

HALAL SUPPLY CHAIN STRATEGY IN THE LEATHER INDUSTRY USING THE QUADRUPLE HELIX MODEL

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ABSTRACT

The Muslim population represents a significant market for halal products, contributing to both the global and Indonesian economies. The leather product industry is an important sector in the Indonesian economy. Indonesia has the largest cattle population in the world and is one of the leading producers of cow leather products on the international market. Business actors in Indonesia process raw leather products into several products for local and global use, which form a supply chain strategy. However, the leather product industry, based on the cattle population in Indonesia, also faces a number of challenges. To face this challenge, it is important to strengthen institutions in the supply chain for halal leather product products by making several strategic assumptions and implementing the Strategic Assumption Surfacing and Testing method. Data collection in this study was done through interviews with experts on Quadruple Helix, including academics, government, associations, and industrial players. This research succeeded in identifying strategic assumptions related to strengthening institutions in the supply chain for halal leather products in Indonesia. There are 20 strategic assumptions divided into four parts. Thus, decision-makers can consider various strategies to increase halal certification considering their level of importance and certainty. Apart from that, this research has also selected 11 main strategic assumptions, which are the main focus of the research. Further research is recommended to validate selected assumptions with stakeholders for implementing the pilot project in Indonesia.

Keywords: *Leather Product Industry, Supply Chain, Halal Product, Strategic Assumption Surfacing and Testing, Quadruple Helix*

1. INTRODUCTION

Indonesia has the biggest number of Muslims in the world. As a result, Indonesia has a potential market for various halal products. Then, the guarantee of halal products becomes important for businessmen in Indonesia. Micro, small, and medium enterprises (MSMEs), for instance, play an important role in increasing the gross domestic product (GDP) of a country and can also help overcome economic problems in Indonesia. Until now, the MSME contribution towards the economy of Indonesia has been strongly significant, with the presence of business entities that have halal certifications spread in various regions.

The leather industry is a major sector of the Indonesian economy. Indonesia has the largest cattle population in the world and is a prominent producer of cattle leather. However, the cowhide industry in Indonesia confronts several issues (Sari & Syatar, 2021), one of which is the presence of various haram leather goods in circulation in Indonesia that are derived from raw pork materials. The main obstacles in implementing the halal supply chain for leather products include inadequate animal slaughter standards and poor handling during slaughter. These factors negatively impact leather quality and hinder the ability of operations management to adopt halal services (Lestari et al., 2022).

Halal certification proves that raw ingredients, production procedures, and the Halal Guarantee System (SJH) comply with MUI's standards. Halal certification is a document, emblem, or trademark issued by an Islamic organization to attest that a product or service adheres to Islamic principles (Islam et al., 2023; Rofiah et al., 2024; Syazwan et al., 2016). The procedure for obtaining halal certification begins with an application to the BPJPH (Halal Product Guarantee Administering Body). Applications for halal certification must be submitted by official enterprises with a valid government business license. Complete supporting files and data are submitted to BPJPH for review and determination of the certification fee. Once the applicant has paid the certificate processing fee, an audit will be scheduled. The audit is conducted by a halal inspection firm appointed by BPJPH. The audit results are then submitted to the MUI Fatwa Commission for a hearing, followed by a legal determination through a halal fatwa (Akim et al., 2019; Lestari et al., 2021).

The Indonesian Ulema Council (MUI) issued Fatwa Number 56 of 2014 about the tanning of animal skins and their use, emphasizing that animal skins derived from dogs and pigs are still regarded as filthy and haram for use as food and consumer products. As a result, this fatwa pushes the government to control and oversee the distribution of Halal items in Indonesia. The provinces of East Java and West Java play a significant role in creating Micro, Small, and

