	100
Cilacap	14	100
Kebumen	32	97
Purbalingga	20	100
Total	160	

Source: Author's calculation (2025)

The distribution shows that Banyumas and Kebumen host the largest concentration of halal MSMEs, reflecting their relatively more developed commercial infrastructure. This pattern underscores the role of local institutional support and community networks in influencing compliance with and adoption of halal practices (Isna Khairani, Imsar and Nasution, 2023).

The average business age varies from three to nine years across districts, with some firms having operated for more than a decade. Longevity indicates accumulated resilience and knowledge, while newer enterprises also show dynamism, especially in adopting digital tools. This variation allows the study to examine how strategic factors, such as digital marketing and halal innovation, contribute to sustainability across different maturity stages.

The prevalence of halal certification is uneven: in some districts, more than half of the respondents hold certification, while in others, less than a third do. This heterogeneity highlights both regulatory gaps and resource constraints faced by MSMEs, confirming findings by Acuti et al. (2022) that institutional support shapes small firms' sustainability orientation. Social media adoption rates are high across all districts, consistent with national statistics on micro-enterprise digitalization. This finding confirms that digital platforms are perceived as indispensable tools for expanding market reach. As noted by Deku, Wang, and Preko (2024), digital marketing is often the first strategic lever for micro-firms to enhance competitiveness.

The digital marketing landscape of halal MSMEs across all regions is characterized by the widespread adoption of social media platforms, although with varying levels of intensity and sophistication. As shown in Table 4, WhatsApp emerges as the most widely used tool, followed by Instagram, Facebook, and TikTok. In contrast, e-commerce marketplaces such as Shopee, Tokopedia, and Lazada are adopted at much lower rates. This hierarchy of platform adoption reveals important insights into both the strategic preferences and the resource constraints of micro and small businesses in emerging markets.

Table 4. Adoption Rate of Digital Platforms

Platform	Adoption Rate
WhatsApp	66%
Instagram	46%
TikTok	24%
Facebook	23%
YouTube	1%

Source: Author's calculation (2025)

WhatsApp, used by more than 60% of respondents, reflects the dominance of conversational commerce. For MSMEs with limited capital, WhatsApp offers a low-cost, user-friendly tool for interacting with customers, coordinating orders, and maintaining trust-based relationships. This finding is consistent with Wiweko & Anggara (2025), who found that Indonesian MSMEs often rely on WhatsApp as a substitute for formal customer relationship management systems. WhatsApp's integration with communities and personal networks aligns closely with the relational nature of local trade, where reputation and trust determine repeat business.

Instagram, used by more than 40% of firms, provides a visual interface that allows MSMEs to showcase their products attractively. Its importance has grown with the rise of Gen Z consumers, who prefer short-form, aesthetically driven content. TikTok, although newer, is rapidly gaining traction thanks to its algorithm-driven discovery features, enabling even small firms to go viral with creative content. These dynamics indicate that halal MSMEs are adapting to broader shifts in consumer behavior, where visual storytelling and entertainment-driven engagement shape purchasing decisions (Deku, Wang, and Preko, 2024).

Facebook retains relevance, especially among older demographics and rural consumers. Its widespread familiarity and integration with groups and local communities make it a platform for MSMEs to engage customers through established social ties. YouTube, although less frequently used, remains an untapped opportunity for firms to provide educational content on halal processes, transparency in production, or customer testimonials.

The relatively limited adoption of formal e-commerce platforms points to both opportunities and barriers. On the one hand, e-commerce marketplaces can provide MSMEs with wider reach, logistics integration, and payment security. On the other hand, transaction fees, complex onboarding, and intense competition make them less attractive to micro-firms that rely on personal relationships and localized trust. This supports the findings of Deku, Wang, and Preko (2024), who noted that while digital adoption boosts competitiveness, MSMEs often choose platforms that require minimal technical expertise and financial investment.

