

# Halal Traceability in Enhancing Halal Integrity for Food Industry in Malaysia – A Review

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**Abstract** - Food safety and its quality assurance are among the concerned issues to many people around the world. They are regarded as important issues to all stakeholders in the food industries. The issue of food safety is treated as similar issue with food integrity. Food integrity includes food safety, health, nutritious and quality. After all, Halal concept is not just limited to food safety and its quality but also include the process control, packaging, storage, and delivery. Since the authenticity of halal food has raised concerns among Muslims consumers, the integrity of the halal food must be monitored so that consumers can be satisfied with the authenticity of halal products. Customers from all around the world, not only concerns on food ingredients whether permissible or not, but want to know about all the activities involved in the food supply chain. The question which is normally asked is whether the integrity of halal food products can remain Halal throughout the supply chain. In short, the integrity of the food products should be maintained to meet the intent of the Halal. That's when we need to make proper halal, traceability is needed to monitor throughout the supply chain. The objective of this paper is to review current practices in Malaysia Halal Food Traceability with regard to Halal Integrity. The study also reviewed the food recall procedures issued by the Department of Islamic Development Malaysia (Jakim).

**Key Words:** Halal Food Integrity, Halal Traceability, Halal Product, Food Recall

## 1. INTRODUCTION

The quality of people life will be improved with the availability of food needed for nourishment and sustenance (Zailani *et al.*, 2010). Food is seen in many useful ways to promote health, nutrition, well-being, and physical fitness. Food which is eaten by Muslims must meet Islamic dietary guidelines generally known as Halal. Halal word comes from the Arabic meaning lawful, justified and allows to be consumed under Islamic law. Halal is not just about the slaughter of animals, the use of alcohol, the sources of food

and beverages, but it is about standards and processes. It is about safety, cleanliness, reliability and quality assurance (Teng *et al.*, 2013).

In today's world, business in Halal industries is the fastest growing business worldwide. It is an emerging market force that attracts Muslims and non-Muslims with healthy, hygienic and contamination-free principles in food production (Bahrudin *et al.*, 2011). Halal concept has received increasing attention due to the fact that the demand for halal food is growing every year as a result of the increase in the Muslim population worldwide, which is about 1.8 billion. In 2010, the Halal food market is up about 16% of world food trade and is estimated to be worth more than \$ 500 billion a year (Talib *et al.*, 2010).

Consequently, the trend has caught the attention of all countries to generate more halal producers. The trend of people choosing a healthy lifestyle, especially with regard to the food have put Halal food products, that have been known as clean and unharmed products under the spotlight (Talib *et al.*, 2010). Halal food has the potential to go to wider market of the world population, which is not only for the Muslim consumers (Zulfakar *et al.*, 2012).

Malaysia is already well known as a successful country in the halal hub world since 1997 when Malaysia was considered a model for the development of the Halal food industry by the Codex Alimentarius Commission when adopting the Codex general guidelines for use of the term Halal in Geneva. Malaysia is seen as the most successful examples in the world where a single Halal standard used throughout the country (Ibrahim *et al.*, 2012). Malaysia is a modern Islamic country where more than half of the 28 million people have embraced Islam as their religion. Halal is an Islamic religious guide to how Muslims should live with the food they prepared, their personal relationships and their social progress. In Malaysia, halal is a concept that is accepted by all, by both Muslims and non-Muslims. The majority of businesses in Malaysia is to sell products or offer halal certified services (Bahrudin *et al.*, 2011).

However, Malaysia's claim to be one of the successful Halal hubs in the world was being challenged due to several

findings on Halal Food Integrity issues. The findings were shocking and appalling as some Halal Industry players and stakeholders are against the rules and regulation set by the Halal authorities. The issues pertaining to Halal food Integrity are highly concerns by Muslim consumers in Malaysia where they began to question the authenticity of Halal food products produced by food manufacturers. This review is to discuss on how Malaysia is trying to enhance the Halal food integrity in order to protect Muslim consumers in the market. The objective of this review is to study the contribution of Halal Traceability in enhancing the authenticity of Halal food produced in Malaysia. This review will discuss the Halal Traceability in the context of Halal Food Supply Chain and followed by its purposes to enhance Halal Integrity.