Medium Enterprises (MSMEs) in the leather industry, accounting for 40% and 24% of the total number in Indonesia, respectively (BPS-Statistics Indonesia, 2016). To address this challenge, it is critical to build institutions in the halal leather supply chain by developing various strategic assumptions and following the Strategic Assumption Surfacing and Testing (SAST) methodology. This method focuses on the relationship between respondents, specifically on studying varied perceptions, opinions, and interpretations of problem situations (Zlatanovic, 2016). According to a study, the SAST method generates and tests strategic assumptions, which are ideal conditions or requirements that a system must meet (Daulay, 2020). Using the SAST method, the purpose of this study is to analyze and identify strategic assumptions related to institutional strengthening in the halal leather product supply chain, as well as to develop strategic recommendations for institutional strengthening based on the findings of the strategic assumption analysis. Then, external factors including academics, the government, associations, and industry entities affect institutional strengthening in the halal leather supply chain. The supply chain strategy in this study requires interaction with several entities. There are many models used to elaborate the interaction between entities in the supply chain strategy (Bygballe et al., 2023; Sabet et al., 2017). Studies used the Triple helix consisting of academics, practitioners and the community (Perdana & Kusnandar, 2012; Razak et al., 2016). This study requires 4 entities to interact in a supply chain strategy. Several studies adopted the Quadruple helix model for various case studies involving government, business practitioners, associations and academics (Hasche et al., 2020; Roman et al., 2020). This party's engagement corrects the Quadruple Helix Model, which strengthens business processes in the halal leather supply chain. Several studies stated that the Quadruple Helix Model can incubate business actors in improving the performance of their business processes (Galvão et al., 2017; Hasche et al., 2020).

2. METHODS

2.1 *Research Design*

This study was conducted in Sidoarjo Regency, one of Indonesia's main leather tanning industrial locations. To address current issues, this study employs a case study technique based on a qualitative model. Strategic assumptions were derived from focus group discussions (FGDs) and open interviews with 5 experts involving academic, association, and industry practitioner and Government who comprise the Quadruple Helix Model. The experts interviewed consist of five professionals with substantial expertise and knowledge of leather-based products, from the raw material to the finished product. These five experts will respond to the questionnaire's questions, which include a list of assumptions, on a Likert scale of 1 to 7 (from least

important/worth 1 to most important/worth 7). Table 1 shows the responders in question. The purpose of the FGD and interviews is to collect and obtain key assumptions about the institutional strengthening strategy for the halal leather supply chain. This strategy is useful for identifying critical assumptions that support adopted plans, policies, or strategies adopted.

The Strategic Assumption Surfacing and Testing (SAST) method was used in this study to identify strategic assumptions that must be evaluated, taking into account the importance and certainty of each assumption in obtaining the intended results. Figure 1 illustrates the amount of relevance and confidence in the assumptions. The SAST process results will be presented in the form of a four-quadrant graph, indicating the importance and certainty of each analyzed assumption. The assessment was based on expert judgments and numerous criteria (Daulay, 2020). Figure 2 shows the research stages.

Table 1 Respondents' Profile

Expertise Field	Position	Experience (Years)	Code
Academician	Lecturer/Researcher	23	A1
Government	Head of Division	15	G1
Government	Staff	9	G2
Association	Chairperson	21	S1
Industry Practitioner	Business Owner	13	I1

