

A Review of Regulatory Framework for Halal Meat Supply Chain: The Case of Halal Meat Based Food Products in Malaysia

Teh Zaharah Yaacob, Harlina Suzana Jaafar, Fadilah Abd.Rahman

Malaysia Institute of Transport, Universiti Teknologi MARA, Selangor, Malaysia

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ABSTRACT

Nowadays, the halal meat based food products are widely distributed throughout the world market. The production and supply chain of halal meat based products consist of many critical control points and risks ranging from raw materials, production stage until the meat products reaches the end users. Hence, to ensure and maintain the safety, quality and halal integrity of this type of food with the objective to protect the health of the citizens from foodborne diseases, it is obligatory upon the abattoirs, food producers, processors, food packaging companies, logistics providers and all parties involved in the distribution and sale all these products to comply with the regulatory requirements imposed by the relevant authorities and agencies in Malaysia. This paper discusses the existing Malaysia regulatory framework relating to the safety, quality and halal compliance relating to the halal meat supply chain. It examines the relevant legislation, local and international standards, certification requirements, and Food Safety Assurance Scheme currently enforced by the government bodies. The roles of the regulatory bodies pertinent are also deliberated. The findings of this study demonstrate that currently a proper regulatory framework has already been put in place in Malaysia in order to regulate the halal meat supply chain. However, to ensure effectiveness, a more thorough monitoring process and enforcement are highly recommended. It is essentially important that the awareness and knowledge of the industry players and all relevant stakeholders of the halal meat based food industry to be enhanced as to better regulate and manage the business trade and industry practices. Thus, the regulatory framework will help to facilitate the halal meat industry players in getting the halal certification for their products. Ultimately, fulfilling the right of Muslim consumers in order to enjoy safe and halal meat based food products.

KEYWORDS: Regulatory Framework, Halal Meat Supply Chain, Contamination Risk, Halal Meat Based Food Products.

INTRODUCTION

The concept of halal food represents quality, safety, hygiene and sanitation to ensure the concept of 'Halalan Thoyibban' which means permissible and good is achieved throughout the halal food supply chain. Currently, the halal food sector is not only considered as an industry that complies with religious requirements, eventually it has also become an economic force domestically and globally[33]. Many countries in the world realize the importance, awareness and involvement in halal food compliance. Indeed, countries such as Japan, Thailand and Indonesia has involved in the halal food industry and agreed that halal practices and compliances are important criteria for halal food export [14]. Halal foods may also attract the non-Muslims market for food with additional and value added features of wholesome, safe, hygienic and contamination free food products[14, 15]. In order to serve the halal food market, the food manufacturers and related stakeholders must understand the Muslim requirements for halal food compliance and regulatory requirement throughout the halal food supply chain [2]. Currently, many issues related to halal food integrity have raised public concern and awareness about the halal status of food products along the supply chain[2]. Therefore, the industry players involved in halal food supply chain need to develop and maintain good business ethics and integrity in dealing with halal food business throughout the halal food supply chain [1, 24].

One of the most significant discussions in the halal food industry is about halal food supply chain compliances, standards and requirement. It is stated that the food production and the distribution processes should comply with the halal food supply chain legislation, standards and requirement enacted by the government [3]. Regulations can be defined as a general principle or rule with or without a coercive power of law employed in controlling, directing or managing an organization, power or system[18]. Regulations are enforced by a regulatory agency formed or mandated to carry out the purpose or the provisions of a regulation or called as the regulatory framework that consists of acts, legislations and standards. Basically, these acts and standards are enacted to protect consumers, food manufacturers and logistics operators in terms of business trade and industry practices for halal food[17]. Adherence to the compliances, legislation and standards will help

minimize the food product's contamination risks throughout the food supply chain process and at the same time improve the company's standard of operation (SOP). In addition, Acts and regulations would benefit the consumers in terms of trusting the halal status and help to regulate right business ethics and conducts among the manufacturers and stakeholders [4, 15]. The key issue here is to draw attention the regulatory framework already been put in place in Malaysia to regulate the halal meat based food products industry. A more better and improved monitoring process and enforcement are highly needed to ensure the effectiveness of the implementation process [15]. Henceforth, the purpose of this paper is to highlight the existing regulatory framework in Malaysia relating to safety, quality and halal compliant of halal meat based food products and issues involved in the enforcement and compliance of the regulation.

