

## Conference paper

# Reconstruction of SCM Performance Measurement Model for Halal Industry

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## Abstract.

One pattern of Islamic business that is growing rapidly in both Muslim and non-Muslim majority countries is the halal industry. [1] emphasized that in its development, the halal industry has an important issue that needs to be addressed immediately, namely the need for performance measurement tools. So far, there is no instrument as a tool to measure performance that is able to comprehensively assess all Supply Chain Management (SCM) in the halal industry. SCM of the halal industry is motivated by the industry's desire to meet the demands of Muslim consumers who want to ensure that what is consumed is guaranteed halal, not only from the status of the ingredients but all aspects involved in the business process [7]. Therefore, the halal industry due to ideological differences requires a performance paradigm shift in the form of a performance measurement tool that is not limited to profit achievement but compliance with Islamic values [2]. The halal industry is said to perform well when SCM is focused on a "holiness" approach through *maslahah* (welfare) [19]. Therefore, through a qualitative approach, this study seeks to develop indicators to measure the performance of Halal Supply Chain Management specifically for the halal industry. The results of the study found that the performance measurement model for HSCM consists of quantitative and qualitative indicators. Aspects of obedience to Islamic principles to achieve halal integrity are not always able to be measured with quantitative techniques, therefore it is necessary to reconstruct qualitative indicators. Further research can be done by implementing the HSCM performance measurement model specifically for the halal industry.

**Keywords:** Halal Industri, Halal Supply Chain Management, Indicator Performance

## 1. INTRODUCTION

Consumption of halal products is increasing tremendously both from Muslim and non-Muslim communities. The State of the Global Islamic Report in 2020 informed that around USD 2,2 trillion has been spent by the Muslim population for halal lifestyles, including food, beverages, cosmetics, medicines, fashion and other halal products. Estimates show the figure of USD 2,4 trillion can be achieved by 2024 where several areas of the halal industry that have the potential to have a role are halal tourism, Islamic social media, halal food and beverages, sharia financial services, cosmetics, medicines and halal fashion. This illustrates the increasingly strong existence of the halal industry globally.

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Published 24 July 2023

Publishing services provided by Knowledge E

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Selection and Peer-review under the responsibility of the ELEHIC Conference Committee.

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The revolutionary effect on the company because of the situation was a significant change in the perspective of modern marketing. The approach that focuses on consumers shifts to a value-based approach such as cleanliness, chastity, honesty in substance and symbols where all these values are important principles of Halal (1).

The next revolutionary influence is the realization that one of the most potential sources of state revenue can be obtained from the halal industry. In its journey the halal industry has become the center of global attention so that it also has an impact on various studies related to the Halal Supply Chain (HSCM), which focus on setting up the Halal network to achieve Halal credibility (2). HSCM is the same as SCM, but the difference lies in the fulfillment of Halal principles regulated in Islamic sharia. (3) confirms that HSCM is very concerned with Halal principles from supplier sources to consumers.

To keep the halal promise to the final consumer that the food consumed is the true actualization of Islamic Sharia values, the credibility of HSCM in the Halal industry is a very important aspect (2).

There are several arguments why the Halal industry is increasingly active in achieving Halal credibility. *First*, Halal credibility is getting more attention than ever before after increasing awareness regarding compliance with HSCM credibility. This has an impact on the complexity of HSCM and logistics costs that require more accurate analysis to avoid inefficiencies. *Second*, the complexity and detail of the Halal supply chain makes credibility issues even more difficult to identify. *Third*, the additional cost consequences for Halal quality and credibility throughout the supply chain are even more expensive than before, especially for industry owners who already have a strong name or brand in the market.

This article attempts to articulate the design of the Halal supply chain to develop a performance measurement model in the Halal industry. Through observation, in-depth interviews and discussions with practitioners and experts of Islamic economics, it is hoped that the performance measurement model for the halal industry will not only be quantitative but also provide space for qualitative measurements considering that not all aspects can be measured through a quantitative approach.

## 1.1. Literature review and research framework

### 1.1.1. Towards Halal Measurement of Supply Chain Management

The demand for halal-labeled products by both Muslim and non-Muslim communities is increasing globally. This is a reflection of a significantly changing perspective on modern marketing. A significant paradigm shift of modern marketing is that companies are shifting from a consumer-centered approach to a values driven approach, which elevates the concept of marketing to the realm of values (1). Halal (permitted) is very clearly based on values, namely in this case Islamic values.

Meanwhile, the awareness that the halal industry is a potential source of income has begun to be realized by various countries in the world. The halal industry is one of the centers of attention because it is considered to have allure as a source of income. This has a logical impact on the need for supply chain management that is different from conventional chain management by integrating Islamic values, especially related to halal principles. (4) emphasized that he stated that Halal Supply Chain Management (HSCM) is the same as Supply Chain Management (SCM), the difference is the integration of elements of Halal values according to Islamic sharia. HSCM must comprehensively implement halal credibility from upstream to downstream, namely from suppliers to end customers.

According to (5) SCM requires a fully halal approach for the halal industry as a commitment to fulfill halal guarantees for final consumption that the products consumed are pure manifestations of halal principles. Therefore the attention is getting bigger for halal credibility in the halal industry supply chain network (6).

