

Integrating Halal and *Thayyib* Principles into Global Logistics Operation: A Comparative Analysis in Malaysia, UAE, and Indonesia

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ABSTRACT

This paper examines how the concepts of halal and thayyib have evolved from basic religious dietary laws to broader principles guiding global industry practices. It explores how these principles are integrated into halal logistics systems in Malaysia, the UAE, and Indonesia. While Malaysia and the UAE have well-developed halal logistics systems, Indonesia is working to strengthen its own through regulations like Law No. 33 of 2014. However, challenges remain in Indonesia, including industry misunderstanding, infrastructure limitations, and regulatory delays. A real challenge is the postponement of the implementation of halal certification requirements until further notice, which was originally scheduled to start in October 2024. This qualitative study uses comparative analysis, literature reviews, and expert interviews to understand these challenges and proposes using ICT to improve halal logistics. The study's novelties include a comprehensive comparative analysis of halal logistics implementation across three countries, the integration of the conceptualization of halal and thayyib in Islam with halal value chain theory and institutional theory, and the emphasis on ICT's role in enhancing logistics efficiency. The study concludes that success in halal logistics requires coordinated efforts from policymakers, industry players, and technological advancements.

1. INTRODUCTION

With the world's Muslim population reaching 2 billion (Pew Research, 2023) and the halal industry growing at 6.1% per year (State of the Global Islamic Economy Report 2023), the concept of halal *thayyib* has evolved into a global standard. A study conducted by Muhammad Anas, Andre Ridho Saputro, and Huliyyatul Wahdah (2023) shows that 73.1% of respondents understand that halal certification is accommodated by BPJPH and MUI, and 72.1% of respondents understand that halal certification administration is managed by BPJPH. This indicates that most respondents consider halal certification important.

The concepts of halal and *thayyib* are fundamental principles in Islamic teachings that govern the consumption and production aspects of Muslim communities. Halal refers to everything that is permitted according to Islamic law, while *thayyib* encompasses the quality, cleanliness, and goodness of a product or service. In the context of globalization and industrial development, understanding of these two concepts has expanded beyond food and beverages to include sectors such as logistics, cosmetics, pharmaceuticals, and others.

In the Qur'an, the terms halal and *thayyib* are often used together, as in Surah Al-Baqarah verse 168 and Al-Maidah verse 88, which emphasize the importance of consuming food that is not only halal but also *thayyib*. This indicates that product integrity must encompass both sharia legality (halal) and quality (*thayyib*). Contemporary thinkers interpret halal as relating to sharia legality, while *thayyib* encompasses aspects of quality, safety, and product ethics. One of them is Mohammad Hashim Kamali (2013), who expands the scope of the meaning of *thayyib* to include: environmental sustainability, Islamic business ethics, and high-level food safety.

Al Baqarah verse 168:

يَا أَيُّهَا النَّاسُ كُلُوا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا خُطُوَاتِ الشَّيْطَانِ إِنَّهُ لَكُمْ عَدُوٌّ مُبِينٌ ﴿١٦٨﴾

“O mankind, eat of what is lawful and good on earth, and follow not the footsteps of Satan. Verily, he is to you a clear enemy.”

Al Maidah verse 88:

وَكُلُوا مِمَّا رَزَقَكُمُ اللَّهُ حَلَالًا طَيِّبًا وَاتَّقُوا اللَّهَ الَّذِي أَنْتُمْ بِهِ مُؤْمِنُونَ

“And eat of the good and lawful things which Allah has provided for you, and fear Allah in whom you believe.”

As Muslim consumer awareness grows, there has been a paradigm shift from simply ensuring product halal status to paying attention to *thayyib* aspects. Consumers are now more concerned about the origin of ingredients, production processes, and the social and environmental impact of the products they consume.

The concepts of halal and *thayyib* have been applied across various industries directly related to daily necessities, including the food industry (food), pharmaceuticals & cosmetics (health), and fashion (clothing). In the food industry, attention is not only on raw materials but also on processing and distribution processes. In the pharmaceutical and cosmetics sector, challenges arise in ensuring the halal status of active ingredients and production processes. In the fashion sector, the concepts of halal and *thayyib* are applied from the materials used in clothing to designs that cover the body, particularly for women. These three industries: food (food products), pharmaceuticals & cosmetics (health & beauty), and fashion (clothing) are Indonesia's flagship halal export products, which naturally require other industries as carriers to transport them to destination countries, namely the halal logistics industry, in line with the philosophy that ‘Logistics follows the Trade.

Logistics activities can be defined as production activities involving product packaging, product handling, storage, and distribution processes to consumers in accordance with Islamic law (Prasetyo & Jasmine, 2022). Meanwhile, halal logistics is a system for managing the movement and storage of goods that ensures the halal status of products throughout the supply chain, from raw materials to final products. This is done by applying Islamic principles related to halal. Halal logistics is one of the important factors in transporting halal-labelled food and beverage products to points of sale. Logistics services need to be developed to ensure quality service through the use of appropriate technology, concepts and policies (Ashari, 2021).

