Journal of Economics, Entrepreneurship, Management Business and Accounting, 2026, 4(6), 874-892.
https://doi.org/10.61255/jeemba.v4i6.2098

Digital Finance and Halal-Practice Orientation for MSME Sustainability Awareness: The Moderating Role of Technological Capability

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ABSTRACT

Purpose – This study examines the associations of digital finance and self-reported halal-practice orientation with sustainability awareness among culinary micro, small, and medium-sized enterprises (MSMEs) in Bekasi City. It also investigates whether technological capability conditions these associations.
Design/methodology/approach – A cross-sectional questionnaire was administered to 200 eligible respondents involved in decisions at culinary MSMEs. Covariance-based structural equation modeling was reported using AMOS. The study assesses perceived financial-service use, halal implementation and orientation, technological capability/readiness, and sustainability awareness; moderation estimates require verification against a hierarchical specification that includes the technological-capability main effect.
Findings/Results – The archived structural results report a positive association between digital finance and sustainability awareness (estimate = 0.319, $p < 0.001$) and a nonsignificant association for halal-practice orientation (estimate = 0.109, $p = 0.161$). Positive interaction coefficients were also reported for digital finance × technological capability (0.260, $p < 0.001$) and halal-practice orientation × technological capability (0.340, $p < 0.001$). Their confirmatory interpretation remains provisional because the main effect of technological capability, latent-interaction procedure, and conditional effects were not reported.
Originality/Value – The study brings digital finance and halal-practice orientation into a common model of MSME sustainability awareness. It distinguishes respondents' sustainability perceptions from verified business survival or environmental, financial, and social outcomes, and identifies measurement and model-specification requirements for a more rigorous assessment of conditional associations.

ARTICLE INFO

Keywords:
Culinary MSMEs, Digital Finance, Halal-Practice Orientation, Technological Capability, Sustainability Awareness

Article Information:
Received: 25/08/2026
Revise: 15/09/2026
Accepted: 25/10/2026

ISSN:
2985-3168 (Online)
2985-3222 (Print)

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1. Introduction

Digital financial services and consumer interest in halal food are increasingly important to culinary MSMEs (Dupi & Inayat, 2025; Ernayani & Firman, 2024). Businesses may use digital payments, financing, and record-keeping while adopting halal-related operating practices in response to changing customer preferences (Nugrioho, 2022; Norhaifa, 2025). However, the presence of these practices cannot, by itself, establish long-term business sustainability, which requires observable economic, social, and environmental outcomes.

In Indonesia, growing digital payments create opportunities for culinary firms to improve transactions and financial administration. Previous research links digital finance with transaction convenience, access to financing, and business performance (Fachrunnisa et al., 2024), while halal-oriented operations may be relevant to credibility and market acceptance (Bakhtiar, 2026). The present study examines how these practices relate to respondents' sustainability awareness rather than treating their questionnaire responses as evidence of actual long-term sustainability.

Prior studies have examined digital finance and halal-oriented MSMEs (Qurniawati & Nurohman, 2021; Alfarizi & Ngatindriatun, 2022), but their outcomes and operationalizations vary. In particular, reported sustainable performance should be distinguished from owners' or decision-makers' knowledge, evaluation, and perceived orientation toward sustainability. This distinction matters in culinary MSMEs, where financing, product-related halal expectations, and daily technology use may coexist without verified sustainability outcomes.

Digital finance can facilitate daily transactions and financial administration (Bai et al., 2021). Rita and Nastiti (2024) also relate digital transformation to financial performance in Indonesian culinary MSMEs. These studies motivate examining digital finance as a potential correlate of sustainability awareness, although improved financial performance is not synonymous with awareness and any association in cross-sectional data cannot establish a causal process.

Research on halal food businesses emphasizes consumer trust, supply-chain orientation, and competitiveness (Secinaro & Calandra, 2020; Usmanova et al., 2022). The items available in this study, however, combine self-reported halal implementation (HP2 and HP4) with beliefs about halal benefits or importance (HP1, HP3, and HP5). We therefore describe this measured construct as halal-practice orientation rather than objective halal compliance or certification.

Technological readiness is associated with business digitalization and the ability to use technological resources (Alqam et al., 2025). Constraints in technical skills and infrastructure may limit MSMEs' opportunities to benefit from digital tools (Yesuf & Fields, 2026). The present technological-capability measure covers infrastructure, digital competence, selection capability, and encouragement of use; it does not directly measure reconfiguration or other dynamic-capability mechanisms.

