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Governance, Risk Management, and Compliance as Organizational Capabilities for Sustainable Halal Certification Implementation: Evidence from Indonesian Food and Beverage MSMEs

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ABSTRACT

Halal certification research has predominantly examined awareness, knowledge, adoption intention, consumer responses, or downstream business outcomes. Less is known about the organizational capabilities that enable micro, small, and medium enterprises (MSMEs) to sustain halal requirements after certification enters day-to-day operations. This study investigates governance, risk management, and compliance (GRC) as distinct but complementary organizational capabilities influencing halal certification implementation among food and beverage MSMEs in Greater Jakarta (Jabodetabek), Indonesia. Institutional Theory is used to explain why firms respond to regulatory and normative pressures, while the GRC perspective explains how those pressures are translated into internal managerial mechanisms. A quantitative, explanatory, cross-sectional survey was conducted with 200 MSME owners or managers selected through purposive sampling. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. Following measurement-model purification, the final model demonstrated satisfactory reliability, convergent validity, and discriminant validity. The structural model explained 78.9% of the variance in halal certification implementation ($R^2 = 0.789$; adjusted $R^2 = 0.785$), with predictive relevance ($Q^2 = 0.783$) and good model fit (SRMR = 0.041). Governance ($\beta = 0.341$, $t = 6.692$, $p < 0.001$), risk management ($\beta = 0.379$, $t = 7.999$, $p < 0.001$), and compliance ($\beta = 0.321$, $t = 7.439$, $p < 0.001$) all exerted positive and significant effects. Risk management was the strongest predictor. The study contributes by reframing halal certification implementation from a predominantly administrative-compliance issue into an organizational-capability problem. It argues that Institutional Theory explains why MSMEs respond to external halal pressures, whereas GRC explains how those responses are operationalized internally through direction and accountability, anticipation and control, and regulatory alignment. The findings imply that certification programs should extend beyond application assistance toward post-certification governance, halal risk management, and continuous compliance capability.

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1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) occupy a central position in Indonesia's economic structure. The underlying thesis reports that MSMEs account for more than 99% of business units, contribute approximately 60.5% of national gross domestic product, and absorb approximately 97% of the national workforce. Their economic importance means that regulatory changes affecting MSMEs can have implications far beyond firm-level compliance. This is particularly evident in the food and beverage sector, where product quality, safety, legality, and halal assurance increasingly shape market access, consumer trust, and business continuity.

Indonesia's halal assurance system has moved halal certification from a predominantly voluntary market signal toward a formal institutional requirement for many product categories. The study context is anchored in Law No. 33 of 2014 on Halal Product Assurance and Government Regulation No. 42 of 2024. Within this regulatory environment, food and beverage MSMEs must not only obtain certification but also maintain halal integrity across materials, suppliers, production, storage, documentation, and other operating activities. The resulting managerial challenge is therefore broader than completing an application or passing an initial certification process.

This distinction between certification acquisition and certification implementation is important. An enterprise may be able to prepare documents for certification while still lacking repeatable internal routines for maintaining halal integrity over time. Supplier changes, substitutions of ingredients, process modifications, employee turnover, incomplete records, and changes in regulatory requirements can create new vulnerabilities after certification. The effectiveness of halal assurance therefore depends on whether the enterprise has organizational mechanisms that make halal requirements part of normal management rather than a temporary compliance project.

Recent international literature reinforces the need to move beyond a narrow certification lens. [1], in a topic-modeling review of 738 Scopus publications, show that halal food research remains heavily concentrated in supply-chain management and consumer behavior while emphasizing the need to protect halal integrity across the value chain. [2] demonstrate that halal certification is positively related to halal supply-chain resilience, competitive advantage, and financial performance among Indonesian frozen-food MSMEs. [3] similarly find that halal certification is associated with operational and financial performance across Indonesian MSMEs. These studies show that certification matters beyond formal recognition, but they do not directly explain which internal organizational capabilities enable MSMEs to implement halal requirements consistently.

A second stream of research remains strongly focused on adoption or intention. [4] examine MSMEs in Indonesia and Malaysia and show that compatibility, government support, and competitive intensity shape behavioral intention to obtain halal certification, while consumer pressure and halal knowledge are not significant in their model. This work provides valuable evidence on pre-adoption decision making, but the dependent outcome remains intention to obtain certification. The present study instead focuses on implementation, which is conceptually different because it concerns the persistence and integration of halal practices after certification requirements enter operational routines.

The third issue concerns the organizational lens used to explain implementation. Existing halal research has examined halal governance, halal supply-chain risk, certification intention, organizational support, or performance outcomes, yet governance, risk management, and compliance are less frequently tested together as distinct organizational drivers of halal certification implementation. This leaves an important conceptual question unresolved: if external regulation creates pressure to comply, what internal managerial capabilities determine whether that pressure is converted into consistent halal implementation?

Governance, Risk Management, and Compliance (GRC) provides a useful framework for answering this question. Governance establishes direction, responsibility, oversight, and accountability. Risk management anticipates, evaluates, controls, monitors, and mitigates threats that may compromise halal integrity. Compliance aligns organizational behavior with regulatory, procedural, and documentation requirements. Although GRC is often discussed as an integrated system, separating its three dimensions empirically allows the relative contribution of each capability to be estimated.

