Supply Chain Management with Halal Critical Control Points and Impact of Halal Slaughtering in Poultry Industry

Md Mahfujur Rahman
Islamic Business School, Universiti Utara Malaya, 06010, Sintok, Kedah, Malaysia.
E-mail: dr_mahfuj@yahoo.co.uk, mahfuj@uum.edu.my

Mohd Shahril Ahmad Razimi
Muhammad Nasri Md Hussain
Islamic Business School, Universiti Utara Malaya, 06010, Sintok, Kedah, Malaysia.
E-mail: shahril@uum.edu.my

1. Introduction

The Muslim population is expected to grow to almost 2.2 billion by 2030, with a steady growth in demand for halal products (Omar et al., 2013). The growing Muslim population has pushed to create more halal producers to serve the current and upcoming Muslim consumer (Omar and Jaafar, 2011), allowing them to enter the lucrative halal market. “Halal” logo on food products are trusted by the consumers, and it authenticates the halal status of the food and its ingredients (Rahman et al., 2015). The halal food sector is becoming more international, with the adaptation of the current supply chain concept. Previously, customers were primarily concerned with halal meals, but today they understand that halal encompasses the whole supply chain, from raw material sourcing through manufacturing, shipping, storing, and handling. Thus the consumers are keen to the detail throughout the handling process, which affects the halal status of the product, particularly when it comes into direct touch with non-halal items. To guarantee that the product is entirely halal, it must be handled, transported, stored, and manufactured in a certain manner. Thus to secure the halal status of the poultry product, it should be seen as a movement of the entire product from production to the end product preparation. As a result, this study evaluates the Halal Supply Chain Management with Halal Critical Control Points and Impact of Halal Slaughtering in Poultry Industry.

2. Materials and Methods

The present work is an integrative review based on current Halal industrial situation due to the current production technique and its effect on halal status on the end products. Thus it includes the integrity of the Halal in poultry production process in line with the Islamic law. It also include the different production steps in the current poultry industry that produce halal product or service and adhere to the rules and standards for Halal service or manufacturing process. The priority was given to all literature exploring this topic from the perspectives of management science with critical control point and quality issues during the present work. We have compiled the information from the data from published articles included in the prominent scientific database such as Scopus, books, chapters, conference proceedings, reports, and of Internet sources.

3. Results and Discussion

3.1 Halal Supply Chain

Halal Supply Chain (HSC) is the application of halalan toyyiban principles across the supply chain, from the source of supply to the consumer, that correspond to the halalan toyyiban concept mandated by Islamic law. In order to maintain the halal status of the products, halal items should not be combined with non-halal products along the supply chain process. During these activities, different conditions may expose the food product to hazards that may influence the halal status of a product. Because current practices evaluate critical control points using the Hazard Analysis Critical Control Point (HACCP) (Riaz, 2004), any potential contamination and risks of the halal product becoming non-halal along the supply chain process are identified as Critical Control Points. Furthermore, if a halalan toyyiban product is mixed with hazardous products or subjected to hazardous surroundings, the product is exposed to hazards where the goods become hazardous and endanger human health.
3.2 Integration of Halal in Poultry Supply chain

To be considered halal, an item must predominantly include at least one of the following: jaiz or mubah, however certain things may be considered makrooh by some yet permissible by others. After categorizing the acts/components of chicken production, the final product can be classified or labelled as halal, haram, or shubhah (Figure 1). The principles of halal and haram are thoroughly established in the Qur'an and Hadiths. On the other hand, these two sources lack instances of things that might be classified as shubhah. What is critical is that any acts/components that may be regarded as haram or whose halal integrity is in question should be designated as shubhah. As a result, Figure 1 develops definitions for the terms halal, haram, and shubhah in relation to halal poultry meat slaughtering. If an act is classified as compulsory by the competent authority, failing to do it renders the final result haram. Likewise, the inclusion of any forbidden act/component renders the final product haram. By principle, omitting an optional or suggested criterion does not impede the final product's halal integrity.