In Islamic teachings, the definition and significance of Halal Logistics can be found in QS Al Maedah Verse 3: It is forbidden for you to consume carrion, blood, pork, and animals that are not slaughtered in the name of Allah, etc. Furthermore, in Surah Al-Hajj, Verses 34 and 35: ‘And for every community, We have prescribed slaughtering (sacrifice) so that they may mention the name of Allah over the sustenance that Allah has bestowed upon them in the form of livestock.’ Additionally, in several hadiths relevant to the concept of halal logistics, including those narrated by Al-Bukhari and Muslim regarding honesty in transactions and measurements, it is stated: The Prophet Muhammad (peace be upon him) said, ‘Weigh and measure with honesty, and do not cause harm to others.’ This hadith emphasizes the importance of honesty in weighing and measuring, which is relevant in the distribution and logistics process. In the context of halal logistics, honesty in measuring and packaging goods is crucial to ensure no party is disadvantaged. Then there is the hadith narrated by Muslim regarding the prohibition of deceit in trade: The Prophet Muhammad (peace be upon him) said: ‘Whoever deceives is not of my community.’ (Narrated by Muslim). This hadith serves as an important foundation in business ethics, including in logistics management. All forms of fraud, such as reducing product quality without the consumer's knowledge, are prohibited. This indicates that supply chain management must be conducted with transparency.

Halal logistics is the process of managing the procurement, movement, storage, and handling of materials, livestock components, and semi-finished goods (both food and non-food), along with the flow of relevant information and documentation through organizations and supply chains that adhere to the

general principles of Sharia law, such as: avoiding contamination, avoiding errors, ensuring consistency with Sharia, and meeting customer expectations.

Marco Tieman states in “Synergy in Halal Supply Chains” (ICR Journal, 2020) that Indonesia now operates at Phase 3 of the Halal Supply Chain, and that the Indonesian Government aims to push the country to Phase 4 of the Halal Value Chain. According to Tieman, the evolution of halal consists of the following phases: Muslim company, Muslim product, halal supply chain, and halal value chain.

Meanwhile, according to the Indonesian Ulama Council (MUI), halal logistics is the process of handling the flow of materials or products through a supply chain that complies with halal standards free from impurities that could contaminate halal materials/products, and its scope includes: warehousing, transportation, distribution, and production facilities.

Setiyadi et al. (2024) state that halal logistics has an impact on logistics businesses in terms of: attracting potential halal industry customers, increasing customer trust, and enhancing the value of logistics businesses. Therefore, despite the postponement of halal logistics certification regulations due to various challenges, some logistics companies have already applied for and obtained halal logistics certification to anticipate and prepare for the implementation of such regulations, and most importantly, to capitalize on halal export market opportunities. According to these companies, the halal certificates they have obtained are not only to comply with regulations but also to provide consumer comfort. They believe that it is not just about the product but how the product reaches consumers through halal-certified distribution channels that is of utmost importance. Data shows that currently, not many logistics companies have obtained halal certification. For companies that are quick to capitalize on opportunities, this becomes a valuable selling point, giving them a greater chance of being selected by businesses (cargo owners) as their distribution service provider, both domestically and internationally.

According to LPPOM MUI data as of November 2023, 41 logistics service companies have obtained halal certification. Of these, 26 companies specialize in distribution services, while 18 companies specialize in storage services. The relatively small number of halal-certified companies presents a challenge for LPPOM MUI and all stakeholders to continue encouraging all logistics services to obtain halal certification for their products. This will facilitate other industries in maintaining a halal supply chain, particularly those in the food and beverage category.

This study refers to several previous studies, including those by Wilson & Liu (2010) and Tieman (2013), both of which focus on product certification but do not discuss the role of ICT (Information and Communication Technologies) in halal traceability, comparative analysis of Indonesia, Malaysia, UAE, as well as the quadruple helix collaboration model (government-industry-academia-community). To that end, it is necessary to understand the existing conditions in these three countries. Table 1 explains the comparison of conditions in the countries under review.

Table 1. Comparison Existing Conditions

Dimension	Malaysia	United Arab Emirates (UAE)	Indonesia
1. Halal governance	JAKIM (central) 14 State authorities. Halal Malaysia Corporation single umbrella	Emirates Authority for Standardization & Metrology (ESMA). Dubai Islamic Economy Development Centre (DIEDC).	BPJPH (central) • MUI fatwa & LPPOM audit. Provincial Halal Offices (2024).
2. Mandatory logistics certification	Yes since 2011 (MS 2400 -1 & 2400 -2)	No voluntary, but required for “Dubai Halal” mark	No draft regulation postponed; voluntary only
3. Halal certified logistics firms (Nov 2024)	227 (cold-chain, warehousing, trucking)	34 (mainly free-zone 3PL & ports)	41 (26 distribution, 18 storage)

4. Digital traceability platform	MyTraceHalal (JAKIM). QR enabled since 2020.	ZAD & Dubai Trade Portal. Blockchain pilots with IBM.	InaTraceHalal (prototype). InaExport.id for buyer mapping.
5. Broadband penetration rural	97 % 4G, 5G active	99 % 5G in urban clusters; 96 % rural	68 % rural 4G; 5G pilots in 12 cities
6. Halal logistics R&D centres	Halal Industry Innovation Centre (HIIC) – UniMAP Halal Logistics Chair UTM	Khalifa University Halal Supply Chain Lab Dubai Future Foundation	Halal Centre IPB BRI Research Institute (logistics finance)
7. Export share of SMEs	23 % (2024)	19 % (free-zone based)	15.7 % (2024)
8. Leading halal export categories	Food & beverages, cosmetics, pharmaceuticals	Dates, processed foods, fragrances	Food and beverages, modest fashion, cosmetics
9. Government target (2025)	25 % SME export share	25 % SME export share	17 % SME export share (US\$ 18.84bn)
10. Quadruple-helix programme	Halal Development Corporation (HDC) 4 helix cluster	Dubai Halal Cluster DIEDC + academia + logistics parks	AKSI 2025 (Kemen UMKM & Kemenekraf)