This study addresses the narrower question of whether digital finance and halal-practice orientation are associated with sustainability awareness among culinary MSME decision-makers in Bekasi City, and whether those associations vary with self-reported technological capability. The Resource-Based View (RBV) and Technology–Organization–Environment (TOE) perspectives are used to interpret the model rather than presented as fully tested theories. The analysis is cross-sectional and purposively sampled; hence the results concern modeled associations in the study sample, not causal effects or citywide population estimates.

2. Literature Review & Hypothesis Development

2.1. Resource-Based View (RBV)

The Resource-Based View (RBV) explains why internal resources and their use can be relevant to organizational advantage (Malhotra et al., 2025). For culinary MSMEs, digital financial services and halal-oriented activities are potentially valuable inputs, but access to these practices is not intrinsically rare or difficult to imitate. Their business relevance may depend on how decision-makers use available resources (Candraningtyas & Rahmawati, 2025). RBV therefore supplies an interpretive rationale for considering resource use and capability jointly, rather than proof that the measured indicators satisfy every VRIN criterion.

Digital payments, halal-related reputation, and business knowledge can support business activities (Islam, 2026; Hidayat-ur-Rehman & Alam, 2026). Their availability must nevertheless be distinguished from firm-specific routines that convert them into operational benefits. Nugroho et al. (2026) relate QR-code payment acceptance to sustainability performance, but the present outcome is self-reported awareness, and no behavioral pathway is directly observed.

RBV identifies valuable, rare, inimitable, and non-substitutable (VRIN) characteristics as conditions that may support sustained advantage. The present questionnaire does not establish rarity, inimitability, or non-substitutability for digital finance, halal orientation, or technological capability. Accordingly, the model makes the more modest argument that differences in access, readiness, and perceived use of resources may coincide with differences in sustainability awareness. Competitive advantage and actual business survival remain outside the measured outcome (İbrahimcioğlu & Kitapçı, 2025; Islam, 2026).

2.2. Technology Organization Environment (TOE)

The Technology Organization Environment (TOE) framework identifies technological, organizational, and environmental contexts that can shape technology adoption (Arifia, 2024; Sánchez et al., 2025). The study does not operationalize the entire framework: competitive pressure, regulation, market requirements, and broader organizational readiness are not separately measured. TOE is therefore employed only as a contextual lens for the role of self-reported technological capability.

The technological context includes digital equipment and connectivity, while organizational considerations may include employees' ability to select and use technology. Competitive and consumer pressures belong to the external environment but are not observed in this sample. Lutfi et al. (2022) illustrates how TOE can organize adoption factors; it would be inappropriate to claim that the present four-construct model tests all three TOE contexts.

In the present model, technological capability/readiness is a first-order self-reported construct combining technology availability, staff competence, ability to select technology, and encouragement of use. Previous studies connect technology with halal-business digitalization and performance (Hadis et al., 2025; Al-Omush et al., 2023; Hasan et al., 2025). Those findings inform interpretation, but our items do not measure halal traceability, organizational learning, or dynamic-capability processes.

2.3. Digital Finance and MSME Sustainability Awareness

MSME sustainability refers to sustained business functioning and economic, social, and environmental outcomes. Such outcomes require evidence beyond attitudes or awareness (Ying & Allaqtta, 2025; Ramdhan et al., 2026). The dependent variable examined here is instead MSME Sustainability Awareness (MS): respondents' understanding and evaluation of sustainable growth and its wider effects, together with one general self-assessment of

enterprise sustainability. The distinction limits the scope of the theoretical and empirical claims.

Digital finance encompasses technology-enabled payment, financing, saving, and financial management services (George, 2024; Elmi et al., 2025). Respondents who perceive these services as useful may also be more attentive to long-term business practices. This possible link is examined as an association with sustainability awareness, not as evidence of improvements in revenue, business survival, or environmental performance.

The literature relates digital finance to business management and sustainable performance (Gbadebo, 2025; Kurniasari et al., 2025). Wang and Zhang (2025) discuss resilience and digital innovation, which provide a broader substantive context. Since the present dependent-variable items concern awareness and perceptions, these outcome studies support the plausibility of examining an association but do not establish that the same mechanisms operate in this sample. Accordingly, the following hypothesis is proposed:

H1: Digital finance is positively associated with MSME sustainability awareness among culinary MSME respondents.