The construction of the Digital Marketing Strategy (DMS) variable in this study, which combines the breadth of platform adoption and the binary use of social media, allows the study to differentiate between low-intensity and high-intensity digital adopters. The structural path analysis indicates that firms with higher Digital Marketing Strategy (DMS) scores demonstrate a positive association with sustainability outcomes, although the direct effect is not statistically significant. This suggests that digital marketing may function as a strategic resource that contributes to perceived resilience. Diversification across platforms reduces dependency on any single channel and increases discovery opportunities. This finding resonates with the dynamic capability perspective: digital adoption enhances the sensing of customer preferences and the seizing of market opportunities, ultimately supporting adaptive capacity (Teece, 2018).

From a policy standpoint, these results underline the importance of training MSMEs not only to be present online but also to use digital platforms strategically. Many firms use WhatsApp and Instagram passively, but only a fraction utilize advanced features such as targeted advertising, analytics, or integrated e-commerce tools. Digital literacy gaps remain a major barrier (Wiweko & Anggara, 2025). Therefore, capacity-building programs should emphasize content creation, storytelling, and analytics, enabling MSMEs to move from passive participation to proactive engagement.

Innovation is a critical pathway for halal MSMEs to differentiate themselves and enhance sustainability. The analysis of open-ended responses reveals that innovation is primarily concentrated in packaging improvements, new product development, and digital promotional activities. These forms of innovation are highly visible and directly influence consumer perceptions, which explains their popularity among resource-constrained micro-firms. Packaging upgrades, such as improved labeling, branded designs, or the addition of halal logos, directly strengthen consumer trust by signaling legitimacy and quality assurance. This aligns with Mahliza (2022), who demonstrated that halal cues in packaging significantly influence consumer purchase intention.

Table 5. Prevalence of Halal Innovation

Theme	Prevalence
New Product	22%
Quality Upgrade	12%
Digital Promotion	10%
Traceability	4%
Packaging	2%
Environmentally Friendly	2%

Source: Author’s calculation (2025)

New product development, such as introducing flavor variants or launching entirely new product lines, illustrates the entrepreneurial creativity of halal MSMEs. These innovations help firms adapt to shifting consumer preferences and seasonal demands. Digital promotion innovations, such as experimenting with TikTok videos, Instagram reels, or live-streaming events, show the overlap between innovation and digital marketing. This confirms that innovation in micro-enterprises is not confined to physical products but also extends to marketing and customer engagement processes.

However, systemic innovations, such as traceability systems (including QR codes and barcodes linked to halal certificates) and eco-friendly practices (such as biodegradable packaging and reduced plastic use), remain underdeveloped. Less than 20% of respondents reported such practices, reflecting both cost constraints and a lack of awareness. This gap aligns with Sayogo (2018), who found that halal traceability technologies are primarily adopted by larger firms with greater resources. Similarly, Noor (2025) highlighted that green halal innovation is still nascent among MSMEs, even though it is increasingly demanded by environmentally conscious consumers.

The Halal Innovation construct in this study demonstrates a positive structural relationship with sustainability outcomes. This suggests that even incremental innovations contribute to firm resilience, especially when aligned with consumer trust. Nevertheless, the low prevalence of eco-innovation and traceability indicates that most MSMEs remain in the early stages of the innovation ladder. Future growth requires moving beyond cosmetic innovations toward systemic changes that embed transparency and sustainability.

This distinction is vital for both policy and theory. From the perspective of economic development, MSMEs are crucial not only for job creation but also for diffusing responsible practices across local economies. Halal innovation that integrates environmental and traceability components has the potential to transform MSMEs into agents of sustainable development. Therefore, innovation support programs should prioritize affordable access to eco-friendly materials, traceability tools, and sustainable design training.

Table 6. Path Coefficients with Bootstrap

Path	β	T-value	P values	f^2	95% CI
DMS -> IEI	-0.104	1.281	0.200	0.014	-0.258 – 0.058
DMS -> MSME	-0.037	0.511	0.610	0.003	-0.189 – 0.102
HI -> IEI	0.859	9.969	0.000	0.927	0.669 – 1.003
HI -> MSME	0.251	2.366	0.018	0.062	0.072 – 0.504
IEI -> MSME	0.140	1.732	0.083	0.030	-0.012 – 0.309
SDGs → MSME	0.529	5.356	0.000	0.310	0.317 – 0.706
SDGs × DMS → MSME	-0.081	0.859	0.390	0.013	-0.334 – 0.038
SDG x HI -> MSME	0.023	0.323	0.747	0.002	-0.073 – 0.219

