

Halal Risk Assessment in Broiler Hatchery Operations

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Abstract

Halal risk assessment in the poultry industry mainly focuses on identifying halal risks at slaughtering and chicken meat processing. Yet halal risk at the early stage of broiler supply before being transferred to livestock farms has not been discussed intensely. This study explores an overview of egg-hatching activities in proposing the halal critical points (HCP) involved in hatchery operation. It was found that five activities in the hatching process had been identified as significant points of halal risk, which are egg receiving from breeder farms, egg incubation, chick disposal, vaccination of chicks, and logistics. A qualitative approach was used to gather information via document analysis and a semi-structured interview in describing and analyzing the halal hazards and risks associated in hatchery operations. The study emphasized that halal risk assessment could be carried out in the commercial broiler hatchery operation of other fowl, such as ducks or quail. Besides, give a positive impact on maintaining the halal integrity of meat sources to Muslim consumers.

Keywords: Halal Risk, Halal Critical Point, Halal Critical Point Analysis Plan, Broiler Chick Hatcheries

Introduction

Poultry has been on high demand as a primary source of protein as compared to other halal meat sources by Muslim consumers in Malaysia (Jamilah & Norsuhana, 2011). According to statistics from the Department of Veterinary Services Malaysia (2022), poultry product consumption increased from 1.46 million tons in 2017 to 1.50 million tons in 2020.

Meanwhile, in Malaysia, the sustenance rate of broiler products is increasing by more than 100% in 2021 (Department of Veterinary Services, 2021).

Halal chicken meat is mostly supplied from commercial live chicken sources using an integrated farming concept (Majid & Hassan, 2014). This concept refers to a system of animal husbandry by providing an efficient supplying feed meal and medicines to contract farmers (Hasan et al., 2019). In addition, raising live chickens on a commercial farm involves the use of systematic and latest technology to obtain quality livestock products that are safe for consumers' consumption (Serin et al., 2011). The success of the broiler industry is dependent on the quality of the supply of healthy chicks to the poultry farm through the process of hatching chicken eggs for growth before slaughter. Yet, the halal assurance management system (HAMS) at the broiler breeding level not only ensure that livestock products are safe but also meets the principles of halal and tayyib (Ramli et al., 2020). Moreover, HAMS at poultry farms ensure the production of chicken meat products according to Shariah principles. As explained in the Quran (surah an-nahl: 114), "Then eat of what Allah has provided for you [which is] lawful and good. And be grateful for the favor of Allah, if it is [indeed] Him that you worship".

Problem Statement

The Department of Islamic Development Malaysia (JAKIM), has taken an initiative in developing guidelines for halal certification, in the Malaysian Domestic Halal Certification Procedure Manual 2020 (MDHCPM) and Malaysian Halal Management System 2020 (MHMS). The MHMS will provide the industry's main source of reference in developing a HAMS, which is the backbone of halal management implementation (JAKIM, 2020). The fundamental goal of implementing HAMS is to eliminate any potential halal risk that might jeopardise the product's halal status.

The guidelines from MHMS provide a collection of documents in the form of halal control standard procedures and standard operating procedures (SOPs) to regulate halal non-compliance in halal product processing activities. It was noteworthy that these guidelines do not put much emphasis on halal compliance in the early phases of the animal supply chain. Furthermore, the 'Halal Food-General Requirement' (Third Revision) (MS1500: 2019), which serves as a benchmark in Malaysian halal certification audits only emphasizes the halal status of animal feed. However, any other material useful in the rearing of farm animals was not clearly mentioned.

In regards of poultry industry, more focuses on the integrity and halal assurance of food items, but limited to the study on halal awareness among consumers of food have been processed (Mohd Hafiz et al., 2012). Besides, there are studies concerning on halal and tayyib status of poultry products but focusing on receiving live chickens and slaughtering procedure (Omar et al., 2012). Likewise, the implementation of the halal certification system generally focused on the slaughtering of chickens and downstream manufacturing of poultry-based products (Razaly and Zakaria, 2018). However, halal compliance during broiler farming operations is not discuss extensively.