2.4. Halal-Practice Orientation and MSME Sustainability Awareness

In culinary businesses, halal assurance ideally involves verifiable ingredient selection, suppliers, production procedures, and related compliance requirements. The current five-item questionnaire does not comprehensively measure these operational features. HP2 and HP4 capture self-reported implementation, whereas HP1, HP3, and HP5 capture perceived consumer, product, and business benefits. For analytical accuracy, the combined score is described as halal-practice orientation rather than independently verified halal implementation (Gemilang et al., 2024; Farhan & Sutikno, 2024).

Alfarizi (2023) discusses halal certification, compliance, and sustainable business performance, offering a rationale for studying halal-related activities. Yet a respondent's favorable beliefs about halal do not necessarily demonstrate certification or consistent practice. An association with sustainability awareness would therefore indicate alignment among perceptions and self-reported activities, not actual halal compliance.

Other studies connect halal supply-chain management, assurance practices, and enterprise outcomes (Nasyiah et al., 2026; Shalihin et al., 2024). Their findings should not be equated with the effects of the present mixed attitudinal and practice-based measure. Operational assessments, supplier verification, segregation, certification, and audit data would be required before inferring actual halal-assurance performance.

Given its possible connection with responsible business thinking, halal-practice orientation may be positively associated with respondents' sustainability awareness. This prediction is deliberately limited to the measured constructs and avoids asserting changes in realized business survival or environmental performance.

H2: Halal-practice orientation is positively associated with MSME sustainability awareness among culinary MSME respondents.

2.5. Technological Capability as a Moderator between Digital Finance and MSME Sustainability Awareness

Technological capability is used here as a broad label for reported technology infrastructure, digital skills, ability to select technology, and managerial encouragement (TC1–TC5). These indicators represent distinct but related aspects of organizational technological readiness. They are treated as a combined first-order measure for consistency with the archived model;

the adequacy of this reflective specification has not been independently established (Zhu, 2024; Safi et al., 2024).

A business with stronger technological readiness may be better placed to operate digital payments and financial applications, although the available questionnaire does not observe actual frequency or accuracy of technology use (Tennakoon, 2024; Yang et al., 2024; Kim & Jin, 2024). Accordingly, technological capability is investigated as a possible boundary condition of the association between digital finance and sustainability awareness.

In RBV terms, respondents may evaluate digital finance in the context of their broader perceived technological readiness. Syahrir (2025) and Nurfauzan et al. (2026) provide related evidence on technology and business outcomes, but no dynamic learning, resource transformation, or causal mechanism is measured here. The present study therefore examines a statistical interaction, not a verified improvement process.

The hypothesized interaction predicts that the conditional digital-finance association with sustainability awareness is more positive at higher values of technological capability. Establishing this claim requires a hierarchical model that also includes the main effect of technological capability and reporting conditional slopes or equivalent contrasts (Waqar et al., 2025; Hidayat-ur-Rehman & Alam, 2026).

H3: Technological capability positively moderates the association between digital finance and MSME sustainability awareness.

2.6. Technological Capability as a Moderator between Halal-Practice Orientation and MSME Sustainability Awareness

Technological readiness can be relevant to the use of digital systems in culinary-business operations (Chakma & Dhir, 2025; Ahmed et al., 2026). However, the current TC scale does not observe specialized halal systems. Technology should therefore be considered a potential contextual condition rather than direct evidence of digital halal assurance.

Implementing verifiable halal systems can involve supplier information, procedural records, and product traceability. Literature identifies technological support as relevant to standards-based processes (Abbas et al., 2023; Tomar, 2025). These operational mechanisms were not included in the current items and cannot be established from the present data.

