



Mapping for Halal Certification Process Optimization in the Context of Logistics Companies in Indonesia

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Abstract: This study aims to map for Halal Certification process optimization in the context of logistics companies in indonesia through LPPOM MUI (Institute for the Assessment of Food, Drugs and Cosmetics of the Indonesia Ulema Council) qq (Qualitate Qua) BPJPH (Halal Product Assurance Agency) in the issuance of halal logistics certificates. This study uses a mix method using 2 stages that the researcher calls the SD (Systematic and Dynamics) Model, starting with the initial stage in the form of a qualitative approach with literature review on several reputable journal databases through SLR Analysis (Systematic Literature Review) with the results of 38% or 27 out of 71 articles in Scopus journals and the theory used to form variables and indicators. Furthermore, using System Dynamics Analysis assisted by Vensim software, a research model was obtained that was displayed with CLD (Causal Loop Diagram) and SFD (Stock Flow Diagram).

Keywords: Certification acceleration, Customer Satisfaction, SLR, System Dynamics, Halal Logistics

INTRODUCTION

Trade and Risk of Contamination of the distribution and storage of Food and Beverage, Pharmaceuticals, and consumables with the services of logistics companies in Indonesia that affect the Customer Satisfaction of logistics service users. Starting from a phenomenon during the era of awareness of hygiene and quality as well as halalness of products based on Islamic sharia law, food and beverages that have obtained halal certification in large quantities have obstacles in the halal assurance process. This includes distribution services including transportation, and storage services. The market demand related to halal-certified products, the government issued Law no 33 of 2014 (UU No 33 Tahun 2014 Tentang Jaminan Produk Halal, 2014) concerning Halal Product Assurance and

its derivatives However, in the implementation of compliance with the regulation there are still many obstacles, so that the revision and improvement of the rules and their derivatives to regulate the implementation policy began with, Regulation of the Minister of Religion No. 26 of 2019 concerning the Implementation of Halal Product Assurance, Decree of the Minister of Religion No. 982 of 2019 concerning Types of Halal Certification Services, Law No. 11 of 2020 concerning Job Creation, Government Regulation No. 39 of 2021 concerning the Implementation of the Halal Product Assurance Field, and Decree of the Head of BPJPH No. 57 of 2021 concerning Criteria for the Halal Product Assurance System. Because the importance of risk management and protocols to maintain the halalness of halal products became clear, and regulations began to be enacted to control the handling and transportation of these goods.

The issue of complexity related to the halal logistics certification process, as well as global security in securing the logistics supply chain in congested environmental transportation is a concern for scientists, governments, and entrepreneurs so that both can be considered in the activities and procedures for handling the acquisition of halal logistics certification above. Customer satisfaction in the halal logistics certification acquisition process service is very important with the development of procedures and their integration with digital technology that is operated to facilitate the halal logistics certification acquisition process. There are three things that underlie our focus in reviewing the complexity of halal logistics certification procedures, namely the existence of data and the fact that first, the development of halal logistics certification for current logistics companies in Indonesia since the enactment of Law 33 of 2014 has only certified 350 from 1900 trucking companies reported by (Tarigan, 2020) of APTRINDO (Asosiasi Pengusaha Truk Indonesia) and 2.000 logistics company reported by (Masita, 2014) chairman of ALI (Asosiasi Logistik Indonesia) totally 3900 logistics companies, therefore estimate only 10-17.5% at the end of June 2024. Meanwhile, October 17, 2024 is the deadline for the final determination for logistics companies that provide distribution and storage services to be required to have a halal logistics certificate. The second thing that we pay attention to is that the mentoring process has not been optimal or there are not many parties who have carried out the mentoring process such as the Logistics Association, the third thing is the length of the logistics halal certification issuance process due to the lack of assistance and human resources in the institution that conducts the inspection of halal requirements. The fourth thing is the lack of understanding of logistics companies in existing regulations, and the directed certification procedures of related institutions, can be the impact of lack of socialization and related institutions. The fifth thing is that there is no Halal Ecosystem in the logistics process in Indonesia, (Tieman, 2022) The advancement of Halal supply chain management highlights the increasing complexity and international scope of the Halal industry. Successful implementation necessitates a comprehensive strategy that incorporates risk management, collaboration, and technological advancements. The creation of Halal industrial clusters, such as Indonesia's Halal Valley, serves as a promising example of developing a complete Halal ecosystem. Future studies should aim to tackle challenges in standardization, improve technological integration, and investigate new models for managing Halal supply chains in a more globalized market, and the sixth thing is that the synergy between institutions in the halal logistics certification process has not been optimal. Departing from 6 things that are supported by empirical data that is still quite significant, we will focus our research on the complexity of halal logistics certification in Indonesia through compliance with applicable regulations.

Therefore there are four Research Objectives, for the first to third research objective we use SLR analysis, for: a) Knowing what the trend year publication and country study are related to the halal logistics certification; b) Knowing what types of research methods have been carried out in the world related to Halal Logistics certification; c) Knowing what context

study obtained can be used as input or applied System dynamics model in policies and rules for the implementation of halal logistics certificate acquisition services and knowing the right solutions to overcome the gap so that it can be used as recommendations for improving SOPs, policies and procedures in the implementation of halal logistics certification services in Indonesia. The fourth objective we use system dynamics analysis for d) Knowing the shape of the model through the system dynamics method and also the influence of the variables of the customer service dimension of LPPOM MUI qq BPJPH.

