

Reviewing the Contributors towards the Performance of the New Islamic Supply Chain Model

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Abstract— This is a conceptual paper on the contributing factors of the performance of the new Islamic supply chain model in Malaysia. There are several contributors toward the model that has been reviewed. They are:- 1) Halal Traceability and Tracking Activity, 2) Halal Certification and Labelling Process, 3) Halal Facilities Segregation and 4). Halal Food Quality Management. All these contributors will be considered in developing new Islamic supply chain management model in Malaysia using robust econometric regression.

Keywords— *New Islamic supply chain model, Halal Traceability, Tracking Activity, Halal Certification, Labelling Process, Halal Facilities Segregation and Halal Food Quality Management.*

1. Introduction

According to Shariah (Islamic Law), Halal is everything permissible or lawful in Arabic, while the opposite of Halal is Haram, which is Prohibited [1], [2]. It is compulsory for Muslim to be sure the products consumed is permissible (Halal) or prohibited (Haram). In other words, Halal also refers to the anything or any actions that have permitted by Shariah Law. Thus Halal practices apply to all aspects of activities of Muslim individual more than just a religion obligation. Halal and Haram (prohibited) are often refer to food, but recently, it is also encompassing food consumption and pervades the areas, for instant logistic and supply chain. [3] stated Halal product or services do not only matter during the point of consumption or purchase, but involves every aspect

and activities along the supply chain. This implicates that Halal Supply Chain is an integral part of Halal Business. The world demand for halal food products is growing with the increasing and spreading of Muslim population around the globe. The concern of halal food is not bound by meat and dairy products, but also food ingredients and requirements and related services. Over the last decade, the study of halal food has been studied from the various perspectives. Some studies the attributes of halal products, some studies the awareness of halal products and some investigated the consumer perceptions and behaviors on purchasing halal products. Nonetheless, so far, there are lack of attempts to review the literature focus on halal supply chain practices. Hence, this study aims to review the selected Islamic supply chain practices, also to propose the new model of Islamic supply chain practices model, specifically in the food products. The finding of this study will assist the supply chain stakeholders such as food manufacturers, logistic providers and government to better understand the Islamic supply chain, directly to increase the performance of Islamic supply chain. The rest of this paper is organized as follows. Section 2 reviewed literature on the Islamic supply chain practices. Section 3 propose the framework of Islamic supply chain model. Finally, section 4 is the conclusion with suggested area for future research.

2. Review of Halal Supply Chain Practices

Presently, Malaysia is facing the tremendous grow of participation among Halal Practitioners, including Halal Service Providers, Manufacturers and Certifiers, besides Malaysian Government.

Since, Malaysia is one model of Muslim nation, and there is emerging trend of Halal Product, hence, the level of integrity of the Halal Products across the nation must be straightly practices. This is to ensure the delivery of the Halal Product is safe and clear from potential contamination. Among the Halal Supply Chain practices are; 1. Halal Traceability and Tracking Activity, 2. Halal Certification and Labelling Process, 3. Halal Facilities Segregation and 4. Halal Food Quality Management.

3. Halal Traceability and Tracking Activity

Traceability, in current supply chain management refers to the management tool that is offers the possibility to response to potential risks that arise in food and feed, and provide the chance for operators or authorities to isolate the problem by withdrawing or recalling them. This could prevent contamination and unsafe products from reaching customers. Several studies pointed out that efficient traceability in supply chains, especially food supply chains has the potential to reduce risks and costs associated with food borne disease and eliminate food safety hazards. According to JAKIM, in general, traceability is defines as the ability to verify the history, location or application of an item by means of documented recorded identification. The elements of traceability include of product, process and customer traceability. A study of meat (Halal) supply chain, traceability in meat (Halal) supply chain comprise a vigorous area with a significant impact has been done by [4]. Traceability refer to the ability to track and/or trace product flows in both fresh production and in industrial distribution chain. Traceability implies that products are uniquely identifiable that at critical points in the production and distribution processes, the identity of product flows are logged and that the information is systematically collected, processed and stored. While tracking is the ability to follow products in real time. In monitoring a distribution process, one way to know the current location of a product is reconstructing the historical flow of a product from stored records. Usually, when a consumer encounters a defective product, one way to know is the history of that product. The analysis of registration and production records in a traceability database is required. Thus, the traceability and tracking system is refers to a