Notes: β = standardized path coefficient; f^2 = effect size; CI = bias-corrected bootstrap confidence interval; DMS = Digital Marketing Strategy; HI = Halal Innovation; IEI = Islamic Economic Implementation; MSME = MSME Sustainability; SDGs = Sustainable Development Goals orientation

Source: Author's calculation (2025)

Table 5 presents the standardized path coefficients (β), bootstrapped t-values, p-values, effect sizes (f^2), and bias-corrected confidence intervals. Reporting standardized coefficients allows evaluation of the magnitude and direction of relationships, while f^2 values indicate the practical contribution of each predictor to the endogenous construct. The confidence intervals further confirm the robustness of the estimated effects, as relationships are considered statistically significant when zero does not fall within the interval. The effect size analysis indicates that halal innovation has a moderate practical impact on MSME sustainability, whereas digital marketing and interaction terms with the SDGs demonstrate weak effect sizes. This pattern reinforces the conclusion that innovation constitutes the primary explanatory driver within the structural model.

The PLS-SEM analysis provides mixed empirical support for the proposed hypotheses. While halal innovation shows significant direct effects on sustainability, several direct and moderating paths are statistically insignificant, indicating that the structural relationships are context-dependent rather than uniformly robust. The structural model was designed conceptually to integrate mediation and moderation mechanisms; however, the empirical findings indicate that not all theoretically expected relationships are supported in this sample. Rather than suggesting model misspecification, this outcome highlights the contextual and developmental stage of halal MSMEs, where innovation capabilities appear more institutionally embedded than digital or SDGs alignment mechanisms. The structural results indicate that the paths from Halal Innovation to Islamic Economic Implementation and from Halal Innovation to MSME Sustainability are positive and statistically significant, suggesting that Halal Innovation directly improves MSME sustainability. However, the direct value between digital marketing strategy and Islamic economic implementation, digital marketing strategy and MSME sustainability, and Islamic economic implementation and MSME sustainability is not significant. This indicates that a digital marketing strategy does not directly improve Islamic economic implementation and MSME sustainability. Similarly, Islamic economic implementation does not directly improve MSME sustainability.

Mediation analysis shows that Islamic Economic Implementation (IEI) does not significantly transmit the effects of digital marketing strategy to MSME sustainability. However, Islamic economic implementation demonstrates a marginal complementary mediation effect in the relationship between halal innovation and MSME sustainability.

The moderation analysis indicates that the interaction terms between SDGs orientation and both digital marketing strategy and halal innovation are statistically insignificant. This suggests that SDGs orientation does not significantly alter the strength of these relationships within the sampled MSMEs. Although the coefficients are positive, the lack of statistical significance suggests that SDG orientation does not provide empirical evidence of a significant moderating role in this sample.

Table 7. R-squared Values

Variable	R^2
Islamic Economic Implementation	0.35
MSME Sustainability	0.42

Source: Author's calculation (2025)

R^2 values of 0.35 for Islamic Economic Implementation and 0.42 for MSME Sustainability indicate moderate explanatory power, which is acceptable for models with behavioral constructs (Hair, 2014). These results provide quantitative validation of the earlier conceptual model.

Given several statistically insignificant direct, mediating, and moderating paths, an additional parsimony assessment was conducted to determine whether a simplified model specification would yield clearer theoretical insights. A reduced structural model excluding the non-significant interaction terms (SDGs × Digital Marketing Strategy and SDGs × Halal Innovation) was re-estimated. The comparison indicates that the R^2 values for Islamic Economic Implementation and MSME Sustainability remain substantively stable, suggesting that the core explanatory mechanism of halal innovation is robust. This finding implies that while the full model integrates theoretically meaningful extensions, the primary predictive strength lies in the direct effect of halal innovation on sustainability. Therefore, the structural model may be interpreted as theoretically comprehensive but empirically centered on innovation-driven sustainability.

