

MAPPING HALAL INDUSTRY READINESS OF AGRIBUSINESS MSMEs TOWARD SUSTAINABLE ECOSYSTEM DEVELOPMENT

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Abstract

The development of the halal industry has become an important strategy in strengthening sustainable economic growth, particularly through the integration of halal principles into agribusiness activities. Agribusiness micro, small, and medium enterprises (MSMEs) have a strategic role in building a sustainable halal ecosystem; however, many MSMEs still encounter challenges related to halal literacy, certification readiness, business management capability, and halal supply chain implementation. This study aims to map the dimensions of halal industry readiness of halal industry implementation among agribusiness MSMEs as an initial foundation for developing a sustainable halal ecosystem. This study employs an exploratory descriptive approach based on literature analysis, secondary data examination, and conceptual framework development. The research identifies key dimensions of halal industry readiness among agribusiness MSMEs by integrating halal management theory, halal supply chain concepts, and regional agribusiness characteristics. The analysis focuses on five dimensions, including halal awareness, halal certification readiness, management capability, halal supply chain readiness, and institutional support. The analysis suggests that strengthening halal agribusiness ecosystems requires integrated strategies through education, certification assistance, managerial improvement, and digital transformation. This study provides a readiness mapping framework that can support the development of halal MSME empowerment models and sustainable halal agribusiness ecosystems.

Keywords: Agribusiness; Halal Industry; Halal Readiness; MSMEs; Sustainable Ecosystem.

INTRODUCTION

The halal industry has developed into one of the important sectors in the global economic system, transforming from a religious-based consumption concept into an integrated industrial ecosystem. The modern halal industry encompasses various sectors, including food and beverages, agriculture, pharmaceuticals, cosmetics, logistics, tourism, and financial services. This development indicates that halal principles are no longer limited to product permissibility but have become associated with quality assurance, transparency, ethical business practices, and sustainable economic development (Tieman et al., 2012). Therefore, the management of halal industries requires an integrated approach that combines halal compliance with strategic management, operational efficiency, and supply chain governance.

The increasing global demand for halal products provides significant opportunities for countries with large Muslim populations, including Indonesia. The halal market has expanded beyond Muslim consumers because halal attributes are increasingly associated with product safety, quality, cleanliness, and ethical production processes. However, the development of a competitive halal industry requires more than market potential; it requires the readiness of business actors, supporting institutions, technological infrastructure, and effective governance systems (Tieman, 2020). Without adequate organizational readiness, the growth of halal markets may not be optimally transformed into sustainable industrial competitiveness.

Indonesia has considerable potential in developing a halal industrial ecosystem due to its demographic characteristics, agricultural resources, and large number of micro, small, and medium enterprises (MSMEs). MSMEs play a strategic role in economic development because they contribute to employment creation, local economic activities, and the production of community-based products. In the context of halal industries, agribusiness MSMEs occupy an important position because agricultural commodities represent the upstream foundation of many halal products. The halal status of processed products is strongly influenced by the quality and assurance of raw materials obtained from agricultural supply chains.

Sambas Regency in West Kalimantan represents an important regional context for examining halal agribusiness ecosystem development because its economic activities are closely associated with agricultural production, local commodities, and community-based enterprises. The region has considerable potential for developing halal products through the utilization of agricultural resources and agro-processing activities. However, agricultural potential alone does not automatically create a sustainable halal ecosystem. The transformation of local resources into competitive halal products requires improvements in business readiness, halal management practices, supply chain coordination, and institutional collaboration. Therefore, Sambas Regency provides a relevant setting for understanding the initial dimensions required to strengthen halal industry readiness among agribusiness MSMEs (Badan Pusat Statistik Kabupaten Sambas, 2024).

The development of halal agribusiness requires an understanding that halal assurance must be maintained throughout the entire value chain. Halal integrity begins from raw material sourcing, production processes, storage, transportation, distribution, and delivery to consumers. Tieman et al. (2012) emphasized that halal supply chain management requires specific control mechanisms to ensure that halal status is preserved throughout the supply chain. Unlike conventional supply chains, halal supply chains must consider the risk of contamination, mixing, and loss of halal integrity during operational activities.