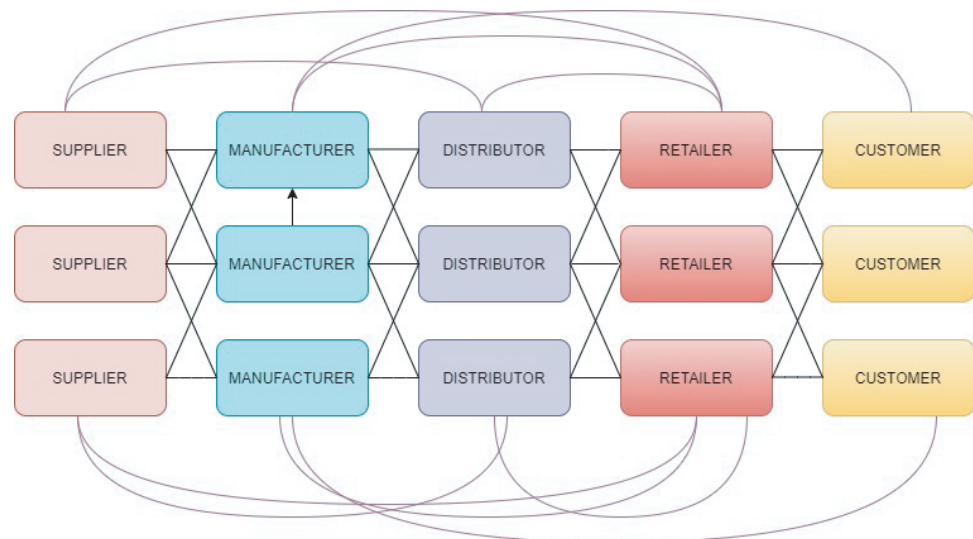
There are several arguments why the world economic community is increasingly passionate about paying attention to HSCM. First, the increasing complexity of supply chains brings with it issues of integrity and credibility of the halal industry in the consumer market. Second, the complexity of the supply chain in the halal industry has an impact on the difficulty of detecting halal integrity. Third, industries that already have big names have greater cost consequences than industries with names that are not yet known. Improvements to the supply chain network to gain halal credibility require greater costs (7)

### 1.1.2. Supply Chain Management

SCM is a network system that involves parties either directly or indirectly for the purpose of customer satisfaction. SCM includes manufacturers and suppliers, transportation, warehouses, distributors and even the customers themselves. So in every business

organization, they will build an involved SCM system to meet customer demands. Each has a role, function and responsibility including research and development to develop new products, marketing, operations, distribution, finance and customer service (8) .

A simple example, when someone walks to the supermarket to buy bath soap. So the supply chain begins with a consumer walking to the supermarket to fulfill his need, namely soap. The next supply chain is the supermarket visited by the consumer. While the supply chain of the manufacturing plant itself has a supply chain sub system in carrying out the bath soap production process. The factory receives raw materials from various suppliers both small and large. This supply chain is illustrated in Figure 1, with arrows corresponding to the direction of the physical product flow.



**Figure 1:** Halal Supply Chain Management.

The characteristics of SCM are flexible, dynamic, and involve information systems between parties in the network (8). An example is how supermarkets present product information, prices and quantities of goods available (inventory) to customers. Furthermore, consumers make purchases, hand over money and get goods. This activity has consequences for the reduction of goods over time and affects the amount of inventory. So the supermarket periodically analyzes the availability of goods to be communicated to the distributor so that they can refill it. The next stream of communication is for the distributor to inform the price and send the delivery schedule to the supermarket. The distributor sends supermarket orders via transportation trucks to refill goods, which ends with the transfer of a certain amount of funds from the supermarket to the distributor. Meanwhile, the packaging cartons of goods that have been sold will be sold by supermarkets to packaging recycling factories or may be sold to other parties.

The entire description of the SCM network above, including information, materials and fund transfers, also occurs throughout the supply chain of other businesses .

The next example, when consumers buy laptops directly at the official distributor. So SCM consists of consumers, authorized laptop distributors, factories that assemble laptops and all suppliers of materials needed to produce laptops. The official laptop distribution company builds an information system for customers through a website to inform them of prices, product specifications, how to order and payment. Customers are given the facility to make purchases online or offline. Online, through the website, consumers can enter product choices, process orders and product payments. On an ongoing basis, consumers can access the position of the goods ordered to what stage. Even for delivery, consumers can find out the location of the goods while in transit at the warehouse of representatives of inter-city delivery services until they arrive at the city and the address of the consumer. The process involves the existence of a product information system including additional costs at various stages of the supply chain. The example described above is a reflection of how the customer is an important and integral substance in the supply chain.

Basically, meeting customer needs and customer satisfaction is the main goal of the supply chain. The goal of the supply chain is to generate profits for each element in the network that passes through the supply chain (9). However, the important substance to achieve profit is through a chain system that satisfies consumers (10).

The term supply chain can be described in a chain network that describes a product or supply from one supplier or producer to another supplier/producer to the final consumer. Implicitly SCM involves only one company process to get to the final consumer, but if examined in more detail there is a systemic network movement from suppliers to producers which then moves to distributors to be distributed to retailers or even directly to consumers (10). All of them are parts or parties that will be passed by SCM where the flow has consequences both on information systems, costs and the flow of raw material products, semi-finished materials, finished materials that are prepared to reach consumers (11).

The term of supply chain is explicitly as if it involves only one stage. But in reality, one supplier can receive raw materials from several small suppliers and one company can receive raw materials from more than 1 supplier. So when described in more detail, there are systemic networks that are integrated with one another to form a large system network called SCM. A more appropriate term is a supply network to describe a supply chain structure that involves components of consumers, distributors, producers and suppliers of raw materials which are systemic and systematic (2). Each component

in the supply network structure is connected by an information system containing product, financial information, shipping & warehouse transit. These structures flow in both directions and it is possible to manage them at one stage.

Each stage in Figure 1 need not exist in the supply chain. Designing an effective and efficient SCM really depends on the function of each component involved and the needs of consumers. For example, a computer product has two SCMs to fulfill customer service, namely corporate and individual customers. This affects the supply chain structure where corporate customers get custom facilities while this does not apply to individual/individual customers. For custom facilities, the factory will design and build computers according to orders and the needs of the corporate character. In this situation there is no separate retailer, distributor or wholesaler function from the manufacturer. These functions will be integrated with factory functions which directly meet and serve corporate consumers. However, of course, suppliers of raw materials still apply both to serve corporate and individual customers.