Literature review

Halal Logistic

Halal logistics refers to the management and transportation of goods in a manner that ensures compliance with Islamic law, maintaining the halal status of products throughout the supply chain. This includes segregation of halal and non-halal items, strict adherence to cleanliness and handling standards, and using specific vehicles to avoid contamination. The importance of halal logistics has been highlighted in various studies, such as (Rejeb et al., 2021) who discuss integrating IoT in halal supply chains, and (Fathi et al., 2016) who explore the challenges and opportunities in halal logistics. Other works like (Tieman & Van Nistelrooy, 2014) and (S. Khan et al., 2023). further emphasize the perception of halal logistics among manufacturers and the associated risks in emerging economies. The role of halal logistics in a non-Muslim-dominant environment is also discussed by (Ziegler et al., 2022).

Certification Acceleration

Certificate acceleration involves expediting the process of obtaining necessary certifications, such as halal certification, to ensure that products and services meet required standards quickly. This process is essential for companies to remain competitive and meet market demands efficiently. Research by (Othman et al., 2017) and (Haleem & Khan, 2017) examines how knowledge, attitude, and sensitivity to government policies influence the halal certification process and its impact on organizational performance. Additionally, (Fathi et al., 2016) and (Susanty et al., 2021) discuss consumers' willingness to pay for halal logistics and the barriers to implementing halal logistics, which relate to the speed and efficiency of certification processes. (M. Khan et al., 2019) also explore how consumer willingness to pay for halal certification impacts market dynamics in Pakistan.

Customer Satisfaction

Customer satisfaction in halal logistics is primarily driven by the logistics providers' ability to meet the specific requirements of Muslim consumers, ensuring that products are handled and delivered according to halal standards. High levels of customer satisfaction are achieved when consumers trust that the products they receive are genuinely halal, fostering loyalty and repeat business. Studies by (Fathi et al., 2016) and (M. Khan et al., 2019) emphasize the importance of meeting halal standards to enhance customer satisfaction. Furthermore, (Rafiki & Abdul Wahab, 2016) highlight the role of human capital in obtaining halal certification, which is crucial for ensuring that companies can consistently meet customer expectations. The importance of maintaining customer satisfaction through reliable halal logistics practices is also discussed by (Karia, 2022) and (Abdul Rahman et al., 2018) , who focus on the integration and performance of logistics service providers.

Halal Logistics Market Demand

The demand for halal logistics is driven by the increasing global Muslim population and the rising awareness of halal standards among consumers. As explored by (Zailani et al., 2017), the growing market demand for halal products necessitates the development of

specialized logistics services that can ensure compliance with halal standards throughout the supply chain. (S. Khan et al., 2023) also emphasize the importance of understanding market demand dynamics in emerging economies, where the halal logistics sector is expanding rapidly. “The growing global demand for halal products, fueled by an increasing Muslim population and heightened consumer awareness, is driving the need for specialized halal logistics services that can ensure compliance with halal standards across the supply chain (S. Khan et al., 2023; Zailani et al., 2017)

Regulation Compliance

Regulation compliance in halal logistics refers to the adherence to both general legal requirements and specific halal regulations that govern the handling, storage, transportation, and overall management of halal products. Compliance is crucial for maintaining the halal integrity of products, avoiding legal penalties, ensuring consumer trust, and accessing markets that require strict halal standards. Several studies have explored various aspects of regulation compliance in the context of halal logistics. For example, (Rejeb et al., 2021) discuss how the integration of IoT in the halal supply chain can support better compliance with regulatory standards by providing real-time monitoring and traceability. (Zailani et al., 2017) highlight the challenges and opportunities in ensuring regulatory compliance in halal logistics, particularly in non-Muslim-majority countries. (Haleem & Khan, 2017) examine the implications of successful adoption of halal logistics on stakeholders, emphasizing the need for strict adherence to regulatory frameworks to ensure the successful implementation of halal practices. (Othman et al., 2017) delve into the influence of knowledge, attitude, and sensitivity to government policies in the halal certification process, showing how these factors impact compliance. Furthermore, (S. E. Hidayat & Musari, 2021) discuss how ASEAN is moving towards global halal logistics through a digitally enabled community, which can enhance compliance with international halal standards. The role of government in promoting halal logistics and ensuring regulatory compliance is also explored by (Ab Talib et al., 2020). (Susanty et al., 2021) provide insights into the barriers faced by Indonesian food, beverage, and ingredient companies in implementing halal logistics, highlighting the importance of regulation compliance in overcoming these challenges. Additionally, (S. Khan et al., 2023) explore the risks associated with halal logistics in emerging economies, emphasizing the need for robust regulatory frameworks to mitigate these risks. Overall, regulation compliance in halal logistics is a multifaceted issue that involves adhering to a complex set of rules and standards.