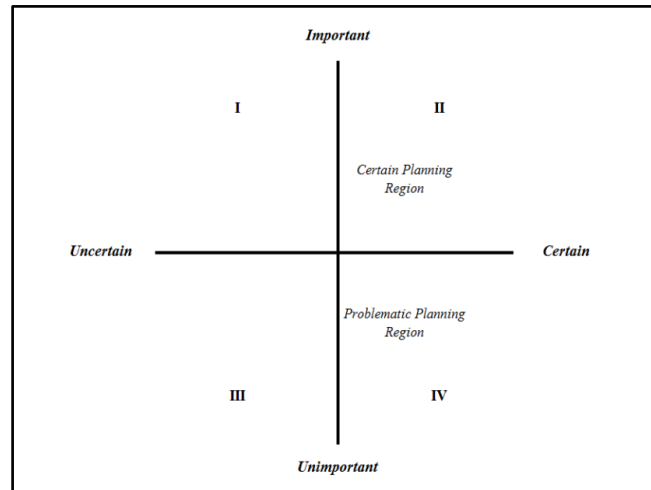


Figure 1 The Graph of Assumption Rank

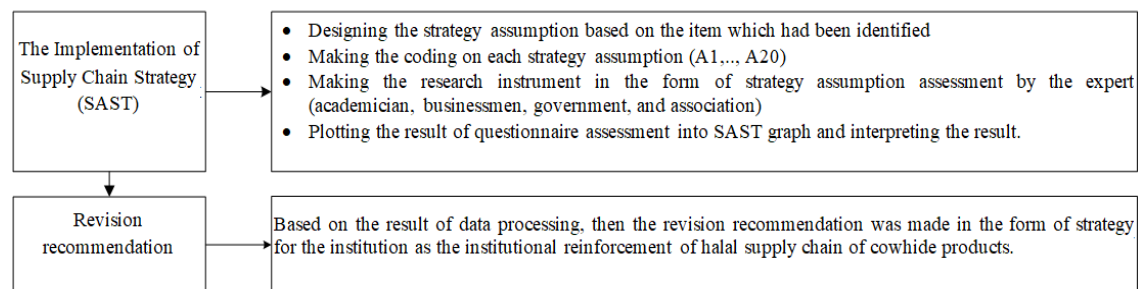


Figure 2. The Research Stages

2.2 Data collection

The first stage in implementing a halal leather supply chain plan using SAST is to determine basic assumptions through expert interviews. In this interview, professionals will share their perspectives and understanding of the principles that underpin the institutions in the supply chain for halal leather products. The information gathered from these interviews will serve as the foundation for identifying critical assumptions that must be tested and reviewed during the future SAST process. Table 2 contains a transcript of interviews with experts from academia, government, associations, and industry.

Table 2. Selected Indicators

Resources	Transcript	Interpretation
Academician	The most significant issue for business actors is their insufficient understanding of Islamic concepts.	Halal Knowledge
Association	Knowledge of halal animal leather is very low.	
Association	Business actors frequently receive requests to create things from snake, zebra, and crocodile skin.	
Industry Practitioner	We accept consumer orders for leather jacket items based on client requirements, such as pigs, snakes, crocodiles, and monitor lizards.	
Association	Until recently, we have never highlighted halal issues; instead, the training focuses on applying online technologies (digital marketing) and product design.	Training and Education
Industry Practitioner	There has never been any halal certification training for leather products.	
Association	The assistance should produce tangible results for business actors, such as establishing a NIB with concrete provisions.	
Government	Halal and GMP certifications are included in the training.	
Government	Halal supervisors have received training in the form of technical instruction on halal certification, as well as simulations of form completion.	
Academician	The critical point of halal use for leather products is in the tanning industry since it uses a lot of chemicals and other substances, making it possible for them to be mixed with non-halal materials.	Standardization
Association	Products from business actors do not yet have good standardization (SNI).	

Resources	Transcript	Interpretation
Association	Cooperatives have not found appropriate standardization for leather product businesses.	
Association	There is no SNI standardization for bag products yet.	
Association	The Association does not have a product catalog.	The Government Role
Association	There is no clear division of tasks and functions between business actors, the Association, and the government.	
Association	The Association is unable to work in the export market due to a lack of understanding of the procedure. Thus, exporter service providers have taken advantage of this opportunity.	
Association	Government assistance is not well targeted to business actors assisted by Intako because the needs of business actors are not detected in detail.	
Government	The Sidorajo government program is in the form of SEHATI outreach (a free halal certification program for MSMEs), but it is currently still targeting the food industry.	
Government	The government is developing the largest halal industrial area in Indonesia, located in Sidoarjo, where MSMEs participating in this program will be facilitated by incentives for halal licensing and certification.	
Government	The Sidorajo government program for the leather industry takes the form of digitalizing MSMEs and developing innovative products.	
Association	Training held by the government, one of which is BPIPI, does not include halal leather in the training material.	
Government	The government has supported the growth of MSMEs for halal certification, which is currently focused on food goods.	
Government	Halal certification procedures should be simplified, especially to meet the requirements for halal raw materials.	
Association	The government's coaching instruction for business actors assisted by cooperatives is ineffective since first-generation business actors can only focus on boosting product volume and are unable to invent new products.	
Association	The government has not socialized the obligation to halal certification for leather items.	
Government	Collaboration with the import-export center in Surabaya to help MSMEs enter the export market.	