In contrast to meeting the needs of individual customers, the function of a well-authorized distributor is very important. This distributor component gives another dimension to the sales aspect where there is one additional component in its SCM structure and will increase when the authorized distributor distributes it back to retailers and indirectly to individual customers.

The SCM structure that is built must be able to achieve the main goal of maximizing the overall supply chain surplus (12). This value is the difference between the value of the final product (sales) minus all costs required in the SCM structure to meet customer needs. The final value of the product certainly varies from one another and depends on the ability of the customer or the purchasing power of the product. So the difference between sales revenue and SCM costs as a whole is a surplus from SCM and becomes a profit value for the company (13). For example, consumers buy memory to increase data storage with a final product (memory) value of Rp. 800.000 then this represents the revenue that the supply chain receives. Consumers who buy the memory will definitely pay at or above Rp. 800.000. Thus, part of the supply chain surplus depends on the purchasing power of customers which is referred to as consumer surplus.

It should be understood that the costs in the SCM structure can be in the form of costs of production, storage, transportation/shipping, transfer of funding from one SCM component to another, building information systems, and others (13). Residual value between Rp. 800.000 or more consumers pay for the total cost incurred in SCM to manufacture and distribute memory is the expected final profit or value. So it can be said that the advantage of the SCM structure is the total profit generated from all

the structures and components of the supply chain. The more effective, efficient and profitable the supply chain is, the more successful the supply chain will be. Therefore, there is a linearity between SCM and the ability to generate profits.

Therefore, the success of SCM is one of them is in the ability to generate profits as a whole within the network structure (14). Success is not measured individually in each component but is an integration between components. While profit growth is a reflection of the quality of SCM, the system must be able to encourage successful growth in the entire scope of SCM which is oriented towards product quality growth (15). The ultimate goal is of course customer satisfaction, not only at the optimal price but customer satisfaction in all areas of SCM which is reflected in the product.

Next, after determining the profit aspect as a reflection of the strength and quality of SCM, the next rational step is to find sources of revenue, cost and value where it can be obtained from one dimension, namely the customer perspective (14). For example, the value obtained from consumers who need cooking oil is dependent on several factors including product quality, ease of obtaining products (stock inventory) and access to find products (transportation), these things are very important for customer satisfaction orientation because they are one -one positive cash source in SCM.

Cash flow is the turnover of funds contained in the SCM network. Each manufacturer certainly has a different SCM network structure. When a supermarket that provides cooking oil pays its supplier, the supermarket reduces the funding that comes from its consumers and passes the money on to the supplier. Therefore, relevant, accurate and comprehensive information is needed in each SCM structure to obtain credible predictions regarding profit estimation. Therefore, effective management of each asset structure, product, financing and system will determine the overall success of SCM. This is because all flows of information, products, or funds generate costs in the supply chain.

### **c. Halal Definition**

The Qur'an defines halal as permissible, permissible, legal or legal. It is different from haram which in its meaning is prohibited, not allowed, unlawful or illegal. Both halal and haram are terms that have universal character where all activities, both worship and muamalah, must refer to halal and haram as regulated in the Koran (16). Therefore, Halal SCM is one of the muamalah activities that requires a learning process to understand, interpret and implement in accordance with Halal as regulated in the Al-Quran and Sunnah. This is a consequence of Islamic principles and values which state that everything in life activities, both worship and muamalah, are the main references to the Qur'an and Sunnah (prophetic traditions) (7)



Muslims expect and demand assurances that whatever products they consume and use must meet the credibility of halal and toyib. So it can be said that anything that is used directly and indirectly is a manifestation of Islamic principles, namely halal as well as toyib which means healthy and good. Therefore, the halal SCM approach is very important to ensure halal integrity in all SCM activities. (17) explain that Muslim consumer confidence regarding the absence of contamination in the halal SCM process is very low due to the lack of access and disclosure of information.

It is very important to ensure the ability of halal SCM to ensure the integrity of the halal process. Until now, to ensure halal at the point of consumption is not easy, although the aspects of preparation, production, handling and storage of products have been regulated at a certain level (18). Specifically, ensuring the halalness of SCM requires reliable logistics capabilities.

In practice, what are called halal products are all products consumed by Muslims such as food, beverages, hygiene products (soap, toothpaste), medicines and cosmetics. The status of halal products is growing and expanding such as lifestyle (such as clothing) and services (such as Islamic banking, hospitality, logistics, etc.). One of the efforts to gain trust that the product is halal is through the halal logo placed on the product packaging. The logo is a symbol to convey a message to consumers that the product is suitable for use (19).

In the end, the halal concept is not only attached to the final product, but must be designed and built in a wider range through management science, organizational behavior, cultural anthropology and sociology which directly affect the existence of SCM (20). HSCM requires an SCM approach as a form of fulfilling the spiritual needs of Muslim consumers as well as the implementation of Islamic values.

