[HMS#195]

Literature Analysis of Risk and Solutions for Halal Beef Supply Chain

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ABSTRACT

The trend toward halal products has increased, especially in the food and beverage sector. This is in line with the increase in the Muslim population and the increasing desire of consumers to get good-quality products. In the context of halal, the most critical ingredient or product is meat and its processed products. However, there are still many points in the beef supply chain where risks result in beef becoming non-halal. This study aims to identify risks and solutions to overcome risks in the halal beef supply chain to obtain beef guaranteed to be halal and maintain consumer confidence. This study was carried out using a qualitative technique called literature review. In total, 26 risks and 26 solutions were found.

Keywords: Beef, Halal supply chain management, Literature analysis

1 Introduction

The development of the era with increased knowledge and income to spend raises the demand for better products and services in various aspects. This triggers the industry to innovate to create products and services that meet consumer desires. In general, products or services with a halal label are made to reflect the beliefs of the Islamic religion. However, over time, the halal label shows that the product or service is managed cleanly and safely and follows *Shari'ah* rules [1].

One of the crucial things in halal products is the quality of the product's raw materials, which impacts the quality and halalness of the product [2]. Meat is one of the many raw materials that require special attention to create a halal supply chain [3]. Even though it is the most critical raw material in halal management, meat is one of the most common types of halal food circulating in the market, as the highest global market share for halal food falls to the meat, poultry, and seafood group [4].

If there are errors or failures in supplying halal raw materials, there will be a threat of failure of the halal supply chain, and derivative products will become non-halal [5]. This holds true for all goods, including beef. However, in practice, there are many risks at every point in the beef supply chain that can make the beef non-halal.

All parties participating in the halal supply chain must take all necessary precautions to prevent cross-contamination, which could turn a product's status from halal to haram, to protect the integrity of halal food items. For this reason, risk management is a crucial

DOI: 10.21467/abstracts.155 ISBN: 978-81-961472-9-7 (eBook)

component of the process of delivering halal food. However, from an academic standpoint, much attention has not been paid to risk management in the halal supply chain [6]. Therefore, this research was conducted to identify the halal beef supply chain risks and solutions to overcome these risks of implementing a halal beef supply chain.

2 Materials and Methods

This study was carried out using a qualitative technique called literature review. The literature is sourced from Scopus, draws on various sources including journals and conference proceedings. The existing literature was studied to determine the most recent developments in Halal SCM. Once the objectives, research questions, and approach had been determined and decided, the full text of the research was studied, the abstract was carefully examined, and a conclusion was taken. When analyzing each item of retrieved material, the researchers focus on risks and solutions. The last step is to create a literature review for each categorized literature organized by risks and solutions.

3 Results

Regarding the beef supply chain, in general, it consists of six main activities, namely feedlot, livestock, slaughtering, processing meat storage, transportation or distribution of meat, and when the meat is sold retail [6-9]. Based on the results of a literature study, 26 risks and 26 solutions were found.

4 Discussion

4.1 Feedlot

In the feedlot, there are three risks. The first risk is that animal supplements or drug products still rarely have halal certificates [10]. The second risk is that cows are given more than their capacity to drink water [11]. The third risk is that cattle are fed non-halal ingredients such as pork and its derivatives [12]. Then, for the feedlot solution, three solutions were found. The first solution is tracing materials and making protein supplements and medicine [10]. The second solution is socializing halal policies' urgency in the feedlot process [10]. The third solution is that if previously the cow was fed non halal food (carrion, pork, or other food), then the cow is quarantined and given halal food (grass or food intended for cows that is halal) [13].

4.2 Livestock

In livestock, there are four risks. The first risk is when cattle farms are mixed with non-halal animal farms [14]. The second risk is the risk of stressed and sick animals [15]. The third risk is discovering a bovine infectious disease [15-16]. The fourth risk is livestock not getting proper cages [6]. In terms of solutions, there are four fattening solutions. The first solution is conditioning the cages so that cattle farms are not mixed with or contaminated with non-halal animal farms. The second solution involves curing sick animals before slaughter or allowing

ISBN: 978-81-961472-9-7
Series: AIJR Abstracts
DOI: 10.21467/abstracts.155

for direct slaughter while considering the ailment the cow is afflicted with [16]. The third solution should be carried out by following the regulations set by the Animal Husbandry Service [17]. The fourth solution is that livestock must get a proper place and sufficient oxygen [6].