LITERATURE REVIEW

Halal Food Industry

Malaysia has a sizeable halal food market with an enormous growth potential of 60% of consumers being Muslim [13]. Malaysia is considered as the third largest producer of poultry meat in the Asia Pacific region. In addition, Malaysia also exports food products to more than 200 countries including Singapore, Indonesia, the USA, Thailand and Republic of China [14, 15]. Malaysia exported RM 9.8 billion worth of halal products in 2013 and it has made Malaysia as one of the largest suppliers throughout the Organization of Islamic Cooperation (OIC) as an international group of 57 members (Oxford Business Group). The local food processing industry in Malaysia is dominated by Small Medium Enterprise (SME) companies with more than 80% companies, followed by 20% of Multi National Company's (MNC's) companies located in Malaysia [13]. Majority of Malaysia's exported food products exported are certified as halal by The Department of Islamic Development of Malaysia (JAKIM), which controls and monitors the safety, quality and standards of the halal food products exported [5, 31]. Currently, the halal food and beverage industry in Malaysia is governed by legislation, standards and requirements that are enforced by the Government bodies in Malaysia [6]. Halal food manufacturers and the stakeholders need to comply with the standards and compliance regarding the food product quality, business integrity and harmonization of halal food standards in Malaysia [1, 13].

Halal Meat Supply Chain

Halal meat is one of the major sources of proteins for food consumption and it is rich in social meaning due to its association with cultural eating habits and rituals for both religious, Islamic and secular [7]. Halal meat based food products can be categorized into beef, mutton and poultry that comes in the form of fresh meat, chilled form, frozen form or meat processed food products. Nowadays, the halal meat based food industry has come out with newly invented products to cope with the changes of the consumer's lifestyle, taste and preference [3]. In [17] defined the Halal status of meat as a credence attribute (the aspect of perceived value) which cannot be ascertained from the consumer even upon consumption of the meat. For Muslims, the decision to purchase halal meat is based on the information provided by the halal butchers especially on the aspect of the slaughtering methods, freshness, taste and hygiene [18, 34]. It is the responsibility of the halal meat processing industry as well as certifying authorities to protect the integrity of halal meat status throughout the supply chain process. Stakeholders in the halal frozen meat based industry need to be knowledgeable in the Sharia' requirements and the aspect of safety and quality of the production of halal meat throughout the halal meat supply chain [14, 17].

In most countries, halal certification has become mandatory for all imported meat products to ensure the freshness and quality of the meat products. In Malaysia, all imported meat based products should be attached to the health certificate document of the meat, the halal meat certificate from the country origin and the approval letter from the Ministry of Health (MOH), Custom Department and Malaysian Quarantine and Inspection Services (MAQIS) [36]. The imported meats are only allowed to enter the Malaysia market after all documentation is verified, completed and passes the quality inspection process from the relevant authorities. The frozen meat is then distributed in Malaysia market through a proper logistics process until the meat reaches the end user. It is proven by [18] through their studies that consumers are aware of the halal meat requirements and are willing to pay for halal meat products that are truly halal from the point of production or slaughtering to the point of consumption. Nevertheless, for Muslim consumers trust in halal meat relates to the certainty about the process attributes and the safety in term of meat wholesomeness. A study done by [19] emphasizes on the strong link of the relationship among the parties involved in the halal meat supply chain to ensure the halal status of the meat based products throughout the supply chain process.