Company reputation and halal Logistics certification

In the context of halal logistics, company reputation is significantly impacted by obtaining halal certification, which is linked to enhancing consumer trust and achieving a competitive advantage in halal-sensitive markets. According to (Othman et al., 2017), adherence to halal certification requirements influences organizational performance positively, as it demonstrates commitment to quality assurance, particularly important in markets where religious and cultural factors shape consumer expectations. Additionally, (Zailani et al., 2017) explore the challenges and opportunities associated with halal logistics, noting that companies investing in halal certification bolster their reputation by meeting rigorous standards that resonate with consumer values. This compliance aids in establishing brand loyalty and expanding access to new markets, thereby reinforcing the company’s image as reliable and ethically aligned. Halal logistics certification is a formal verification process that ensures logistics providers adhere to halal standards throughout the supply chain. This certification covers various aspects, such as transportation, storage, handling, and packaging, to prevent contamination with non-halal items. The significance of halal logistics certification

is underscored by (Othman et al., 2017), (Fathi et al., 2016) , and (Ab Talib et al., 2016), who discuss how certification can influence logistics performance and organizational practices.

Additionally, studies like (Rahman et al., 2022) and (S. E. Hidayat & Musari, 2021) explore the role of government in promoting halal logistics and the impact of digital technologies on certification processes. Implementing halal logistics in a non-Muslim environment, as discussed by (Ziegler et al., 2022), and the challenges faced by SMEs in obtaining certification, as explored by (Susanty et al., 2021), further highlight the importance of a robust certification system.

Halal Logistics Certification Cost (Compliance Cost)

The cost of obtaining halal logistics certification can be a significant factor for businesses, influencing their decision to pursue certification. As explored by (Othman et al., 2017), the costs associated with certification include fees for audits, documentation, and ongoing compliance monitoring. (Ziegler et al., 2022) discuss the implications of these costs in non-Muslim-majority environments, where businesses may face additional financial burdens due to the need for specialized halal logistics processes. (Fathi et al., 2016) further examine how these costs can affect consumers' willingness to pay for halal logistics, impacting market demand. "The cost of obtaining halal logistics certification, including fees for audits, documentation, and compliance monitoring, is a significant consideration for businesses, particularly in non-Muslim-majority environments (Fathi et al., 2016; Othman et al., 2017; Ziegler et al., 2022) "

Halal Logistics Training

Proper training in halal logistics is essential for ensuring that logistics providers understand and adhere to halal standards. As highlighted by (Rafiki & Abdul Wahab, 2016) Abdul (2016), the human capital involved in halal logistics needs to be well-versed in halal practices to maintain the integrity of the supply chain. This training includes knowledge of halal certification processes, handling procedures, and the importance of segregation between halal and non-halal products. The study by (Karia, 2019) further emphasizes the role of training in enhancing the performance of logistics service providers. "Training is a critical component in ensuring that logistics providers understand and adhere to halal standards, with human capital being a key factor in maintaining the integrity of the halal supply chain (Karia, 2019; Rafiki & Abdul Wahab, 2016) “

Halal Logistics Associations and Consultation Provider in Halal Logistics

Halal logistics associations play a crucial role in promoting best practices, providing guidance, and ensuring that logistics providers are well-informed about the latest developments in halal standards and regulations. The study by (Ab Talib et al., 2020) discusses the role of government and related associations in promoting halal logistics, while (Tieman & Van Nistelrooy, 2014) highlight how associations can influence the perception and adoption of halal logistics among manufacturers. Associations also facilitate networking and collaboration among industry stakeholders, which is essential for the continuous improvement of halal logistics practices. "Halal logistics associations are instrumental in promoting best practices, offering guidance, and ensuring that logistics providers stay informed about the latest developments in halal standards and regulations (Ab Talib et al., 2020; Tieman & Van Nistelrooy, 2014)". Consultation providers play a crucial role in assisting businesses with the implementation and maintenance of halal logistics standards. They offer expert guidance on compliance with halal certification requirements, help in the preparation for audits, and provide training tailored to the specific needs of the business. As highlighted by (Othman et al., 2017), the complexities involved in the halal certification

process often necessitate the involvement of specialized consultants who can help companies navigate regulatory requirements and ensure that their operations align with halal principles.

Furthermore, (Rejeb et al., 2021) discuss the importance of integrating advanced technologies such as IoT into halal supply chains, a process that may require the expertise of consultation providers to implement effectively. These providers help businesses understand and apply these technologies within the framework of halal logistics, ensuring compliance with both traditional halal standards and modern technological requirements. (Karia, 2019) also emphasizes the role of consultation providers in enhancing the performance of logistics service providers through tailored training and support. By collaborating with halal associations, consultation providers ensure that the services they offer are aligned with the latest industry standards and regulations, thereby facilitating successful certification and ongoing compliance. "The involvement of consultation providers is often essential in navigating the complexities of halal certification, as they offer specialized guidance on compliance, audit preparation, and training tailored to the specific needs of businesses (Karia, 2019; Othman et al., 2017) .