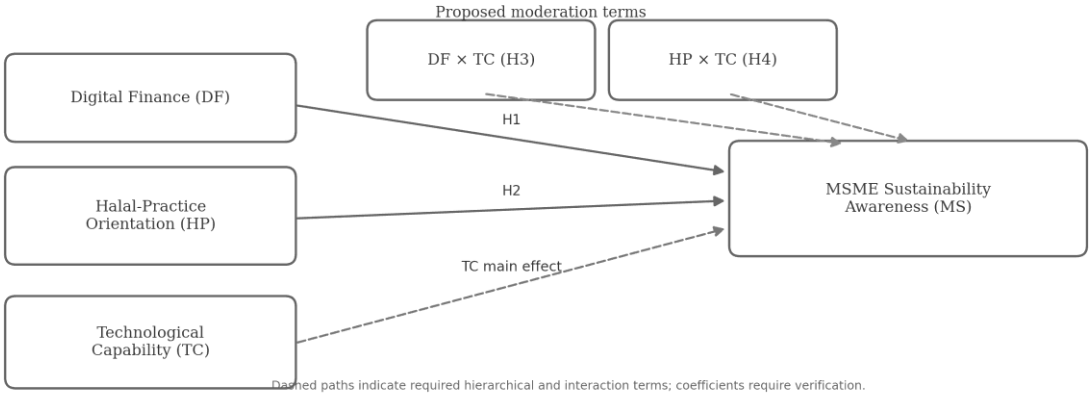
Respondents who rate both halal-practice orientation and technological readiness highly may also express stronger sustainability awareness. This is a plausible statistical interaction, but not evidence that digital traceability, supplier monitoring, or actual halal compliance explains it (Sulaiman et al., 2026; Khan et al., 2024).

Technology may assist halal-related business management in other contexts (Hidayati et al., 2024; Sari et al., 2026). In this study the moderation hypothesis refers narrowly to conditional associations among self-reported constructs. Confirmation requires full disclosure of the interaction specification and its uncertainty.

H4: Technological capability positively moderates the association between halal-practice orientation and MSME sustainability awareness.

Figure 1 summarizes the proposed associations between digital finance, halal-practice orientation, technological capability, and MSME sustainability awareness. The diagram includes a direct technological-capability path to satisfy the hierarchical principle for interaction models. RBV and TOE provide interpretive context; no complete RBV or TOE framework test is claimed. The interaction paths and conditional effects require verification against the complete structural model.

Figure 1. Conceptual Research Model



Source: Author's own work (2026)

3. Methodology

This study employed a quantitative, cross-sectional explanatory survey to examine associations among digital finance (DF), halal-practice orientation (HP), technological capability (TC), and MSME sustainability awareness (MS). The approach is observational; neither temporal ordering nor causal identification is established. The archived analysis uses covariance-based structural equation modeling (CB-SEM) in AMOS. Estimates and fit statistics are reported as originally available and must be interpreted in light of the unresolved full moderation specification.

The target group consisted of owners, managers, or staff members of culinary MSMEs in Bekasi City who were involved in business decisions and whose businesses had operated for at least one year. Purposive sampling was described in the original protocol. The manuscript does not establish that all completed questionnaires came from owners; the precise distribution across owners, managers, and workers, recruitment channels, invitation counts, exclusions, and response rate require confirmation from the original fieldwork record. Coverage of several subdistricts does not imply statistical representativeness of Bekasi City.

The archived dataset summary contains 200 usable questionnaires. This number is descriptive, not an a priori statistical-power justification: adequacy depends on model complexity, indicator quality, the interaction estimation method, effect size, and convergence. Questionnaires used five-point Likert responses (1 = strongly disagree; 5 = strongly agree). The source manuscript does not document the AMOS version, estimator, missing-data procedure, normality tests, or original recruitment flow; these should be retrieved from the analysis and fieldwork records before the specification is claimed to be reproducible.

The DF indicators address digital financial-service use and respondents' perceptions of transaction and management benefits. HP combines self-reported halal-practice implementation (HP2, HP4) with perceived advantages or importance (HP1, HP3, HP5). TC covers infrastructure (TC1–TC2), human/selection skills (TC3–TC4), and managerial encouragement (TC5); these domains may not be interchangeable reflective indicators. MS1–MS4 primarily gauge understanding and awareness of sustainability, whereas MS5 is a broad self-assessment. Hence MS is labeled MSME sustainability awareness throughout, not verified firm-level sustainability performance.

Measurement assessment used standardized factor loadings, average variance extracted (AVE), and composite/construct reliability (CR). These statistics assess convergent validity and internal consistency, not discriminant validity or content validity. Discriminant validity requires inter-construct correlations, Fornell–Larcker comparisons, and preferably heterotrait–monotrait ratios (HTMT) or another suitable latent-variable diagnostic; these outputs were not available in the archived tables. The study also uses one respondent and one questionnaire for every construct, creating potential common-method variance that cannot be ruled out by AVE or CR.