Institutional Theory complements the GRC perspective. Institutional Theory explains why organizations adapt under coercive, normative, and mimetic pressures, but it does not by itself specify the concrete managerial mechanisms through which small firms operationalize that adaptation. This study therefore makes a theoretical distinction that becomes central to the paper: Institutional Theory explains why MSMEs respond to the external halal environment, whereas GRC explains how they internalize that response. Governance provides direction and accountability, risk management provides anticipation and control, and compliance provides regulatory alignment.

The study addresses three interrelated gaps. First, it addresses an empirical gap by shifting the outcome from awareness, intention, or adoption toward actual halal certification implementation. Second, it addresses a conceptual gap by examining governance, risk management, and compliance simultaneously but as separate predictors, allowing their relative effects to be compared. Third, it addresses a contextual gap by applying GRC to food and beverage MSMEs, a setting in which formal governance and risk systems are typically less developed than in large regulated corporations. Together, these gaps create a stronger basis for examining halal certification as an organizational-capability problem.

Accordingly, this study investigates the effects of governance, risk management, and compliance on halal certification implementation among food and beverage MSMEs in Jabodetabek. Its principal empirical contribution is not simply that all three GRC dimensions matter, but that risk management emerges as the strongest predictor in a regulatory certification context. This result challenges a purely compliance-centered interpretation of halal certification and suggests that sustainable implementation depends particularly on the ability to anticipate and control operational halal risks.

2. LITERATURE REVIEW

2.1 Institutional Theory: Why MSMEs Respond to Halal Pressures

Institutional Theory explains organizational adaptation as a response to socially and legally constructed expectations. [5] distinguish coercive, normative, and mimetic forms of institutional pressure, [6] emphasizes the broader regulative, normative, and cultural-cognitive pillars that shape organizational legitimacy. These perspectives are especially relevant when organizations operate under explicit regulation and stakeholder expectations, as occurs in halal certification.

Coercive pressure arises from laws, regulations, and formal authority. In the Indonesian halal context, mandatory requirements create direct incentives for MSMEs to modify business practices. Normative pressure arises from expectations held by consumers, certification agencies, industry communities, and professional actors regarding what constitutes credible halal practice. Mimetic pressure may arise when firms observe competitors or peer businesses and imitate practices that appear legitimate or successful under uncertainty. The present model does not measure these three pressures directly; rather, Institutional Theory is used as a supporting explanatory lens for understanding why internal GRC practices become relevant.

A limitation of using Institutional Theory alone is that it explains the environmental sources of pressure more readily than the firm-level capabilities required to convert those pressures into daily operating routines. The present study addresses that explanatory gap by linking Institutional Theory to GRC. External pressure can motivate response, but implementation requires mechanisms for assigning responsibility, identifying risk, maintaining controls, and sustaining regulatory alignment. The GRC framework therefore operates as the internal translation mechanism through which institutional pressure becomes organizational practice.

2.2 *Governance: Direction and Accountability*

Governance refers to the structures and processes through which organizational direction, responsibility, oversight, and accountability are established. In large organizations, governance may involve boards, committees, formal policies, and specialized control functions. In MSMEs, governance is usually less elaborate, but its underlying purpose remains relevant. Halal implementation requires clarity over who makes halal-related decisions, who monitors materials and processes, who maintains records, and who acts when a nonconformity is detected.

The thesis operationalizes governance through division of duties, structured decision making, halal oversight, leadership commitment, clear responsibility, and periodic evaluation. These elements align with halal governance literature emphasizing control, supervision, regulation, and education in preserving halal integrity [7]. They also align with the broader GRC view that governance provides organizational direction and accountability [8].

Governance should strengthen halal implementation because organizational clarity reduces ambiguity and dependence on informal memory. Clear roles increase the likelihood that halal-related responsibilities are consistently executed; management commitment increases the likelihood that adequate attention and resources are provided; oversight and evaluation increase the likelihood that deviations are detected and corrected. Therefore, governance is expected to improve the consistency with which halal requirements are integrated into business operations.

H1: Governance has a positive effect on halal certification implementation among food and beverage MSMEs.

2.3 *Risk Management: Anticipation and Control*

Risk management concerns the systematic identification, evaluation, control, monitoring, and mitigation of events that could prevent organizational objectives from being achieved. In halal operations, risk is not abstract. It can arise when suppliers change, ingredients are substituted, production practices vary, storage conditions create cross-contact concerns, employees misunderstand procedures, documentation is incomplete, or regulations change. These risks may compromise halal integrity even when a business has already obtained certification.

[9] positions halal risk management as a mechanism for combining robustness and resilience in halal systems. [10] likewise demonstrate the importance of structured halal supply-chain risk management. More recent evidence by [2] links halal certification to supply-chain resilience and business performance, reinforcing the view that halal assurance is connected with a firm's ability to withstand and respond to disruption. [1] similarly identify supply-chain management and risk-related integrity concerns as major themes within halal food research.

Risk management should have a positive effect on halal certification implementation because it moves the organization from reactive correction toward preventive control. A business that identifies critical halal risks can define controls before failure occurs, monitor vulnerable activities, and establish corrective action for deviations. This capability is particularly important for MSMEs because resource constraints can magnify the impact of operational errors. The ability to anticipate and control risk may therefore be a core mechanism that keeps halal requirements functioning after certification.