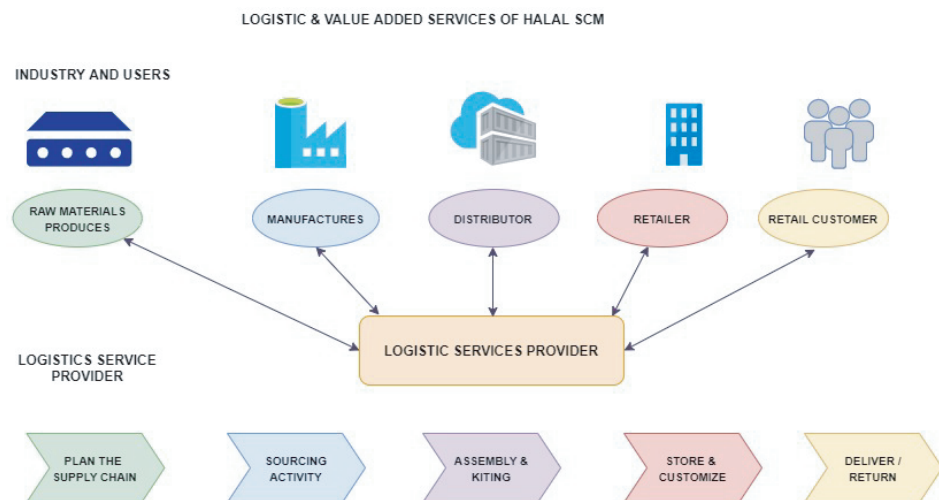
(20) argue that the Islamic market-oriented cultural model is created by a cultural perspective and market orientation that concretely implements Islamic values. The halal accreditation system is the HSCM model that is practiced by most business organizations to meet the demands and pressures of stakeholders, both consumers and the government. Therefore, the halal business opportunity is getting bigger and has resulted in the realization that a more practical, systematic and integrated HSCM system is needed.

### **1.1.3. Halal Supply Chain Management**

The basic components of conventional SCM are raw material suppliers, manufacturers, distributors, retailers, and consumers (21). The entire process flow from upstream to



downstream is principally segmented into three phases, namely the inbound phase, production phase and outbound phase (22).The inbound phase deals with material procurement and management of activities, such as supply delivery to factories, transportation and storage. While in the outbound phase, the finished product will be sent from the factory to the final customer which includes warehousing, transportation, retail, marketing and sales activities to the final consumer. The conventional SCM framework was adopted to construct the Halal SCM model according to the requirements of “halal” and “toyyiban” (16). So it can be concluded that in principle a halal supply chain or HSCM includes a complete Halal supply chain from suppliers to end consumers (see Figure 2).



**Figure 2:** Logistic and Value Added Services of Halal Supply Chain Management.

In other words, the HSCM model is reconstructed or adapted from the conventional SCM model by synergizing Islamic values in conventional SCM. Reconstructing the HSCM model requires commitment and goodwill, therefore the responsibility of top management to take halal policies is very necessary. The policy is related to the scope of halal certification and standardization, guarantees to consumers that they have obtained products with halal integrity by building control and supervision mechanisms through the appointment of a halal committee (6). This is basically the main foundation for business organizations in protecting halal integrity throughout HSCM.

HSCM is defined as a halal management process to ensure the achievement of halal integration and to expand halal credibility from the initial source of goods to the final consumer. Therefore, to ensure that the final product has gone through the halal network stages, it is very important to establish the principles of HSCM management.

(23) emphasized that there are at least three factors to determine the foundation of halal, namely not allowing direct contact with something that is haram (forbidden), contamination because it is mixed with what is haram, from the point of view of looking at sharia values that regulate halal. While the point of view is influenced by market needs, the majority of Islamic schools of thought in a country, local fatwas and local culture.

As explained in the previous section, the overall implementation of HSCM in every supply chain must be based on and guided by elements of sharia law, in this case the Qur'an, Hadith and the agreement of the scholars. Muslims are required to consume halal products unless they are in a very forced or "dharuriyah" situation and condition where there is no longer a choice due to certain situations and conditions (24). In this case, attention is not only focused on the finished product but the product must be halal with a wider scope, namely the "toyyiban" aspect on the aspects of cleanliness, quality and halal integrity throughout the network through which the product passes until it becomes the final product.

HSCM as a whole covers the production process starting from the halalness of raw materials to going through the logistics process for the final product. The goal is to maintain the existence of halal integrity and product quality in all process elements. The process elements or stages involved in the supply chain include (1) halal procurement, (2) halal manufacturing, (3) halal distribution, and (4) halal logistics (2). It should be noted that to ensure that the supply chain has halal credibility and the value of its products is guaranteed to be halal in a sustainable manner, aspects of Islamic principles and social norms that are oriented to the existence of Islamic values must be carried out. This, of course, has not found space in conventional SCM theories even though HSCM and SCM have similarities in efficiency goals. The main factors that motivate the implementation of HSCM according to (2) are institutional pressures such as laws governing the halal accreditation system, regulations on halal accreditation standards and market demands and halal business opportunities both domestically and globally.

(25) emphasized that there are several factors that influence the development and formation of HSCM, namely (1) the belief that halal must exist in all attributes of product quality, (2) the belief that it is very important to maintain halal integrity throughout the supply chain, (3) belief in the importance of to eliminate doubts and uncertainties throughout the supply chain, (4) the importance of supervision and control of halal products and the existence of halal values in products, (5) consumer sensitivity to halal implementation. Meanwhile, to build HSCM with integrity, it is very important to control which points must be monitored for halal and toyyiban aspects. Therefore, success in

realizing HSCM requires a joint and collective commitment from various elements to a commitment to comply with halal procedures.

To prevent non-optimal implementation of HSCM, a clear, detailed and open information system related to all aspects such as halal procurement, halal production processes, halal distribution and logistics is very much needed by consumers. (26) explained several aspects needed to improve halal integrity in the *Halal Food Supply Chain* (HFSC), namely Halal certification, Halal standards, Halal tracking, trust and commitment among HSCM members, and the role of the government. In addition, several studies have identified a number of factors that determine the success of HSCM implementation, namely government support, effective planning related to product transportation, information technology systems, human resource management, collaborative relationships, halal certification, and the ability to track halal (27).