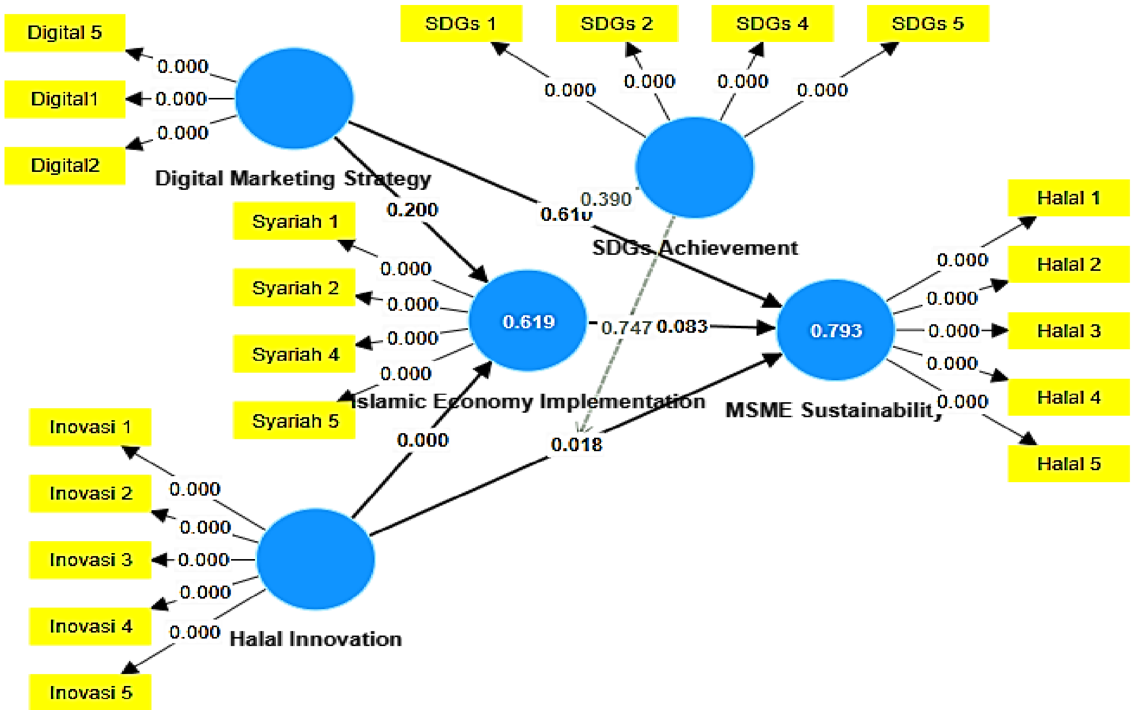

Figure 2. Inner Model
Source: Author's calculation (2025)

Although the direct structural effect is not statistically significant, digital marketing may function as a foundational capability that indirectly supports sustainability through strategic integration and long-term adaptation. This finding suggests that digital adoption may contribute to perceived sustainability beyond short-term performance outcomes (Muttaqin and Fitriyah, 2023; Deku, Wang, and Preko, 2024). Digital marketing may enhance perceived sustainability by improving customer engagement and market visibility. This suggests that digital tools may enhance perceived market stability and customer engagement, which are commonly associated with sustainability in MSMEs.

From a theoretical perspective, the results align with the dynamic capability framework (Teece, 2018). Digital platforms strengthen sensing capabilities, such as detecting market trends; seizing capabilities, such as engaging new customers; and reconfiguring capabilities, such as adapting to shocks. In halal markets, digital tools also amplify ethical commitments by allowing MSMEs to showcase halal processes, interact transparently, and build trust. This intersection of digital strategy and ethics extends the understanding of how digitalization supports sustainable development.

The positive relationship between halal innovation and MSME sustainability underscores its strategic importance. Unlike previous research that emphasized short-term consumer behavior outcomes (Sayogo, 2018; Mahliza, 2022), this study's findings demonstrate that halal innovation directly contributes to firm resilience and long-term viability. Incremental innovations in packaging and product variety sustain competitiveness, while emerging practices in traceability and eco-packaging connect MSMEs to broader sustainability agendas.