System Dynamics

the concept of system dynamics which includes tools like causal loop diagrams (CLDs) and SFD can be inferred from discussions in several articles that explore the interactions and feedback mechanisms within the halal logistics system. (Rejeb et al., 2021) discuss the integration of IoT in halal food supply chains, which inherently involves complex feedback loops between technology adoption, compliance, and customer trust. While they don't explicitly mention system dynamics, the article's focus on these interactions aligns with system dynamics principles, where the adoption of IoT improves compliance and traceability, creating a positive feedback loop that could be modeled using CLDs. (Zailani et al., 2017) explore the challenges and opportunities in halal logistics, highlighting the complex relationships between logistics practices, customer satisfaction, and market access. This can be related to system dynamics, as the authors discuss the impact of these interrelated factors on overall business performance, which could be visualized through causal loop diagrams. (Othman et al., 2017) examine the influence of knowledge, attitude, and sensitivity to government policies in the halal certification process. The interactions among these factors and their impact on organizational performance could be modeled using system dynamics to better understand how changes in one variable might affect others in a feedback loop. (Karia, 2019) discusses the integration and performance of logistics service providers in halal logistics, which can be linked to system dynamics by examining how the integration of logistics processes influences performance outcomes.

METHOD

Research Methods according to (Abdurachman, Edi ;Arifiani, 2022) is to talk about how the implementation procedures, or research mechanisms will be carried out, so the research method is divided into two parts, namely research procedures and research techniques. Based on data and analysis, we choose to use the mixed method which is a combination of exploration through qualitative and quantitative approaches. This study comprises two main components: a comprehensive literature review followed by supplementary data analysis and discussion, as outlined by (Göcke et al., 2022) and (Waqas et al., 2021). The research adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines, as proposed by (Moher et al., 2009) The utilization of PRISMA in this study is justified due to its wide acceptance as a rigorous systematic review protocol, as noted by (Panic et al., 2013). Moreover, PRISMA is commonly adopted in the fields of business and marketing, as highlighted by (Siddaway et al., 2019). This systematic literature review, conducted using the Watase Uake System, follows a structured

process: a) Identification of keywords, criteria, and limitations; b) Screening of relevant articles; c) Search for articles from selected sources and potential exclusions; d) Review of titles, abstracts, and keywords of the selected articles; e) Compilation of relevant information and items from each selected article during the extraction process; and e) Analysis of classification, network patterns, network hypotheses, and visualization. The Scopus database was chosen for this research due to its robust indexing and extensive citation coverage, as corroborated by (Rocha et al., 2020). As (Norris & Oppenheim, 2007) assert, Scopus offers superior coverage of social science literature compared to other databases. Its repository is widely accessed and esteemed for empirical and quantitative research, as evidenced by (Farrukh et al., 2020). Consequently, Scopus has emerged as an indispensable tool in the realm of social science research. The data for this study were collected in June 2024, employing specific search keywords such as "Halal Logistics Certification; Halal Logistics regulation; Halal Logistics Implementation; Halal Logistics Association; Halal Certification acceleration; Halal Logistics regulation compliance; Halal Logistics Ecosystem; Halal Logistics Market Demand; Halal Logistics Efficiency; Halal Logistics Customer Trust; Halal Logistics Customer Satisfaction; and Halal Logistics Training" within the "article title, abstract, or keywords" fields. These keywords were thoughtfully selected to encompass articles related to Halal Certification Process Optimization In The Context Of Logistics Companies In Indonesia. The inclusion criteria applied were: a) Publication in scholarly journals; b) Publication between 2014 and 2024; and c) Scopus journal quartiles Q1 to Q4. After Analyse the theory using SLR Furthermore, using System Dynamics Analysis assisted by Vensim software, a research model was obtained that was displayed with CLD (Causal Loop Diagram) and SFD (Stock Flow Diagram).

HASIL DAN PEMBAHASAN

After applying these criteria, a total of 71 articles identified. Subsequently, these articles' titles and abstracts underwent a thorough review to create a comprehensive table and facilitate content analysis. Following this evaluation, 44 papers were excluded either due to their lack of direct relevance to celebrity endorsement or duplication. The resulting database comprised 27 articles.