To satisfy the hierarchical principle, a complete moderation specification should simultaneously include DF, HP, TC, DF × TC, and HP × TC as predictors of MS: $MS = \beta0 + \beta1DF + \beta2HP + \beta3TC + \beta4(DF \times TC) + \beta5(HP \times TC) + \varepsilon$. If latent interactions were estimated in AMOS, replication additionally requires the exact product-indicator or parcel procedure (or documented observed-score approach), centering or standardization, treatment of measurement error, multicollinearity diagnostics, and conditional effects. The archived document does not identify these features or the TC main-effect estimate, so the reported interaction coefficients cannot yet be verified as results from this complete model. Conditional slopes would be $\beta1 + \beta4TC$ for DF and $\beta2 + \beta5TC$ for HP on the same scale used to estimate the interactions.

4. Result and Discussion

4.1. Result

The study summary reports 200 eligible respondents associated with culinary MSMEs in Bekasi City. Table 1 describes the available gender, age, education, business-duration, monthly-income, and subdistrict characteristics. The respondent-role composition was not supplied in the source table, so the sample must not be described as consisting exclusively of owners. These descriptive distributions characterize the obtained purposive sample rather than the citywide culinary MSME population.

Table 1. Descriptive Analysis

Demographics	Categories	n = 200	Percentage (%)
Gender	Male	92	46.00
	Female	108	54.00
Age	< 25 years	18	9.00
	25 – 30 years	42	21.00
	31 – 36 years	58	29.00
	37 – 42 years	45	22.50
	> 42 years	37	18.50
Education	No formal education	2	1.00
	High school and lower	116	58.00
	Graduation	76	38.00
	Postgraduation	6	3.00
Length of business	< 5 years	74	37.00
	5 – 9 years	63	31.50
	10 – 14 years	38	19.00
	> 14 years	25	12.50
Income (per month)	< Rp 5,000,000	95	47.50
	Rp 5,000,000 – Rp 10,000,000	84	42.00

Demographics	Categories	n = 200	Percentage (%)
	Rp 11,000,000 – Rp 20,000,000	14	7.00
	> Rp 20,000,000	7	3.50
Subdistrict	Bantargebang	12	6.00
	Bekasi Barat	18	9.00
	Bekasi Selatan	17	8.50
	Bekasi Timur	20	10.00
	Bekasi Utara	14	7.00
	Jatiasih	12	6.00
	Jatisampurna	14	7.00
	Medansatria	15	7.50
	Pondok Gede	24	12.00
	Pondok Melati	19	9.50
	Mustikajaya	20	10.00
	Rawa Lumbu	15	7.50

Source: Processed primary data, 2026.

Table 1 indicates that 54.0% of respondents were women and 46.0% were men; the largest age category was 31–36 years (29.0%). High school or lower was the most frequently reported education category (58.0%), followed by graduation (38.0%). These figures summarize the survey respondents without establishing their ownership status or representativeness.

Businesses operating for less than five years accounted for 37.0%, and those operating for five to nine years represented 31.5%. The largest reported monthly-income category was below Rp5,000,000 (47.5%). Respondents appeared across the listed Bekasi subdistricts, with Pondok Gede accounting for 12.0% of records. No recruitment probabilities are available for drawing population inferences.

The measurement-model summary comprises standardized factor loadings, AVE, and CR for four questionnaire-based constructs. An item loading greater than 0.50 and an AVE greater than 0.50 were used as criteria for convergent validity, while CR greater than 0.70 was used for internal consistency. Content-validity and discriminant-validity conclusions cannot be derived from these criteria alone.

Table 2. Results of Convergent Validity and Construct Reliability Tests

Variable	Item Code	Statement Item	Standardized Loading	AVE	CR
Digital Finance (DF)	DF1	I use digital financial services to support my business operations.	0,802	0,747	0,936
	DF2	Digital financial services make my business transactions easier.	0,801		
	DF3	Digital financial services improve my business financial management.	0,886		
	DF4	I utilize digital financing services for business development.	0,915		
	DF5	Digital financial services increase the efficiency of my business.	0,911		

Variable	Item Code	Statement Item	Standardized Loading	AVE	CR
Halal-Practice Orientation (HP)	HP1	Implementing halal practices increases consumer confidence in my business.	0,932	0,846	0,965
	HP2	I implement halal practices in the selection of raw materials, production processes, and product presentation.	0,926		
	HP3	Halal practices help maintain the quality and safety of the products I sell.	0,917		
	HP4	I strive to ensure that the entire business process is in accordance with applicable halal principles.	0,891		
	HP5	Halal practices are an important part of managing and developing my business.	0,932		
Technological Capability (TC)	TC1	My business has adequate technological devices and facilities to support business operational activities.	0,758	0,714	0,926
	TC2	My business has internet access and supporting digital systems.	0,884		
	TC3	My employees and I have the ability to use digital technology in running our business.	0,914		
	TC4	I am able to identify and implement technology that suits business needs.	0,853		
	TC5	I actively encourage the use of technology in my business.	0,808		
MSME Sustainability Awareness (MS)	MS1	I understand the idea of a business growing in a sustainable way.	0,854	0,605	0,884
	MS2	Sustainable growth does not only focus on company profits, but also on the positive effects on society and the environment.	0,845		
	MS3	Understanding the social impact of the entrepreneurial spirit is also very important.	0,672		
	MS4	Additionally, it is important to be aware of the environmental	0,755		