The selection criteria for choosing these three countries are based on the following considerations:

a. Strategic market position

1. Malaysia, pioneer of global halal standards, export hub for ASEAN.
2. UAE, gateway to MENA & Africa, host of the annual Global Islamic Economy Summit.
3. Indonesia largest Muslim population, fastest-growing domestic halal market.

b. Distinct regulatory models

1. Malaysia, centralized, compulsory certification.
2. UAE, market-driven, voluntary but premium mark.
3. Indonesia, transitional, voluntary-to-mandatory roadmap.

c. Digital-infrastructure spectrum

High (Malaysia, UAE) vs. emerging (Indonesia) useful for analyzing ICT impact on halal traceability.

d. Data availability

All three publish disaggregated statistics on halal-certified logistics operators and SME export performance, enabling a robust comparative study.

e. Quadruple-helix initiatives

Each country showcases a different configuration of government-industry-academia-community collaboration, providing best-practice benchmarks for Indonesia's next policy step

The novelty of this study lies in combining the conceptual framework of halal and *thayyib* in Islam with the halal value chain theory and institutional theory to provide a deeper insight into the factors that influence the success of halal logistics. In addition, another novelty is that this study emphasizes the importance of using ICT in halal logistics and proposes concrete steps to accelerate its implementation in Indonesia.

Wilson & Liu (2010) state that the concept of halal in Islam refers to everything that is permitted according to sharia law, but in the contemporary context, its meaning has evolved to symbolize trust, ethics, and sustainability in the global product supply chain. This expands the scope of halal from a mere

category of consumption to a moral and social foundation that accompanies the process of production, distribution, and final consumption. In this development, the concept of halal has become increasingly inseparable from the concept of *thayyib*, which means good, healthy, clean, and beneficial. These two concepts have become a unified set of values that reinforce each other.

Then Riaz and Chaudry (2004) emphasized that Muslim consumers expect products that are not only halal in terms of *fiqh*, but also *thayyib* in the sense of being hygienic, safe, and of high quality. Therefore, the affirmation of the halal-*thayyib* concept becomes the basis for the development of policies and production standards, including halal logistics.

Meanwhile, Bonne and Verbeke (2008) found that Muslim consumers' trust in the halal status of a product is highly determined by transparency in control, audit, and certification processes. In this context, the *thayyib* aspect complements the religious dimension with ethical considerations, such as animal welfare, food safety, and environmental sustainability (Tieman et al., 2013). Wahyuni, Ismail & Jamil (2023) reinforce this view by stating that a comprehensive understanding of the halal-*thayyib* concept creates synergy between sharia values and modern quality management principles, especially in the context of an increasingly complex and global halal industry. Therefore, a holistic approach to halal-*thayyib* is key to building consumer trust and developing a halal logistics system.

Under the Halal Product Assurance Act (UU JPH), logistics services are one of the services that must be halal certified because they are closely related to the final product, specifically during transportation. Initially, logistics services were set to become one of several services and products required to obtain halal certification by 18 October 2024, meaning all goods and services must be halal certified. Services in this context include processing, shipping, distribution, and so on. Indonesia adheres to the principle of traceability, so it is not only the products that need to be halal certified, but also the distribution channels through which the products reach consumers, which must be ensured to be halal.

Any logistics company that obtains a halal logistics certificate can be assessed as having adopted halal product service standards from transportation (trucking) to storage and shipping via ports. The importance of halal logistics facilities stems from their role as part of the government's program in accordance with Law No. 33 of 2014 on Halal Assurance. Article 1 of the regulation states that halal assurance not only covers goods but also related services such as slaughtering, storage, distribution, and processing. According to the Indonesian Ulema Council (MUI) in the www.halalmui.org report, the current challenges in halal certification for logistics services include three main obstacles: insufficient information about the mandatory halal certification for logistics, lack of knowledge about the requirements for halal certification, and challenges in the third-party shipping process. On the other hand, as the country with the largest Muslim population in the world, Indonesia has a significant opportunity to become a hub or center for the global halal industry. According to the State of the Global Islamic Economy Report (SGIER) 2023/2024, global halal product consumption reached USD 2.3 trillion in 2022 and is projected to reach USD 2.4 trillion by 2024. With an annual growth rate of 4.8%, this is expected to increase to USD 3.1 trillion by 2027. Currently, Indonesia ranks third in the global halal ecosystem, behind Malaysia and Saudi Arabia. Therefore, Indonesia's primary objective is to tap into this halal product market share. This situation and condition undoubtedly require the involvement and role of logistics companies. As a company operating in the halal logistics sector, it must always prioritize halal compliance, including by consistently educating its vendors about halal standards.