Resources	Transcript	Interpretation
Association	Cooperatives do not get CSR from companies around Sidoarjo.	CSR
Government	Corporate social responsibility (CSR) is still severely lacking.	
Association	The potential for overseas markets necessitates a license for raw leather materials derived from animals raised on cultivated farms so that they do not disrupt the ecology to the point of extinction.	Export Potential
Industry Practitioner	Halal certification is not an issue for local marketing until it needs to be exported.	
Association	Business actors do not have local brands, so many third parties get large margins from them due to better third-party branding.	
Association	Export regulations are tough to meet and cannot be handled by industry participants alone.	

3. RESULTS AND DISCUSSION

3.1 *Designing Strategy Assumptions*

The results of the FGD (Focus Group Discussion) and interviews with qualified experts in the sector were used to make strategic assumptions for establishing the halal leather supply chain. The results of the conversation revealed 20 key strategic assumptions. These assumptions will then be coded so that researchers can define and visualize them in a graphical format. Table 3 represents the design assumptions for the halal leather supply chain implementation strategy.

Table 3. Assumed Strategy for Implementing the Halal Leather Supply Chain

No	Assumption	Code
1	Train competent human resources in the field of halal products by sending personnel to certification courses.	A1
2	Activate halal product campaigns for customers through business actors in the form of excellent items.	A2
3	Create standard operational procedures for production processes based on Indonesian government-issued halal product requirements.	A3
4	There is an inventory of the availability of halal items.	A4
5	Government programs help to strengthen the halal community.	A5
6	Participate in the government's Halal Certification Assistance Program.	A6
7	Business actors provide funding to register for halal certification.	A7
8	Increasing government and private sector programs using CSR	A8

No	Assumption	Code
	monies to support halal certification for business actors.	
9	The government-appointed Halal certification institutes (BPJPH and LPH) are responsible for enabling financing and ensuring that it is not diverted.	A9
10	Halal inspection organizations offer alternate alternatives for raw materials whose halal legality remains uncertain.	A10
11	Socialization of the obligation for halal certification (mandatory) by the government by implementing a punishment system for business actors who do not carry out halal certification.	A11
12	Implementing regulations on the validity duration of halal certification for four years (PP 39 of 2021).	A12
13	The government advises business actors on halal items.	A13
14	Increasing halal certification capabilities among human resources (e.g., supervisors, assistants, auditors).	A14
15	Cross subsidies for business actors in making halal certification payments, in the form of grouping business actors based on industry scale.	A15
16	The government's provision of coaching incentive monies for business actors is contingent on the halal certification scheme.	A16
17	The government regularly promotes halal regulations and certification processes to the public.	A17
18	Halal certification provides business actors with a competitive advantage on both the local and international levels.	A18
19	There is transparency throughout the halal product manufacturing process until it reaches the consumer.	A19
20	The promotion of Indonesian halal products is acceptable in the worldwide (international) market.	A20

In addition, a collective evaluation is carried out by integrating the assessment findings of each assumption that has been assessed by experts, as well as looking at patterns (values that commonly emerge) from each assumption assessment. The findings of this examination are then represented as a Cartesian diagram with four assessment categories: important, not important, certain, and uncertain.

3.2 Selection of Main Assumptions

A Cartesian diagram depicting the relationship between the variables is used to determine assumptions. This diagram is typically represented as a horizontal line on a plane divided into four sections by two opposing axes. The vertical axis indicates one variable, and the horizontal axis represents the other variable. The values for each pair of variables can be represented as points on the diagram. The following are the outcomes of five respondents' assessments of the assumptions in implementing the halal leather supply chain strategy,

which can be seen in Figure 3.