## 2. Halal Food Integrity

Halal Integrity means that the product is still Halal from upstream to downstream supply chain, free from any activity that may violate Halal status, intentionally or unintentionally. Today, the creation of food is a complicated process. Food has undergone many changes hands, as well as geographical location to get to the final state. For example, the raw material can be obtained in Venezuela, processed in the United States, sent to Mexico for production, and the final product is sold in Canada.

Chocolate is made from cocoa beans that are essentially handpicked from the plants. Open nuts, fermented and dried by hand. After that, they be sent to a processing plant that converts them into liquid, powder, or any other form of ingredients for future use, it also means that they change hands and get exposed to a variety of materials manufacture and processes. Each new ingredients, even if used in minuscule amounts, should be checked for *halal-ness* of it.

*Halal-ness* aspects or a term of halal integrity is one of the main properties and unique feature of halal products. When relate with others, halal products are produced according to the religious needs based on *halalan toyyiban* (in accordance with the principles of Islamic laws and quality of health) concept. This concept requires products to meet the critical elements of *toyyib* and *halal* that is of high quality for human consumption. From the Islamic point of view, this is a holistic concept that not only focus on the physical characteristics of the product but also emphasize moral behavior involves in the entire supply chain.

### 2.1 Halal Food Product

A product is a physical collection, services, and symbolic features that generates satisfaction or benefit to the user or purchaser (Cuyvers *et al.*, 2000). Therefore, the adaptation of product that can involve three main components namely; physical products (i.e., design, quality, color, size, style and presentation), product packages (i.e., branding, labeling and trademarks) and auxiliary services (i.e., warranties, spare

parts and after sales services, instruction manual, delivery and installation).

Since halal food product is attached to the values of Islam, development of the product must be guided by the principle of legality, availability, accuracy and purity of the production process must be innocent, beyond suspicion and ensured purity from beginning to end (al-Ukhuwwah, 1938). For example, in adopting branding, adaptation of brand name that associated with halal identity is perceived as important so that the issues such as unintended meaning, pronunciation difficulties or brand in common with non-halal food products should be avoided, as inappropriate use of the name may violate halal identity images. According to Hazair (2007), it is awkward for manufacturers to name their food products after the haram or forbidden foods such as ham, chicken, bacon halal meat or alcohol-free beer because it can be confusing to the Muslim community. The halal market is sensitive to these issues and might prefer halal products with the correct brand name as they relate to the concept of halal.

In Malaysia, Halal food products are food permitted under the Shariah law which meeting below conditions.

**Table -1:** Halal Food Requirement according to Shariah Law

	Required Conditions
a.	Does not contain any parts or products of animals that are non-halal to Muslims or products of animals which are not slaughtered according to Shariah law
b.	Does not contain any ingredients that are Najs according to Shariah law
c.	Is safe and not harmful
d.	Is not prepared, processed or manufactured using equipment that is contaminated with things that are Najs (filth or unclean) according to Shariah law
e.	The food or its ingredients do not contain any human parts or its derivatives that are not permitted by Shariah law
f.	During its preparation, processing, packaging, storage or transportation, the food is physically separated from any other food that does not meet the requirements stated in. Items a., b., c., d., or e., or any other things that have been decreed as Najs (filth or unclean) by Shariah law

Packaging for halal food products should take into account particularly in materials, designs and size to suit the halal specification to ensure the protection of halal product from cross- contamination and non-halal material. In addition, the design of packaging for halal products must also be taken into account on the design and image that does not stir the sensitivity of halal issues. The use of packaging materials and design must comply with Shariah by using materials that are not only permissible but also to ensure the use of the image on the packaging does not violate the representation of halal concept.

Adaptation to the labeling may also be necessary to fulfill the relevant information in accordance with halal

expectation based on clear instructions provided on the label. Market with high expectations on halal integrity may require more information on halal-related information to be disclosed on product labels which may include the use of food such as grain, grass, anti-biotic free or animal by-products, types of stunning used, electrical, captive bolt, non-stun, the method of slaughter by hand or mechanical and details of the certification body to issue the certification.