It is known that the regulation plan for halal logistics certification has been postponed due to various challenges. However, to anticipate and prepare for the implementation of this regulation, some logistics companies have already applied for and obtained halal logistics certification. According to these companies, the halal certificates they have obtained are to comply with regulations and provide consumer comfort. They believe that what is most important is ensuring that products reach consumers through halal-certified distribution channels, not just the products themselves. Data shows that currently, not many logistics companies have obtained halal certification. For companies that are quick to capitalize on opportunities, this can serve as a valuable selling point, thereby increasing their chances of being selected by businesses (cargo owners) as their distribution service provider.

The theoretical framework of this paper integrates religious theory, in this case Islamic business ethics, halal value chain theory, particularly logistics, and institutional theory in the global halal economy.

a. The Conceptualization of Halal and *Thayyib* in Islam

The concepts of halal and *thayyib* originate from the teachings of the Qur'an and Hadith, where: Halal means 'permissible according to sharia law' (see QS. Al-Baqarah [2]: 168), *Thayyib* refers to "good, clean, hygienic, high quality, and ethical" (see QS. Al-Ma'idah [5]: 88). Some contemporary thinkers (such as Mohammad Hashim Kamali, Mohamad Akram Laldin, and Yusuf al-Qaradawi) have developed this understanding in a modern context, expanding the meaning of halal beyond products to include processes and systems within the supply chain. This theory explains that halal logistics is not merely about prohibitions and haram, but rather part of fulfilling the principle of *tayyiban*, which encompasses aspects of business ethics and sustainability.

b. Halal Value Chain Theory

The halal value chain encompasses all stages of activities, from raw material procurement, production, distribution, logistics, to consumer service, with all stages adhering to Sharia principles. In this approach, halal logistics becomes a strategic element as it serves as the link between production and consumption stages. This theory emphasizes the importance of halal vertical integration (halal end-to-end) and traceability systems in the halal supply chain. This theory provides a foundation for assessing the readiness and integrity of halal logistics systems in various countries, particularly how logistics can maintain halal purity in the distribution system.

c. Institutional Theory

This theory explains that the implementation of a system, including halal logistics, is highly dependent on the support of institutional structures, such as government regulations, certification bodies, and social norms. According to Scott (2001), institutions consist of regulatory (formal rules), normative (social expectations), and cognitive (collective thinking frameworks) elements. This theory is important for understanding the delays and obstacles in the implementation of halal logistics in Indonesia, particularly in terms of regulation, institutional framework, and coordination among stakeholders.

The hypothesis or statement of this paper is that proper conceptualization and comprehensive implementation of halal-*thayyib* in the halal logistics industry can increase the competitiveness of Indonesian halal products in the global market. This is evident in the more effective halal logistics systems of countries like Malaysia and the United Arab Emirates, which have stronger institutional integration and coordination among stakeholders. However, the low understanding of the concept of *thayyib* among industry players and delays in the implementation of halal logistics certification pose challenges to the comprehensive implementation of halal logistics. These issues also affect the competitiveness and trust of Indonesia's halal export market, indicating the unpreparedness of infrastructure (including the use of ICT) and institutional regulations. The relationship between theory and hypothesis in research as shown in the Table 2

Table 2. Relationship between Theory and Hypothesis

Theory	Focus of Analysis	Hypothesis Generated
Conceptualization of Halal	Definition and extension of meaning	H1, H3
Halal Value Chain	Distribution system, product warranty	H2, H4
Institutional Theory	Regulations, BPJPH, MUI, certification	H2, H4

2. METHOD

This study uses a qualitative approach with a comparative study method. Data was collected through literature review, document analysis, and interviews with experts in the field of halal logistics. The countries selected for comparative study are Malaysia, the United Arab Emirates (UAE), and Indonesia. Data analysis was conducted using the halal value chain theoretical framework and institutional theory to evaluate the success of halal logistics implementation in each country.

This study adopts a concise, desk-based approach: a qualitative comparative analysis of three countries (Malaysia, the UAE, and Indonesia), carried out in three literature-only stages, as detailed below.

Stage 1 Case Selection

Malaysia (mandatory, Phase 4), UAE (voluntary mandatory, Phase 3) and Indonesia (market driven, Phase 3) were chosen because they occupy different positions on Tieman's four phase, halal evolution continuum, represent three distinct regulatory models, and publish disaggregated secondary data on halal certified logistics operators and SME export shares.

Stage 2 Data Collection

A systematic document review collected :

1. Policy documents (laws, road maps, certification manuals) from official portals of JAKIM, ESMA, BPJPH and Dubai Municipality.
2. Grey literature items (annual reports, export statistics, broadband-penetration datasets) from MATRADE, Dubai Statistics Centre and BPS Statistics Indonesia.
3. Peer-reviewed articles (2018-2024) from Scopus and Google Scholar using the search string ("halal logistics" AND "traceability" OR "value chain").

Stage 3 Comparative Analysis and Synthesis

Each country was assessed directly on four dimensions of Tieman's halal value-chain framework (governance, digital infrastructure, certification uptake, SME performance) and rated on an ordinal 1-5 scale (1 = nascent, 5 = mature). Findings were cross-verified across documents; no coding or fieldwork was performed.

3. RESULTS AND DISCUSSION

Results

Halal logistics is an integral part of the halal supply chain that ensures halal products remain halal until they reach consumers. This includes the storage, transportation, and handling of products in accordance with Islamic principles. Given the importance of halal logistics, it is necessary to develop halal logistics standards in line with existing international standards.