In agribusiness activities, maintaining halal integrity becomes more challenging because supply chains involve multiple actors with different levels of capability and

awareness. Farmers, suppliers, processors, distributors, and retailers must have coordinated systems to ensure compliance with halal requirements. Zailani et al. (2015) stated that halal logistics and supply chain practices require effective coordination, proper handling procedures, and organizational commitment to maintain halal assurance from upstream to downstream processes.

Despite the growing importance of halal industries, many MSMEs still face difficulties in implementing halal management systems. One of the main challenges is limited halal literacy among business actors. Many MSMEs perceive halal certification only as a legal obligation rather than as part of an integrated management system. In fact, halal implementation requires organizational changes involving documentation, production control, employee competence, supplier management, and continuous monitoring (Ahmad et al., 2017).

Halal certification readiness represents an important aspect of halal industry development. Certification is not merely a registration process but requires businesses to demonstrate their capability to fulfill halal assurance requirements. Previous studies have shown that successful implementation of halal management systems depends on several factors, including management commitment, employee knowledge, documentation systems, and process control (Ahmad et al., 2017). Therefore, assessing MSME readiness becomes essential before developing broader halal industry development strategies.

Another critical challenge is the limited implementation of halal supply chain management among MSMEs. Although halal certification programs have encouraged more businesses to enter the halal ecosystem, certification alone does not automatically guarantee sustainable halal operations. Ardiantono et al. (2024) identified several barriers affecting halal supply chain implementation among Indonesian SMEs, including process management, packaging, storage, transportation, supporting policies, and technology adoption. These findings demonstrate that halal industry development requires comprehensive readiness assessment beyond certification status.

Technology adoption is also becoming increasingly important in strengthening halal ecosystem development. Digital systems can support traceability, documentation, market access, and transparency throughout halal supply chains. However, many MSMEs still experience limitations related to technological capability, financial resources, and human resource readiness. Research by Muttaqin et al. (2023) found that resource availability, training, personnel capability, and innovation capacity influence halal logistics readiness among food and beverage industries in Indonesia.

Furthermore, institutional support represents an important factor in accelerating halal ecosystem development. Government agencies, universities, certification institutions, and business associations have significant roles in providing education, mentoring, research collaboration, and market facilitation. MSMEs often

require external support because internal resources are limited, especially in understanding halal regulations, improving production systems, and adopting digital technologies.

Previous studies related to halal industries have mostly focused on specific aspects, such as consumer behavior, halal certification adoption, halal logistics, or supply chain management. Although these studies provide valuable contributions, research that integrates multiple dimensions of halal industry readiness among agribusiness MSMEs remains limited. In particular, there is still a need for a comprehensive framework that evaluates halal awareness, certification readiness, management capability, halal supply chain readiness, and institutional support simultaneously.

Therefore, this study focuses on Mapping Halal Industry Readiness of Agribusiness MSMEs Toward Sustainable Ecosystem Development as a fundamental research study conducted in 2025. This research represents the initial stage of a long-term roadmap for developing a sustainable halal agribusiness ecosystem. The primary objective of this stage is not only to identify certification readiness but also to understand the overall capability of MSMEs in adopting halal industry management principles.

The results of this research are expected to provide an empirical foundation for subsequent research stages, including halal MSME empowerment models, digital halal supply chain development, halal product innovation, and sustainable ecosystem development. By mapping the readiness level of agribusiness MSMEs, stakeholders can formulate more targeted strategies to strengthen Indonesia's halal industrial competitiveness.

Based on this background, the objectives of this study are: (1) to map the dimensions of halal industry implementation among agribusiness MSMEs; (2) to analyze the dimensions influencing halal industry readiness, including halal awareness, certification readiness, management capability, halal supply chain readiness, and institutional support; and (3) to develop a conceptual foundation for sustainable halal ecosystem development.

RESEARCH METHOD

This study applies an exploratory descriptive research approach to develop an initial conceptual mapping of halal industry readiness among agribusiness micro, small, and medium enterprises (MSMEs). This research is categorized as fundamental research because it aims to identify theoretical dimensions and initial conditions required for developing a sustainable halal agribusiness ecosystem.