Variable	Item Code	Statement Item	Standardized Loading	AVE	CR
		impact caused by entrepreneurship.			
	MS5	In my opinion, my company can be considered sustainable.	0,750		

Source: Processed primary data, 2026.

As shown in Table 2, standardized loadings range from 0.672 (MS3) to 0.932 (HP1 and HP5). The originally calculated statistics use the labels DF, HP, TC, and MS; their item wording, rather than the labels alone, determines their interpretation. In particular, HP mixes implementation and perceived benefit statements, while MS is predominantly an awareness measure. All reported loadings exceed 0.50, indicating item convergence within the fitted measurement specification, but not confirming unidimensionality or appropriate construct content.

The available AVE values were 0.747 (DF), 0.846 (HP), 0.714 (TC), and 0.605 (MS). These values meet the stated convergent-validity threshold, but there is no reported latent-factor correlation matrix, Fornell–Larcker comparison, or HTMT diagnostic. Whether the constructs are empirically distinct therefore remains unverified and must be assessed before interpreting the interactions as robust.

The reported CR values were 0.936 (DF), 0.965 (HP), 0.926 (TC), and 0.884 (MS), consistent with high internal consistency in the archived measurement model. The high reliability of HP does not verify halal compliance, and high reliability of MS does not transform awareness into observed sustainability performance. These results support only the reported convergence and internal-consistency criteria; complete measurement validation is pending discriminant-validity and substantive item-content evaluation.

Discriminant-validity assessment (pending original latent correlations): the square roots of reported AVE are approximately DF = 0.864, HP = 0.920, TC = 0.845, and MS = 0.778. Fornell–Larcker comparisons cannot be completed without inter-construct correlations, and HTMT requires item-level covariance information. These square roots alone do not establish discriminant validity.

Model-fit indices were reported for the original full structural model in Table 3. They should be read as fit statistics for that archived specification; the provided report does not confirm that the lower-order TC path and both interactions were included simultaneously. Therefore these values cannot be assumed to describe a re-estimated, hierarchy-compliant moderation model.

Table 3. Goodness of Fit Measures of The Full Model

Parameter	Cut-off value	Result	Interpretation
Chi-square	Expected to be low	289.845	Acceptable fit
CMIN/df	< 3.00	1.575	Good fit
GFI	> 0.90	0.891	Marginal fit
RMSEA	< 0.06	0.054	Good fit
TLI	≥ 0.90	0.976	Good fit
CFI	> 0.90	0.981	Good fit
AGFI	> 0.90	0.850	Marginal fit

Source: Processed data, 2026

The archived model yielded CMIN/df = 1.575, RMSEA = 0.054, TLI = 0.976, and CFI = 0.981; GFI = 0.891 and AGFI = 0.850 were below the listed 0.90 benchmarks. The chi-square value was

289.845. These figures indicate that several reported fit indices were favorable for the archived specification, but their validity for a full hierarchical interaction model, and the estimation method used, require verification from the AMOS output. They do not address construct overlap or common-method variance.

Table 4 reproduces the originally reported direct and interaction coefficients without imputing missing parameters. In a hierarchical model, the TC main-effect coefficient is a necessary lower-order term. Because that coefficient and the interaction-estimation details are unavailable in the submitted results, inferential claims based on the interaction terms remain provisional. In addition, the available table does not indicate whether estimates are standardized or unstandardized and omits standard errors, critical ratios, and confidence intervals.