Halal Meat Supply Chain Contamination Risks

The most important factors that will affect the halal meat supply chain are the risks of cross contamination to the meat products along the halal supply chain process ranging from the raw materials until the finished food products received by the end user. In [30] define halal supply chain as the management of a halal network with the objective to extend the halal food integrity from original source to the point of consumer purchase. In order

to ensure that the food product is truly halal at the point of consumer purchase, a high degree of trust and implementation should be placed on the principles of the management of halal supply chain among all the parties involved. The risks of food cross contamination in the halal meat supply chain can happen at any stages ranging from food processing, packaging, transportation, warehousing and retailing [13,35]. Cross contamination risks must be managed and tackled by all parties along the supply chain process. Cross contamination is defined as the physical movement or transfer of harmful bacteria from one person, object or place. In terms of halal principles, cross contamination occurs when halal food products have direct contact with non halal food or non-food products[25] during any stages in the halal meat supply chain. Biological, physical and chemical hazards may also contribute towards cross contamination risks in the meat processing and also during the transportation process.

In food processing and packaging, the risks of food contamination may happen if the manufacturer does not practice the hygiene and cleanliness aspects in the food preparation, equipment used, housekeeping and material handling. In term of logistics services, food product contamination risk may occur due to lack of awareness, handling procedures and readiness to implement halal logistics policy and practices in halal business [15]. Risk factors for food product contamination in the halal meat supply chain happened due to improper or leakage during the stages of halal meat supply chain process. Past studies indicate that risk of food products contamination happen due to improper food production practices, wrong use of equipment, improper handling, temperature abuse during production and logistics, unsanitary container, improper loading or unloading procedures, damage in packaging, poor management of transportation maintenance and bad employee habits [16]. From this perspective, it is emphasized that during the stages of halal meat supply chain the meat products should be physically segregated from any non halal element or any other unhygienic element. Moreover, the equipment used in all unit operations should be solely dedicated only for halal meat production. Thus, halal food producers are required to practice the “Thoyibban” concept which encompasses the quality, nutrition, hygiene and ethically delivery practices of the food products to the consumer. Regulation in halal food production stipulates that food products should be protected against physical, chemical and microbial contamination during production, transportation and distribution processes [22, 25]. Furthermore, in industry practices, standard of Good Manufacturing Practice (GMP) and Hazard Analysis Critical Control Points (HACCP) are highlighted and being used as one of the additional measures and guidelines for halal meat based food products throughout the halal food supply chain process [6].

Halal Meat Based Food Products and Regulatory Framework

The process of halal meat supply chain involves the process of segregation throughout the entire chain. Therefore, during processing, handling, manufacturing, packaging, storage, transportation and display, halal meat based food products should be physically separated from the non-halal ones. Figure 1 illustrates the flow of Regulatory Framework of the halal meat supply chain in Malaysia. From Figure 1, the halal meat based food products can be categorized into two main processes which involved the process of food production and logistics. It shows four main processes in the food production before the meat is processed as a completed food product. The process involved in food production for halal meat based products are permitted meat, slaughtering, meat processing, meat based food production until the meat turn into a finished food product [3]. The finished food products are then distributed to the end user through a proper logistics process. From the process flow, it is clearly described all the stages of halal meat supply chain are governed by proper legislation and standards [23]. The legislation and standards have been enacted by the government and related agencies in Malaysia. The regulatory procedures control the activities in the food production and logistics process of halal meat based food products and helps to manage the safety and quality of the halal meat throughout the halal food supply chain.