A recent study developed a *Halal Food Supply Chain* (HFSC) model which describes at least nine important aspects that determine the effectiveness of HFSC implementation. The nine aspects are cleanliness, security, physically separated management and packaging, storage and transportation processes, packaging and labeling, practice according to norms, improving the quality of human resources, growing innovative competencies and fulfilling resources

## 2. METHOD/MATERIAL

The research method uses a qualitative approach by exploring and interpreting what is understood by the relevant informants to the research. Qualitative descriptive research is research that focuses on providing detailed and accurate descriptions and explanations of a reality from the data that has been obtained (28). (29) explains that the implementation of qualitative research has flexibility in every stage, this means that research has room for does not move in a linear manner where to be able to move on to the next stage it must complete the previous stage. In contrast, in qualitative research, it is allowed to return to the stages that have been passed previously according to the needs, creativity and innovation of researchers.

In this study, data were collected using field study methods in the form of theoretical analysis, document research, observation, and interviews through the distribution of questionnaires, observations and in-depth interviews. The selected informants are halal industry practitioners and Islamic economic experts. All data were analyzed using qualitative descriptive methods through an inductive approach to describe or describe the objective reality and circumstances related to halal supply chain management.

Furthermore, relationship analysis is carried out by synergizing and linking data through collecting, classifying and categorizing data, comparing data and drawing conclusions.

This research phase begins with conducting a survey to the research location. Next, collect data through observation, documentation and interviews and perform data analysis by identifying and transcription of observations, interview questionnaires. From the results of the data analysis, a discussion was carried out on how to measure the performance of Halal Supply Chain Management from an Islamic perspective specifically for the halal industry.

### 3. RESULTS AND DISCUSSIONS

#### 3.1. Halal: Toyyib is the Principle

One of the important factors in terms of halal is toyyib. The results of the interview show that what was conducted found that halal must refer to the Al-Quran and Sunnah. However, it was acknowledged by informant Y that the sunnah in some cases has a different interpretation in each school or sect. In addition, the Qur'an and Sunnah provide broad principles that according to informant Y need to be operationalized. For example, the verses of the Qur'an explicitly and clearly state that pork and liquor are prohibited. However, from the perspective of Islamic scholars this can be interpreted differently, especially when the situation and conditions are compelling and emergency. This perspective is quite vulnerable for the definition and implementation related to contamination between halal and haram. Meanwhile, this is very likely to happen if there is no effective control and supervision. Therefore, HSCM must ensure that the possibility of contamination has been reduced to a minimum. So the assurance that there is no contamination along the HSCM elements is a logical consequence. This is in line with what has been stated by most of the informants where protection against unlawful and/or non-halal contamination along the HSCM elements is very important so that all SCM must be handled carefully and effectively and efficiently to protect the halal credibility of the product.

As stated by informant X, important principles related to halal logistics and the HSCM system are regulated by fiqh law. The principle in general also emphasizes that everything must be based on value, that in every difficulty there must be ease, it is not allowed to intentionally harm, keep away arbitrariness and the law must be certain and there is no doubt in its application. This is because every HSCM goal according to all informants is to protect halal integrity as the main principle. Regarding this, informant

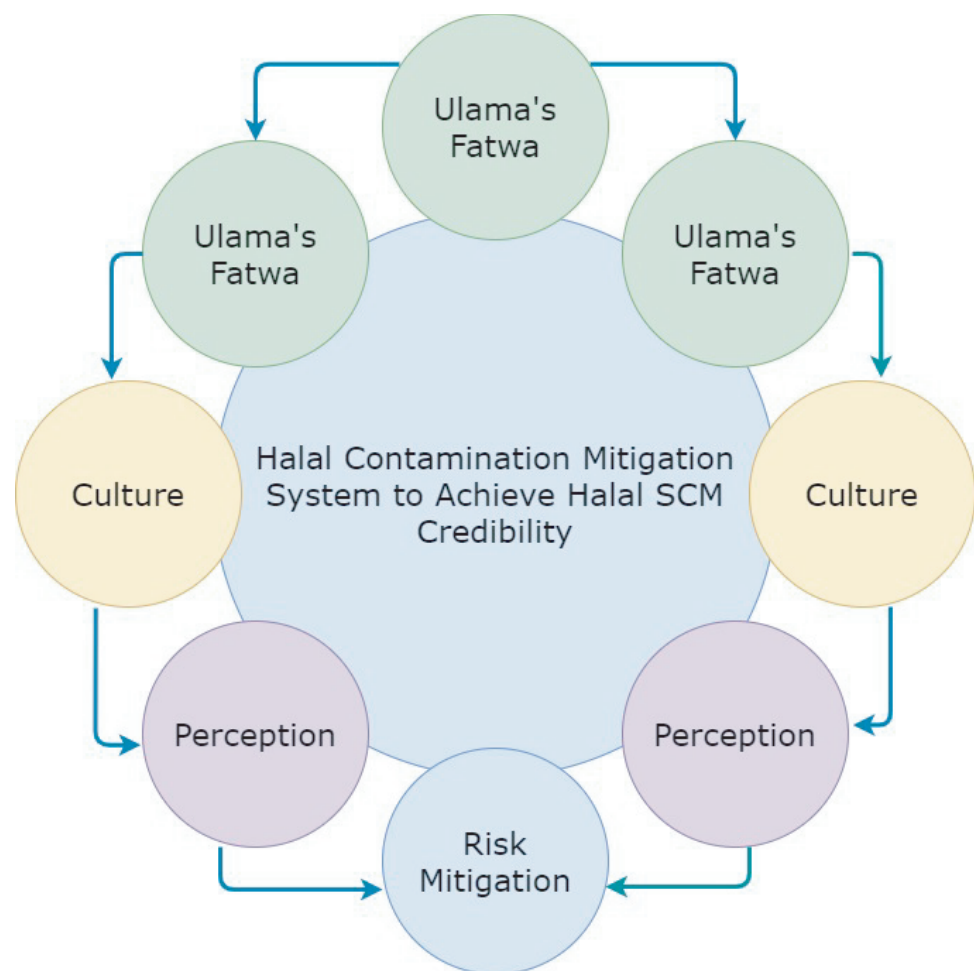
M added several principles to HSCM, namely *first*, it is important to design an HSCM system that does not add new burdens to consumers, *Second*, provide space for culture or habits that may need to be included in the HSCM process. *Third*, the obligation to understand and implement the hadith of the Prophet (HR Al-Bukhari and Muslim) (30) as follows:

”Indeed, what is lawful is clear and what is unlawful is clear. But between the two there is a doubtful (disguised) matter that is not known by many people. So whoever shuns himself from the doubtful, it means that he has preserved his religion and his honor. And whoever until he falls (doing) on doubtful (cryptic) matters, indeed he falls into unlawful things, like a shepherd who grazes his cattle on the edge of a ravine who fears they will fall into it.”

According to most of the interviewees, this principle is one of the most important principles for Halal logistics and HSCM, to avoid falling into doubtful circumstances. *Fourth*, referring to the words of the Prophet that ”Allah has cursed liquors, the one who drinks it, the one who pours it, the seller, the buyer, the one who extorts it, the one who takes the juice, the one who delivers it and the one who asks for it to be delivered.” (HR. Ahmad). Informant X also responded to this principle that what leads to Haram acts is categorized as haram. So in the transportation and storage of halal products, all haram elements must be avoided. *Fifth*, the assertion from informant Y that HSCM must ensure that there is no direct or indirect contact with the Haram, this is even analogous to touching a dog (the law is to wash hands seven times if it is exposed to wet dog hair). The law can be used as a reference to distinguish between dry and wet products in HSCM. Therefore, it is very important for companies that have been certified Halal to build a solid and stable monitoring system to monitor production and raw materials and the existence of Halal throughout the HSCM by ensuring and guaranteeing that transportation, storage, and handling are in accordance with Sharia principles.

Furthermore, informant M gave an affirmation related to maintaining the credibility of the product from unlawful contamination through the application of halal throughout the SCM elements. The theme of cross-contamination of illicit products was found and repeated in the interview results so this indicates that it is in need of special attention and handling. In practice, the issue of cross-contamination between halal and haram products is often a difficulty in itself as well as a risk gap for reducing guarantees in halal implementation. While halal products that are in direct contact with haram, the risk becomes non-halal. Therefore, it is necessary to study the various opinions of scholars which may differ in regulating this matter because the opinions of scholars become a reference for Muslim consumers.

As stated by almost all informants, the fatwas of the scholars may differ from one another in translating halal products, cross-contamination, transformation of halal products into non-halal, and others. While the obedience of Muslims is greatly influenced by these fatwas. Even from the observations, it is also found that the possibility of culture as a manifestation of habits is also very influential on consumer perceptions. For example, the state of Brunei Darussalam requires the separation between meat slaughtered through Islamic procedures and those that are not appropriate. This will affect the design of HSCM for example in regulating transportation, storage and management to meet cultural demands, customs and government regulations. It is shown in the following figure: It is shown in Figure 3.



**Figure 3:** Ulama's fatwa and culture influence people's perceptions in building mitigation of the risk of halal contamination.

The products that have been explicitly categorized as haram are pork, blood, carrion and liquor. If there is direct contact (cross-contamination) with these haram products, the halal product will become haram. Risk mitigation is urgently needed to overcome

this because halal products are threatened not to be consumed by Muslim consumers. The risk mitigation system in HSCM must be built to prevent halal products from moving in that situation, especially if the products produced are wet and mass-produced.

It can be concluded that consumers need higher assurance regarding the credibility of halal products. Therefore, the HSCM system must be able to avoid direct contact with haram products by considering the perceptions of Muslim consumers who are strongly influenced by the fatwas of ulama, government regulations, culture and normative values that exist in society. This situation encourages a logical consequence in the form of building a strong HSCM system in mitigating the risk of cross-contamination and being responsible for this occurrence.

The results of interviews and data processing also found that product characteristics such as wet or dry products (chilled/frozen), bulk orders or not have had major implications for the HSCM design. In addition, the perception of Muslims regarding halal is very influential on consumer views in building important parameters for HSCM. While this is a complex problem because the schools of Islamic thought are often different in judging something and the diversity of Islamic culture. As explained in the previous section, local fatwas and local culture greatly influence consumer perceptions and decision making. Especially in Indonesia, the attitude of taqlid or following the fatwa of scholars is very strong. The results of the interviews found various guidelines and recommended principles to maintain the credibility of halal products as follows:

Furthermore, the results also found that further empirical research is needed to better understand and estimate the views or frameworks of Muslim consumers as potential factors for the success of HSCM. In addition, further research is needed to understand the principles of managing HSCM to meet different market share demands. For example regarding the difference between SCM requirements for Muslim-majority and non-Muslim countries. The next empirical research needs an HSCM model that has the ability to describe and maximize HSCM. This is very important to help and support the halal industry to have an increasingly perfect HSCM approach.

The result of the subsequent discussion was that new knowledge and understanding were obtained regarding the significant differences between Muslim and non-Muslim countries such as Indonesia, Malaysia, the Netherlands and China. In these Muslim-majority countries, *toyyib* (kindness and cleanliness) is one of the most important elements of halal.

Furthermore, it is related to the agreement between Muslim-majority countries and non-Muslims that the risk of contamination with the haram must be addressed with caution so that the halal credibility of the product is maintained. However, this requires



TABLE 1: Principles to maintain the credibility of halal products.