H2: Risk management has a positive effect on halal certification implementation among food and beverage MSMEs.

2.4 *Compliance: Regulatory Alignment*

Compliance refers to adherence to applicable laws, standards, procedures, administrative requirements, documentation obligations, and institutional expectations. In halal certification, compliance begins with formal requirements but extends into continuing behavior. Maintaining certification integrity requires documentation, fulfillment of relevant obligations, consistency with halal procedures, and adaptation to regulatory changes.

[11] show that compliance is relevant to MSMEs' intention to pursue halal certification. [4] further show that external regulatory and competitive factors can be more influential than internal knowledge in shaping certification intention across Indonesia and Malaysia. These studies reinforce the

salience of the regulatory environment but remain primarily adoption-oriented. The present study extends the discussion by testing compliance against implementation rather than intention.

Compliance should strengthen implementation because it establishes behavioral and documentary alignment between the organization and the external halal assurance system. However, compliance is conceptually distinct from risk management. Compliance specifies what must be followed; risk management addresses uncertainty about what may go wrong. This distinction becomes theoretically important when comparing their empirical effects in a regulatory certification setting.

H3: Compliance has a positive effect on halal certification implementation among food and beverage MSMEs.

2.5 *Integrating Institutional Theory and GRC*

The central theoretical proposition of this paper is that Institutional Theory and GRC operate at different explanatory levels. Institutional Theory explains why organizations adapt to the halal environment: coercive pressure arises from regulation, normative pressure arises from stakeholder expectations, and mimetic pressure can arise from peer behavior. GRC explains how organizations operationalize this adaptation internally. Governance structures responsibility, risk management structures anticipation and control, and compliance structures alignment with external requirements.

This distinction moves the study beyond a context-only application of Institutional Theory. Rather than merely stating that MSMEs experience institutional pressure, the model specifies organizational mechanisms through which response quality can vary. Two firms may face the same regulation but differ in their governance clarity, risk capability, and compliance discipline. The resulting differences in internal capability provide a plausible organizational explanation for variation in halal certification implementation.

2.6 *Positioning the Study within Recent Halal MSME Research*

The study's strongest novelty therefore lies in its unit of explanation, not merely in the novelty of individual variables. Governance, risk management, and compliance have each appeared in related literatures, but they are brought together here to explain implementation as an organizational phenomenon. This enables comparison of their relative contributions and produces the theoretically interesting finding that risk management is more strongly associated with implementation than compliance in a regulatory certification context.

The distinction is also relevant for theory. Adoption models often rely on behavioral theories or technology-organization-environment frameworks, while performance studies frequently employ resource-based or capability perspectives. By combining

Institutional Theory with GRC, the present study emphasizes the interaction between external legitimacy pressure and internal organizational response. This approach does not compete with those theories; rather, it occupies a different explanatory space. It explains how firms facing external halal demands build the internal direction, control, and alignment necessary for implementation.

This positioning reveals why the current study is not a duplication of existing certification research. Adoption studies ask whether MSMEs intend to obtain certification; performance studies ask what certification produces; supply-chain studies ask how halal flows and processes can be protected. The present study asks a different managerial question: which internal organizational capabilities are associated with the ability to implement halal certification consistently? The answer provides a link between adoption and outcome research because implementation is the organizational process through which formal certification can plausibly become operationally meaningful.

A third stream focuses on the integrity and performance of the halal supply chain. [1] show that supply-chain management is one of the most prominent themes in contemporary halal food research, and [12] develop a performance-measurement approach for small enterprises participating in self-declared halal certification. These studies emphasize process integrity, governance, assistance, and measurement. The present research intersects with this stream by treating risk management as an organizational capability, but it differs by modeling risk management alongside governance and compliance and by using halal certification implementation as the endogenous construct.

A second stream evaluates the consequences of certification. [3], using a large Indonesian MSME sample, show that halal certification is associated with operational and financial performance, while [2] connect certification with supply-chain resilience, competitive advantage, and financial performance among frozen-food MSMEs. These studies demonstrate that certification can produce business value. However, outcome-oriented models often treat certification as an explanatory variable and do not unpack the internal managerial mechanisms that determine the quality of implementation before such outcomes can emerge.

Recent halal MSME research demonstrates an important diversification of research questions. One stream examines the antecedents of certification adoption. [4] , for example, compare Indonesia and Malaysia and emphasize compatibility, government support, and competitive intensity as determinants of intention. This stream is valuable because it explains why firms decide to seek certification, yet adoption intention remains conceptually upstream from implementation. Intention can exist without sustained operational execution, and successful application does not guarantee that halal controls will remain embedded after certification.