In addition, the selection of a recognized halal logo should also be taken into account in terms of interest seen at the halal integrity in target markets because reliable halal logo will provide clues to the status halal authenticity. At present, there are hundreds of listed certification bodies implementing halal standards and very little mutual recognition exist between them (Sungkar and Hashim, 2009). Therefore, the selection of halal logo which is recognized is critical and important to improve consumer confidence and to ensure the product performance in target markets.

Thus, the development of halal products must hold both physical and ethical products as required by these principles. According to Sharia (Islamic law) rules, the physical integrity of halal products demanding halal toyyiban concept and basic needs to be met that includes halal-ness, cleanliness, safe, healthy and nutritious. Meanwhile, the ethical integrity of halal products requires the establishment of appropriate business concepts such as fair trade, animal welfare, environmental friendly organic and non-riba financing (Islamic finance) that are consistent with Islamic business ethics. From the industry perspective, the establishment of farm-to-fork concept of Halal Standard (such as the MS1500: 2009) also emphasizes both physical (i.e. objects or items used) and ethical aspects (i.e. right conduct which covering the aspects of processing, handling, packaging, labeling, warehousing, transporting, distributing, financing, marketing, selling, etc.). Thus, the basic dimensions of Halal integrity include both the physical and the ethical concept of Halal (Hassan and Bojei, 2011). Based on this study, halal-ness, cleanliness, safe, health and nutritional properties represent physical integrity are important in ensuring basic halal-ness status.

## 2.2 Halal Food Supply Chain

The supply chain is a global network of organizations working together to improve the flow of material and information between suppliers and customers at the lowest cost and highest speed. Its objective is customer satisfaction (Govil and Proth, 2002). Supply chain is also defined as the movement of material as it flows from the source to the end customer. Supply chain including purchasing, manufacturing, warehousing, transportation, customer service, demand planning, supply planning and supply chain management. It consists of people, activities, information and resources involved in moving a product from the supplier to the customer. Based on Turban conventional supply chain framework, supply chain begins with raw materials, inbound logistics, warehousing, production, storage, outbound

logistics, marketing and sales and customer service (Turban, 2008). The conventional supply chain flow does not implement technology and Shariah law at every stage.



Fig - 1: Conventional Supply Chain Flow

Halal Supply Chain on other hand holds the same definition but with the addition of Shariah element, where the law of Islam provides a guideline for the proper Halal process. In this scenario, each stage of the supply chain process will be carried out or add in based on a Shariah law. For example, at the level of raw material, the slaughtering session was conducted in compliance with Islamic rules in which it must be slaughtered by a Muslim, began with bismillah and using a sharp knife (Al-Qardhawi, 1993). In short, the entire supply chain processes and activities must be certified as Halal compliant.

## 2.3 Halal Food Integrity Issues

Food safety and its quality assurance are among the important things to many people around the world. Several decades have shown that people have put such issues above everything else primarily because of changes in their eating habits, values, and beliefs (Zailani *et al.*, 2010). Only at the end of 2000, Muslims realize that the halal concept is not only limited to food but also including the process control, packaging, storage, and delivery. In other words, if the food was not handled or stored properly, it is not considered halal (Shah Alam and Mohamed Sayuti, 2011).

In May 2014, the country was shocked by the disclosure that two Cadbury chocolate products, Cadbury Dairy Milk and Cadbury Dairy Milk Hazelnut Roasted Almond, containing porcine due to random testing by the ministry on the product taken from the shelves in Perlis and Kedah (NST, May 2014). The shocking revelation samples contaminated chocolate has angered Muslims, said the suspension of purely Halal certificate for the product is not enough.