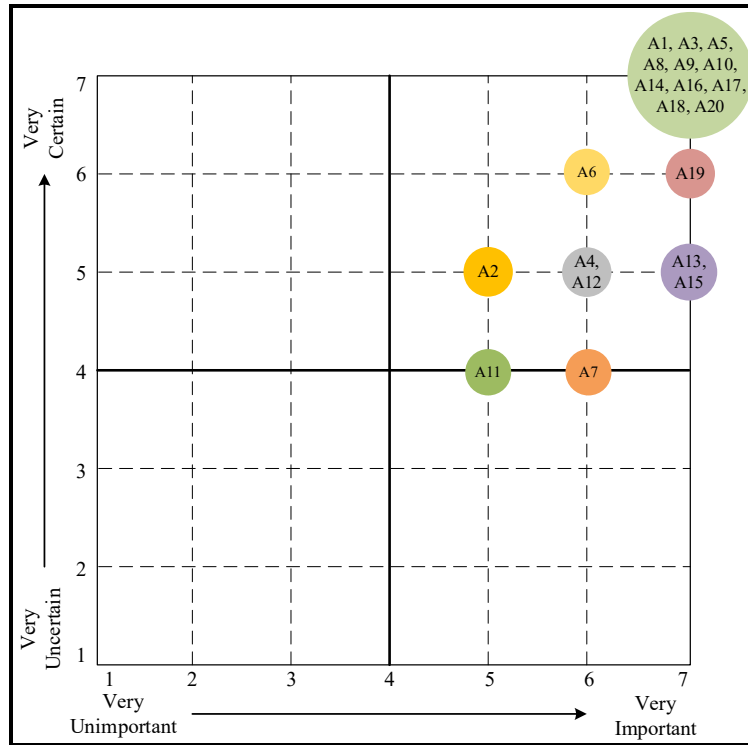


Figure 3. Cartesian Diagram of SAST Assumption Selection

The assessment findings presented above reflect the respondents' perspectives on the assumptions provided. There are 8 clusters in SAST formed in this study. The peak cluster is an ideal cluster with very important and very certain conditions. This best cluster contains 11 assumptions obtained from the results of data processing on the Cartesian Diagram. In addition, this best cluster is used as a focus for the development of this study. Assumption one (A1) states that "training competent human resources in halal products by sending employees for certification" is a critical for the success of institutional improvement of the halal leather supply chain. The majority of respondents gave this assumption an importance value of seven, and they believed that it would undoubtedly be successful in implementing the halal leather supply chain, with a certainty rating of seven. Competent human resources can be obtained by providing training and improving certification (Hosen et al., 2024; Vega Wafaretta et al., 2023). The assumptions contained in the first quadrant (A1, A3, A5, A8, A9, A10, A14, A16, A17, A18, and A20) indicate that these assumptions are ideal conditions or absolute prerequisites in implementing the leather product supply chain. Halal beef. Assumption A19 ranks second in priority, with a score of 7.6, following the highest-rated assumption with a score of 7.7. Indeed, the implementation of the Quadruple Helix Model in this study can explain several selected assumptions. The Quadruple Helix Model is believed to be able to identify solutions for policy-making to help business

actors (Tursanurohmad et al., 2023).

4. CONCLUSION

The Strategic Assumption Surface and Testing (SAST) method used in this study was successful in finding strategic assumptions for institutional strengthening in the supply chain for halal leather products. The Quadruple Helix Model serves as the foundation for 20 strategic assumptions. As a result, decision-makers can examine a variety of measures to boost halal certification based on the level of importance and certainty. Aside from that, this research has identified 11 key strategic assumptions, which are the primary subject of the study. However, this study has limitations in identifying the priority of assumptions to be adopted. Further research is needed to apply a weighting and assessment approach to identify the best strategic assumptions for increasing halal certifications in Indonesia.

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