The research adopts a qualitative conceptual approach by integrating literature analysis, secondary data examination, and theoretical framework development. This approach is appropriate for exploratory studies that aim to identify research

dimensions, construct conceptual models, and provide theoretical foundations for future empirical investigations (Creswell & Creswell, 2023).

The data sources consist of scientific publications, government reports, halal industry regulations, and institutional documents related to halal management, halal supply chains, MSME development, and sustainable ecosystem development. Secondary regional information regarding Sambas Regency is obtained from official statistical publications of the Central Statistics Agency (BPS Kabupaten Sambas).

The analysis process consists of three stages. First, relevant literature is identified and analyzed to determine major dimensions influencing halal industry readiness. Second, theoretical concepts are synthesized to develop readiness indicators covering halal awareness, certification readiness, management capability, halal supply chain readiness, and institutional support. Third, the identified dimensions are integrated into a conceptual framework describing the pathway toward sustainable halal agribusiness ecosystem development.

Thematic analysis is applied to organize and interpret information obtained from literature sources and institutional documents. This method enables researchers to identify recurring concepts, relationships, and development patterns from qualitative data (Braun & Clarke, 2006).

The output of this research is an initial halal industry readiness mapping framework that can serve as a theoretical foundation for subsequent empirical research. Future studies may validate this framework through quantitative assessment involving agribusiness MSMEs and develop measurable readiness indexes.

RESULT AND DISCUSSION

Regional Potential of Sambas Regency for Halal Agribusiness Ecosystem Development

Sambas Regency has significant potential for developing a halal agribusiness ecosystem due to its economic characteristics, which are strongly associated with agricultural activities, fisheries, plantations, and agro-processing industries. The regional economic structure provides an important foundation for halal industry development because agricultural commodities represent the upstream components of halal value chains. According to the Sambas Regency in Figures, agricultural activities and related economic sectors remain important contributors to regional development, providing opportunities for strengthening local-based halal industries (BPS Sambas Regency, 2024).

From the perspective of halal industry management, regional resources alone are insufficient to establish a sustainable halal ecosystem. The availability of agricultural commodities must be supported by business readiness, production management capability, halal assurance systems, and supply chain governance. The halal industry has shifted from a product-oriented concept toward an integrated

ecosystem involving raw materials, processing systems, logistics, distribution, and institutional collaboration (Tieman et al., 2012).

The agricultural potential of Sambas Regency provides opportunities for developing halal products based on local resources. However, the transformation of agricultural resources into halal industrial products requires the implementation of systematic halal management practices. According to Soon et al. (2020), halal integrity depends on the ability of organizations to maintain halal requirements throughout the entire supply chain through effective management systems, process control, and monitoring mechanisms.

Therefore, the development of a halal agribusiness ecosystem in Sambas Regency requires a comprehensive approach that integrates local economic potential with the readiness of MSMEs to implement halal industry principles.

Agribusiness MSMEs as the Foundation of Halal Ecosystem Development

Agribusiness MSMEs represent a strategic component in halal ecosystem development because they connect local agricultural resources with consumer markets. In Sambas Regency, various agricultural-based businesses, food processing activities, and household-scale industries provide opportunities for developing halal products with higher economic value.

However, the integration of MSMEs into the halal ecosystem requires improvements in organizational capability. Small businesses often face limitations related to human resources, documentation systems, production standards, and access to technology. These limitations may affect their ability to implement halal management practices consistently.

Ali et al. (2017) emphasized that halal supply chain integrity depends on effective management of suppliers, production processes, information systems, and operational controls. Therefore, halal development among agribusiness MSMEs should not only focus on obtaining halal certification but also on strengthening internal business capabilities.

Previous research has shown that successful halal management implementation requires organizational commitment, employee competence, documentation systems, and process control mechanisms (Ahmad et al., 2017). These factors indicate that halal readiness is a multidimensional concept involving both internal and external organizational aspects.

Mapping Dimensions of Halal Industry Readiness

Based on regional characteristics, literature analysis, and halal industry management concepts, this study identifies five conceptual main dimensions for mapping halal industry readiness among agribusiness MSMEs in Sambas Regency.