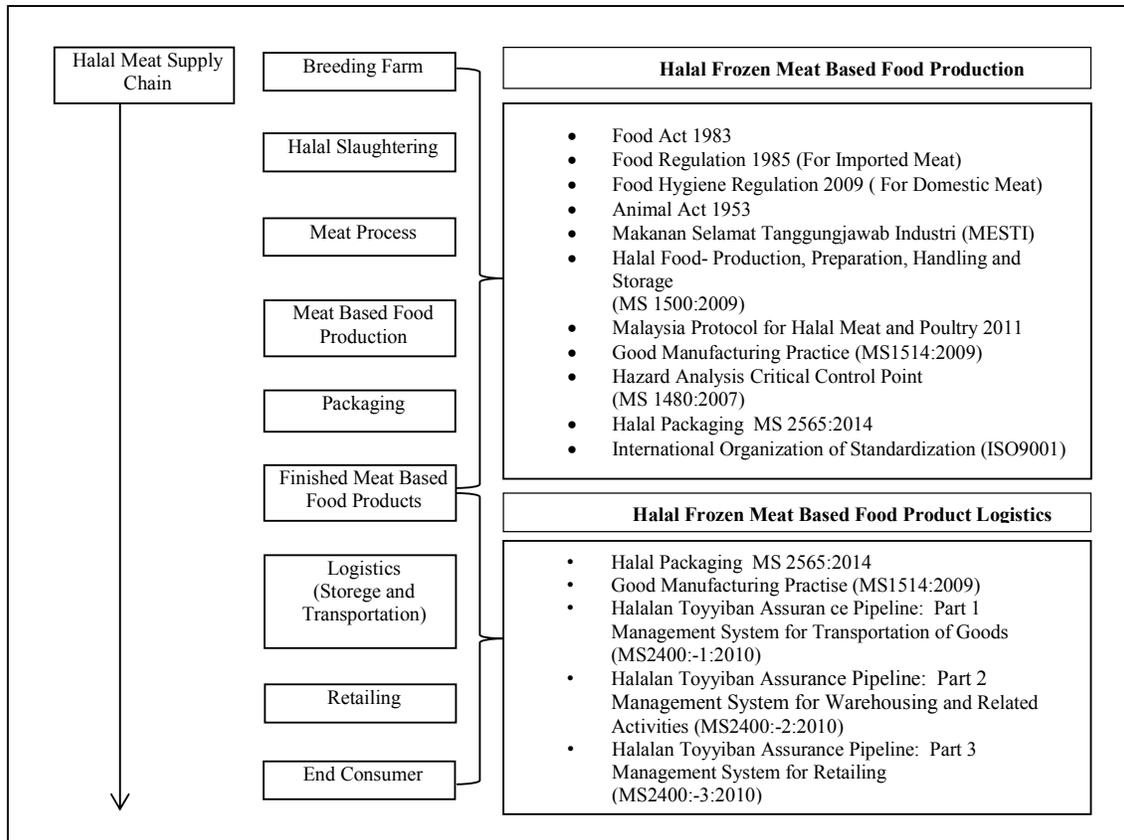


Figure 1: Halal meat supply chain regulatory framework in Malaysia

Halal Meat Based Food Production Process

Halal meat must be produced in fully integrated establishments such as permitted farm halal slaughterhouse listed by the Department of Islamic Development of Malaysia (JAKIM). The permitted farm and the slaughterhouse must fully comply with all requirements outlined in the Malaysian Protocol for the Halal Meat and Poultry Productions 2011 and Halal food-production, preparation, handling and storage (MS 1500:2009). The standard has been enacted by referring to the mandatory legislation procedure enacted in Food Safety Act 1983 and Food Hygiene Regulation 2009 [6]. In the halal meat supply chain, halal animal feed is considered as a critical part and important stage in the halal meat supply chain as enacted in the Food Safety Act 1983 and Food Hygiene Regulation 2009 [29]. The guideline on halal animal feed and halal slaughtering has been mentioned in the Malaysian Standard MS1500:2004, whereby one of the seven basic requirements for the preparation of halal food is the source of halal animal feed (Halal Food-Production, Preparation, Handling and Storage Malaysia Standard of MS1500:2009) [10]. Anything that is fed to the poultry, cattle, and sheep must be halal and the feed mill should not contain any animal hormone such as pork enzyme even if the main reason is to stimulate animal growth. The ingredients in the feed mill must not contain any genetically modified organism from non-halal animals in order to ensure the animal is being fed by halal food only [28, 36].