It was also reported that the finding of non-Halal Deoxyribonucleic acid (DNA) in the ingredients produced and sold on the premises of Halal certified that openly promotes and brings together two provisions of Halal and non-Halal products despite of its Halal presentation, the application of false halal logo premises or packaging of the product and the use of self-produced halal logo to mislead consumers. Furthermore, the easy access to unreliable online information cause misunderstanding and misinformation among Muslims in Malaysia, creating a wave of distrust and uncomfortable emotions and perceptions of the overall local Halal system. Consequently, consumers are not convinced that every single food product is served on their plates is Halal (Ibrahim *et al.*, 2012). This including issues on food safety and food health related such as e-coli and mad cow disease to name a few.

Halal brand, trademarks, and logos which hold no credibility or authenticity may lead to possible doubts of customers. There are findings that reveal the activities undertaken by food manufacturers fabricating Halal logo on their food packaging to appeal to Muslim consumers to buy their products, despite the fact that the food was made in the premises they are not approved by the authorized body (Anir *et al.*, 2008). The debate on the detection of food ingredients sold in the market is not only the worries but Muslim consumers in Malaysia are also concern about the way certain foods are prepared and how they are packaged.

The issue of product (food) integrity is equivalent to the issue of products (food) safety because according to Beulens *et al.* (2005), food safety is currently regarded as an important issue for all stakeholders in the food production, food quality, integrity and related services. Food integrity issues including food safety, healthy, nutritious and quality. According to Fadzlillah *et al.* (2011) as more food available on the market, the authenticity of halal food has raised concerns among Muslim consumers worldwide.

The integrity of the halal food must be monitored so that consumers can be satisfied with the authenticity of halal products. Customers will not only be asked for halal products but also the halal process (Bonne and Verbeke, 2008). As a result, customers choose to buy halal products, particularly for the halal process. They not only concerns about food ingredients whether it is halal or not, but also want to know about all the activities involved in the supply chain whether the products they buy are really halal all the way (Jaafar *et al.*, 2011).

Their concerns are legitimate as most food products are now sourced from various parts of the world. It is not just because of the distance and the number of food handlers should go but also whether the validity of the Halal status of the original product itself is also concerned. The question is whether the integrity of Halal food products can be guaranteed and may remain Halal throughout the entire supply chain process in the food trade scenario. Thus, the integrity of the product should be maintained for the purposes of the Halal.

### 3. Traceability

According to the International Organization of Standardization (ISO), traceability is defined as the ability to trace the history, application or location and a series of recorded identifications. Traceability is defined by the Codex Alimentarius as forward and backward tracking with a paper or electronic devices. Others define traceability as having the capability to follow and document the origins and history of a food product; from genetics to dinner plate, the tracing involves identifying all the procedures and practices that affect the life of the product delivered and documented and available to the buyer or any other supply chain participants to see (Bahrudin *et al.*, 2011). According to Gellynck and Verbeke (2001), tracing is the ability to track food ingredients and back along the production chain, from the end user to the producer and supplier of the producer. Tracing is to find the history of the product, for example to provide a source of contamination while tracking refers to the ability to track food ingredients forward along the production chain. Tracking can be used to locate and withdraw products that may pose a serious risk to the health of consumers.

**Table - 2:** Authors Summary on Purpose of Traceability

Authors	Purpose of Traceability
McKean (2001)	To increase the transparency in production chain; more transparency is likely to increase consumers trust in food safety due to the increased amount of information about among others; production processes, food safety controls, animal living conditions and use of medicines. Increasing transparency is also likely to enhance the actual level of food safety as a result of the improved information flows throughout the chain.
Regattieri, Gamberi et al. (2007)	To provide a safer food supply and connect manufacturers and consumers
Pettitt (2001)	To reduce the risk of liability claims (counterattack liability claims and to recoup claims from other participants in production chain); to improve recall efficiency (the quality of recalls that reduce the cost and improve the image of production chain)
Meuwissen (2003)	It promotes transparency along the supply chain which reduces the potential of products recalls as well as liability claims towards the manufacturers
Zailani et al. (2010)	Traceability is also a communication and tracking mechanism to ensure information is accessible along the supply chain

In order to achieve the concept, traceability technologies need to be introduced that can track and trace, forward and

backward history data in the supply chain process. The aim of this study is to review the current practices of Halal Food Traceability system in Malaysia that can support the entire process of Halal Supply Chain with tracking and tracing technology. (Ibrahim *et al.*, 2012).