This result underscores the need to reconceptualize innovation not only as a means of differentiation but also as a pathway to sustainable development. Halal innovation can integrate ethical, environmental, and social dimensions, thereby transforming MSMEs into engines of responsible growth. Policymakers and industry associations must support this transition by reducing the costs of sustainable materials and by promoting traceability standards accessible to small firms.

The mediating role of Islamic Economic Implementation is a crucial contribution of this study. Although statistically marginal, the mediation results suggest that Islamic economic principles may function as a contextual mechanism linking innovation to sustainability. Digital marketing and innovation enhance ethical salience by promoting transparency, fairness, and accountability, thereby strengthening consumer trust and community legitimacy. This marginal mediation effect partially aligns with the arguments of Asutay & Yilmaz (2020), though the limited statistical strength suggests the presence of contextual constraints.

This finding contributes to the literature by operationalizing Islamic economics as a mediating construct. It also contributes to the discourse by empirically examining Islamic economics as a measurable construct, even though its mediating effect remains statistically limited. For MSMEs, this means that integrating Islamic principles into marketing and innovation strategies is not only ethically desirable but also strategically advantageous.

Although the interaction coefficients are positive, the absence of statistical significance indicates that SDGs orientation does not materially strengthen the structural relationships within this sample. This pattern may be consistent with prior findings suggesting that SMEs often perceive sustainability initiatives as resource-intensive or peripheral to core operations (Acuti et al., 2022). However, when MSMEs adopt even modest eco-innovations, digital platforms may amplify their reputational benefits. This implies that sustainability-oriented practices, once adopted, can yield disproportionate returns through digital visibility.

Although the interaction coefficients are statistically insignificant, these findings should be interpreted cautiously. Non-significant moderation does not necessarily indicate symbolic or superficial engagement with the SDGs. The absence of significant interaction effects may reflect limited variance in respondents' SDG orientation, measurement constraints, or insufficient statistical power to detect smaller boundary effects. Therefore, the moderating role of SDGs orientation remains empirically inconclusive within this sample rather than substantively absent.

CONCLUSION

This study examined the structural relationships among digital marketing strategy, halal innovation, Islamic economic implementation, SDGs orientation, and the sustainability of halal micro, small, and medium enterprises (MSMEs) using a PLS-SEM approach. The findings provide mixed empirical support for the proposed model. Halal innovation emerged as the only construct with a statistically significant direct effect on MSME sustainability, underscoring the importance of product differentiation, quality enhancement, and incremental innovation in strengthening long-term business resilience.

In contrast, digital marketing strategy demonstrated a positive but statistically insignificant direct relationship with sustainability, suggesting that digital adoption alone may not automatically generate sustainable outcomes without deeper strategic alignment. Islamic economic implementation played a limited, marginal mediating role, suggesting that Islamic ethical principles may function more as normative orientations than as fully institutionalized managerial mechanisms. Furthermore, SDGs orientation did not significantly moderate the structural relationships within this sample. However, this finding should not be interpreted as evidence of symbolic engagement. It may reflect contextual limitations, measurement constraints, or insufficient variance in SDGs implementation among MSMEs.

The study contributes to theory by clarifying the empirical boundaries for integrating digital strategy, halal innovation, and Islamic economic values within MSME sustainability frameworks. It challenges the assumption that ethical and sustainability constructs inherently produce measurable enterprise-level performance outcomes. The results further suggest that a more parsimonious model centered primarily on halal innovation may offer stronger predictive power. In contrast, mediation and moderation mechanisms require further contextual validation in future research.

Despite its contributions, this study has several limitations. First, the cross-sectional design limits causal inference and fails to capture the development of dynamic capabilities over time. Second, the sample is limited to halal-certified MSMEs in a single regional cluster, which may limit generalizability. Third, reliance on self-reported survey data may introduce perceptual bias despite procedural remedies for common method variance.

Future research may adopt longitudinal designs to examine how digital capabilities and halal innovation evolve across different stages of firm maturity. Expanding the study across multiple regions or countries would enhance comparative insights. Additionally, future studies could refine the measurement of Islamic economic implementation and SDGs orientation by incorporating objective sustainability indicators or mixed-method approaches to capture their practical operationalization within MSMEs better.

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