The sources of animal feed is a crucial subject that has to be addressed to ensure the halal status of livestock meat products (Nurulaina et al., 2017). Besides, medical materials such as antibiotics and vaccinations on livestock impact the halal status of livestock products (Shahdan et al., 2016). Addition to animal feed supplies and medications, farm biosecurity,

animal welfare standards, logistical supply activities, and livestock farm locations were considered in determining halal risk point (Omar et al., 2013; Shahdan et al., 2016). However, it was found that the evaluation of halal risk points was not studied in depth at the upstream chain, especially for commercial broiler activities. Therefore, this study was carried out to examine and evaluate the potential risk of HAMS at broiler hatchery operations, which results in the halal integrity of poultry supply chain.

Literature Review

Hatcheries activity

Meat products from halal slaughtered chickens are widely consumed in Malaysia. Therefore, poultry farming has been long commercialized to meet the demand of chicken meat (Serin et al., 2011). In fact, chicken farming commonly known as “broiler” is Malaysia’s largest commodities industry, accounting for up to 70% of the total market share and the care activities are rapidly developing in the broiler sector (Jabatan Perkhidmatan Haiwan, 2017). Thus, the integrated broiler farming includes the production of poultry feed, egg production, chick hatching, livestock farms, and processing of poultry meat products (Ariffin et al., 2015; Baluch et al., 2017). The chicks to be hatched are done methodically to produce quality broilers meeting the standard weight. Therefore, broiler breed selection must be prioritised since it is critical in determining egg production with an optimal development rate and creating safe-to-eat meat (Youn, 2012).

Department of Veterinary Services Malaysia (DVS) (2006) highlighted viable chicken eggs are produced by a healthy and excellent ‘Grand Stock Parent’ breed. Several phases are involved in egg-hatching operations, including egg selection, storage and incubation. These phases must be completed before the eggs are hatched and transferred to animal farms for intensive care (Lohmann, 2018). The early phase of egg production is the selection of high quality eggs from the breeding farm before the incubation process is carried out (Cobb Vantress, 2008). The broken and sub standard eggs will be segregated or discarded and the eggs meeting specified standards will undergo an automated incubation procedure for 18 days at a room temperature of 36°C- 38°C and air humidity of 85% (Giriraj, 2014). Following that, healthy chicks that satisfy the weight requirements must be vaccinated to protect living chicks from disease infections. Vaccination is critical in preventing harmful bacteria and viruses from infecting the chicks, which can negatively impact livestock yield. After vaccination, they will be placed in special baskets and transported to the broiler farm via properly ventilated truck. This helps reduce the stress as it will be detrimental to chick’s growth and survival. The animal welfare is particularly emphasized within the context of halal management from the time the young chicks hatch until they are delivered to the livestock farm (Mohammad Fathi et al., 2016; Mokhtar & Munir, 2017), appropriate care is strongly recommended immediately after hatching without harming or injuring the chicks (International Halal Integrity Alliance (IHI), 2009).

Proper discard of dead and sub standard chicks are also emphasized. For example, burying chicks is one of the most effective techniques other than the use of closed combustion incinerator. The disposal of live chicks should be regulated systematically to prevent diseases transmission by predators and pests such as rodents and environmental pollution (Dafwang et al., 2011; Nancy, 2014). Not only that, disposing of chick carcasses presents a threat to halal compliance. Besides, chicken carcasses can be potentially used as meat-based animal feed, which could result in al-Jallalah animals (Tacon, 1982; Abiola & Onunkwor, 2004). Al-Jallalah

animals refer to animals being intentionally fed from non-halal sources, which is possibly to reduce operating costs. The non-halal food sources include unslaughtered animal carcasses, pig bones, animal blood and farm animal excrement (Jamaludin et al., 2017). Thus, also pointed out that mixing food items with illegal substances can be harmful to the health and well-being of the human spirit which violates the principles of halal and toyibba (Dahlan et al., 2013). Therefore, the halal risk evaluation at the hatchery stage is necessary because the early stage of the broiler supply chain is considered to have a positive impact on the halal assurance of slaughtered chicken meat products.