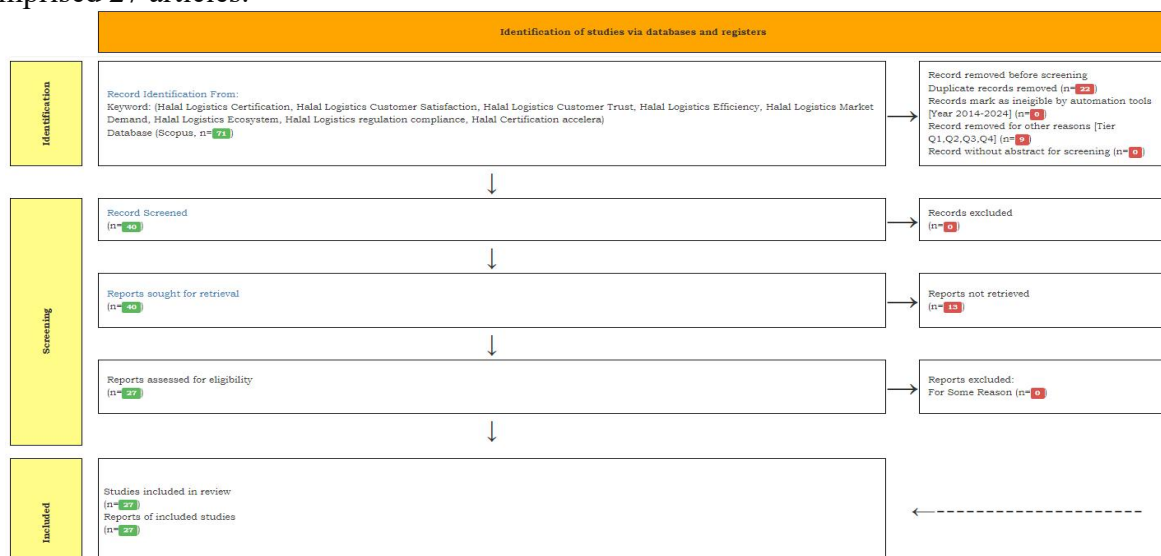


Fig. 1. Prisma model of Halal Logistics Certification

This section outlines the evolution of 27 identified research articles related to online strategies in the aviation and tourism sector. These articles have been categorized based on their publication year, the country where the research was conducted, the research methods employed, the primary journals in which they were published, the online strategy under examination, the theoretical foundations used, and citation analysis.

Year of publication and Country Study of Halal Logistic certification.

As illustrated in Figure 3, the research output related to online marketing strategies in the aviation and tourism sectors exhibited a pattern of fluctuation during the years 2014 to 2024, with a relatively consistent range of 1 to 6 articles per year. However, the exceptional year of 2020, marked by the global Covid-19 pandemic, witnessed a remarkable upsurge in scholarly activity, yielding a peak of 20 articles. Subsequently, in 2022-2023, there was a noticeable decline to 2 articles .

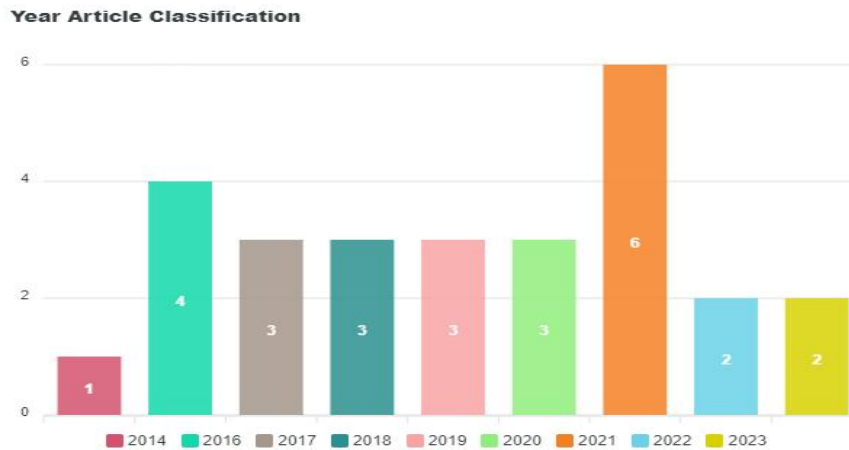


Fig. 2. Yearly article classification publication of Halal Logistics Certification

According to the data depicted in Figure 4, the majority of articles, totaling 27, indicate that research on online marketing strategies in the aviation and tourism sectors often encompasses multinational studies. Malaysia emerges as the most prominent location for research in this field, with 12 articles, followed by Mix countries with 5 articles, then Indonesia with 3 articles, followed by Korea and Bangladesh with 3 articles each. Finally Germany , Pakistan and Thailand with 1 article each. This data pattern underscores the global nature of research in Halal Certification process optimization in the context of logistics companies, with a significant proportion of studies adopting a multinational perspective. The prominence of the Malaysia and Indonesia as research hubs reflects the diverse geographical origins of scholarship in this field. The prevalence of multinational studies suggests a recognition of the interconnectedness of the Halal Logistics practices and implementation across borders, highlighting the need for cross-cultural and cross-national perspectives to address the complexities and dynamics of Halal logistics certification effectively. Further exploration of these articles can provide valuable insights into the specific countries or regions of focus and the implications for global Halal logistics certification practices.

