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Analysis of the Upstream-Downstream Halal Value Chain Integration in the Culinary Business: A Case Study of Three Branches of Bakso dan Mie Ayam Pak Mitro in Semarang

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ABSTRACT

The research aims to analyze the integration of the halal value chain from upstream to downstream in a chain culinary business, with a case study of three Bakso & Mie Ayam Pak Mitro branches in Semarang. Increasing public awareness of halal product consumption has driven the importance of halal value chain integration in the culinary sector, particularly meat-based food businesses that have high halal critical points. The research uses a descriptive qualitative approach with an exploratory case study design. Data were collected through in-depth interviews with the owner, branch manager, and raw material suppliers, as well as field observations and documentation throughout the operational chain. The results show that the integration of the halal value chain at Bakso & Mie Ayam Pak Mitro has been running sustainably from the upstream stage selection of halal-certified raw materials from accredited slaughterhouses and trusted suppliers, midstream centralized processing and distribution that maintains halal integrity, to downstream hygienic product presentation and service at all three branches. However, several challenges were identified in terms of written standard operating procedures (SOPs) between branches and formal cross-contamination monitoring. This study concludes that owner commitment and kitchen centralization are key to establishing a consistent halal value chain across all branches. The results provide practical contributions for culinary MSMEs in implementing an integrated Halal Product Assurance System in multi-branch businesses.

Keywords: Halal Value Chain; Upstream to Downstream; Multi-Branch Culinary Business.

Introduction

The rapid growth of the halal culinary industry has encouraged businesses not only to ensure the halal status of their final products but also to ensure the comprehensive integration of halal principles throughout every stage of the value chain, from raw material procurement and production processes to storage, distribution, and service to consumers. Phenomenon is experienced by the culinary business Bakso & Mie Ayam Pak Mitro Semarang, which has three operational branches. The development of entrepreneurship in Indonesia is currently a crucial pillar in driving economic growth and creating jobs. However, with intense competition in the culinary sector, businesses are not only required to innovate but also to safeguard their reputations from negative issues that could undermine consumer trust. As a form of resilience and a strategy to maintain customer trust across all its branches, the business owner emphasizes a commitment to the quality of halal-certified raw materials such as using beef from trusted suppliers and other supporting ingredients whose halal status is guaranteed in accordance with Islamic teachings.

From a sharia economic perspective, halalness is an absolute quality standard that integrates worldly economic values with religious observance (Amir & Tjibtosubroto, 2019). To

comprehensively guarantee product halalness, the implementation of a Halal Value Chain from upstream to downstream is mandatory. This concept provides added value at every stage, from the procurement of certified raw materials in the upstream stage, to contamination-free processing and distribution in the midstream, to presentation and marketing in the downstream stage (Ab Rashid, Norasekin & Bojei, 2020). The urgency of this integration is reinforced by government regulations through the Halal Product Guarantee Agency (BPJPH), as mandated by Law No. 33 of 2014 and Law No. 6 of 2023, which mandate halal certification for all food and beverage products.

Research on the integration of the Halal Value Chain from upstream to downstream at three Bakso & Mie Ayam Pak Mitro Semarang branches is highly relevant. This study is necessary because existing research on halal culinary businesses has tended to focus on downstream aspects, such as halal certification, raw material compliance, or consumer perceptions and purchasing decisions, while the integration between upstream and downstream processes in establishing an integrated halal value chain remains relatively underexplored, particularly in local culinary businesses. This study offers novelty by comprehensively analyzing the integration of the upstream–downstream halal value chain, encompassing raw material selection and procurement, supplier management, production processes, storage, distribution, and service to consumers within a single culinary business ecosystem. Focusing on three branches of Bakso dan Mie Ayam Pak Mitro in Semarang also enables the study to identify consistency, variations, and potential gaps in the implementation of halal principles across business units, thereby providing a more contextual understanding of how halal value chain integration is implemented in local-scale culinary businesses. Managing the halal value chain in a multi-branch beef and chicken-based culinary business presents unique challenges, particularly in maintaining the consistency and integrity of halal certification at each outlet. The study aims to analyze in-depth how the halal supply chain is coordinated, from raw material selection to consumer delivery, and to serve as a model for culinary MSMEs in implementing the Halal Product Guarantee System consistently and integratedly.