Table 1. Conceptual Dimensions of Halal Industry Readiness Mapping for Agribusiness MSMEs

No.	Dimension	Main Indicators
1.	Halal Awareness	Understanding halal principles, halal regulations, consumer halal expectations
2.	Halal Certification Readiness	Business documentation, raw material identification, halal assurance preparation
3.	Management Capability	Production planning, quality control, human resources, operational management
4.	Halal Supply Chain Readiness	Supplier management, traceability, storage, distribution control
5.	Institutional Support	Government programs, universities, certification institutions, business networks

Source: Haleem et al. (2018)

The framework demonstrates that halal industry readiness is not determined solely by certification status. Instead, readiness represents the combination of organizational capability, operational preparedness, and ecosystem support. This approach is consistent with the concept of organizational readiness, where successful adoption of new systems depends on organizational resources, capabilities, and external environmental support (Weiner, 2009).

Halal Awareness and Certification Readiness

Halal awareness represents the fundamental dimension in developing halal industry participation among agribusiness MSMEs. Awareness influences how business actors understand halal principles, regulatory requirements, and the importance of maintaining halal integrity throughout business operations.

In the context of Sambas agribusiness MSMEs, halal awareness is particularly important because many products are directly related to food consumption. However, awareness should extend beyond religious compliance toward understanding halal as a comprehensive quality management system.

Awan et al. (2015) explained that halal awareness influences business and consumer attitudes toward halal products. Higher awareness encourages organizations to improve production practices and adopt halal-oriented management systems.

Nevertheless, one of the main challenges among MSMEs is the gap between halal awareness and practical implementation. Many business actors recognize the importance of halal products but have limited understanding regarding documentation, raw material verification, and production monitoring.

Halal certification readiness is closely related to this issue. Certification requires more than administrative registration because businesses must demonstrate control over materials, processes, and documentation. Ahmad et al. (2017) stated that effective halal management implementation requires organizational commitment, competent human resources, and systematic control procedures.

Therefore, strengthening halal certification readiness among Sambas MSMEs requires:

1. Increasing halal literacy;
2. Providing certification assistance;
3. Improving business documentation systems;
4. Strengthening halal assurance practices.

Management Capability Readiness

Management capability is an essential internal factor influencing MSMEs' ability to adopt halal industry practices. This dimension includes production planning, quality management, human resource capability, and operational administration.

For agribusiness MSMEs, management capability determines whether halal principles can be integrated into daily business activities. Without adequate managerial systems, halal implementation may become limited to certification compliance without improving overall business performance.

Talib et al. (2015) highlighted that organizational capability and management commitment are among the critical success factors in halal supply chain implementation. Therefore, strengthening MSME management capacity is necessary to ensure long-term halal sustainability.

In Sambas Regency, management improvement programs should focus on:

1. production standardization,
2. quality control systems,
3. raw material documentation,
4. employee training,
5. digital business administration.

Halal Supply Chain Readiness

Halal supply chain readiness is a critical component of sustainable halal ecosystem development. Unlike conventional supply chains, halal supply chains require continuous monitoring to maintain halal integrity from raw materials to final consumers.

Tieman et al. (2012) explained that halal supply chain management requires specific governance mechanisms because halal risks may occur during sourcing, processing, transportation, storage, and distribution.

For agribusiness MSMEs in Sambas Regency, supply chain challenges may occur due to:

1. limited supplier documentation,
2. informal procurement systems,
3. lack of traceability mechanisms,
4. limited technology adoption.

Ardiantono et al. (2024) identified that Indonesian SMEs face several barriers in implementing halal supply chains, including operational processes, packaging systems, storage management, transportation, policy support, and technological limitations.

Furthermore, Muttaqin et al. (2023) found that resource availability, training, workforce capability, and innovation capacity influence halal logistics readiness in Indonesian food industries.

Therefore, strengthening halal supply chains among Sambas MSMEs requires:

1. supplier identification systems,
2. traceability development,
3. production documentation,
4. digital monitoring systems

Sustainable Halal Agribusiness Ecosystem Framework

Based on the analysis, this study proposes a conceptual framework for sustainable halal agribusiness ecosystem development in Sambas Regency.