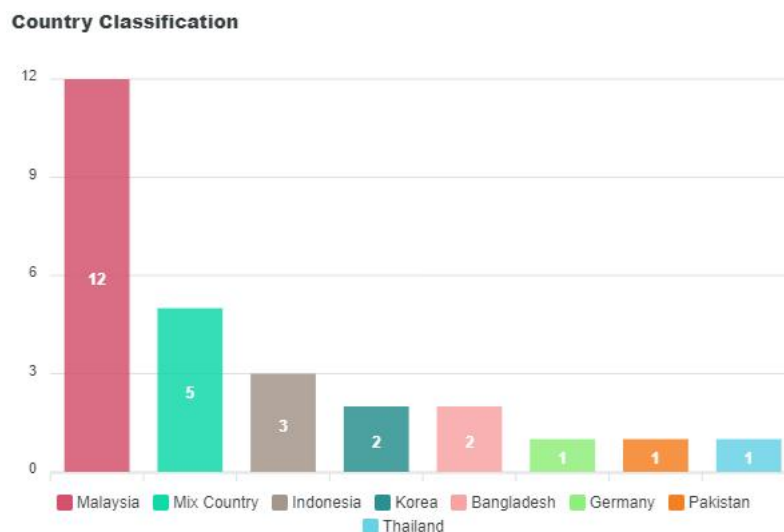


Fig. 3. Country study classification of Halal Logistics Certification

Type of research method used

Based on Figure 5, it is evident that the survey method is the predominant research approach, representing 42.3% of the total. This high utilization of surveys may indicate a preference for collecting quantitative data and conducting large-scale studies within the field being examined. The survey method's popularity could be attributed to its ability to efficiently gather data from a wide range of participants, making it a versatile choice for researchers aiming to draw statistically significant conclusions. In the second position, the systematic reviews method is notably employed, suggesting that researchers value in-depth exploration of specific instances or contexts. Case studies are often chosen when researchers seek a comprehensive understanding of complex phenomena, and their prevalence here underscores their importance in the academic landscape. Furthermore, the relatively low utilization of methods like content analysis and systematic review may imply that these approaches are less favored or less applicable in the specific research domain under consideration. Overall, the distribution of research methods in Figure 5 reflects the research community's preferences and priorities within the given field, shedding light on the balance between quantitative and qualitative approaches and highlighting the significance of case studies for in-depth investigation. Further analysis would be required to understand the contextual factors influencing these choices and their impact on the quality and depth of research findings

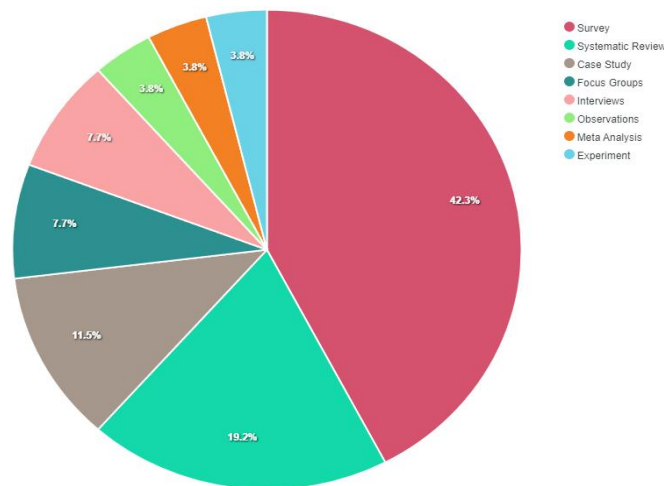


Fig 4. Method use in Halal Logistic Certification's research

Context Study in Halal Logistics Certification research

Based on figure 6, we can see that the main context study is Halal Logistics and SCM , also Halal Logistics itself with 12.5% each. Continue with other context study with average 4.2% around 18 context studies, as follows : Halal Food Supply Chain, Syubbah semi processed food, Halal Logistics Supply chain, Consumer behavior toward alternative, Food Beverage ingredient companies, Islamic marketing, MICE Tourism, Public Health vaccine update, Digital transformation halal logistics, Halal certification process, Halal logistics government policies, Halal cosmetics, General supply chain management, Halal food industry, Halal logistics and air cargo, Food supply chain management, Halal logistics risk assessment, and Logistics industry.

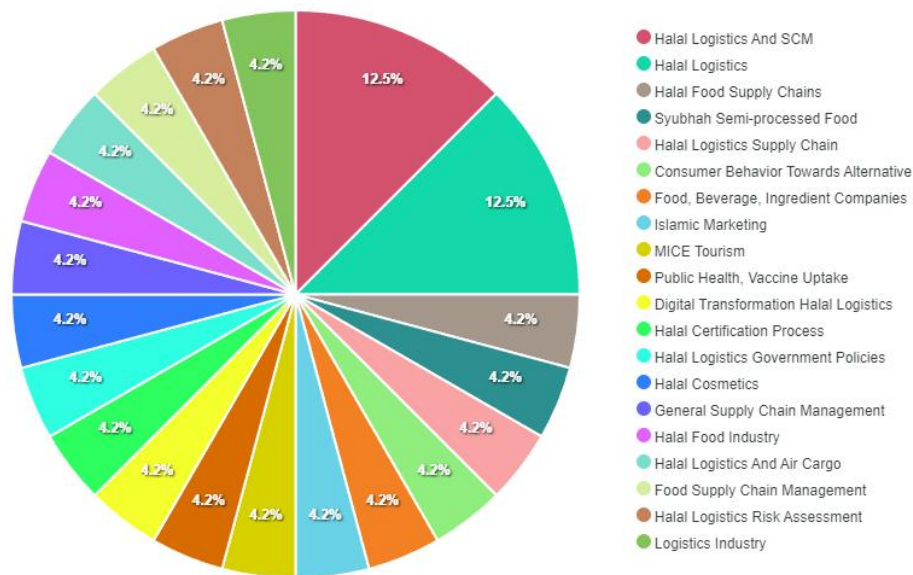


Fig 5. Context study of Halal Logistics Certification’s research

Model through the system dynamics method

From The theory taken from keywords and article state as well as some context study on figure 6 , we then create the Black Box diagram as per figure 7 below. The black box diagram illustrates the complexity of Halal logistics certification as influenced by both controlled and uncontrolled inputs under the regulation of UU 33 Year 2014 about Halal Product Assurance. The uncontrolled input is the population of logistics companies, while controlled inputs include market demand, Halal logistics training, consultation services, and certification costs. These inputs feed into the evaluation process of certification and certification management. The desired outcomes aim to reduce regulatory non-compliance, enhance customer service, improve company compliance, and increase logistics efficiency. Conversely, the undesired outcomes include a low percentage of certified companies (only 10%), potential contamination or disintegration of Halal logistics facilities, increased compliance costs, and complexities in Halal logistics certification management.