Malaysia Protocol of Halal Meat and Poultry 2011 was being introduced to the halal meat and poultry industry to support the implementation of MS1500:2009. It gives a clear instructions and guidelines on good halal practice in the meat, poultry and meat based food product throughout the entire halal food supply chain. The Department of Veterinary Services (DVS) along with JAKIM conducted a holistic certification program, inspections and accreditation system as well as the implementation of legislation to support Malaysian food safety and quality management system and halal industry [36, 10]. Currently, there is a lot of issues on proper slaughtering process of halal meat before the meat is received by food manufacturer for meat products processing [20]. Regular checking and enforcement by the Department of Islamic Development Malaysia (JAKIM) is needed to ensure that the slaughtering process in the abattoirs follows the Sharia' law. The requirements of the slaughtering process according to Syaria'law, stated that the person who slaughters must be a Muslim and a sharp knife is used to slaughter the animal. This requirement also includes that the abattoir is clean, hygiene and follow the requirement of the halal certified slaughterhouse. The Malaysian halal logo needs to be displayed in order to increase the confidence level of the customers to the products or services as well as to

increase the marketing of the products internationally. Therefore, a standard of Halal Food-Production, Preparation, Handling and Storage (Malaysia Standard of MS1500:2009) is used as a guideline for a proper slaughtering process in Malaysia. Moreover to support the standard, the Malaysian Protocol for Halal Meat and Poultry 2011 guidelines is used as a reference and guidelines for the proper halal slaughtering process.

The local manufacturers have an added advantage in the food processing with the implementation of Halal Food- Production, Preparation, Handling and Storage (Malaysia Standard of MS1500:2009) [34] along with Good Manufacturing Practices (GMP) and HACCP [25]. The standards and certification are being recognized and accepted worldwide and will help to increase the reputation of local food industries in the world market based on the value of the certification. In addition, to meet the Halal status, halal meat based food producers and the stakeholders have to adapt and adhere to the standards that meet global benchmarks such as ISO 9001, Codex Alimentarius, Quality Assurance, Good Hygiene Practise (GHP) and company's own Standard of Operating Procedure (SOP) [1]. Precisely, the use of 'Halal' in Malaysia has been enacted in Trade Description Act 2011 which applies to the halal food with the term of "Ditanggung Halal" or "Makanan Halal" indicate that the food can be consumed by Muslim[4]. Similarly, for food products, the halal logo indicates the source of ingredients used in the food manufacturing process must be halal and safe for consumption. A careful and analytical handling must be taken to avoid cross contamination of halal meat and meat products with non-halal substances. In order to maintain the food product safety and quality, halal frozen meat based products must be suitably packaged with packaging materials that are decreed as acceptable by the Sharia' law and comply with the standards of halal packaging [11, 12]. Manufacturers are required to comply with standard and legislation enacted by the relevant Government bodies to ensure a smooth flow of halal meat supply chain process.

A previous study indicated that the halal status of meat is often believed to be equivalent to the application of halal slaughtering process by the certified halal abattoirs. However, the additional stages in halal meat based products, particularly during the meat processing are also needed to be prioritized in order to avoid contamination of halal meat with non-halal meat or other unacceptable ingredients [22]. The meat chain is very complex and the risks of cross-contamination can happen at any stage of halal meat supply chain, thus it is important to prioritize the critical process that will affect meat production [23]. This critical process in meat processing is called as Critical Control Points (CCP) and food processing involved in 'CCP's need to be clearly identified and carefully monitored. During the process of halal meat supply chain, care should be taken care during the process of cleaning, deboning, carcass fabrication, mincing, mixing, packaging, transportation and cold storage. Halal meat products should be packaged in clean containers and proper labels affixed to identify the halal markings according to the standards of Halal Packaging (MS 2565:2014) and Halalan Toyyiban Assurance Pipeline: Part 1 Management System for Transportation of Goods (MS2400:-1:2010).

Halal Meat Based Food Products Logistics Process

During transportation and storage, halal meat based products must be segregated from non-halal ones so as to prevent cross contamination and this guideline has been included in Halalan Toyyiban Assurance Pipeline: Part 2 Management System for Warehousing and Related Activities (MS2400:-2:2010). Referring to the standard of MS2400: 2010, the finished meat products should be received by a Muslim inspector and halal meat based food products must be segregated during transportation and storage [24]. A study by [33] states that in Singapore and Malaysia, the halal issues has raised concern among the consumers whether there is segregation and proper handling of the halal meat products from the non-halal meat products and whether companies conducting halal meat business are fully knowledgeable of the segregation procedure in halal meat logistics. There are the issues of mixing of halal and non halal meat together in the same storage container or transport as most of the local transport companies in Malaysia involved in a small volume of meat trading [2, 36]. Based on the requirement from Halalan Toyyiban Assurance Pipeline: Part 1 Management System for Transportation of Goods (MS2400:-1:2010) segregation is an important factor that needs to be implemented during the transportation of halal meat [8, 9].