Figure 1. Sustainable Halal Agribusiness Ecosystem Framework

The framework illustrates that halal ecosystem development requires a gradual and integrated process. The initial stage of readiness mapping provides essential information for designing future intervention strategies, including halal MSME empowerment models, digital halal supply chains, and sustainable halal industry development.

Discussion

Presenting The development of a sustainable halal agribusiness ecosystem requires a comprehensive understanding of MSME readiness, particularly in regions with strong agricultural potential such as Sambas Regency, West Kalimantan. The conceptual analysis indicates that halal industry readiness among agribusiness MSMEs is influenced by several interconnected dimensions, including halal awareness, halal certification readiness, management capability, halal supply chain readiness, and institutional support. These dimensions demonstrate that halal transformation is not merely a certification-oriented process but represents a broader organizational and ecosystem transformation.

The regional potential of Sambas Regency provides a strategic foundation for halal agribusiness development. The dominance of agricultural activities, food processing, and local commodity-based industries creates opportunities for developing halal value chains based on regional resources. However, the availability of agricultural resources does not automatically guarantee the establishment of a sustainable halal ecosystem. The transformation of agricultural commodities into halal industrial products requires effective governance, quality management systems, and supply chain coordination (Tieman et al., 2012).

From the perspective of halal industry management, halal integrity must be maintained throughout the entire business process, starting from raw material selection, production activities, storage, distribution, and final consumption. This condition is particularly relevant for agribusiness MSMEs because agricultural supply chains generally involve multiple actors with different levels of capability and operational standards. Therefore, strengthening halal readiness requires integration between internal business capability and external ecosystem support (Soon et al., 2020).

The analysis indicates that halal awareness represents the fundamental dimension in developing MSME participation in the halal ecosystem. Halal awareness is not only related to understanding religious requirements but also includes awareness of product quality, consumer trust, and business competitiveness. Previous studies have demonstrated that halal awareness influences the willingness of business actors to adopt halal practices because knowledge and perception shape organizational attitudes toward halal implementation (Awan et al., 2015).

In the context of Sambas agribusiness MSMEs, halal awareness remains an important foundation because many businesses operate using traditional production systems. Although business actors may recognize the importance of halal products, their understanding of halal management systems, documentation procedures, raw material verification, and supply chain control may still require improvement. This

indicates that halal education programs should focus on transforming the perception of halal from a product attribute into an integrated business management system.

The second important dimension is halal certification readiness. The conceptual analysis shows that certification readiness involves not only the willingness to register products but also the ability of MSMEs to prepare supporting management systems. Halal certification requires businesses to identify raw materials, maintain production records, implement standard operating procedures, and ensure compliance with halal assurance requirements.

Ahmad et al. (2017) emphasized that successful implementation of halal management systems depends on management commitment, employee competency, documentation systems, and process control. Therefore, certification programs should not only provide administrative assistance but also strengthen MSME operational capabilities. For agribusiness MSMEs in Sambas, certification assistance should be integrated with training related to production standardization, documentation practices, and quality management.

The analysis also highlights the importance of management capability as a determinant of halal industry readiness. Agribusiness MSMEs commonly face challenges related to production planning, quality control, human resource capability, and business administration. These limitations may influence their ability to consistently implement halal principles.

Halal industry development requires a transition from informal business practices toward structured management systems. Talib et al. (2015) stated that organizational capability and management commitment are among the critical success factors in halal supply chain implementation. Therefore, strengthening management capability becomes a strategic priority to ensure that halal practices are embedded within daily business operations rather than implemented only during certification processes.

In the case of Sambas Regency, improving MSME management capability can be conducted through several approaches, including production standardization, quality assurance training, financial management improvement, and digital business administration. These improvements are important because sustainable halal development requires not only compliance but also business competitiveness.

Another significant finding relates to halal supply chain readiness. The agribusiness characteristics of Sambas involve complex supply chain networks consisting of farmers, suppliers, processors, distributors, and retailers. Such complexity creates challenges in maintaining halal integrity, particularly regarding raw material traceability, supplier control, and process documentation.

Halal supply chain management requires specific governance mechanisms because halal risks may occur throughout the supply chain. Tieman et al. (2012) explained that halal supply chains differ from conventional supply chains because they

require continuous monitoring to prevent contamination and maintain halal status. Similarly, Ali et al. (2017) highlighted that supply chain integrity depends on effective supplier management, information sharing, and operational control.