Halal Management System in Malaysia

The referral of MDHCPM 2020 and MHMS 2020 for halal certification ensures that halal animal husbandry products protect public health. The fundamental goal of implementing HAMS is to eliminate any potential halal risk that might jeopardise the product's halal status. Several standards are also used to strengthen the halal certification process, including MS1500: 2019 and MS1480 (Food Safety According to Hazard Analysis and Critical Control Points-HACCP) and MS1514 (Good Manufacturing Practices For Food) in line with the principles of halal and toyibba (Sani & Dahlan, 2015).

Although, the integrated system of halal and food quality has a substantial influence on assuring the halal status of a product manufactured (Jamaludin and Ramli, 2023; Rejaii and Arianfar, 2016; Demirci et al., 2016). Not only can the halal status be determined, but the finished product is also safe to consume. Hence, it can be stated that the issue of halal management is suitable if the level of halal risk is analysed by adhering to Islamic law while simultaneously emphasising the importance of food safety. In doing so, JAKIM's HAMS is believed to be effective not only for halal certification of products but also for preventing any non-compliance to halal status during production (Anwar, 2018). According to Rahman and Abdul (2017), the main principle of HAMS is to reduce the possibility of haram contamination. However, the implementation of HAMS focuses on the production of halal food products and Islamic consumer goods, but is not extended to livestock sector. Therefore, the implementation of HAMS, especially at the broiler breeding level, can facilitate halal assurance in the poultry meat supply chain.

The development of halal risk control is the requirement for HAMS. This halal risk control refers to establishing written documents for determining halal critical points (HCPs) to avoid any halal risk across the food supply chain (JAKIM, 2020). Furthermore, this halal risk control element was created to identify possible halal hazards in product processing operations. Identifying HCPs at the activity or process phases, determining possible halal hazards, as well as effective risk control systems and corrective actions during in-process activities, are all specified components (Raheem et al., 2018). All of these elements are then compiled into a written document known as a halal managing risk, which serves as the main guidelines for industry players in assuring that their operation will not jeopardize the halal status of their supply chain. In doing so, each stage of the chick hatching process, from viable chicken eggs to transporting chicks to animal farms, is controlled and evaluated in terms of the degree of haram risk, to comply with the halal and toyibba concepts. The next part of this study examined the procedures for halal risk determination.

Halal Risk Determination

The determination of HCP and the implementation of a halal risk management strategy are mentioned in the fifth clause of subsection 6.1 of the MHMS standards (JAKIM, 2020a). It was adopted from the hazard analysis critical control point (HACCP) through the MS1480: 2019 standard (Department of Standards Malaysia, 2019a). According to Dahlan & Sani (2016) and Afiq & Ramli (2018), the concept of assessing HCP was taken from the international food safety system, which contains seven key principles for controlling food safety hazard points to prevent any prohibited substances from polluting the halal status. However, an examination of current halal management standards and procedures revealed that the assessment and relevant tools used to identify the possibility of halal risk were clearly state in Malaysian Standard MS2400-1: 2019 as an example. The 'Halal Control Point (HCP) Risk Matrix Evaluation' was obtained from the Malaysian Halal Standard MS 2400-1: 2019 (Halal Supply Chain Management System- Part 1: Transport-General Requirement) (Department of Standards Malaysia, 2019b) as shown in Table 3.1.