No	Dimension	Information	Sub Dimension	Principle
1	Direct contact with haram products	When there is direct contact between halal products and haram products, the halal product becomes haram & unfit for use	Haram product	Separates the entire production process, packaging, transportation including loading and unloading of goods
2	Risks .	Halal & Haram are very clear and explicit, while there are many opinions regarding product contamination. In principle there should be no doubt	The nature of the product: whether the product is wet / dry, whether it is mass production / on order.	The loading and unloading equipment must be separate for halal products. Physical separation of halal and haram products in the process of storing, transportation/transportation and management of goods handling; Generate codes & labels. Choose suppliers carefully (through the selection process)
3	Viewpoint	Everything that leads to haram then the law is to become haram Everything that is doubtful must be shunned Something that is too difficult to make something that can be consumed by Muslim consumers should be avoided Not allowed because of desire and need but must pass the limits of sharia that have been regulated Paying attention to the various opinions and the majority of the sects adopted/adhered to in each region Paying	One of the reasons for the differences in sects in issuing a fatwa is that each ulema takes his studies in religious centers that have different sects.	Building halal facilities and the process of cleaning everything from haram elements. This can be seen in one of the laws, if the dog's saliva sticks to clothes, dishes, skin, it must be cleaned seven times, where once it must use sand/earth.

understanding and a common perception so that indicators as benchmarks are needed. This is as has been explained that there is a possibility of differences in the flow of Islam when judging something, including in this case the standard of contamination. According to several informants, this discussion is quite complicated and complex so that it is not easy to come to a mutual agreement in a Muslim-majority country. Some differences are often very explicit and fundamental so that they tend to be

detrimental to the implementation of HSCM itself. This is actually different in non-Muslim countries which tend to be more practical and concrete. Of course, this situation is very understandable because the existence of ulema's fatwas does not exist in non-Muslim countries.

The results of subsequent interviews found that the cost of implementing HSCM with integrity is quite large, especially for non-Muslim countries. For example, in a country like Hong Kong with a minimal number of Muslim consumers, the flow of halal products is not large. This has an impact on the difficulty of building a contamination risk mitigation system along the HSCM, for example providing special infrastructure for halal products. Constraints such as high costs tend to complicate the implementation of HSCM so that the availability of halal products in the country is very limited.

This has a direct impact on Muslims who live in non-Muslim countries. Obtaining halal products is difficult and expensive, especially products with guaranteed halal credibility, which are actually processed on a system with high risk of contamination mitigation. Therefore, a new paradigm is needed regarding the separation of halal products as a form of mitigating the risk of contamination. So once again the minimum level of contamination needs to be formulated as a benchmark for halal credibility.

The results of the interview also conclude regarding the efforts of European countries in achieving Halal credibility, especially when exporting to Muslim countries in the Middle East and Asia. European countries actually have a high motivation to be able to comply with strict rules related to halal so that they are allowed to carry out export activities in all Muslim countries. European countries in several studies show strong intentions and efforts in avoiding modification efforts so that they can be accepted in certain Muslim countries but on the contrary have strong efforts to be accepted in all Muslim countries.

The Netherlands, for example, provides strict rules to separate halal and non-halal products. This has even been legalized in a halal certificate. Even in the Netherlands it is explicitly regulated that halal and haram should not work in the same HSCM system but must be separated. For example, for meat that is slaughtered using Islamic rules, it must be separated from meat that is not slaughtered using Islamic rules, even though the animal is generally halal. On the aspect of storage and delivery have different rules. For livestock that may be consumed according to Islamic law, but are slaughtered in a halal and non-halal way (from halal livestock), they can use the same storage and delivery space but must be clearly separated in position and packaging. However, the labeling must be clear for meat from halal livestock but slaughtered in the non-halal way. Utilization of the same storage and shipping space has an impact on cost efficiency in the utilization of refrigerated containers. Meanwhile, this does not apply to animals that

are not allowed to be consumed by Muslims, so both storage and shipping should not use the same space and machinery. So the entire HSCM system must be completely separated.

Interpreting the various explanations of the informants above, it can also be concluded how important continuous corrective elements, supervision and sanctions are to maintain halal credibility throughout the network. This is good in aspects of raw materials, production processes, warehousing, transportation, terminals for loading and unloading goods, and others related to HSCM. In more detail, halal credibility is in the logistics process, goods receipt, storage, cross-docking, inventory replenishment, goods pick-up and delivery. All of these activities must be controlled and monitored to achieve halal credibility.

Once again, it is very important for consistency and commitment in maintaining and guarding halal integrity in HSCM both in production, transportation, warehouse, transit terminal and goods departure. In the aspect of transportation, especially at the transit terminal and the departure of goods, loading and unloading of goods is the most risky thing, so it requires its own risk mitigation. Activities Item identification, coding and attributes must be secure, clear and open. Therefore, the competence and understanding of halal in everyone involved in the halal logistics operation process is a priority. The human resource training needs to be carried out on an ongoing basis to grow the competencies needed to maintain halal integrity.

There are at least eight business strategies in SCM according to the Global Supply Chain Forum namely customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, procurement, product development and commercialization, returns. Especially for HSCM for halal food products, the management of the HSCM system to meet customer needs and satisfaction in the aspect of halal credibility is very important to maintain production and procurement flow management. The results of the interview also explain the importance of separating orders by studying the regions and even countries where the product is requested (countries with a Muslim majority or vice versa).