system which provides a set of database that relate to both the location of food and food ingredients along the production chain. Therefore, the study suggests using Radio Frequency Identification (RFID) as one tools of tracing and tracking technology in Halal Supply Chain. Motivated by the earlier study, [5] has used and defined traceability and tracking system as one technology that is able to trace the history, application or location of what is under consideration of the standardization in International Organization (ISO). In the Halal Supply Chain, the study found that Halal Supply Chain Practitioners, e.g. firms should taking initiative on RFID to increase performance in Halal Supply Chain, because it is important for production and management to ensure that information is managerially useful. Contrary to the study by [6], that has done a literature study of how knowledge-management can be used as an effective tool in traceability system, besides RFID. The finding of the study emphasize that the integrated between knowledge-management and RFID is more efficient tool than RFID alone in the traceability system, particularly in term of documentation and recording. This is because knowledge-management features are more comprehensive than RFID. Additionally, other study using a comprehensive literature review by scrutiny in-depth has been done by [7]. The study highlight that the efficiency of traceability system can be improved by adding orienting-management policies in Halal Supply Chain management. The study also point out that the application of traceability system cannot be implement or adopt alone in the Halal Supply Chain management. Thus, it is suggest that the orienting-management policies should be compliment with other traceability tool, such as HACCP Certification, which may lead to significant improvement for the entire Halal Supply Chain performance. Nonetheless, recent study by [8] has explore the benefits of traceability system in Halal Food Industry in Western Australia. Government department has been actively promoting organization in adopting traceability system, because it is provide transparency information of the product specifically food. It can be conclude that improvement in Halal transparency in the production chain of the Halal Food Industry is important in the period of rapid technological change and highly competitive market.

3.2 Halal Certification and Labelling Process

Apart from Malaysia, Singapore, Thailand and Indonesia are among the countries that have their own Halal Certification body. In the Malaysia context, the Halal Certification and Labelling (Logo) are issued by a body that is authorized by the Malaysian government. Department of Islamic Development Malaysia (JAKIM) is a body that plays significant role in Halal Certification since 1994 to 2008. The Halal Certification is issued according to three categories of application. These categories are 1) Product/ Consumer Good, 2) Food Premise and 3) Slaughter House/ Abattoir. The Halal Certification will be awarded if the basic principle and procedure are complied and revoked if not complied. The basic inspection in term of product processing, handling storage, equipment and distribution is mandatory before the Halal Certification is approved. In a study of certification scheme, although [4] defines certification as the voluntary assessment and approval by an accredited party on an accredited standard, some other studies claims that it is "partial-voluntary" because of, for example, it is consumer requirement, price disadvantages and risk financing organization. The purpose of the certification process is to reach a defined performance and to make this known to stakeholders that is include consumers, governments, risk financing parties and society. As for the current status, [4] found that the certification standard constantly evolve. For the reason of credibility, supply chain increasingly endeavor to base certification on accredited standard. Product-market organization provide an affordable method for supply chains consisting of multiple small entities to collectively attain accredited certification, in contrast to certification of each small unit individually. Additionally, in practices, standard used for certification go further than the legislative provisions. Certification also becomes more important due to thoroughness become increasingly vital, not only with regard to food safety issues, but also in the field of livestock epidemics. In 2009, a study by [9] has been done in providing an understanding of Halal Certification System in Malaysia. The study point out that the current practice of Halal Certification in the value chain is constructed based on a standard format with three elements namely processing, information and actors. First, in the element of process, Halal Certification process including five steps that is application/document approval, followed by premise inspection, next is panel committee/ appeal committee, then issuance of Halal Certification and lastly monitoring and enforcement. Current practice

shows that the process is not a problem but the implementation of the task at each process will create problem if the procedures are dissatisfied.