To determine the level of potential halal risk, there are several strategies before the halal risk management plan is developed. First, a complete process flowchart for hatching needs to be developed. Second, the likelihood of halal risk on each step of the process involved is assessed. Third, the hatching activity is evaluated in terms of determining the degree of severity or risk impact. Finally, HCP can be determined based on the framework of the risk code classification as shown in Table 3.1. The halal risk code classification was adapted from the MS2400-1: 2019 guidelines.

Table 3.1

Halal risk classification (as adopted from ms 2400-1: 2019 (department of standards malaysia, 2019b)).

Ranking level	Likelihood	Impact	Code
9	Likely	Critical	High
8	Moderate	Critical	Significant
7	Likely	Moderate	
6	Unlikely	Critical	Moderate
5	Moderate	Moderate	
4	Likely	Insignificant	
3	Insignificant	Moderate	Low
2	Moderate	Insignificant	
1	Unlikely	Insignificant	

As shown in above table, the halal risk is categorized into low, moderate, significant and high based on its impact and likelihood. The MS2400-1: 2019 guidelines clearly states that high risk to the halal status can be considered as HCP (Department of Standards Malaysia, 2019b). The risk information collected will then be documented in a halal risk management strategy, which serves as guidelines for corrective action by farmers. Overall, once the halal risk management plan is developed, it not only helps identify and avoid any haram contamination but also helps to assure that the initial supply of chicks to the farm complies with food safety and halal toyibba as defined by Shariah law.

Methodology

The HCP particularly at the hatchery level, which had not been addressed by the poultry industry was presented in this study. The qualitative data were obtained using semi-structured interviews and relevant literature to understand the process of hatching chicks in determining its HCP. Purposive sampling was used and five respondents were selected for the interview, considering their technical expertise in the commercial broiler operation and halal management. The findings of the interviews with respondents were recorded and transcribed verbatim for analysis using NVIVO computer software version R1. After the analysis, a flow framework for the hatcheries process was developed, in the halal risk management plan. The background of respondents involved in this study was presented in Table 4.1.

Table 4.1

Respondent background

Position		Field background	Experience (years)
Veterinarian (Poultry Industry)	R1	Hatcheries management	26
Veterinarian Technical Officer (Poultry Industry)	R2	Field Veterinary	3
Veterinarian (Government sector)	R3	Veterinary audit compliance	16
Veterinarian Officer (Government sector)	R4	Resources and training	29
Assistant Manager (Poultry Industry)	R5	Halal compliance auditor	11

The flow chart for the commercial hatching of chicks was developed based on the interviews and review of relevant documents. This provides a backbone for the halal risk analysis, which includes possible halal hazards, halal control mechanisms, and corrective actions for halal non-conformance. As shown in Figure 5.1, the hatching process consists of 12 steps, starting from the receiving of chicken eggs to the delivery of chicks to the broiler farm. There were five HCPs identified, which includes receiving of eggs from breeding poultry farms (HCP1), incubation process (HCP2), disposal process (HCP3), vaccination process (HCP4) and logistic activities (HCP5). Further explanation of each HCP involved was described in the next section.

Results and Discussion

HCP 1: Egg receiving

The chicken eggs shall come from breed hens with a high fertility rate to produce the chicks with the best growth rate. Furthermore, choosing the right laying hens can result in high-quality chicken meat that meets the requirements of the livestock industry's supply chain (Jabatan Perkhidmatan Veterinar Malaysia, 2006; Youn, 2012). This type of "Ross" genetic breed is used to obtain high-quality meat in the industry, which always results from the integrated farming practice. This was acknowledged by respondent P1 who stated "...Cobb is there...Ross is also there, Arbor acres are also there. But for the current one, the farm... 90

per cent takes Ross breed...". The procedure of selecting clean, uniform, viable, and undamaged eggs is emphasized for incubation when receiving eggs at the hatchery. This requires physical inspection by the workers. Therefore, the workers handling the eggs also need to observe cleanliness to prevent cross-contamination from pathogenic microorganisms such as proper hand washing, disinfection and wearing a clean uniform (Lohmann, 2018). The fumigation procedure requires the usage of chemicals such as formalin and potassium permanganate to chicken eggs before incubation. The purpose of egg fumigation is to avoid pathogen microorganism cross-contamination, which might harm newly hatched chicks. (Giriraj, 2014; FAO, 2020). Microbial cross-contamination of micro-organisms will render the chick's animal welfare procedures ineffective. Therefore, it shall be determined that receiving chicken eggs presents a moderate halal risk.