### 3.1 Halal Traceability

Halal industry involves operating the farm to table and this has led to the development of new relationships in the value chain, particularly in the field of information technology. Halal traceability emerged as an important area in the global Halal market. An effective traceability system in Malaysia is important to reduce the risk associated with halal food which can disrupt Malaysia's international Halal trade. It is to function as a communication tool to make information available throughout the supply chain where it provides a set of data about the location of food and food ingredients along the production chain and the data associated with both where and when issues. The key to an effective traceability system is good communication and management between the connections along the supply chain. In particular, tracing is the ability to trace food ingredients back along the production chain, from producer to end-users and also to supplier producer (Zailani *et al.*, 2010). Tracing aims to find the history of the product, for example to provide a source of cross contamination (Meuwissen *et al.*, 2003). On the other hand, tracking is the ability to follow the path set by the unit and/or group of downstream products through the supply chain as it moves between trading partners. Halal traceability can be established with one goal in mind in which to improve transparency in the production chain. More Halal transparency may increase consumer trust in food Halalness because of increased information on, among other things, production processes, control of food safety etc., would also increase the actual level of food Halalness as a result of good information flow along the chain (Zailani *et al.*, 2010).

**Table 3:** Proposed Shariah Law and Halal Traceability System on Supply Chain

Supply Chain Stage	Shariah Law Implementation	Halal Traceability System
Raw Material	Livestock being feed with good, clean, permitted and legal nutritious food. Slaughter according to Islamic guidelines	Monitoring System
Inbound Logistics	Monitoring the flow of inbound vehicle (truck/container). If needed, doing <i>Samak</i> to certain truck or container.	Monitoring System Inventory System
Warehouse	Monitoring halal product	Monitoring

	from mixed with non-halal product. (ex. Segregate by zoning)	System Inventory System
Production	Repackaging by production house, using halal equipment and worker practice the concept of hygiene permitted by Islamic law	Monitoring System Inventory System
Storage	Monitoring the halal product from mixed up with non-halal products	Monitoring System Inventory System
Outbound Logistics	Monitoring the flow of inbound vehicle (truck/container). If needed, doing <i>Samak</i> to certain truck or container. Need to do segregation in the container if there is non-halal and halal product	Monitoring System Inventory System
Retails and Shop	Maintained the freshness and cleanliness and product safety to be sold	Monitoring System Inventory System
Customer Service	Look up for any complaint from customer. To enhance/improve service quality	Inventory System

### 3.2 Halal Food Recall

According to Codex Alimentarius, food recalls can be defined as the act of removing the food from the market at any stage of their supply chain due to reasons related to safety and quality. The main objective of food recall is to protect public health by ensuring that a) there is a rapid removal of unsafe food from all possible levels of the supply chain b) consumers concerned and related stakeholders are informed c) the food under recall can be taken, destroyed and reprocessed (FAO/ WHO, 2012).

The beginning of food recall process can be triggered by; reports from public health officials, consumer and industry complaints, outbreaks of foodborne disease, the competent authority inspection and testing program and sampling, information from government departments other than statements of international partners and concerns that the company initiated obtained through its own sampling (CFIA, 2012).

In Malaysia, the Ministry of Health (MOH) plays a major role in food recalls. Each regulatory agency established at the entrance to make sure that all products entering

Malaysia must meet their needs. Although there are some variations in the implementation of the department to department, the aim is to prevent unsafe food from entering the food supply chain (Kal-kausar *et al.*, 2013).