4.3 Slaughter

From the slaughter process, there are seven risks. The first risk when slaughtering, the three channels (airway, esophagus, and blood vessels) are not cut off [18]. The second risk, the animal has not died entirely but skinned is carried out [19]. The third risk, the knife used for slaughter is unhygienic and not sharp [7, 10, 20]. The fourth risk is the location of the unhygienic slaughter of animals [21]. The fifth risk is the stunning method and causing livestock to be injured or dead [6, 10]. The sixth risk is that the slaughterer does not follow the Sharia [6, 21]. Seventh risk, cows experience stress from the farm to the slaughter site [20]. There are eight solutions found to overcome the risks that exist in slaughter. The first solution sets a specific time limit that guarantees the animal dies and the blood comes out completely before further processing [22]. The second solution provides tools for sharpening knives [15]. The third solution is the separation of dirty areas and clean areas [14]. The fourth solution is applying the stunning technique with specific equipment that does not cause the animal to die before being slaughtered [21]. The fifth solution is staff training on religious requirements and animal welfare regulations from breeding to slaughter [19]. The sixth solution provides a cage to rest the cows before being slaughtered [14]. The seventh solution is antemortem inspection (examination of the health of the slaughtered animal before slaughtering) before the cow is slaughtered [14]. The eighth solution, after slaughter, a postmortem inspection (inspection of the health of the offal and carcass after slaughter) must be carried out to determine that the meat is in good condition [15].

4.4 Storage and Handling

There are three risks found in the beef storage process. The first risk is cross-contamination with unclean and dangerous materials and contamination with damaged and rotten products in the logistics warehouse [23]. The second risk is logistics' inability to regulate storage temperature when storing where meat is not kept cold [23, 20]. The third risk is no standardization of the procedure for keeping halal meat and non-halal meat separation [6]. There are three solutions related to beef storage. The first solution, cold storage, must have temperature and control standards [14]. The second solution requires that equipment such as racks and containers be separated to avoid contamination between halal and non-halal meat [24]. The third solution has a particular storage room for storing halal meat [24].

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Series: AIJR Abstracts
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4.5 Distribution

Four risks were found in the beef distribution process. The first risk is transportation for distributing meat, which is not hygienic. The second risk is the absence of inspection oversight over goods contaminated with prohibited, unsafe, and harmful components and contaminated products that suffer damage and deterioration while being transported through logistics [23]. The third risk, the traceability of beef, is unreliable, less secure, and not based on real-time [6]. The fourth risk is that halal and non-halal meat is distributed using the same transportation medium [6]. There are three solutions found for distribution risk. The first approach involves spending money on transportation infrastructure, distance capacity, technology, and management. [25]. The second solution is to pack meat precisely so it is not contaminated with non-halal goods [26]. The third solution, designing a system to facilitate the tracking of meat and ensuring that every point of the beef supply chain goes through a halal process [9].

4.6 Retail

In terms of retail risk, five risks were found. The first risk is the inability to regulate the inspection of beef contaminated with prohibited, hazardous, dirty materials and tainted, damaged, or ruined goods [23]. The second risk is that creating a halal workplace atmosphere is challenging [6, 10]. The third risk is using cutting tools simultaneously on meat and non-halal meat [6]. The fourth risk is that the beef sold is deliberately mixed with non-halal meat [27]. The fifth risk is that halal beef is sold in the same place or on the same display as non-halal beef [6]. Related to solutions for retail risk, there are five solutions found. The first solution has separate dedicated staff for selling halal and non-halal meat [14]. The second solution is to educate staff regarding the management of halal meat [14]. The third solution separates halal and non-halal meat-cutting tools [24]. The fourth solution is applying consumer protection laws [28]. The fifth solution separates the place or display for selling halal and non-halal meat [24].

5 Conclusions

This study found that in the halal beef supply chain, there are six critical processes: feedlot, livestock, slaughter, storage and handling, distribution, and retail. Risks, solutions, and related strategies are found in each of these processes. In total, 26 risks and 26 solutions were identified. It is recommended to improve education on halal practices among practitioners in the field who are implementing the halal beef supply chain. This will help increase awareness and understanding of the importance of complying with the Halal Assurance System in every percent of the halal beef supply chain.

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Series: AIJR Abstracts
DOI: 10.21467/abstracts.155

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ISBN: 978-81-961472-9-7

Series: AIJR Abstracts

DOI: 10.21467/abstracts.155