Table 1. Positioning against Selected Recent Halal MSME Research

Study	Primary outcome	Perspective	Context/method	Gap addressed by present study
Widigdo & Triyanto (2024)	Certification intention	Knowledge & compliance	Indonesia / quantitative	Moves from intention to implementation
Kristanto & Kurniawati (2025)	Resilience & performance	Halal supply chain	Indonesia / PLS-SEM	Explains internal capabilities preceding outcomes
Azizah et al. (2025)	Operational & financial performance	RBV/performance	32 Indonesian provinces / PLS-SEM	Focuses on implementation mechanism rather than downstream performance
Fianto et al. (2026)	Certification intention	TOE/adoption	Indonesia & Malaysia / PLS-SEM MGA	Examines post-adoption implementation
Syamsurizal et al. (2026)	Halal supply-chain performance	SCOR/performance measurement	Indonesia / Delphi-AHP	Tests GRC dimensions as causal predictors of implementation
Present study	Halal certification implementation	Institutional Theory + GRC	Jabodetabek / PLS-SEM	Compares governance, risk management, and compliance as organizational capabilities

3. METHODS

3.1 Research Design and Context

The study employed a quantitative, explanatory, and cross-sectional design. The quantitative approach was selected because the objective was to test hypothesized relationships among latent constructs using numerical survey data. The explanatory design was appropriate because the study sought to examine the effects of governance, risk management, and compliance on halal certification implementation. The cross-sectional design captured organizational conditions during a single research period and therefore supports association and predictive interpretation rather than longitudinal causal claims.

The research setting comprised food and beverage MSMEs located in Jabodetabek, covering Jakarta, Bogor, Depok, Tangerang, and Bekasi. The area was selected because it contains a substantial concentration of MSME activity and provides a diverse metropolitan business environment. The sectoral focus on food and beverages is particularly relevant because halal integrity is closely connected to ingredients, processing, storage, packaging, and other operational activities.

3.2 Population, Respondent Criteria, and Sampling

The population consisted of food and beverage MSMEs in Jabodetabek. Respondents were owners or managers because these individuals were expected to possess knowledge of both internal management practices and the halal certification process. Respondent eligibility required the individual to be an owner or manager, operate in food and/or beverages, be located in Jabodetabek, understand the halal certification process, have obtained, be applying for, have previously applied for, or otherwise understand certification, and have operated the business for at least one year.

Purposive sampling was used because not all MSMEs possess sufficient experience with halal certification to provide relevant responses. The questionnaire was distributed online through Google Forms. Data screening was conducted to assess completeness, response consistency, and eligibility. A final sample of 200 valid questionnaires was retained for analysis. This sample exceeded the minimum size considered adequate for the complexity of the model in the thesis and was judged sufficient for PLS-SEM estimation.

3.3 Constructs and Measurement

The initial instrument contained 26 indicators measured on a five-point Likert scale. Governance consisted of six indicators covering division of duties, structured decision making, halal oversight, leadership commitment, responsibility, and evaluation. Risk management consisted of six indicators covering risk identification, prevention, control, evaluation, mitigation of nonconformities, and monitoring. Compliance consisted of six indicators covering regulatory adherence, administrative requirements, document completeness, institutional obligations, documentation management, and regulatory developments. Halal certification implementation consisted of eight indicators covering halal commitment, operational implementation, work culture, consistency in production, employee understanding, continuity, readiness to maintain certification, and integration of the halal system into business management.

The operationalization was designed to capture organizational practices rather than merely attitudes toward certification. This distinction is essential because the dependent construct concerns the extent to which halal requirements are embedded consistently, integratively, and sustainably in business activities.

3.4 PLS-SEM Procedure and Measurement-Model Purification

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The analytical procedure comprised descriptive analysis, measurement-model evaluation, structural-model evaluation, predictive assessment, and hypothesis testing through bootstrapping. Following [13], the measurement model was evaluated through outer loadings, Cronbach's alpha, rho_A, composite reliability, Average Variance Extracted (AVE), cross-loadings, the Fornell-Larcker criterion, and the Heterotrait-Monotrait ratio (HTMT).

The initial measurement model showed a discriminant-validity concern between governance and halal certification implementation, with an HTMT value of 0.938, exceeding the 0.90 criterion used in the thesis. The purification process was not based on HTMT alone. The thesis examined outer loadings and cross-loading patterns and then considered whether specific items created conceptual overlap between governance responsibilities and implementation behaviors. Four indicators (G1, G5, HC5, and HC7) were removed. Their initial outer loadings ranged from 0.621 to 0.668, below the 0.70 criterion used for the final model. After removal, the governance-implementation HTMT value decreased to 0.896, and the retained constructs satisfied the measurement criteria.

This purification step is reported transparently because indicator deletion can create concerns about post-hoc model fitting. The interpretation of the final model therefore recognizes that the empirical results apply to the purified measurement structure. The retained indicators still represented the central conceptual domains of governance and halal certification implementation while improving empirical distinctiveness.

3.5 Structural-Model Assessment

The structural model was evaluated using inner VIF for collinearity, R^2 and adjusted R^2 for explanatory power, f^2 for relative effect size, Q^2 and PLSpredict for predictive relevance, SRMR for model fit, and bootstrapping for path significance. The thesis applied $t > 1.96$ and $p < 0.05$ as the significance criteria at the 5% level. The use of multiple structural and predictive criteria reduces reliance on a single fit or significance statistic and allows a more complete assessment of model quality.

3.6 Methodological Rigor and Interpretation Boundaries

Fourth, the measurement purification is documented because discriminant validity between governance and implementation was initially weak. The removed items had comparatively low loadings and contributed to conceptual overlap. The final model should therefore be viewed as a more parsimonious representation of the constructs rather than as evidence that the removed aspects are substantively unimportant. Replication should test whether the same items perform similarly in other MSME samples.