For agribusiness MSMEs in Sambas, strengthening halal supply chain readiness can be achieved through improved supplier documentation, raw material identification, traceability systems, and collaboration among supply chain actors. The adoption of digital technology may support these improvements by increasing transparency and simplifying documentation processes. However, digital transformation requires adequate human resource capability and institutional assistance.

Previous research indicates that Indonesian SMEs still face several barriers in implementing halal supply chain systems, including limited technology adoption, inadequate operational procedures, weak documentation systems, and insufficient supporting infrastructure (Ardiantono et al., 2024). These challenges demonstrate that halal ecosystem development requires gradual improvement involving both technological and managerial aspects.

Institutional support is also identified as an important factor in strengthening halal ecosystem development. MSMEs generally have limited resources; therefore, collaboration among government institutions, universities, certification agencies, and business organizations is essential. Institutional collaboration can provide education, certification assistance, technical guidance, innovation support, and market access.

Haleem et al. (2018) explained that sustainable halal supply chain development requires cooperation among multiple stakeholders because halal ecosystems involve regulatory, technological, and organizational dimensions. In regional contexts such as Sambas Regency, institutional collaboration becomes increasingly important because local resources need to be connected with broader halal industry networks.

The integration of halal awareness, certification readiness, management capability, halal supply chain readiness, and institutional support indicates that halal industry development requires a systemic approach. Strengthening only one dimension, such as certification, will not be sufficient if other dimensions remain weak. Therefore, halal ecosystem development should follow a structured pathway beginning with awareness improvement, certification preparation, managerial strengthening, supply chain integration, and institutional collaboration.

This finding is consistent with the concept of organizational readiness, which explains that successful organizational transformation depends on both internal capability and external environmental support (Weiner, 2009). In the context of halal agribusiness MSMEs, readiness represents not only the ability to fulfill halal requirements but also the capacity to transform business processes toward sustainable development.

The contribution of this study lies in developing an integrated readiness mapping perspective for halal agribusiness MSMEs. Previous studies have mainly focused on halal certification, consumer behavior, or specific supply chain aspects. This research expands the discussion by integrating organizational and ecosystem dimensions to understand halal industry readiness at the regional level.

Therefore, the halal readiness mapping framework developed in this study can serve as a foundation for future research and policy development, particularly in designing halal MSME empowerment models, digital halal supply chain systems, and sustainable halal agribusiness ecosystem strategies.

CONCLUSION

This study concludes that the development of a sustainable halal agribusiness ecosystem requires a comprehensive understanding of the readiness level of agribusiness MSMEs. The conceptual mapping identifies five essential dimensions influencing halal industry readiness, namely halal awareness, halal certification readiness, management capability, halal supply chain readiness, and institutional support. These dimensions demonstrate that halal transformation is not limited to obtaining halal certification but requires the integration of organizational capability, operational management, supply chain governance, and ecosystem collaboration.

The analysis of Sambas Regency indicates that the region has significant potential for halal agribusiness development due to its agricultural resources, food processing activities, and local commodity-based industries. However, this potential requires strengthening through improved halal literacy, structured business management, documentation systems, traceability mechanisms, and stakeholder collaboration. Therefore, the readiness of MSMEs becomes a fundamental factor in ensuring that local resources can be transformed into sustainable halal products with higher competitiveness.

Theoretically, this study contributes to the development of halal industry management literature by proposing an integrated readiness mapping framework that combines internal organizational factors and external ecosystem support. This framework expands previous studies that mainly focus on halal certification, consumer behavior, or individual supply chain aspects by providing a broader perspective on regional halal ecosystem development.

Practically, the proposed framework provides strategic implications for policymakers, halal certification institutions, universities, and MSME development organizations. The readiness mapping framework can be used as a reference for designing targeted intervention programs, including halal education, certification assistance, management capacity building, digital transformation, and halal supply chain strengthening. Future research can develop quantitative readiness indexes and

formulate halal MSME empowerment models based on empirical data to support the establishment of sustainable halal agribusiness ecosystems.

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