For this step, other study by [9] suggested a web-based information system namely Manufacturers Self-Evaluation Support System (MAHSESS) that potentially improved the Halal Certification process by helping manufacturers to carry out the self-evaluation of the halal status of their product before submitting the application. Information is the second element in the current practice of certification process. Information is significant because, if without reliable information, the decision making might be ambiguity. Lastly is the actor's element. The actors is referring to the individuals who are involved in the Halal Certification process. These actors are responsible for different and specific task in Halal Certification process. According to the tabulated data collected from the interview, there are several issues as such lack of expertise with little experience lead to slow processing, unsystematic filling system contribute to the inefficient operational, premise inspection may take several days to be completed and delay in receiving lab test result. It is suggested that with a good understanding, cooperation and training for internal actors, the Halal Certification process could be improved and efficiency could be achieved. In contrast to the studied by [10] in the study regarding restaurant manager and Halal Certification in Malaysian restaurant. The study has define Malaysian Halal Certification as a total quality health and sanitary system. At the current practice, it is involve adopting procedure for slaughtering processing and other related operations, as outlined by Islamic rules as it certifies raw materials, ingredients and products based on quality, sanitary and safety consideration. Recent study by [11] using audit and laboratory analysis as one of the tool in the process to get the verification and Halal Certificate in food supply chain. The study found that laboratory analysis is not often used to prove the absence of haram ingredient, although it is efficient. Second, by extensive literature review, the study found that there are several of Halal requirement and Halal Assurance worldwide that makes the verification process long and complicated, but no standard certificate or labelling that makes Halal Certified food abstruse. Besides the certification process itself, Halal Certification on packaging and labelling on the product is also essential in Halal Food Industry. The process of packaging and labeling the products must be considered to create a genuine and healthy Halal Products. In food labelling, hiding any facts, such as the source of the ingredients is prohibited in Islamic jurisprudence.

Hence, the information of the ingredient of the Halal Food must be clear, accurate, and complete, including incidental or hiding ingredients that may affect the halal status of the products. So, the authorized Halal Certification Logo and organization contact details must be shown. There are several issues related to Halal Logo on packaging and labelling, and one of them is the packaging material. Packaging material and containers are essential to keep the product safe and presentable. Packaging for Halal Food must not be made from non-halal substances and if it made from raw materials of animal origin, then it is require proper Halal Certification on the material [12]. Also, handling of packaged Halal Food Products should not be mixed with those used for non-halal products [13]. Different to the Halal Certification process at food premises, a study was conducted at EDC-UUM aimed at investigating the influencing of human factors affecting the Halal Certification process at food premises. Halal Certification is a document issued by the Islamic organization, which verifying the products meet the Islamic dietary guidelines.

Current practices shows that Halal Certification process at EDC-UUM food premises can be successful in it's implementation but need to develop their management responsibility and staff policy accordingly. In the context of management responsibility, organization has to increase halal awareness among employees and ensure Halal Policy is understand by everyone, avoid haram materials to enter the premise and conduct internal halal audit. Meanwhile, staff policy context, the organization need to ensure that the Halal Policy is shown adequately for reminder, there is good record on food handler training and the staff has undergone the typhoid injection accordingly [14]. Yet, there are several issues in the current practices of Halal Certification, as stated in the study by [15]. In the study, the issue has been highlights in Malaysian Halal Certification system is inefficiency and conflict of authority and governance between federal government and state government. This problem is due to the segregation of authority between federal government and state government in Malaysia.