Third, the model is predictive and explanatory within the PLS-SEM framework, but the cross-sectional design constrains causal interpretation. Terms such as effect and influence refer to the modeled structural relationships and should not be interpreted as experimental causal identification. This distinction is particularly important for international publication because the substantive argument does not require overstating causality: the strong and consistent associations are sufficient to establish the practical and theoretical relevance of GRC capabilities.

Second, the study uses a single survey instrument to measure predictors and the outcome. The thesis evaluates collinearity and reports full-collinearity VIF values below 5.00, with one compliance item at 3.534. These diagnostics do not eliminate all possible common-method concerns, but they provide evidence that severe linear overlap is not dominating the model. Future studies should use multiple data sources to test the robustness of the relationships more directly.

Several design choices are important for interpreting the evidence. First, the use of owners and managers as respondents is appropriate because the constructs concern organizational practices that are unlikely to be fully observable by customers or external stakeholders. At the same time, this respondent strategy introduces the possibility of self-assessment bias. The study therefore treats the findings as perceived organizational practices reported by knowledgeable actors rather than as independent audit verification.

4. RESULTS AND DISCUSSION

4.1 Respondent and MSME Profile

The final sample comprised 200 food and beverage MSME respondents. The thesis reports that 170 respondents (85.0%) operated businesses with one to five employees, indicating that the sample is strongly representative of micro-scale organizational structures. In terms of annual turnover, 161 respondents (80.5%) reported turnover below Rp300 million, 31 respondents were in the Rp300 million to Rp2.5 billion category, and eight respondents were in the Rp2.5 billion to Rp50 billion category. This profile is important because the organizational systems examined in the study operate in settings characterized by limited staffing and resource capacity.

Descriptive analysis indicated generally positive assessments of governance, risk management, compliance, and halal certification implementation. Risk management had the lowest overall mean among the four constructs, although it remained within a high category in the thesis. This descriptive pattern is noteworthy because risk management later emerged as the strongest structural predictor, suggesting that the capability with the largest explanatory contribution may also be an area with comparatively greater room for improvement.

4.2 Measurement Model

After purification, all retained outer loadings exceeded 0.70. Governance loadings ranged from 0.831 to 0.870, risk management from 0.854 to 0.888, compliance from 0.860 to 0.893, and halal certification implementation from 0.842 to 0.858. These values indicate strong indicator relationships with their assigned constructs.

Internal consistency reliability was satisfactory. Cronbach's alpha values were 0.873 for governance, 0.936 for risk management, 0.940 for compliance, and 0.904 for halal certification implementation. Composite reliability values were 0.913, 0.950, 0.952, and 0.928 respectively. AVE values were 0.724 for governance, 0.759 for risk management, 0.768 for compliance, and 0.722 for halal certification implementation, exceeding the 0.50 criterion.

Discriminant validity was supported by cross-loadings, the Fornell-Larcker criterion, and final HTMT values below 0.90. The governance-implementation HTMT value, the closest pair, was 0.896 after purification. The results therefore indicate that the final measurement model provided acceptable empirical separation among the four constructs.

Table 2. Measurement Model Summary

Construct	Retained items	Loading range	Cronbach α	Composite reliability	AVE
Governance	4	0.831–0.870	0.873	0.913	0.724
Risk Management	6	0.854–0.888	0.936	0.950	0.759
Compliance	6	0.860–0.893	0.940	0.952	0.768
Halal Certification Implementation	5	0.842–0.858	0.904	0.928	0.722

4.3 Structural Model, Predictive Assessment, and Hypotheses

The inner VIF values were 1.568 for compliance, 2.373 for governance, and 1.957 for risk management in predicting halal certification implementation, indicating no problematic multicollinearity under the criterion used in the thesis. The structural model explained 78.9% of the variance in halal certification implementation ($R^2 = 0.789$; adjusted $R^2 = 0.785$), which the thesis categorized as strong.

The relative effect sizes were 0.232 for governance, 0.348 for risk management, and 0.312 for compliance. Risk management therefore not only had the largest path coefficient but also the largest f^2 value, approaching the large-effect threshold used in the thesis. Predictive relevance was positive ($Q^2 = 0.783$). The retained endogenous indicators also showed positive Q^2predict values, ranging from 0.508 to 0.626. The SRMR value was 0.041 for both the saturated and estimated models, below the 0.08 criterion used in the thesis.

Bootstrapping supported all three hypotheses. Governance positively influenced halal certification implementation ($\beta = 0.341$, $t = 6.692$, $p < 0.001$). Risk management had the largest positive effect ($\beta = 0.379$, $t = 7.999$, $p < 0.001$). Compliance also had a positive and significant effect ($\beta = 0.321$, $t = 7.439$, $p < 0.001$). The ranking of effects was therefore risk management, governance, and compliance.