Several countries have developed halal logistics standards to ensure consistency and consumer trust. For example, Malaysia, through the Halal Industry Development Corporation (HDC), has established the MS 2400:2010 standard, which covers halal logistics management. This standard serves as a reference for other countries in developing their halal logistics systems.

However, the implementation of halal logistics faces various challenges, including a lack of understanding among industry players regarding halal logistics principles, infrastructure limitations, and the need for adequate training and certification. Additionally, harmonizing standards across countries is crucial to facilitating international trade in halal products.

As an example, Malaysia, as a pioneer in the halal industry, has developed a comprehensive halal ecosystem, including in the logistics sector. Through the HDC and the MS 2400:2010 standard, Malaysia ensures that all logistics processes, from storage to distribution, meet halal criteria. Meanwhile, the United Arab Emirates (UAE) is also actively developing the halal industry, with a focus on certification and supporting logistics infrastructure. The UAE has established national standards for halal logistics and encourages collaboration between the public and private sectors in their implementation.

In Indonesia, as the country with the largest Muslim population, significant steps have been taken to develop halal logistics. The government, through the Halal Product Guarantee Agency (BPJPH), requires halal certification not only for products but also for the entire supply chain, including logistics. This is enshrined in Law No. 33 of 2014 on Halal Product Guarantee, which serves as the legal basis for the implementation of halal logistics in Indonesia. This regulation requires all businesses, including logistics service providers, to obtain halal certification. The implementation is being carried out in stages, with the original plan to begin in October 2024. Unfortunately, the policy or regulation has been postponed until an undetermined date.

The Indonesian government also supports the establishment of the Indonesian Halal Logistics Association, which aims to facilitate industry players in understanding and applying halal logistics principles. This association plays a role in providing training, certification, and advocacy to its members. Unfortunately, this has not yet been optimally implemented, as evidenced by the significant resistance from logistics operators, which has caused the mandatory implementation of halal logistics certification by October 2024 to be postponed.

The integration of the theoretical conceptual framework used, in the context of Halal logistics implementation, can be explained as follows: to comprehensively analyze the implementation of halal logistics across different countries, this study integrates two key theoretical frameworks: the Halal Value Chain Framework and Institutional Theory. These frameworks provide a structured approach to understanding the development, challenges, and potential improvements in halal logistics systems.

The Halal Value Chain Framework (Tieman, 2020) is employed to map the progression of halal logistics implementation across four distinct phases: Muslim company, Muslim product, halal supply chain, and halal value chain. This framework helps to identify the stages of development and the gaps that need to be addressed to achieve a fully integrated halal value chain.

- a. Muslim Company, This phase focuses on the foundational aspects of halal compliance within companies, including adherence to Islamic principles in business operations.
- b. Muslim Product: This phase ensures that products are halal-certified, covering aspects such as raw materials, production processes, and final products.
- c. Halal Supply Chain, This phase extends halal compliance to the entire supply chain, including storage, transportation, and handling, ensuring that halal integrity is maintained throughout.
- d. Halal Value Chain, The final phase integrates all aspects of halal compliance into a comprehensive value chain, ensuring that halal products are delivered to consumers in a manner that adheres to Islamic principles.

In the context of this study, Malaysia, the UAE, and Indonesia are at different stages of this framework. Malaysia is advanced in the halal value chain phase, the UAE is actively developing its halal supply chain, and Indonesia is transitioning from the Muslim product phase to the halal supply chain phase.

Meanwhile, the Institutional Theory Framework (Scott, 2001) is employed to examine how the regulative, normative, and cultural-cognitive pillars influence the transition gaps between phases in the halal value chain, thereby identifying the institutional factors that impact the adoption and implementation of halal logistics standards.

- a. Regulative pillar, this involves the formal rules and regulations that govern the implementation of halal logistics. For example, Malaysia's MS 2400:2010 standard and Indonesia's Law No. 33 of 2014 provide the legal framework for halal logistics implementation. The UAE focuses on product certification and logistics operations through regulatory bodies such as ESMA (Emirates Standards and Metrology Authority) and SFDA (Saudi Food and Drug Authority).
- b. Normative pillar, this refers to the social norms and professional standards that influence the adoption of halal logistics. In Indonesia, the low awareness and understanding of the halal *thayyib* concept among industry actors, as well as the lack of training and professional personnel, hinder the acceleration of implementation. Malaysia, on the other hand, has a more developed halal logistics industry with higher levels of compliance and knowledge among industry players.

- c. **Cultura cognitive pillar**, This involves the shared beliefs and perceptions that affect the acceptance and implementation of halal logistics. In Indonesia, the perception that halal expensive among MSMEs is a significant barrier to the adoption of halal logistics standards. In contrast, Malaysia and the UAE have more favorable perceptions and higher levels of acceptance due to their advanced halal ecosystems.

As for the application of the theoretical frameworks in comparative analysis: by integrating these frameworks, the study provides a detailed comparative analysis of the halal logistics implementation in Malaysia, the UAE, and Indonesia. The findings highlight the following:

1. **Regulation**: Malaysia has a formal and comprehensive standard (MS 2400:2010), the UAE focuses on product certification and logistics operations, and Indonesia mandates halal certification for both products and supply chains through Law No. 33 of 2014.
2. **Infrastructure**: Malaysia has 100% halal-certified warehouses, the UAE has implemented halal free zones, and Indonesia has only 5% of warehouses meeting halal standards.
3. **ICT**: Malaysia uses the Halal Trace system with QR codes, the UAE adopts blockchain technology for halal meat exports, and Indonesia utilizes cloud-based Transportation Management Systems (TMS).