Methods

Research Type and Approach
This research employed field research with a descriptive qualitative approach (Creswell & Creswell, 2023). The design employed was an exploratory case study to gain an in-depth understanding (in-depth analysis) of the Halal Value Chain integration phenomenon from upstream to downstream in chain culinary businesses. This research was conducted at three Bakso & Mie Ayam Pak Mitro branches in Semarang City, Central Java. Data collection and field observations took place in stages for 6 months.

Research Subjects and Objects
Research Subjects (Informants) are Business owners, managers at the three branches, employees in the processing and serving departments, suppliers of primary raw materials (beef and chicken), and consumers. Informants were selected using purposive sampling based on their direct involvement in the halal value chain, comprising three business owners/managers, three production staff, three suppliers, and three consumers, with each informant selected according to predefined criteria relevant to their role and experience in the upstream–downstream halal processes.

Research Object
Integration of the halal value chain, encompassing raw material procurement (upstream), processing and distribution (midstream), and presentation and marketing (downstream) at three Bakso & Mie Ayam Pak Mitro Semarang branches.

Data Types and Sources
The data used consisted of two sources: (1) Primary Data is primary data in the form of words, verbal information, and operational behavior obtained directly from key informants through in-depth interviews and direct observation. (2) Secondary Data: Supporting data obtained through official documents, halal certificates for raw materials (e.g., halal certificates from slaughterhouses/meat), production process photographs, summary records, and relevant literature reviews.

Data Collection Techniques
Data collection was conducted systematically through three main technique: (1) Observation: Direct observation of daily operational processes, from raw material receipt, kitchen processing, inter-branch distribution, to product presentation techniques to customers at all three Semarang branches to ensure the validity of physical conditions and hygiene (halal & thoyyib). (2) In-depth Interviews: Structured and in-depth question and answers with business owners, branch managers, and suppliers to explore quality assurance strategies, halal SOPs, and the accurate handling of operational issues firsthand. (3) Documentation: Collecting concrete evidence in the form of photographs of operational activities, permit documents, halal certificates for raw materials, and other supporting archives to strengthen the primary data.

Results and Discussions

The study maps the operational flow of Pak Mitro's Bakso and Mie Ayam in Semarang from upstream to downstream. A comprehensive overview of the implementation of an integrated halal value chain with a scientific approach. The mapping includes key activities at each stage, findings from actual implementation at all three branches, and the integration of scientific and educational principles applied to maintain product quality and halal certification. The detailed Halal Value Chain integration matrix, along with indicators for achieving sharia compliance in this culinary business, is presented in Table 1.

Table 1. Halal Value Chain Integration Matrix and Science-Education Integration at Bakso and Mie Ayam Pak Mitro

Value Chain Stages	Key Activity Components	Implementation Findings in 3 Branches	Description
Upstream	Supplier Procurement and Selection	1. Strict selection of beef and chicken suppliers. 2. Halal certification inspections at slaughterhouses.	100% of the main raw materials have valid and verified MUI/BPJPH halal certification.
	Raw Material Receipt	1. Physical inspection of ingredients upon arrival at the central kitchen. 2. Separation of halal and non-halal ingredients (if any supporting ingredients are present).	Zero raw material contamination during the receiving stage.
Midstream	Processing & Milling	1. Meat grinding using our own special machines or those of a proven partner. 2. Meatball boiling and chicken noodle broth preparation.	Free from hazardous chemicals (borax/formaldehyde) and physical contamination.
	Storage (Cold Storage)	Storage of dough and meat in the cold storage before	Zero cross-contamination during storage (safe shelf-life).