**Table -4:** Government Supporting Agencies for Food Recall

Agencies	Legislation	General Function
MOH	<ul style="list-style-type: none"> <li>Malaysian Food Act 1983</li> <li>Food Regulation 1985</li> <li>Food Hygiene Regulation 2009</li> </ul>	Play a major role in food recalls
MOA, DVS	<ul style="list-style-type: none"> <li>Animal Act 1953 (Revised 2006)</li> <li>Animal regulation 1962</li> <li>Customs Act of 1967</li> </ul>	Play an important function in food recall system. Mostly focus on the farm and import of meat products

### 3.3 Relationship between Halal Traceability and Food Recall

Halal traceability in this context means an ability to track any food, feed, food producing animal or substance that will be used for consumption, through all stages of production, processing and distribution (Arienzo *et al.*, 2008). Halal traceability system in this context can help the food producers to determine the location of the product in the supply chain since the system retains and traces the information related to history, application, use and location of the product. The system must be able to track a food item forward and backward through the supply chain and automatically can help to control costs by reducing the number of product recall or product being destroyed (Lang *et al.*, 2004). Rickard (2006) indicates that when product is received, information regarding product type, lot number and the name of the shipping and transporting companies will be captured with a bar code scanner or other Halal food tracking system and then be recorded. There is important for each manufacturers and distributors to develop their traceability policies as key information to find and remove product from the marketplace (FDS, 2012). According to Zailani *et al.* (2010), traceability and tracking systems serves as tools for communication, making information available along the supply chain. Therefore, it is important for companies to have a robust recall plan in operating to reduce such negative impacts. In addition to having a recall, it is critical that the plan is tested well in advance to ensure efficient, quick and timely crisis prevention and public safety.

### 3.4 JAKIM's Procedure of Halal Product Recalls

There are two actions taken by Jabatan Kemajuan Islam Malaysia (JAKIM) if companies make a serious offence towards Halal procedure. These two actions are suspension or withdrawal of Halal certificate and recall of the Halal product. Suspension and revocation of Halal certificate can only be made against the company which carries Halal certificate of Malaysia that made serious mistakes. Meanwhile, JAKIM uses nine procedures below for the withdrawal of a product from the market.

**Table- 5:** Procedure for Product Recalls Adopted by JAKIM (JAKIM, 2011)

Step	Procedures
1.	The company must have a written procedure on the recall system to ensure the introduction of product recalls from the market. JAKIM will withdraw products for specific reasons such as to detect illegal elements, fosterage, or contamination in the product. JAKIM also can start a recall if he received complaints from consumers about the Halal status. JAKIM will also act on the instructions of other authorities concerned
2.	The examiner should ensure that the company withdraws all its distributed products in batches (group) either from the agent or distributor
3.	The examiner should ensure that the company is starting to initiate the recall once evidence in the case (first procedure)
4.	If the inspector is not satisfied with the action of recalls made by the company or find that the product is still on the market, the company will be required to make a public announcement. If the company refuses to make a public announcement, JAKIM should do so
5.	A copy of the order recalls will be sent to the Ministry of Domestic Trade, Cooperatives and Consumerism Ministry (Ministry of Domestic Trade and Consumer Affairs / Ministry) and the Ministry of Health (MOH) or other agencies concerned
6.	If the company refused to follow the order, then JAKIM Halal Certificate should be withdrawn, or make a public announcement and ultimately enforcing the law on the company
7.	The inspector shall ensure that the States to take action against the withdrawal of a product by using methods that are appropriate or available for disposal, repair or re-process.
8.	The examiner shall make a review of records withdrawn products in terms of product, brand name, the date, the process, the product, the method of product recalls and recall actions.
9.	Any act of destruction of recalled product should be supervised by JAKIM officer/ JAIN or related agencies.

#### 4. CONCLUSIONS

An effective traceability system of Halal food industry needs the local halal supply chain to be developed and modelled as an important aspect for the industry to survive in the global halal food market and industry. Halal traceability allows industry stakeholders to detect and track vital information at each stage of production and allows to reduce the withdrawal of the product and the number of cases of compliance found by authorities will result in a negative impact on the growth of this industry. Halal Traceability implementation can reduce the cost of removing the product from the market. Food manufacturers can implement product recall management that can effectively ensure the safety and halal status of food products in their own approaches. Preventing the occurrence of product recalls, especially in terms of halal assurance, will lead to the level of customer confidence in the integrity of Halal industry. This in turn will increase the positive development of the halal hub in Malaysia.

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