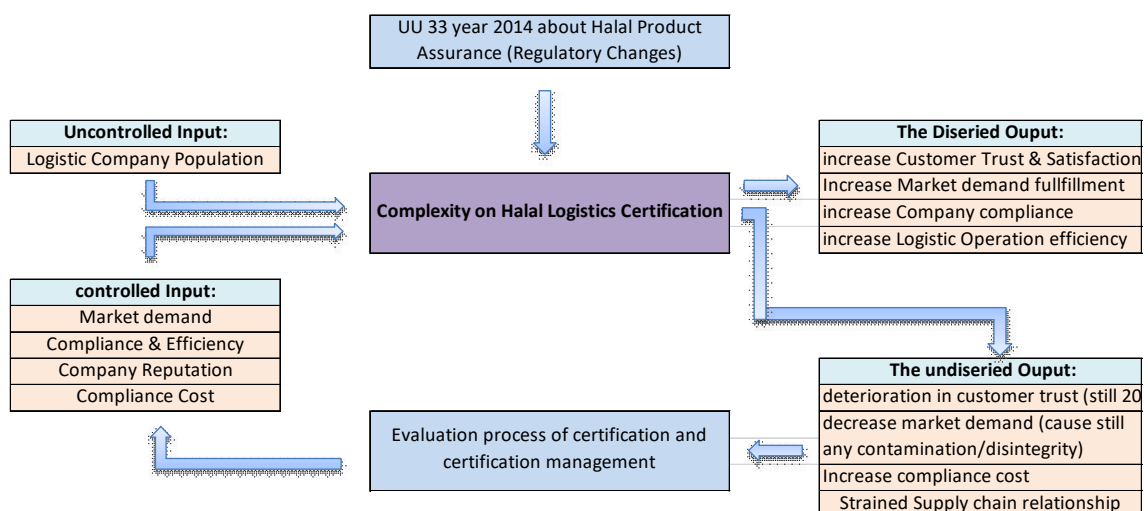


Fig 6. Black Box Diagram of Complexity on Halal Logistics Certification

The Level Matrix of Halal Logistic Certification depicted in the image provides a structured framework for the progressive implementation and management of Halal certification in logistics. It categorizes various aspects such as market demand, Halal logistics training, provision of consultation, and certification costs into four distinct levels, each representing a different stage of complexity and involvement. This matrix correlates

with the black box diagram by detailing the controlled inputs that influence the complexity of Halal logistics certification.

Table 1 Level Matrix of Halal Logistics Certification

Matriks Level			
I	II	III	IV
Market demand	fulfill Halal Log certification	Company Reputation	
		Customer Trust & satisfaction	
Compliance & Efficiency	Compliance Cost	Compliance % Efficiency	
		Certification Requirement	
	Halal Log certificate qty decrease	Operational Efficiency	Halal Logistics Training Method
		Feedback Mechanism	
		Training and education	
Company Reputation	Tehcnology & Infrastructure	Facilite dan service the socialization (Pre audit)	Pre audit*
	Operational efficiency	Training and education	Media audit*
		Feedback Mechanism	
Compliance Cost	Certification Requirement	Certification acceleration	Audit
		Regulation compliance	Audit facilities
	Regulatory changes	Socialization	Post audit
		Halal Logistics certification	certification management
			Registration Media
		Calculation Method	
		Ease Payment	
		Availibility of Discount	

The Level Matrix reflects onto the CLD by structuring the progression of factors like market demand, training, and compliance management, which are key variables in the CLD's feedback loops, aligning with the theory of System Dynamics that emphasizes the interrelationships and feedback mechanisms within a system to manage complexity and drive continuous improvement as display on figure 8. Exogenous Variables that affect other variables: *Company Reputation and Compliance Cost*, while Endogenous Variable that are influenced and/or influenced by other variables Market demand and Compliance & Efficiency). Main Variable *Halal Logistics Certificate (Number of Halal Logistics Certificates that have been issued/Number of companies)*. Briefly explain the relationship between variables. *Balancing Loop (B1)*: Higher compliance costs may initially reduce operational efficiency, but through investments in training and technology, efficiency increases, offsetting the increase in initial costs. *Reinforcing Loop (R1)*: Improving a company's reputation increases market demand, which justifies investment in compliance, which further enhances reputation