The next, related to the management of manufacturing flow according to the results of this research, is related to how to physically handle halal products along HSCM. The results of the study also found that it is necessary to build a formula that regulates halal control activities to ensure halal credibility in all sources of order points, production, logistics, to the end of the consumer. Meanwhile, related to procurement management, the important things found in this study are how to manage the HSCM structure through

an effective purchasing strategy, accuracy in determining specifications, accuracy at when the best time to order materials, selection of potential suppliers, integrated systems between suppliers, analysis and supplier evaluation. The implementation of HSCM in all these processes will not be effective if every human resource involved does not have the understanding and knowledge related to halal values. Therefore, education and training for human resources with a sustainable system is needed. In fact, informant Y emphasized that the cost incurred by the halal industry to educate and train his team regarding the concrete understanding and implementation of halal values is one measure of the industry's performance.

### **3.2. Building Halal Supply Chain Management with Shariah Integrity**

HSCM is an activity to ensure halal safety that utilizes and manages resources effectively throughout the supply chain from raw materials to final products in the hands of consumers. This process is part of the observance of carrying out Islamic values as explicitly commanded by Allah in the Qur'an and known as Sharia which means "Islamic law". According to Islamic law, consumption of halal (halal) and toyyib (healthy) and non-haram (violating the law) products is very important to protect faith, life, dignity/lineage, intelligence and Islamic property.

Ensuring the right intentions are the first step in developing the integrity of HSCM. Therefore, the implementation of halal values is a commitment not only to middle and lower management but also top management. The commitment is to take a responsible policy in protecting halal integrity in HSCM. Furthermore, the commitment to fulfill the entire scope of the organization with halal certification. Finally, guarantee for consumers that the products consumed are halal with integrity through effective guarantee methods through control mechanisms such as halal committees, halal compliance officers and continuous evaluation and inspection systems. In line with this, it also develops, formulates and continuously improves the HSCM framework for both logistics and customer service.

The HSCM performance measurement model has so far been more oriented to the financial aspect and is not inclusive. However, there are more balanced performance appraisal models, such as the balanced scorecard and Value Added. However, even though these models have a more balanced matrix, they still do not have indicators to measure the aspect of trustworthiness of halal products. Therefore, the existing performance appraisal model has not been effective in measuring HSCM.

Meanwhile, the purpose of the performance appraisal model is to ensure that the halal industry has optimized its HSCM to ensure that the halal credibility of the product has been met. Therefore, reconstructing the model can be done by incorporating new indicators that are able to measure halal credibility along HSCM. This is to ensure that HSCM is not only cost efficient but also effective in protecting halal integrity and strong in halal implementation throughout HSCM.

The effectiveness of HSCM and halal credibility are again the keywords in building the HSCM performance measurement model. The model specifically addresses three key aspects, namely process quality, waste prevention and halal credibility. The quality of the process reflects two things, firstly the strength/trust of the product through halal certificates and secondly the ability to respond to any consumer complaints received regarding the status of halal credibility. Even in terms of the environment, the handling and management of physical waste in HSCM such as carbon, residual water used in production and other resources used are also elements that must be assessed in HSCM performance indicators.

Waste in HSCM can be mitigated through the use of appropriate packaging (reusable), environmentally friendly transportation models and product management processes that pay attention to the environment (temperature and humidity levels). Meanwhile, waste from end consumers is more difficult to manage in HSCM, but this can be minimized through packaging that does not burden the environment, for example from recycled paper and the mileage required in shipping and purchasing products. Transportation is very relevant to the distance traveled so it is closely related to the natural environment. The effects of transportation activities not only interfere with efficiency but also the sustainability of nature. Since current energy consumption is mainly based on non-renewable energy, energy consumption is an important indicator in measuring performance on aspects of waste management throughout the HSCM.

Next, the efficiency of HSCM is to avoid increasing the price of halal products. However, each cost will be borne by the final consumer, this is linear with the heavy burden that the consumer must bear. Prices that burden consumers fall into the category of reducing the convenience of Muslim consumers, especially those living in non-Muslim countries in consuming halal products. From all the explanations above, the indicators must contain at least the following:

TABLE 2: HSCM Performance Indicators.

No	Dimensional	Indicators	Halal Integration
1	Financial	Accounting-based costs (production, purchase costs, waste treatment costs, transportation costs, ROA, ROE, ROS, etc.)	
		Risk mitigation based indicators (Sharpe ratio, Treynor ratio and others)	
		Cost efficiency strategy	
		Logistics dimension	
		Profit dimension	
2	Non Financial	Commitment Top &	Production process complies with halal procedures
		Organizational policy Information technology facilitates measurement of operational performance	Materials used are halal
		The company motivates employees	There is a separation of transportation between halal and non-halal products
		There is trust in every supply chain	There is a separation of storage between halal and non-halal products
		There is an exchange of information between the supply chain	There is a separation of halal and non-halal products in the process of product movement
		There is a guarantee of product safety.	There is a separation of halal and non-halal products at the airport provided by the government
		Middle management Information traceability improves business processes	There is a separation of halal and non-halal products at the port provided by the government
			The existence of a halal certification body provided by the government
			The company does not mix halal and non-halal products in the transportation system
			Products meet halal procedures
			All employees are skilled in implementing halal supply chain
			All employees have knowledge about the implementation of halal supply chain
			All employees are capable of implementing halal supply chain
	The company conducts training on the implementation of halal supply chain		
	The equipment used by the company is not used for non-halal products		
	The company does not mix halal and non-halal products in product storage in the warehouse		

## 4. CONCLUSION AND RECOMMENDATION

Halal Supply Chain Management performance indicators for the halal industry have two dimensions, namely financial and non-financial. The halal industry has a commitment to Islamic values and vision while this cannot always be measured quantitatively. Therefore, the halal industry HSCM measurement indicators must have the ability to accommodate aspects that cannot be measured quantitatively. In addition, the effectiveness and assurance of halal integrity requires commitment from top management to the bottom. The opinions of scholars and culture are very influential on the perception of Muslim consumers, therefore in building indicators must pay attention to the opinions of scholars. Further research is to implement concretely the indicators that have been produced in this research.

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