Table 3. Structural Model and Hypothesis Testing

Hypothesis / Path	β	t-statistic	p-value	f^2	Decision
H1 Governance → Implementation	0.341	6.692	<0.001	0.232	Supported
H2 Risk Management → Implementation	0.379	7.999	<0.001	0.348	Supported
H3 Compliance → Implementation	0.321	7.439	<0.001	0.312	Supported

Table 4. Structural and Predictive Quality Indicators

Indicator	Result	Interpretation in thesis
R^2 / Adjusted R^2	0.789 / 0.785	Strong explanatory power
Q^2	0.783	Positive predictive relevance
SRMR	0.041	Good fit under <0.08 criterion
Inner VIF	1.568–2.373	No problematic multicollinearity

Discussion

From Certification Compliance to Organizational Capability

The findings show that governance, risk management, and compliance all contribute positively to halal certification implementation. At one level, this confirms the logic of GRC: direction, risk control, and regulatory alignment are complementary. At a deeper level, however, the results suggest that halal certification implementation should not be framed primarily as the completion of an administrative process. The model explains a large proportion of variation in implementation through internal organizational practices, indicating that the quality of implementation is strongly associated with managerial capability.

This reframing matters because recent literature has increasingly examined the performance consequences of halal certification. [2] connect certification with supply-chain resilience, competitive advantage, and financial performance; [3] link certification to operational and financial performance across a broad Indonesian MSME sample. The present study complements these downstream-outcome studies by examining an upstream managerial question: what organizational capabilities help MSMEs implement halal certification in the first place? The answer is not a single factor but a combination of governance, risk management, and compliance.

Governance: Making Halal Responsibilities Repeatable

Governance had a positive and significant effect on implementation. This supports the view that halal assurance requires organizational clarity even in small firms. Many MSMEs rely heavily on owners, informal communication, and flexible role allocation. Such flexibility can support entrepreneurship, but it can also create ambiguity when formal standards must be maintained consistently. Governance mitigates this weakness by clarifying decision authority, responsibility, oversight, and evaluation.

The result is consistent with halal governance arguments emphasizing control and supervision [7] and with GRC literature positioning governance as the directional component of integrated management [8]. It also aligns with the finding by [12] that governance and assistance are important components in halal supply-chain performance for small enterprises participating in Indonesia's self-declared certification program.

The theoretical implication is that governance should not be equated with corporate bureaucracy. In the MSME context, governance can be understood as minimal organizational formalization sufficient to make halal responsibilities repeatable. This can include a clear responsible person, documented decision rules for ingredients and suppliers, periodic review, and escalation procedures when nonconformity occurs. The positive coefficient therefore reflects the value of structure without requiring a large-company governance architecture.

Why Risk Management Is Stronger Than Compliance

The most important finding is that risk management is the strongest predictor of halal certification implementation. This result is theoretically interesting because halal certification is a regulatory system; one might reasonably expect compliance to dominate. Instead, risk management has the largest path coefficient ($\beta = 0.379$) and the largest effect size ($f^2 = 0.348$). The result suggests that sustainable implementation is shaped less by static conformity alone than by the ability to anticipate and control operational uncertainty.

This can be explained by the nature of food and beverage operations. Compliance requirements define what the firm must do, but they cannot eliminate uncertainty in suppliers, materials, processes, employees, storage, documentation, and changing business conditions. A firm may be compliant at the time of certification yet later encounter a supplier substitution, an undocumented ingredient change, a new employee, or a process deviation. Risk management provides the capability to detect and respond to these changes before they undermine halal integrity.

The result therefore supports a dynamic interpretation of halal assurance. Compliance can establish entry into the formal halal system, but risk management helps sustain integrity as operating conditions evolve. Stated cautiously, the cross-sectional data do not prove temporal causality, but the relative pattern of coefficients is consistent with the interpretation that continuous risk anticipation and control are particularly important for implementation quality.

This interpretation is consistent with [9] emphasis on robustness and resilience and with [2], [10] work on halal supply-chain risk and resilience. It also aligns with the broader trajectory identified by [1], who show that halal food research increasingly recognizes the importance of maintaining integrity across complex value chains. The present study adds to that literature by showing that, at the MSME organizational level, risk management has a stronger empirical association with implementation than compliance itself.

The finding also offers a potential explanation for a practical policy gap. Certification support programs often focus heavily on documentation and procedural assistance because these are visible and auditable. Yet documentation alone may not equip MSMEs to respond to new operational risks after certification. The results therefore justify expanding assistance toward risk identification, halal critical-point mapping, monitoring, corrective action, and change management.

Compliance: Necessary but Not Sufficient

Compliance remained a significant and meaningful predictor, demonstrating that regulatory alignment is indispensable. MSMEs need to maintain required documents, fulfill administrative obligations, follow halal procedures, and remain attentive to changes in regulation. The significant coefficient confirms that certification implementation cannot be separated from compliance discipline.

However, the fact that compliance has the smallest path coefficient among the three GRC dimensions is theoretically informative. It suggests that formal adherence is necessary but not sufficient for strong implementation. This does not reduce the importance of compliance; rather, it clarifies its role. Compliance defines alignment with required standards, while governance and risk management help ensure that such alignment is consistently organized and preserved amid operational variation.

This result provides a useful extension to intention-based studies. [4] find that external and regulatory factors are important in shaping intention to obtain certification. The present study indicates that once attention shifts from intention to implementation, internal managerial capabilities become especially important. This difference reinforces the empirical gap between pre-certification adoption decisions and post-adoption organizational execution.