Nevertheless, the situation is different in halal imported meat whereby the halal meat is secured and moved into the shipping container without any element of non-halal meat. The halal imported meat from other countries will not be approved to enter the local port without any declaration of Health Certificate of the meat, halal abattoirs certification and the quality inspection by the Department of Health, Custom and Quarantine Services at the port. These requirement and surveillance are based on regulation enacted in the Food Safety Act 1983 and Food Regulation 1985 for imported meat [26]. Temperature monitoring of the meat based products during transportation to ensure risks of food product contamination and damaged goods need to be monitored. Frozen meat and meat based food products rely heavily on the temperature control to maintain quality, safety and hygiene of the food products. By understanding the sensitivity characteristics of halal food products, manufacturers and logistics companies need to invest more on the equipment, facilities for the proper handling procedures [23]. Temperature monitoring is the key essential to maintain the quality and safety of the meat based products during transportation [27].

Hygiene and Sanitation in Halal Meat Supply Chain

Hygiene and sanitation are important practice of halal frozen meat based products throughout the entire halal food supply chain. The practices of hygiene and sanitation in the meat chain include the various aspects of personal hygiene, clothing, equipment, working premises processing and handling of halal meat based products. Halal meat based food products need to be prepared, processed, packaged, transported and stored in such a manner to ensure the halal food complies with hygiene and sanitary requirements according to Codex General Principles of Food Hygiene and other relevant Codex Standards [27]. Hygiene and sanitation are obligatory in 'Islam' and this includes the various aspects of personal hygiene, clothing, equipment, working premises, containers and transportation used in the halal food supply chain[15]. The objective of hygiene and sanitation procedure is to ensure that the food produced is hygienic and is not hazardous to public health. Hygienic food products can be defined as food products that are free from najis, harmful germs and any food product contamination risks that can affect the halal status, safety and quality of the food products[28].

Henceforth to meet the food hygiene and sanitation criteria, the halal meat based food products should be prepared, processed, packaged, transported and stored in according to the hygienic and sanitary requirements of the relevant authorities as enacted in the legislation and standards. Manufacturers must ensure that the food is safe and hygienically clean for consumption. They are also responsible for monitoring pollution, chemicals used and disposal of wastes during the food production. The standard also requires manufacturers to subscribe to the principles of GMP (Good Manufacturing Practices), GHP (Good Hygiene Practices) and HACCP (Hazard Analysis of Critical Control Point) [32]. Manufacturers are not allowed to use ingredients that are harmful or engage themselves in any unethical conducts that might affect the consumers's belief and rights. The halal standards need to be implemented will also be used in as in Malaysia Standard of 1480, which is the food safety regulations based on HACCP as well as Malaysia Standard of 1514[11], the general principles of food hygiene. In general, users of the standards should be able to meet the requirements relating to Islamic needs and expectations. Thereby, the parties involved in the halal meat supply chain such as the slaughterhouses, food producers, processors, food packaging companies, logistics providers and all parties involved in the distribution and sale of halal frozen meat based food products should comply with all the regulatory requirements imposed related to hygiene and sanitation procedure of halal meat products.