3.3 Halal Facilities Segregation

The physical handling of the Halal Products throughout the supply chain need to be formulated to extend the Halal Supply Chain performance [3]. Halal Facilities Segregation is one of the physical handling that is important to assure that all possible contamination are eliminated during the production process. The purpose of Halal Facilities Segregation is to make sure the Halal Products not

be in direct contact or mixed with the non-halal products or elements during the supply chain process to preserve the halal status. Various Halal Standard and Certification standard have repeatedly pointed out the need to Halal Facilities Segregate the Halal Products to prevent any intentionally or unintentionally, direct or indirect contact with elements that can defeat the halal status [16], [17]. From the production stage to the consumer, it is important to ensure that Halal Products are separated from any potential contamination of non-halal materials. Therefore, during the process of preparation, packaging and storage, it is important to have dedicated facilities for the use of Halal Product only. Thus, the manufactured products should be free of contamination and should not have direct or indirect contact with non-halal materials [18]. To facilitate the Halal Products, specifically food products, it is highlighted the need for dedicated facilities to transport, store and market the Halal Products. Dedicated facilities is refer to the production premises, machineries, tools, material handling, warehouse or storage area, transport and containers to minimize the possibility of Halal Products being mixed with non-halal products [19]. According to [11], all Halal Food that is stored, transported, displayed, sold and served shall be segregated at every stage to prevent from being contaminated with non-halal products. Proper storage, warehouse and transportation would increase and preserve the quality of the Halal Products [20], [3]. The purpose of dedicated storage, warehouse and transportation is to minimize potential cross-contamination, where they should not mixing halal and non-halal products on one pallet or load carrier and refrigerator container. Hence, dedicated storage, warehouse and transport are significantly important in halal (food) supply practice [17, 21, 22].

3.4 Halal Food Quality Management

In order to assure quality of the Halal Food, material handling is important process in the manufacturing flow, where Halal Food Products requires different procedures in term of handling, storage and product management. All equipment used for Halal Food Products for all unit operations should be solely dedicated to Halal Food Product only. In other words, tools, machines and processing aids used for Halal Food Products should be designed and constructed only for Halal Food Products. If they were used for non-halal products or in contact with prohibited najis, it must be washed and ritually cleansed as require by Islamic Law [23]. Cleanliness in Islam emphasized the concept of cleanliness in food. In the aspect of

food supply chain, one of the important element in food quality is cleanliness. Cleanliness and sanitation of the products are considered to be the foundations of Halal Food preparation. In handling Halal Foods, the premises and food preparation process must be kept clean and free from the elements that may cause infestation or flies, rats and other such pests [24], [25]. In response to the emergence of the Halal Food industry that become significant, training is required among the stakeholders; workers and professionals, to develop a sustainable pool of knowledge, and management should be able to ensure everyone is well-trained and well-understand about the Halal Food Industry [28]. Each organization implementing Halal Supply Chain must ensure the internal stakeholders are aware and understand the halal requirement to minimize the probability of human errors in the production of Halal Food Quality. The purpose of Food Quality in Halal Supply Chain management is to minimize the possibility of repatriation of the products by customers. Generally, food product are susceptible to any contamination, therefore, the well-knowledge and well-training employees is needed to handle the manufacturing process. Hence, the Halal Food Quality can be certain [26].

Other study by [27] also agreed that the requirement for training in the Halal Food Industry and Halal Logistics is vital to ensure the consumers experience a whole Halal Food Supply Chain. Besides that, the training is important to ensure that integrity is delivered throughout the supply chain and to keep pace with the world demand for Halal Food Products. Further, in the study by [17] halal collaboration could be vertically and horizontally. The vertical and horizontal collaboration could provide useful strategies in controlling Halal Food Quality, besides improving customer's confidence in Halal Food Product. The collaboration in Halal Food Supply Chain are used to better organize and upscale production of Halal Food Products. Horizontal collaboration is the collaboration between companies in the same industry, can be facilitated through direct collaboration between similar companies or intermediary such as logistic provider or trader, allowing for better sharing information, pooling resources and bundling of halal food volumes. As a conclusion, proper material handling and cleanliness results in healthy, clean and wholesome food. This is line with the concept of Halal Food which is physically need to be clean, safe to consume and protected from any contamination. Hence, food quality should be applied throughout the food supply chain process from primary production to the final stage for consumption [25].

A summary of the halal supply chain practices

reviewed articles is shown in the Table 1. Thirty two (32) articles were reviewed and 72.8% of the articles studied halal certification process, 43.7% studied facilities segregation, 28% studied food quality and 25% studied traceability and tracking system as the important practices to increase the performance of the Islamic supply chain.