Institutional Theory Revisited: Why versus How

The findings allow a more specific theoretical contribution to Institutional Theory. Regulation and stakeholder expectations create pressure for MSMEs to respond, but pressure does not determine the quality of response. Two enterprises can face identical formal requirements yet differ substantially in implementation because their internal capabilities differ. The GRC dimensions specify these capabilities.

This produces a two-stage conceptual explanation. Institutional Theory accounts for why adaptation becomes necessary: legitimacy is affected by coercive and normative expectations. GRC accounts for how adaptation is organized: governance directs and assigns accountability, risk management anticipates and controls uncertainty, and compliance aligns behavior with external requirements. This is a stronger theoretical contribution than simply applying Institutional Theory to a new setting because it identifies an internal mechanism connecting institutional pressure with organizational implementation.

The model does not empirically test institutional pressure as an antecedent, so this two-stage mechanism should be treated as a theoretically grounded interpretation rather than a statistically confirmed mediation process. Future research can test the complete chain directly by modeling institutional pressures as antecedents of GRC capabilities and halal implementation as the outcome.

Contribution to the Halal MSME Literature

The study contributes to halal MSME literature in three ways. First, it changes the focal outcome. Much of the literature emphasizes intention, adoption, awareness, or certification outcomes, whereas this study treats implementation as an organizational construct. Second, it introduces comparative explanatory power across three GRC dimensions rather than treating governance, risk, or compliance in isolation. Third, it provides evidence from predominantly micro-scale businesses, where formal managerial systems are limited but still consequential.

The finding that risk management is the dominant predictor is the most distinctive empirical contribution. It suggests that a certification system rooted in compliance is operationally sustained by a broader capability to manage uncertainty. This finding offers a bridge between halal certification research and the risk/resilience stream of halal supply-chain research.

Boundary Conditions, Alternative Explanations, and Descriptive Signals

Finally, the relative dominance of risk management may be context-sensitive. Food and beverage businesses face ingredient and process risks that may be more immediate than in some other sectors. In cosmetics, services, or other product categories, compliance or governance could have different relative importance. The present result should therefore be interpreted as a robust finding within the observed food-and-beverage MSME context rather than a universal ranking of GRC dimensions.

Another alternative explanation concerns reciprocal relationships. Strong halal implementation may itself encourage firms to formalize governance, risk controls, and compliance routines. Because the data are cross-sectional, reverse influence cannot be ruled out. A longitudinal design would be required to determine whether stronger GRC precedes stronger implementation or whether successful implementation feeds back into organizational formalization. Acknowledging this possibility strengthens rather than weakens the paper because it defines a clear next step for theory testing.

Turnover comparisons similarly indicate weaker risk-management and compliance averages among the lowest-turnover firms. Resource constraints may therefore shape the ability to maintain formal controls, documentation, and monitoring. An alternative explanation for the structural results is that GRC scores partially reflect broader organizational maturity or resource availability. The current model does not include organizational resources as controls, so future research should test whether firm size, digitalization, staff capability, or management sophistication moderate the relationships.

Employee-size comparisons also show that firms with six to ten employees have comparatively low governance and risk-management means, while the smallest firms show the lowest compliance mean in the relevant comparison. A plausible interpretation is that organizational complexity can increase faster than management formalization. When an enterprise grows beyond the owner-centric stage, responsibilities multiply and coordination becomes more difficult, but formal governance and risk practices may lag behind. This interpretation should be tested in future research using group comparison rather than inferred from descriptive means alone.

The descriptive subgroup findings provide additional, although non-causal, signals. The thesis reports that MSMEs operating for six to ten years show the lowest risk-management mean in the business-age comparison, while firms operating for more than twenty-one years show the lowest compliance mean. This suggests that experience alone does not automatically institutionalize halal capability. Routines can mature without becoming systematically risk-based or compliance-oriented, reinforcing the argument that GRC capability requires deliberate development.

The strength of the GRC relationships should be interpreted alongside the characteristics of the sample. Most respondents operate very small businesses: 85% report one to five employees and 80.5% report annual turnover below Rp300 million. In such firms, managerial functions are often concentrated in the owner or a small team. This means that governance, risk management, and compliance may be less structurally differentiated than in large organizations. Their significant effects are therefore notable because they indicate that even simplified versions of these capabilities matter in micro-enterprise settings.

Theoretical Implications

The first theoretical implication concerns the conceptualization of halal certification implementation. The study supports treating implementation as an organizational capability outcome rather than simply the presence of a certificate or an intention to obtain one. This shifts theoretical attention from willingness to comply toward the quality of internal managerial systems that sustain halal practices.

The second implication is the distinction between external pressure and internal response. Institutional Theory is valuable for explaining regulation and legitimacy, but GRC provides the managerial micro-foundations of response. The proposed distinction - Institutional Theory explains why, GRC explains how - offers a parsimonious bridge between institutional-level explanations and organization-level implementation mechanisms.

The third implication is the non-equivalence of GRC dimensions. Although governance, risk management, and compliance are integrated conceptually, they do not have identical empirical effects. The stronger effect of risk management indicates that disaggregating GRC can reveal important variation that would be hidden in a single composite index. Future theory should therefore consider both integration and differentiated functional roles within GRC.