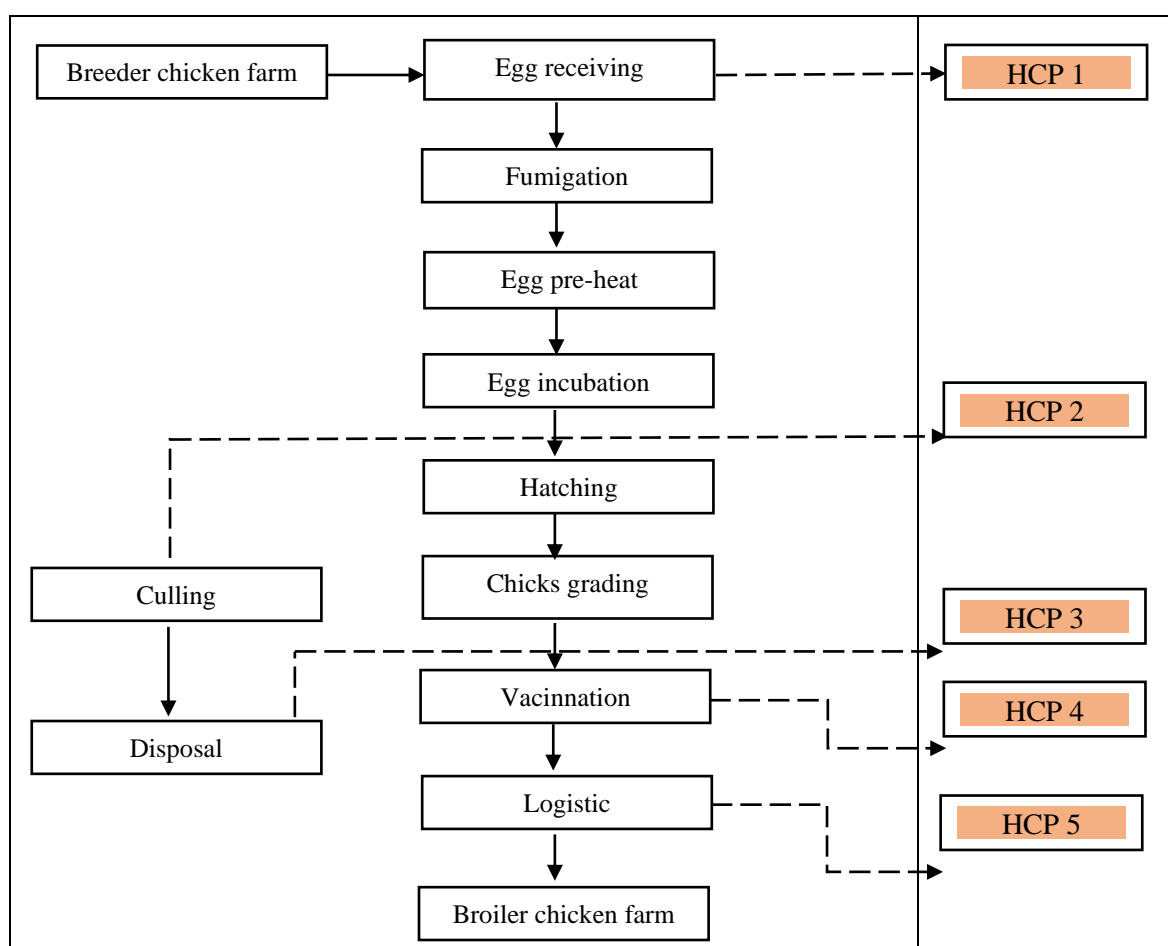


Figure 5.1 Halal critical point on hatcheries process

HCP 2: Culling Process

The culling procedure is one of the techniques for disposing of underweight chicks or chicks with abnormal physical conditions upon receiving. Unwanted chick corpses are commonly buried in the ground by the hatcheries. Chicks that are still alive but do not meet the requirements should be culled by cutting the blood arteries in their necks so that they are not completely tortured before being disposed of. The purpose of a systematic disposal process, in this case, is to prevent disease transmission to other groups of chicks (Dafwang et al., 2011). In addition to disposal, incineration has also been used. This approach involves burning animal

carcasses in a controlled system which then becomes a source of crop fertilizers for a sustainable ecosystem (Calduch et al., 2013). In the context of halal risk assessment, the process shall be reviewed and evaluated depending on a lot of factors that may contribute to halal non-compliance.

Human handling during culling actions is one of the factors to consider. The use of a knife machine to sever the blood vessels of the chick's neck is critical in this circumstance. Therefore, the knife's sharpness and cleanliness must both be in good working condition so that the cutting procedure will not give severe pain to the animal. Also, the conduct of animal welfare, shall be observed. A humane approach toward livestock is not only required by the livestock management system, but it is also consistent with Shariah principles. Therefore, competent workers must conduct the halal risk assessment, and suitable training must be provided to improve the process's effectiveness. Overall, the culling procedure shall be classified as HCP.

HCP 3: Chick Disposal