Table 4. Archived Structural Estimates and Hypothesis Testing Status

Hypothesis	Path	Estimate	p-value	Interpretation
H1	Digital Finance for MSME Sustainability Awareness	0.319	<0.001	Accepted
H2	Halal-Practice Orientation for MSME Sustainability Awareness	0.109	0.161	Rejected
H3	Technological Capability Moderate Digital Finance to MSME Sustainability Awareness	0.260	<0.001	Provisional
H4	Technological Capabilities Moderate Halal-Practice Orientation for MSME Sustainability Awareness	0.340	<0.001	Provisional
—	Technological Capability → MSME Sustainability Awareness	0.238	0.03	—

In the archived model, digital finance had a positive coefficient with sustainability awareness (estimate = 0.319, $p < 0.001$). This is a reported conditional statistical association, not evidence that digital finance caused improvements in business survival, financial resilience, or environmental performance. Its magnitude may change when the full TC main effect is included or when estimation details are verified.

Halal-practice orientation had a smaller, statistically nonsignificant reported coefficient (estimate = 0.109, $p = 0.161$). Consequently, H2 was not supported in the archived model. Given the mixture of attitudinal and self-reported practice items, the result cannot be interpreted as demonstrating that actual halal compliance is unrelated to enterprise sustainability.

The original results list positive interaction coefficients for DF × TC (estimate = 0.260, $p < 0.001$) and HP × TC (estimate = 0.340, $p < 0.001$). However, the direct TC effect, product-term construction, scale of estimates, and conditional slopes were not reported. H3 and H4 should therefore be treated as provisional rather than fully verified moderation findings. A revised AMOS model must include all lower-order terms, assess multicollinearity, and report conditional effects at prespecified levels of TC (for example, its mean and one standard deviation above and below the mean) with standard errors or confidence intervals. No numerical simple slopes can legitimately be inferred from the currently available tables.

4.2. Discussion

The archived results suggest a positive association between digital finance and respondents' sustainability awareness, whereas halal-practice orientation was not significantly associated with the same outcome. These findings concern perceptions rather than realized sustainability performance. Prior studies associate digital financial inclusion or literacy with business outcomes (Tandilino et al., 2025; Siow et al., 2025), but differences in dependent-variable operationalization preclude a direct equivalence. RBV offers the narrower interpretation that

access to tools and business resources may be associated with how decision-makers evaluate sustainable growth; it does not establish VRIN advantage or a causal resource-transformation mechanism.

The reported interaction terms offer a tentative indication that the digital finance–awareness and halal orientation–awareness associations could vary with technological capability. Yet positive coefficients alone do not establish the size or direction of the conditional associations at practically relevant values, particularly when the technological-capability main effect has not been reported. Evidence from digital-capability and technology-adoption research (Khin & Ho, 2019; Chaudhuri et al., 2023; Melo et al., 2026) is useful for comparison, but mechanisms such as sensing, seizing, and reconfiguring were not measured here. Interpretation of H3 and H4 must await the complete hierarchical specification and simple-slope or marginal-effect analyses.

The HP items require particular care. HP2 and HP4 involve self-reported implementation, whereas HP1, HP3, and HP5 represent favorable evaluations of halal practices. The construct therefore cannot identify which firms were certified, verified ingredients, maintained segregated processes, or implemented traceability systems. Studies on halal assurance and IT capability (Wijaya et al., 2023; Hidayati et al., 2024) offer plausible future mechanisms, but the present survey cannot test them. Likewise, TC indicators address devices, internet access, human skills, technology selection, and managerial encouragement; they do not assess actual digital halal documentation or supply-chain monitoring. The nonsignificant HP main association should not be interpreted as a failure of objectively observed halal compliance.

The coefficient magnitudes of 0.260 and 0.340 cannot establish that one interaction is substantively stronger than the other. Such a comparison requires a comparable coefficient scale and a formal contrast with its uncertainty. Furthermore, a single respondent rated all study constructs at the same time. Social desirability, acquiescence, and generalized positive self-evaluation could inflate cross-construct relationships; no common-latent-factor or marker-variable diagnostic was supplied. Accordingly, the interaction pattern is exploratory until measurement distinctiveness, method variance, and full model specification are examined (Vrontis et al., 2022).

The contribution of the study is to distinguish perceived sustainability awareness from objective enterprise sustainability while considering how digital finance, halal-practice orientation, and technological readiness may be related in one sample. For practitioners, the results cautiously suggest potential value in digital financial literacy and technological skills, without demonstrating that interventions will improve survival or social and environmental outcomes. For theory, RBV and TOE help organize possible links between resources and adoption contexts but were not fully tested. Subsequent research should measure verified sustainability outcomes, operational halal assurance, external TOE conditions, and the specific technological processes proposed in the wider literature (Maulana et al., 2026).