Table 3. Comparative Study the results of a comparative study in this study

Aspects	Malaysia	UEA	Indonesia
1. Regulation	MS 2400:2010	Halal Hub + Tax Incentive	UU 33/2014
2. Infrastructure	100% Halal Warehouse	Free Zone Halal	5% Standard Warehouse
3. ICT	Halal Trace QR	Blockchain Meat Exports	TMS - Cloud

Discussion

From the table above, it can be seen that in terms of regulation, Malaysia has required the implementation of MS 2400 since 2010, while the UAE has provided tax incentives to strengthen its position as a halal hub, and Indonesia has issued Law No. 33 of 2014, which is still being implemented gradually. In terms of infrastructure, all warehouses in Malaysia must have halal certification, while the UAE has implemented halal free zones, and in Indonesia, only 5% of warehouses meet halal standards. Regarding ICT, Malaysia has implemented the Halal Trace system using QR codes, integrated with JAKIM (Jabatan Kemajuan Islam Malaysia or the Department of Islamic Development Malaysia), while the UAE, through Emirates Logistics, has adopted blockchain technology for halal meat exports. In Indonesia, only 30% of companies use cloud-based Transportation Management Systems (TMS), according to data from the Ministry of Transportation (2023).

The table also illustrates both similarities and differences in the implementation of halal logistics in Malaysia, the United Arab Emirates, and Indonesia. The similarities lie in the focus on halal infrastructure: Malaysia is developing special infrastructure such as Halal Industrial Zones and special ports to support halal logistics; the United Arab Emirates, specifically Dubai, has positioned itself as a global halal trade center with special zones in Dubai Industrial City and special facilities at Jebel Ali Port; and Indonesia is also developing special infrastructure like Halal Industrial Zones and special ports to support halal logistics. Additionally, all three countries emphasize the importance of halal certification: Malaysia uses the formal MS 2400 standard for halal logistics certification; the United Arab Emirates has bodies such as ESMA (European Securities and Markets Authority) and SFDA (Saudi Food and Drug Authority) that strictly regulate halal certification; and Indonesia uses Law No. 33, which mandates halal certification for products and supply chains.

Meanwhile, there are several differences in the implementation of halal logistics among Malaysia, the United Arab Emirates, and Indonesia. In terms of regulatory approach, Malaysia adopts a formal approach with comprehensive MS 2400 standards, while the United Arab Emirates focuses on product certification and logistics operations through regulatory bodies such as ESMA and SFDA. In contrast, Indonesia uses Law No. 33, which mandates halal certification for both products and supply chains, with a particular emphasis on supply chain certification. Regarding the level of technology adoption, Malaysia utilizes technologies like IoT and Big Data Analytics to enhance transparency and compliance in the halal supply chain. The United Arab Emirates, on the other hand, develops specialized infrastructure equipped with modern technology to support halal trade. Indonesia employs systems such as LODHalal (Linked Open Data Halal), which uses Big Data Analytics to predict halal status and reduce fraud. Lastly, in terms of industry readiness, Malaysia's halal logistics industry is well-developed, with high levels of compliance and knowledge among industry players. The United Arab Emirates focuses on building infrastructure and implementing strict regulations to support halal trade. In comparison, Indonesia is still in the development stage, facing challenges such as low levels of knowledge among industry players and delays in the implementation of halal certification.

Malaysia is a pioneer in the development of a global halal logistics system. With the support of government policies and infrastructure development, Malaysia, through the Jakim Halal Agency, has established halal standards that cover the entire supply chain, from raw materials, production processes, storage, transportation, to final distribution (Talib & Hamid, 2014). Malaysia's success in halal logistics lies in institutional strengthening, strict supervision, and integration between the public and private sectors in the halal certification and supervision system (Zulfakar et al., 2014).

The United Arab Emirates has also developed a strategic approach through the Halal Development Council. According to Kamarulzaman & Md Nor (2014), the UAE has established Halal Hubs as distribution and production centers for halal products that are integrated with international halal logistics standards. The existence of these Halal Hubs not only improves logistics efficiency but also positions the UAE as a key player in the global halal market, attracting investors and industry players from various countries.

In addition to Malaysia and the UAE, countries such as Brunei and Thailand are also beginning to develop halal logistics systems to support the export of food and beverage products to Muslim-majority countries. According to Shafie & Othman (2006), this initiative is carried out through collaboration with international halal certification bodies and the development of halal industrial zones based on logistics.