Table 1. Summary of Halal Supply Chain Practices

Number	Authors (Year)	SCM Practices			
		Halal Traceability and Tracking Activity	Halal Food Quality	Halal Facilities Segregation	Halal Certification and Labelling Process
1	Van Amstel (2002)				x
2	Meuwissen, Velthuis, Hogeveen, and Huirne (2003)	x			x
3	Gowen Lii and Tallon (2003)		x	x	x
4	Riaz & Chaudry (2004)		x	x	x
5	Shafie & Othman, (2006)		x	x	x
6	Nor et al., (2008)			x	x
7	Bonne & Verbeke (2008)			x	x
8	Cheng et al., (2008)	x			
9	Noordin, NH et. al (2009)				x
10	Khan K et al., (2009)			x	x
11	Bahrudin, Illyas, and Desa (2011)	x			
12	Tieman (2011)	x		x	x
13	Alam and Sayuti (2011).				
14	Samsi, Ibrahim, and Tasnim (2012)	x			
15	Van der Spiegel et al. (2012)				x
16	Nakyinsige, Man, & Sazili, (2012)		x	x	x
17	Zannierah Syed Marzuki, Hall, and Ballantine (2012)				x
18	Tieman, van der Vorst, &		x		x

	Che Ghazali, (2012)				
19	Pahim, Jemali, and Mohamad (2012)		x	x	
20	Razali MR et. al (2013)				x
21	Dabbene, Gay, and Tortia (2014)	x		x	
22	Ngah, Zainuddin, and Thurasamy (2014)		x	x	x
23	Poniman, Purchase, and Sneddon (2015)	x			
24	Tieman (2015)		x	x	
25	Ab Talib, Abdul Hamid, and Zulfakar (2015)	x		x	x
26	Aigobogun et al (2015)				x
27	Karia et al (2015)				x
28	Rasi et al (2017)				x
29	Ahmad N & Shariff (2017)				x
30	Zailani et al (2017)		x	x	
31	Soon et al (2018)				x
32	Qurtubi & Kusriani (2018)				x
	TOTAL	8	9	14	23

4. Conceptual Framework

Based on the literature review, this study proposes the new Islamic supply chain model to increase the performance of the halal supply chain, specifically in the food industry. The proposed new Islamic supply chain model illustrates that practices namely Halal traceability and tracking activity, Halal certification and labelling process, Halal facilities segregation and Halal food quality management directly increase the performance of Islamic supply chain performance as shown in Figure 1.

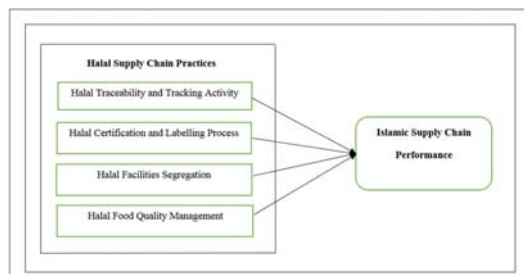


Figure 1. Conceptual Framework of Halal Supply Chain Performance

5. Conclusion

Although the foundation of Halal supply chain is to eliminate the element of contamination between Halal and Haram, the Muslims consumer requires a higher assurance of their Halal food. Therefore, the new Islamic Supply Chain model can be characterized as robust supply chain that address the vulnerability of Halal supply chain process and practices. Besides that, the new Islamic supply chain model also assist supply chain stakeholders to better understand the supply chain process and practices to the entirety of the supply chain in ensuring their flow are in compliance with Shariah and meet the requirement of their target Muslim market. Further empirical research is needed to be better understand of the Halal supply chain practices to increase performance of Halal supply chain. Also, there is a need for a new Halal Supply Chain model that is able to describe and optimize the whole process of Halal Supply Chains. This would help the stake holders that are the manufacturers, logistic providers, authorities to move towards more efficient and effective Halal supply chain process and practices.

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