The fourth implication is a dynamic view of regulatory implementation. Compliance captures alignment with formal requirements, whereas risk management captures adaptation to changing operational conditions. The present findings suggest that sustained regulatory implementation may depend on both static alignment and dynamic control. This distinction has relevance beyond halal certification and may inform research on standards implementation in other resource-constrained small-business settings.

Practical and Policy Implications

For MSME owners and managers, the findings suggest that halal certification should be managed as an operating system rather than an administrative project. A practical starting point is to assign clear halal responsibility, map critical risks from raw materials through distribution, identify preventive controls, specify monitoring activities, and define corrective action. These practices can be simple and proportionate to firm size; the objective is consistency rather than bureaucracy.

For BPJPH and other authorities, certification acceleration can be complemented by post-certification capability development. The thesis shows that longer business experience does not automatically correspond to stronger risk management or compliance. Periodic evaluation, regulatory refreshment, and monitoring therefore remain relevant even for established businesses. Assistance programs can explicitly distinguish between obtaining certification and sustaining implementation.

For Halal Inspection Bodies and Halal Product Process facilitators, the results support practical GRC-based mentoring. Simple responsibility matrices, standard operating procedures, halal critical-point identification, monitoring checklists, and change-control procedures can help translate certification requirements into repeatable routines. This approach is consistent with [12], who emphasize governance, assistance, and measurable halal supply-chain performance among small enterprises.

For government agencies and MSME development institutions, GRC capability can be integrated with wider business-capacity programs. The thesis reports that lower-turnover enterprises have comparatively weaker risk-management and compliance scores in relevant descriptive comparisons. Digital documentation tools, modular risk-management training, mentoring, and peer-learning communities may therefore be particularly useful for resource-constrained firms.

For MSME associations and communities, peer learning offers a scalable mechanism for strengthening implementation. Best-practice forums can focus not only on how to apply for certification but also on how to manage supplier changes, document corrective action, maintain records, and monitor risks. Community support can reduce the managerial burden on individual micro-enterprises while reinforcing normative expectations for credible halal practice.

Limitations and Future Research

Several limitations shape the interpretation of the findings. First, the study is geographically limited to Jabodetabek. This metropolitan region may differ from other parts of Indonesia in institutional access, business density, consumer expectations, and certification support. Replication across provinces is necessary before the coefficient ranking is generalized nationally.

Second, the study focuses only on food and beverage MSMEs. Other sectors may face different halal risks and organizational requirements. Future research can test the model in cosmetics, pharmaceuticals, slaughter-related activities, services, and other relevant sectors.

Third, the study relies on self-reported survey data. Respondents may overestimate the strength of their governance, risk, compliance, or implementation practices. Future studies can combine surveys with document review, audit records, observation, certification data, or assessor evaluations. Such triangulation would strengthen measurement validity.

Fourth, the cross-sectional design does not establish temporal causality. The language of effects in the structural model follows PLS-SEM convention, but the design cannot prove that changes in GRC precede changes in implementation. Longitudinal studies could measure organizations before certification, immediately after certification, and during maintenance periods to observe capability development over time.

Fifth, the model includes only three organizational predictors. The thesis identifies halal awareness, organizational support, digitalization, top management commitment, and halal knowledge as potentially relevant variables. Future models could test these constructs alongside GRC or examine mediating and moderating mechanisms.

Sixth, Institutional Theory is used as a supporting explanatory lens rather than directly operationalized. A particularly promising future model would test coercive, normative, and mimetic pressures as antecedents of GRC capabilities. This would allow the proposed why-to-how mechanism to be examined empirically: institutional pressures would explain the motivation for adaptation, GRC would represent organizational response capability, and halal certification implementation would represent the resulting organizational outcome.

5. CONCLUSION

This study examines governance, risk management, and compliance as organizational capabilities that support halal certification implementation among food and beverage MSMEs in Jabodetabek. All three dimensions have positive and significant relationships with implementation, and the model explains 78.9% of the variance in the dependent construct. Risk management is the strongest predictor, followed by governance and compliance.

The main contribution is conceptual as well as empirical. Halal certification implementation should not be understood only as administrative compliance. It is an organizational-capability problem involving direction and accountability, anticipation and control, and continuing regulatory alignment. Institutional Theory explains why MSMEs experience pressure to adapt, whereas GRC clarifies how that adaptation can be organized internally.

The finding that risk management is stronger than compliance is especially important. It indicates that a regulatory certification system can depend heavily on the ability to manage operational uncertainty after formal requirements are understood. Accordingly, policies that seek to increase certification effectiveness should complement application assistance with post-certification governance, halal risk management, monitoring, and continuous compliance support.

Research Significance for International Readers

The Indonesian halal context provides a theoretically useful case because regulatory pressure is strong, consumer legitimacy is salient, and the majority of affected firms are small. This combination makes visible a general organizational problem: formal rules can mandate conformity, but they cannot by themselves create implementation capability. The study's contribution is to show empirically that the organizational response architecture matters and that the anticipatory component of that architecture - risk management - can be especially important.

Although the empirical setting is Indonesia, the problem addressed by the study has wider relevance. Small firms in many regulatory environments must translate standards, certification rules, or stakeholder expectations into internal routines despite limited resources. The distinction between external institutional pressure and internal GRC capability therefore has potential applicability to other certification and standards contexts where implementation quality depends on governance, risk control, and compliance discipline.

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