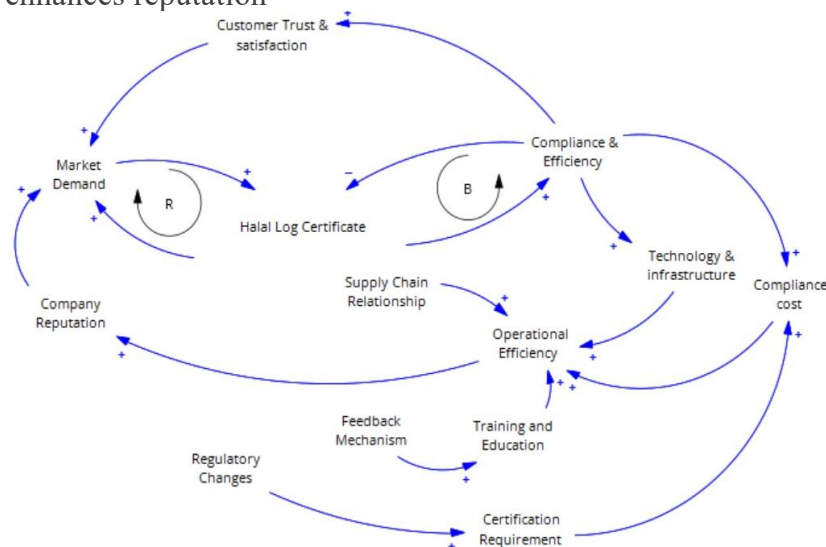


Fig 7. CLD of Halal Logistics Certification in Indonesia

The Stock and Flow Diagram (SFD) illustrates the impact of Halal Logistics Certification on various factors within a logistics company. It begins with "Market Demand," driven by the company's reputation, leading to the need for Halal Logistics Certification. The certification, in turn, affects "Compliance and Efficiency," which is essential for meeting regulatory and operational standards. However, obtaining and maintaining this certification incurs "Compliance Cost." The diagram highlights the cyclical relationship between market demand and company reputation, as well as the interconnectedness of compliance and efficiency with associated costs, emphasizing the balance that companies must achieve to maintain both certification and operational efficiency.

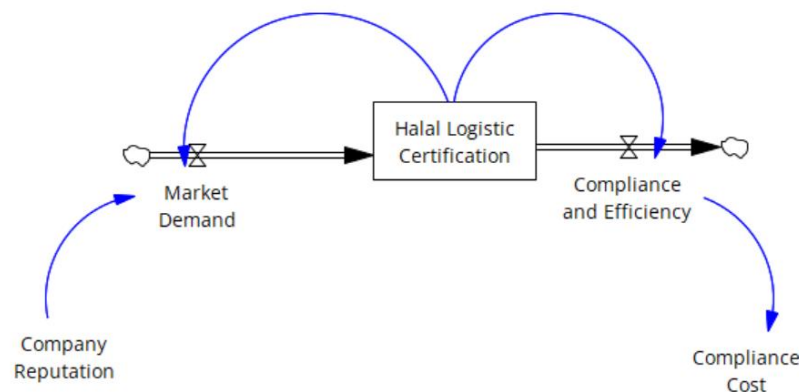


Fig 8. SFD of Halal Logistics Certification in Indonesia

CONCLUSION

In conclusion, this study has provided a comprehensive analysis of the halal logistics certification process in Indonesia, highlighting the complexity and challenges faced by logistics companies in complying with regulatory standards. The research revealed significant gaps in the certification process, including the limited number of certified companies, inefficiencies in the certification issuance, and a lack of comprehensive training and consultation services. The integration of a System Dynamics approach allowed for the identification of key variables and their interdependencies, offering a structured framework for improving the certification process. The findings underscore the critical need for enhanced coordination between stakeholders, streamlined procedures, and increased support for logistics companies to ensure the successful implementation of halal logistics practices. These insights offer valuable recommendations for policymakers and industry players, aiming to optimize the halal certification process and meet the growing market demand effectively.

Implications

The practical implications of this research are significant for logistics companies, regulatory bodies, and policymakers in Indonesia. The study's findings highlight the need for a more streamlined and efficient halal certification process, which could lead to improved compliance rates and enhanced operational efficiency. By adopting the recommended System Dynamics approach, logistics companies can better manage the complexities of certification, ultimately leading to higher customer satisfaction and market competitiveness. Theoretically, this research contributes to the existing body of knowledge by providing a robust framework that integrates regulatory compliance with operational dynamics in the halal logistics sector. This framework can serve as a model for future studies in similar contexts, offering insights into the interplay between regulation, market demand, and organizational efficiency. For stakeholders, including certification bodies and industry associations, the research underscores the importance of collaboration and innovation in overcoming the barriers to

effective halal logistics certification, thereby fostering a more sustainable and compliant logistics ecosystem.

Research limitations

Despite its valuable contributions, this study has several limitations that should be acknowledged. First, the research is primarily focused on the context of logistics companies in Indonesia, which may limit the generalizability of the findings to other regions or industries with different regulatory environments and market dynamics. Second, the use of a System Dynamics approach, while insightful, may oversimplify the complex interactions between variables, potentially overlooking nuances that could be better captured through more granular, qualitative analyses. Additionally, the study relies heavily on secondary data and the existing literature, which might introduce biases or limitations related to the accuracy and completeness of the data used. Lastly, the research did not extensively explore the perspectives of key stakeholders, such as government officials or logistics company executives, which could provide a more comprehensive understanding of the challenges and opportunities in the halal certification process. Future research should address these limitations by incorporating broader geographical contexts, employing mixed-method approaches, and engaging directly with stakeholders to enrich the findings and enhance their applicability.

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