5. Conclusion and Suggestion

5.1. Conclusion

This study examined archived cross-sectional associations among digital finance, halal-practice orientation, technological capability, and MSME sustainability awareness in a purposive sample of 200 culinary MSME respondents in Bekasi City. The outcome represents perceived understanding and attitudes, not verified economic, social, or environmental sustainability.

First, the originally reported digital-finance coefficient was positive and statistically significant (estimate = 0.319, $p < 0.001$). Second, the reported coefficient for halal-practice orientation was not statistically significant (estimate = 0.109, $p = 0.161$). These results do not establish causal influences and cannot be generalized to objective halal compliance, business survival, or citywide MSME performance.

Third, positive interaction coefficients involving technological capability were reported for both digital finance and halal-practice orientation. Nevertheless, their interpretation as confirmed moderation is premature because the archived results omit the technological-capability main effect and the procedure used to estimate interactions. The proper substantive conclusion is that moderation is a plausible but not yet fully validated statistical pattern. A hierarchy-compliant re-estimation, measurement diagnostics, and conditional-effect analysis are necessary before stronger conclusions are warranted.

5.2. Suggestions

Culinary MSMEs may consider improving digital financial literacy, technology infrastructure, and staff skills to support financial administration. These are practical implications motivated by related research and the associations observed here, not intervention effects demonstrated by the present cross-sectional survey. Decision-makers should assess adoption costs and suitability for their operations.

Halal-oriented firms should distinguish general positive attitudes toward halal from independently verifiable operating procedures. Support agencies could combine technology assistance with ingredient screening, supplier documentation, and appropriate halal assurance training. The effectiveness of such measures for actual sustainability performance requires separate evaluation using behavioral and financial evidence.

6. Limitations and Future Research

First, the cross-sectional, single-source, purposively recruited design precludes causal inference and population-representative claims. All four constructs were reported by one respondent at the same time, allowing common-method variance and socially desirable responding. No independently documented procedural safeguards or CB-SEM common-method-factor diagnostic was supplied with the original analysis output. Future studies should separate sources or measurement occasions and combine self-reports with independently verified indicators.

Second, MS1–MS4 mainly capture awareness, understanding, and evaluation of sustainable development, while MS5 is a global perception of whether the firm is sustainable. These items do not measure firm survival, cash-flow stability, revenue resilience, employment, waste reduction, or social performance. Thus the outcome is consistently called MSME sustainability awareness. Future research should use objective longitudinal business, accounting, employment, or environmental records to evaluate actual sustainability, while maintaining an explicit distinction between awareness and performance.

Third, HP contains both self-reported implementation items (HP2 and HP4) and beliefs about benefits or importance (HP1, HP3, and HP5). It does not verify certification, ingredient screening, supplier compliance, segregated production, operational documentation, or external audits. This construct is best interpreted as halal-practice orientation; any relationship cannot be generalized to verified halal compliance. Future studies should separately model implementation and orientation, validate their content with industry experts, and corroborate compliance with external records.

Fourth, TC combines infrastructure, human competence, technology selection, and managerial encouragement, although these could represent different dimensions or a higher-order composite. The archived reflective measurement model does not prove that these dimensions are interchangeable. Neither sensing, seizing, organizational reconfiguration, nor specific halal digital-traceability systems were measured. More targeted instruments and tests comparing reflective versus multidimensional specifications are recommended. The archived records also omit discriminant-validity, full interaction-estimation, and conditional-effect diagnostics; these remain substantive limitations of the current inference.

Fifth, the recruitment log and distribution of respondent roles were not supplied in the reviewed manuscript, and the sample-size rationale was not supported by an a priori power or sensitivity analysis. Even complete city-subdistrict coverage would not make purposive recruitment representative. Future research should preserve response-flow records, explain the respondent unit, and justify sample size in relation to full latent interaction complexity. A new analysis should also document estimator, AMOS version, missing-data handling, and tests of distributional assumptions.

Acknowledgement

The authors would like to express their sincere gratitude to all respondents for their valuable contributions and insights, as well as to colleagues and academic staff for their constructive feedback and support throughout this research. This research was funded by the Directorate of Research, Technology, and Community Service, Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia through the Penelitian Dosen Pemula (PDP) grant program, under Decree Number 196/KPA/C3/KPT/2026 and Agreement/Contract Numbers 282/C3/DT.05.00/PL-BARU/2026; 0620/LL3/AL.04/2026; and 011/LPPM/UK/VII/2026.

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