Value Chain Stages	Key Activity Components	Implementation Findings in 3 Branches	Description
		distribution to the three branches.	
	Inter-Branch Distribution	Shipping of semi-finished ingredients to Branches 1, 2, and 3 in Semarang	The physical condition and halal status of the ingredients remain stable upon arrival at all three branches.
Downstream	Serving & Equipment Sanitation	1. Standardized cleaning and washing of cutlery at each branch. 2. Serving meatballs and chicken noodles directly to customers	High hygiene and sanitation scores; clean cutlery, free from oil residue or odor.
	Customer Service & Information	1. Displaying halal logos and ingredient transparency boards. 2. Hospitality and halal awareness training for frontline workers.	Increased consumer trust and customer satisfaction at all three branches

Bakso and Mie Ayam Pak Mitro in Semarang, each operational stage is carefully analyzed to identify critical halal control points and formulate mitigation measures based on technical and scientific standards. Mapping the value chain flow is crucial in the production process. A crucial aspect of halal product quality assurance in the culinary industry is identifying vulnerable points that could potentially trigger contamination with haram (forbidden) or impure (unclean) ingredients. The assessment covers potential biological and physical contamination risks, control procedures, and quantitative monitoring parameters based on physical and biological principles. Details of the identification and mitigation matrix for these critical halal control points are comprehensively presented in Table 2.

Table 2. Evaluation Profile of the Implementation of the Halal Value Chain at the Three Branches of Bakso and Mie Ayam Pak Mitro in Semarang

Halal Value Chain Evaluation Indicators	Branch 1	Branch 2	Branch 3	Compliance
Upstream	Centralized from the main kitchen; 100% halal certified	Receive distributed supplies from the main kitchen.	Receive distributed supplies from the main kitchen.	97% High
Midstream	Uses walk-in freezer and thermally insulated cool box	Uses standard branch freezer boxes; temperature control is carried out daily.	Uses standard branch freezer boxes; temperature control is carried out daily.	94% High
Downstream	Uses constant hot water washer/rinse system	Manual washing with running water and	Manual washing with running water and	89% Fair

		rinsing with warm water.	rinsing with warm water.	
Staff Understanding of Halal Education & Science	Very good (Regular training from owner & management team)	Good (Follows SOPs and written work instructions).	Good (Follows SOPs and written work instructions).	85% Fair
Transparency of Halal Information to Consumers	Displays halal certificate, educational banners, & kitchen transparencies	Displays halal stickers/logos and raw material information.	Displays halal stickers/logos and raw material information.	91% High

Quantitatively measuring the effectiveness and consistency of implementing science-based halal standards, an evaluation was carried out on the level of compliance in all operational units of Bakso and Mie Ayam Pak Mitro business. This evaluation covered key indicators from upstream to downstream, ranging from the assurance of halal raw materials, precision of thermal control and cold chain systems, hygiene and sanitation of instruments, to the level of halal-science literacy of staff at all three branches. The distribution of the percentage of achievement and compliance levels of the integration of the Halal Value Chain and these scientific principles is visually depicted in Figure 1.

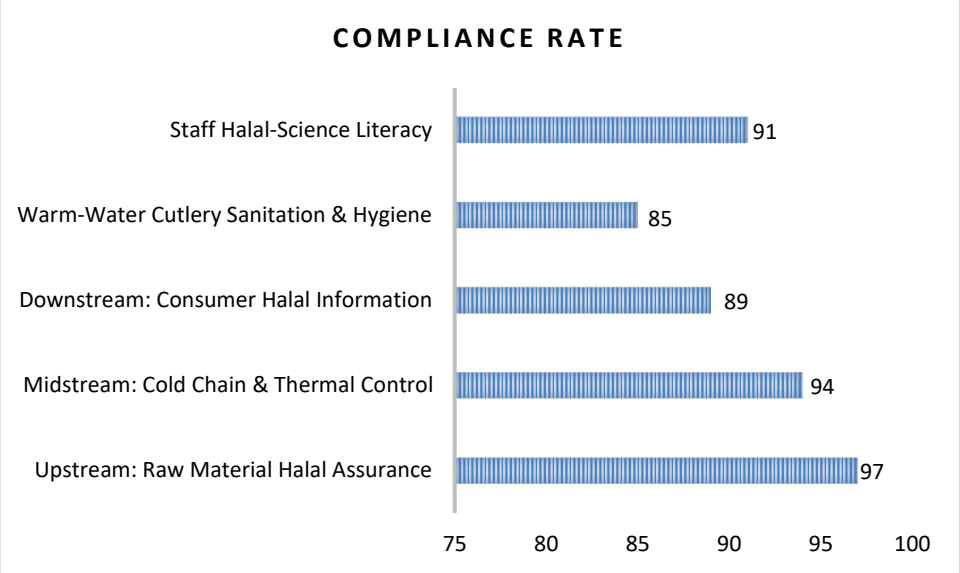


Figure 1. Compliance Rate (%) of Halal Value Chain (HVC) and Science Integration Across Three Branches