Next is the chick disposal activity. The corpse of the chicken must be disposed of in an orderly manner once the chicks have been culled. The chicks' carcasses must be buried in the ground or burned in an incinerator. However, the potential of chick's corpse being fed to other animals imposes risk to halal integrity. Therefore, chick corpse management must be closely monitored, and halal audits must be conducted to ensure that non-halal carcasses are not manipulated for use as a source of feed for the aquaculture industry. The farm must ensure that the disposal procedure is well-managed and adheres to the standards by the Department of Veterinary Services' rules. Furthermore, the halal executives of the farm should perform halal audits and monitoring to ensure that other animal feed sources are not contaminated with haram substances. Therefore, it can be observed that the procedure of disposal of chick carcasses presents a significant halal risk and should be considered as HCP.

HCP 4: Vaccination

The administration of vaccines to newly hatched chicks is the next HCP that has potential halal risks. In this activity, newly hatched chicks will go through a grading procedure that includes sex selection and other industry-specific criteria. Before being transferred to the farm, the chicks will be vaccinated. Cobb (2013) claimed that immunisation is necessary to preserve the chick body's immunity to illness infection and to avoid disease transmission to humans. He also said that the drug is typically given to one-day-old chicks. This was also expressed by the interview respondents (P2) by stating "...Vaccines need to be distributed...in the early stages of chickens as a measure to prevent disease...".

The Department of Veterinary Services (2006; 2015) mentioned that there are several methods to immunise the chicks. The methods include combining the proper vaccination dose into the drinking water container, spraying the vaccine to the eyes or nose of chicks and injection. However, it was found that the injection process was performed before the chicks were placed in the basket for delivery. Cobb (2013), Department of Veterinary Services (2015); Aviagen (2018); Cobb (2018); Hankovszky (2018) claimed that the dose approved by the authorities should be used in the prescription of such medicines. This is because exceeding the dosage could cause harm not just to animals but also to humans.