METHODOLOGY

Methodology is defined as the technique used in order to achieve the objectives of the study. It is the process of gaining data to support the finding of the study throughout the research. By choosing the right methodology, the answers may be tabulated and conclusions be made [21]. This stage will form the central part of this research activity and conclusion. Hence, this on-going research paper is written based on the review of all relevant literatures from various databases related to the regulatory framework of halal meat supply chain with special references on halal meat based food products in Malaysia. Extensive literature reviews were obtained from leading databases and articles through the use of relevant keywords related to the study. Apart from that, to obtain a clear understanding of the research, a thorough review of Malaysia's regulations and standards was also referred. Relevant Malaysia's legislations, regulation and standards related to the halal meat supply chain were also reviewed [11, 12]. In fact, to support this study, observation and informal interviews were carried out by the Department of Health based in Port Klang on issues related to halal imported meat supply chain in Malaysia. The observation and informal interviews will support the findings from the review of the literature. The other sources of literature review include Pro-quest, EBSCO, Web of Science-Social Citations Index and Business Source Premier, Elsevier, Science Direct and Emerald. The report from the JAKIM, Halal Development Corporation, Malaysia Standard of MS1500: 2009, MS2400: 2010, Food Safety Act 1983, Food Regulation 1985 and Food Hygiene Regulation 2009 were also referred.

FINDINGS AND DISCUSSION

Based on the review, it is important that a proper regulatory framework is very important to manage the halal meat safety and quality throughout the halal food supply chain. Primarily, the issues of halal certification and compliances are related to the food product safety and quality assurance. Halal meat based products must comply with the standards and regulation to ensure the safety and quality of the food throughout the halal food supply chain process. Based on the issues discussed, there is a proper regulatory framework that governs and controls the halal meat supply chain ranging from raw material, production, packaging, transportation, storage until the halal meat products reaches the end user. However, due to lack of enforcement and monitoring from the local authorities, the issues of non-conformity of regulations in halal meat supply chain happens and affects the halal status, safety and quality of halal meat supply chain. It is also noted that the industry players of halal meat are lack of understanding and exposure to the proper flow of halal meat supply chain regulatory

framework. Thus, the improvement of the halal operation in the halal meat supply chain can be facilitated with awareness and readiness from the stakeholders involved in the halal meat supply chain.

The government and the related agencies need to play their roles to strengthen the regulations and requirements enacted in the legislation and standards. This can be done by continuous monitoring, audit and surveillance at ports, slaughterhouse, warehouses, meat based food factories, logistics operators and retail premises. The information regarding the regulation and the halal standard must be disseminated to the stakeholders through the feedback from the input from surveillance and audit process. In this situation, government agencies need to meet the industries and to clarify on the issues that affects the efficiency and effectiveness of halal operation in the halal meat supply chain. The input and feedback from the halal agencies and the industry players will help to improve the halal operations and compliances in the halal meat supply chain business. On the other hand, both the industry players and consumers need to be informed and educated on the principles of Halal operations as to enhance their understanding of Halal meat supply chain regulations and compliances. By educating the customers on the halal meat aspect can help them to increase halal knowledge and awareness of halal meat supply chain process and consumption.

CONCLUSION AND RECOMMENDATIONS

This paper highlights the review of the existing regulatory framework relating to the safety, quality and halal compliant for the halal meat supply chain. The findings of this study proved that currently Malaysia has a proper legal and regulatory framework to regulate the halal meat based food products industry in Malaysia. Hence, to support the findings, a process flow of regulatory framework for halal frozen meat based product has been developed as described in Figure 1 to enhance the understanding of the regulations imposed throughout the stages of halal meat supply chain process in Malaysia. From the process flow, it shows that all relevant parties in the halal meat industries need to play major roles for the common goal to ensure conformity and obligatory of the regulatory framework of halal frozen meat based products throughout the halal food supply chain. Therefore, it is critical for the local authorities to empower the enforcement and proper monitoring of the regulatory practices among the industry players in halal meat based food products. In addition, the awareness and knowledge of halal food regulation among the industry players need to be enhanced for better management of halal operation in their business trade and industry practices. The knowledge of the regulatory procedure will ensure a smooth regulatory compliance for halal meat based food products and at the same time ensuring the safety and quality of the halal frozen meat based products. Henceforth, the right of the consumers particularly Muslim consumers to consume safe and halal meat based food products is duly protected and increase the reputation and recognition of halal meat industry in Malaysia enormously.

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