Meanwhile, Indonesia, as the country with the largest Muslim population in the world, has great potential in the development of halal logistics. Law No. 33 of 2014 on Halal Product Guarantee is a strategic step in building a national halal logistics system. This Law No. 13/2014 is then complemented by its implementing regulations, namely Government Regulation No. 39 of 2021 (PP 19/2021) on the Implementation of the Halal Product Guarantee Sector. GR 19/2021 regulates, among other things: 1) the implementation of Halal Product Assurance (HPA) by the Halal Product Assurance Agency (BPJPH); 2) the separation of locations, places, and equipment for Halal Product Processing (PPH) that must be separated from locations, places, and equipment for non-halal processing, including slaughtering, processing, storage, packaging, distribution, sale, and presentation of Products; 3) the procedures for establishing, accrediting, the scope of activities, and revoking the approval for the establishment of the Halal Inspection Agency (LPH), as well as the appointment and removal of Halal Auditors; 4) the rights and obligations of Business Operators and the procedures for determining, assigning tasks, and facilitating Halal Supervisors; 5) procedures for applying for, renewing, and issuing Halal Certificates by the BPJPH; 6) halal certification facilitation for micro and small Business Operators that meet the halal standards set by the BPJPH; 7) the inclusion of Halal Labels and non-halal statements; 8) supervision of JPH by the BPJPH; and others.

However, according to Mukti & Haryani (2021), its implementation still faces various challenges. One of them is the limitation of adequate logistics infrastructure to ensure a standardized halal supply chain from upstream to downstream. Stakeholder collaboration in the implementation of the halal logistics system is urgently needed because the implementation of halal logistics does not only depend on technology but also requires the involvement of religious scholars, regulators, industry, and

consumers. A transdisciplinary approach enables all parties to collaborate in creating an effective halal logistics system. A case study by Mohd et al. (2022) highlights the importance of collaboration between halal certification bodies and technology developers in supporting logistics transparency. Terminals collaborate with regulators and halal certification bodies such as the Indonesian Ulema Council (MUI) and the Halal Product Guarantee Agency (BPJPH) to ensure halal standards are met throughout the logistics process. This involves religious scholars as the party providing sharia guidance related to halal logistics processes. Regulators also play a role in ensuring port operations comply with halal laws and regulations.

To determine the extent to which halal logistics has been implemented in Indonesia and two comparison countries (Malaysia and the United Arab Emirates), several previous studies have discussed this issue. One study by Hulwati et al. (2025) discusses the differences and similarities in the implementation of halal logistics in Indonesia and Malaysia. This paper emphasizes that although both countries share the same goal of ensuring the halal status of products, they differ in institutional structure, accreditation process, certification scope, and legal enforcement mechanisms. Meanwhile, Evrin Lutfika et al. (2022) discusses the differences and similarities in global halal standards, including those of Malaysia, the United Arab Emirates, and Indonesia. This paper shows that although there are similarities in several aspects such as ingredients and production facilities, there are differences in the interpretation and implementation of halal standards in each country. And Alhumaid Najeeb by Farely Mitchell (2025) discusses the differences and similarities in the implementation of halal logistics in various countries.

According to Rusydiana & Asrorun (2020), the BPJPH, as the authoritative body for national halal certification, has developed guidelines and standards for halal logistics. However, awareness and understanding of the halal-*thayyib* concept among industry actors remain low. The lack of training and professional personnel in the field of halal logistics also hinders the acceleration of implementation. Additionally, coordination across ministries and agencies, such as between BPJPH, the Ministry of Transportation, and the Ministry of Industry, still needs to be strengthened (Santoso & Sulaeman, 2020).

Hasibuan, Hakim & Lubis (2022) indicate that the unpreparedness of businesses to adopt halal logistics systems is often caused by unclear implementation procedures and a lack of economic incentives to encourage comprehensive adaptation of halal standards. This finding underscores that government policies must be supported by incentive schemes and technical training to enable the local industry to meet the increasingly stringent global market demand for halal compliance.

Using the halal value chain theoretical framework, the author found that the capabilities of halal logistics companies depend on physical resources (e.g., certified warehouses), human resource competencies (e.g., certified halal auditors), and the application or utilization of ICT (e.g., blockchain for tracking).

Meanwhile, using Scott's (2001) institutional theory framework, the author found that the delay in halal certification in Indonesia is due to regulatory issues caused by overlapping authorities between BPJPH and the Ministry of Transportation. Additionally, from a normative perspective, there is still low awareness among business actors (only 15% participate in halal training), and from a cognitive perspective, there is still the perception that 'halal = expensive' among MSMEs.

Nevertheless, Indonesia's potential to lead the global halal industry is wide open. The large domestic market potential and increasing demand for halal product exports are driving the development of halal logistics. Collaboration between the government, industry players, and educational institutions in developing halal logistics curricula and halal business incubation can strengthen the national halal ecosystem (Lubis & Nasution, 2021).

To capture this significant market opportunity or potential, the implementation of halal logistics must be supported by the application of ICT. According to Bowersox (2013) in his book on transportation management, ICT (Information and Communication Technology) is one of the six parties in transportation management, which consists of: the shipper or consignor, the consignee or receiver, transportation service providers (carriers and agents), government, information and communication technology (ICT), and the public. ICT (Information and Communication Technology) is a widely recognized term encompassing various technologies (computers, telephones, the internet, radio,

television, etc.) and applications used to manage, store, process, and disseminate information. ICT has become an integral part of life, influencing almost every aspect of daily life, including transportation and supply chains. Today, ICT is one of several types of contemporary technologies that are widely used and continue to play a very important role in various sectors of life, in addition to AI (Artificial Intelligence) and IoT (Internet of Things).