In the halal perspective, the distribution of vaccination material is closely linked to animal welfare practices. Not only does the approach benefit animals and humans, but it also

adheres to halal principles. If vaccinations are not given according to procedures and the disease is not managed, it is considered hazardous to animals and indirectly impacts human health. This is apparently in conflict with the toyibba concept. However, the source of vaccines or medicinal materials used on animals has not been given enough attention by JAKIM's Malaysian halal certification. Furthermore, Malaysian halal certification system particularly does not include the halal animal husbandry industry. In this regards, much attention should be given to the status of the vaccine components used in identifying the level of halal risk. In general, the vaccine's principal component must not contain any ingredient that are considered haram by Muslims. Therefore, the vaccine's ingredients and delivery are considered as HCP.

HCP 5: Logistic

The logistic activity was proposed as sixth HCP for egg hatcheries. It focuses on the delivery of chicks in a special basket to broiler farms via truck. To ensure good quality chicks, air ventilation, interior temperature management of the truck, and environmental circumstances are considered. These logistical transportation operations are, on the whole, more directly tied to biosecurity practices. Steenwinkel et al. (2011) and Parker (2018) explained that animal welfare practices must be given to chicks during the delivery process. It does not only involve one of the biosecurity elements but also several other areas such as pest control around hatchery area, maintenance of equipment and good personnel hygiene. The observation of these good practices will itself reduce stress and hence mortality of the livestock. Furthermore, these elements of animal care could result in chick's improved health and livestock yield (Zahari et al., 2012). This matter was also highlighted by the (P4) respondent, who emphasized that the logistical aspect is very important, which can potentially pose a halal risk. The respondent's statement is as follows "...In addition to people saying what they eat, the transportation used should also be what people say... have one, the risk is halal there...".

From a halal perspective, vehicles transporting chicks must be hygienic and do not carry elements that are considered najis and haram in Islamic teachings. To maintain halal integrity, particularly in the area of assured halal logistics, the business must verify that the transportation used meets the halal assurance standards outlined in both MS1500: 2019 and MS 2400-1: 2019. These standards underline the importance of avoiding transporting goods or raw materials that are prohibited in Islam. Furthermore, the development of SOPs that describes the use of transportation, which transports animals only for halal meat consumption. Finally, having a regular schedule halal auditing programme can help strengthen halal integrity, particularly in logistics. This overall assessment proposed that chick delivery has a high degree of severity and should be classified as an HCP.

Halal critical control analysis plan

After the discussion on each HCP for broiler hatching activities, the findings of this study can be summarized and proposed into the framework of the HCP analysis plan as shown in Table 5.1 It includes an assessment of risk levels and halal control mechanisms if halal non-conformance occurs at the respective HCP.

Conclusion And Recommendation

Halal and haram issues are always becoming a polemics especially on meat status issues. The Malaysian halal food industry had been developing HAMS in which it is a necessity on applying

halal certificate. In the context of this study, halal management in Malaysia only sees the importance of halal assurance starting from the process of slaughtering live chicken in the slaughterhouse until it is processed into a meat-based food product. While in the aspect of halal verification, it is emphasized that the slaughtering process must be in accordance with Islamic law based on the sources of the Quran and hadith. But the top chain of chicken meat supply is not given full attention in terms of halal assurance. Therefore, this study examines and evaluates the level of halal risk that focuses on chick hatching activities, which are the main source of broiler chicken supply to commercial livestock farms. In this regard, the current study examined the level of halal risk involved with egg hatcheries, which are the primary source of broiler supply for commercial farms. The five HCPs were proposed which will act as guidelines for hatchery operators and also the traceability process on slaughter products or downstream production of halal chicken meat can be done more effectively. Thus, this study found that this HCP analysis is not only limited to commercial chicken operations, but can also be used in other poultry farming industries such as ducks and quails. Overall, this study will provide guidelines in establishing a halal assurance management system at the upstream level of the poultry supply chain.