The Halal Value Chain at Bakso and Mie Ayam pak Mitro culinary business in Semarang demonstrates a holistic, structured, and consistent halal value chain integration model across its three branches. Research shows implementation of halal value not only serves as a form of sharia compliance but is also integrated with physical science principles and operational education (Berry, 2025; Braun & Clarke, 2013). The procurement of primary raw materials, such as beef and chicken In the upstream sector,, is centralized in the main kitchen, with a 100% compliance rate. Halal assurance is ensured through rigorous selection of slaughterhouses and chicken slaughterhouses that have received official halal certification from BPJPH unit, and MUI unit is supported by education of receiving staff regarding the physical and biological parameters of

fresh meat, such as pH, colour, and elasticity, to prevent initial contamination (Jarata, 2025; Keleher, McLean & Smith, 2024; Devito, 2018; Martiana, Maesyaroh & Sobar, 2018).

The processing, storage, and distribution of ingredients to Branches 1, 2, and 3 recorded a 95% compliance rate in the midstream sector. Cross-contamination is mitigated using specialized grinding facilities and the implementation of thermodynamic physics principles. Bakso process is maintained at a constant temperature above 70-100°C for complete protein denaturation and thermal sterilization, while semi-finished product storage utilizes a thermophilies-based Cold Chain System with a temperature range of -16°C to -20°C to halt the growth of spoilage bacteria without synthetic preservatives. Inter-branch distribution utilizes thermally insulated cool boxes to maintain the temperature stability of raw materials during transportation (McLean, Keleher & Smith, 2024; Nurcahyanie, Singgih & Dewi, 2022; Porter, 1985).

Compliance across the three branches reached 80% to 92% in the downstream sector, focusing on equipment sanitation and information transparency for consumers. The cutlery washing process utilizes thermal sterilization using high-temperature hot water (>55°C) and surfactants to accelerate the physical and chemical dissolution of fats (degreasing) and remove any remaining impurities (Viraj & Nitin, 2026; Yuniastuti, Viviyanti & Pratama, 2023; Rohman, Faizur & Ulinnuha, 2022). Implementation of the official halal logo and the hygienic kitchen layout serve as effective public education tools such as halal science awareness. Overall, the consistent integration of HVC based on scientific understanding across all Bakso & Mie Ayam Pak Mitro Semarang branches has proven to not only maintain product integrity from upstream to downstream, but also significantly improve operational efficiency and strengthen consumer trust.

Conclusion

Bakso and Mie Ayam Pak Mitro Semarang has successfully integrated Halal Value Chain (HVC) principles consistently across its three branches through three main stages:

1. Upstream Value Chain: Halal assurance begins with the selection of accredited suppliers with official Halal Certification for the main raw materials (beef and chicken). Receiving raw materials involves stringent inspection standards to ensure the physical and biological halalness of the raw materials.
2. Midstream Value Chain: The processing, boiling, storage, and distribution of ingredients from the central kitchen to the three branches are carried out according to strict standard operating procedures (SOPs). Supervision focuses on mitigating the risk of cross-contamination by utilizing physical principles, such as temperature control in cold storage and equipment sterilization.
3. Downstream Value Chain: The consumer presentation stage ensures clean cutlery, transparent ingredient information, and a hygienic service environment.

Overall, the integration of HVC into Pak Mitro's Bakso & Mie Ayam (Chicken Meatballs & Noodles) not only serves as a form of sharia compliance but also serves as a medium for halal science education for managers, employees, and consumers. The implementation of halal standards based on scientific understanding (physics and biology) has been proven to increase operational efficiency while strengthening consumer trust in multi-branch MSME culinary businesses.

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Conflicts of interest

The author declares that there are no financial, personal, or professional conflicts of interest that could influence the implementation and results of this research. The research on Pak Mitro's Meatball & Chicken Noodle business in Semarang was conducted independently for academic purposes only.

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