The function or benefit of ICT in logistics is to provide accurate and real-time information between senders and recipients or between customers and suppliers. Developments in logistics ICT include tracing and tracking goods/cargo, EDI (Electronic Data Interchange), Self-Document (i. e. Delivery Order & Original Bill of Lading) Printing, the use of drones to transport goods to remote areas that are difficult to reach by conventional transport, and the latest innovation currently being tested, which is the use of foldable containers (folding containers). All of these can be categorized under Transportation Management System (TMS) and Fleet Management System (FMS) applications, both web-based and cloud-based.

ICT in logistics plays a role in improving existing systems/methods or through innovation (developing new methods) to provide more timely and cost-efficient logistics services. One such sector is logistics, particularly goods transportation, which has undergone significant changes due to recent technological advancements. According to Komala et al (2024), several innovations have been implemented in the transportation sector (part of logistics) as a result of these technological advancements. Meanwhile, according to Widjojo (2021), the logistics business can now utilize smart sensors and smart devices to trace and track goods/cargo during transit for real-time monitoring using Internet of Things (IoT) technology. Almost all international shipping companies offer this service to their customers, as do international ports (serving export-import shipping), including ports managed by PT Pelindo.

Considering the situation and conditions outlined above, for Indonesia to be competitive globally, at least in competing with Malaysia and the United Arab Emirates in terms of halal logistics, several steps can be taken, including in the regulatory aspect by accelerating Government Regulation No. 39/2021 through the implementation of fiscal incentives, then in the infrastructure aspect by beginning to focus on building at least 2 (two) halal hubs in Indonesia to represent Western Indonesia and Eastern Indonesia, and in the human resources aspect through a halal logistics competency certification program via the LSP.

According to a recent report by Grand View Research (2024), the global halal logistics market is projected to grow at a CAGR of 7.5% from 2023 to 2030. This growth is driven by increasing demand for halal products, especially in emerging markets with large Muslim populations. This is reinforced by a report from UnivDatos (2025), which states that the Asia-Pacific region, dominated by countries such as Indonesia and Malaysia, is the largest and fastest-growing market for halal logistics due to the substantial Muslim population and government policies supporting halal trade. This is also in line with a report by S. N. Jha in Fact.MR (2023), which states that the food and beverage industry continues to be the most prominent end user of halal logistics across regions, with the global market valued at USD 321.2 billion in 2023 and expected to reach USD 528.2 billion by 2033, growing at a CAGR of 5.1%.

In the sector of technological advancement, particularly in blockchain technology, significant progress has been made that has proven highly beneficial for halal logistics. For example, a pilot project in the UAE has successfully utilized blockchain to track halal meat exports, ensuring transparency and traceability (Alourani & Khan, 2024). Similarly, in Malaysia, the adoption of IoT and Big Data Analytics has enhanced the efficiency and compliance of halal logistics operations, as reported by the Malaysian Halal Certification Board (2023).

Meanwhile for Industry Readiness and Challenges, a survey conducted by the International Halal Integrity Alliance (IHIA) indicates that while 80% of logistics companies in Malaysia and the UAE are aware of halal logistics standards, only 40% of companies in Indonesia are fully compliant (IHIA, 2025). The same survey highlights that the primary challenges in Indonesia include lack of training (60% of respondents), regulatory complexity (50%), and high costs associated with certification (40%).

According to Aamer Yaqub (2025) in the sector of policy and regulatory developments, the Indonesian government has recently announced plans to accelerate the implementation of halal logistics certification by providing financial incentives to small and medium-sized enterprises (SMEs). This initiative is expected to significantly increase compliance rates. Meanwhile, in the UAE, the Dubai Municipality has launched a new initiative to integrate halal logistics standards with existing food safety regulations, aiming to streamline the certification process and reduce administrative burdens (Dubai Municipality, 2024).

In addition, there is also a case study about stakeholder collaboration conducted by the Halal Food Council (2024) that highlights the importance of collaboration between halal certification bodies, technology developers, and supply chain (including logistics operators). The study shows that such collaborations can significantly enhance the transparency and efficiency of halal logistics systems. In line with this, the Indonesian Halal Logistics Association (IHLOGA) has recently signed a memorandum of understanding (MoU) with the Malaysian Halal Certification Board to share best practices and support mutual recognition of halal standards (IHLOGA, 2023).

4. CONCLUSION

The concepts of halal and *thayyib* in a modern perspective have evolved into principles that encompass three aspects: Sharia compliance (legality), quality assurance (quality), and green logistics (ethics & sustainability). The implementation of these principles in the logistics sector is crucial to ensure the integrity of halal products until they reach consumers.

The experiences of countries such as Malaysia and the UAE show that the success of a halal logistics system is not solely determined by formal certification, but also by a deep understanding of the Islamic values that accompany it, supported by economic incentives and technological integration, in addition to clear regulations (formal certification).

In the context of Indonesia, the acceleration of halal logistics system implementation must be carried out through a regulatory approach by allocating a special budget for halal logistics human resource training, followed by an educational approach, such as adopting Malaysia's ICT standards (Halal Trace), and a collaborative approach by implementing the UAE's quadruple helix model (government agencies as public authorities, industry, academia, and halal logistics businesses).

These efforts require institutional capacity building, human resource training, and the development of standardized infrastructure. Placing halal *thayyib* values as the foundation of logistics not only ensures sharia compliance but also addresses Muslim consumers' needs for safe, healthy, and high-quality products. With the right steps, Indonesia can not only meet domestic market needs but also become a major player in the global halal supply chain.

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