Table 5.1

Halal critical point analysis plan in broiler hatching activities

HCP No.	Process step	Risk ranking assessment			Halal Control Mechanism				Control measure
		Likelihood	Severity	Risk level	What	How	Frequency	Who	
1	Egg receiving	Likely	Moderate	7	a. Wearing a clean uniform. b. Practice a good personal hygiene procedures before handling chicken eggs. b. Wash hands using detergents and disinfectants.	a. Change the clean uniforms before entering the operating area. b. Perform sanitizing on the entire body of the worker before entering the operating area. c. Wash and disinfect the hands according to the procedure.	Before and after starting handling the chicken eggs.	Operators	a. Ensure all uniforms are adequate and clean. b. Perform the fumigation process on the eggs according to the procedure. c. Training is given to employees on good personal hygiene practices.
2	Chicks Culling	Moderate	Critical	8	a. The process of slaughtering the chicks is performed by trained workers. b. Chick culling activities be monitored periodically by Halal Executive officers.	a. Slaughter of chicks by cutting the blood vessels in the neck before disposal. b. Inspect the culling process to comply with animal welfare procedures and practices.	Every chick went through a grading and selection process.	a. Operators b. Farm supervisor c. Halal executive	a. Provides employee skills competency training to perform the culling process. b. Provides halal awareness training and animal welfare practices.

3	Chicks Disposal	Likely	Critical	9	<p>a. Methods of disposing of chicks following company SOPs and procedures of JPV authorities.</p> <p>b. Monitor and verify the disposal activities by the regulations of the authorities.</p>	<p>a. Buried the carcasses in the ground.</p> <p>b. Incinerated the carcasses with closed system.</p> <p>c. The carcasses after slaughter are being processed for other animals feed.</p>	After culling process	<p>a. Operator</p> <p>b. Veterinarian</p> <p>c. Halal executive</p>	<p>a. Chick disposal procedures are updated.</p> <p>b. Provides Internal halal audit monitoring records.</p>
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Table 5.1
Continues

HC P No.	Process step	Risk ranking assessment			Halal Control Mechanism				Control measure
		Likelihood	Severity	Risk level	What	How	Frequency	Who	
4	Vaccination	Likely	Critical	9	<p>a. Provide suitable vaccines to chicks for preventing zoonotic diseases occur.</p> <p>b. The vaccine ingredient does not contain any source of haram materials.</p> <p>c. Vaccination must be performed by trained workers.</p>	<p>a. Use a suitable dosage of vaccine as prescribed by the veterinary officer.</p> <p>b. Vaccine supplied is registered and approved by the JPV.</p> <p>c. Review the list of approved vaccine ingredients through product specification and safety documents.</p>	The vaccination is given after the chicks go through the process of grading and sex selection.	<p>a. Operators</p> <p>b. Veterinarian</p> <p>c. Halal executive</p>	<p>a. Vaccine must be certified and approved by the company and source records and DVS.</p> <p>b. Provides updated records of vaccination and dosage according to the procedure.</p> <p>c. Conduct internal halal audit records on a scheduled basis.</p>
5	Logistic	Likely	Critical	9	<p>a. Using a dedicated transport to transport live chickens only.</p> <p>b. A transport is not used to carry haram products or forbidden material according to shariah with halal management guidelines (MS1500: 2019) and MS2400-1: 2019).</p>	<p>a. Used only to transport chicks to be sent to the livestock farm.</p> <p>b. Have SOPs related to logistics activities.</p> <p>c. Conduct internal halal audits regularly</p> <p>d. Has a cleaning and disinfection program on logistics transportation .</p>	Every time of transferring live chicks to broiler farms.	<p>a. Operators</p> <p>b. Farm supervisor</p> <p>c. Logistic operator</p> <p>c. Veterinarian</p> <p>d. Halal executive</p>	<p>a. Provides travel records of logistics services.</p> <p>b. Provides a record of halal awareness training to the respective logistic operator.</p> <p>c. Provides schedule internal halal audit records by halal executives.</p>

									d. Records of cleaning and disinfection of bacteria on transport trucks.
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