Figure 1: Islamic law and Halal status

3.3 Control Points for Halal Poultry Supply Chain

In the case of halal meat, Islamic rules are mainly based on the Qur'an (Divine book) and Hadith (Actions and sayings of the Prophet Muhammad, peace and blessings be upon him [PBUH]). However, differences in contemporary industrial halal meat production methods are noted in regards to required criteria of halal. For example, some halal certification organizations allow specific slaughter methods, while others do not. Due to the method utilized for halal slaughtering, halal meat must be monitored and upheld to an even higher level. This means that quantitative standards are preferred for this kind of meat production. These can be organized by Control Points for Halal Poultry Supply Chain (CPHPSC) with halal poultry meat production's control points (CP). The recommended CP include all potential steps/components for halal slaughtering and are thus relevant regardless of the number of chickens slaughtered (Shahdan et al., 2016). A model CPHPSC programmer for poultry meat production is provided here as a starting point, integrating religious concepts with the most frequent contemporary industrial processes of slaughtering (Figure 2). The steps/components of the particular CP can be changed depending on the requirement, whether on a big or small scale. Modified CP, on the other hand, should not violate the fundamental principles of halal slaughtering. Determination of these CP for the halal poultry meat production sector necessitates a thorough examination of suitable alternatives and their implications.
In this work for CPHPSC we highlighted 7 essential points for halal poultry meat processing to be monitored and regulated. The objective is to foster the production of halal chicken meat through a systemic approach to assure halal integrity of the finished product. CP 1- Poultry farming breeding, rearing and feeding; CP 2- Poultry welfare during transportation and lairage; CP 3 - Immobilization for slaughtering; CP 4- Act of slaughter which include the Recitation of the tasmiah, instrument of slaughtering and the human resource where it must be a muslim; CP 5 -Time to complete bleed; CP 6-Washing and packaging; and CP 7 Storage of the poultry products without any non-halal products (Shahdan et al., 2016; Omar et al., 2013; Alvarado et al.,2007; Nakyinsige et al., 2012)

3.4 Quality attributes of Halal vs non-Halal meat products

Microorganisms are naturally present in processed raw chicken meat, the majority of which are responsible for the deterioration of poultry meat. Chicken and poultry products are top or second in most nations across the world in terms of foods related with disease, whereas the United States ranks third in terms of documented food-borne disease outbreaks (Ibrahim et al.,2014). High meat prices encouraged meat producers in several countries to create a variety of meat products using non-meat components. However, retaining the nutritional value, organoleptic and texture qualities of such goods is a significant issue, necessitating considerable work to safeguard the product integrity, taste, flavour, and textural sensory attributes. Here we bring forward the influence of Islamic (Halal) and non-Islamic (non-halal) chicken slaughtering methods on the quality characteristics of burgers made from poultry meats. The total yeast and mould counts of halal and non halal poultry based products were 5.10 x 103 (c.f.u./g) and 7.0 x 103 (c.f.u./g), respectively. This suggests that using a halal slaughtering procedure reduced microbial viable counts. The sensory evaluation of halal poultry meat-based products is shown in Table 1. The commercial non poultry-based products received the greatest marks across all sensory characteristics.

<table>
<thead>
<tr>
<th>Chemical composition</th>
<th>Halal poultry products</th>
<th>Non-Halal poultry products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture (%)</td>
<td>68.71</td>
<td>73.00</td>
</tr>
<tr>
<td>Protein (%)</td>
<td>18.71</td>
<td>16.23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensory Criteria</th>
<th>Halal Poultry products</th>
<th>Commercial non poultry products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall acceptance</td>
<td>2.93 b</td>
<td>3.71 a</td>
</tr>
</tbody>
</table>

* For criteria means in a row followed by different letter differ significantly at 5% level.
4. Implication, Limitation and Conclusion

This study provides a couple of key points to consider in poultry industry. To begin, implementing a quality assurance plan is a crucial component in attaining complete farm-to-fork strategy. Stakeholders in the meat industry can claim, and consumers can trust, that halal meat meets specified quality standards. The integrity of the Halal chicken production should be preserved via maintaining the Islamic Shariah compliance and as well as the quality of the product in entire production process. The quality and safety of meat and poultry storage will be influenced by the strength of fresh meat storage. To confirm the CPHPSC application of the chicken production process, dedicated transportation is strongly suggested. Furthermore, to ensure the CPHPSC elements, for halal chickens should be take care during the pre-slaughter and post-slaughter phases. Animal welfare should be prioritised throughout the pre-slaughter phase to reduce stress during transportation, since stress can increase contaminant shedding and cross-contamination. For the post-slaughtering phase, appropriate storage may retain the quality of chickens through refrigerated transportation with the protocols followed at the dressing units and outlets. Contamination may be avoided by transporting birds in clean, disinfected containers from the farm to the slaughterhouse and also from slaughterhouse to the retailer.

Designing and implementing fully Halal integrated supply chains from farm to the consumer has become a critical component of the entire poultry production system. Furthermore the quality assurance system should be taken care in order to meet customer needs for continuous supplies of high-quality, safe, and nutritious meals. As a result, public confidence in the food chain will be increased by providing the customers to get not only high-quality chickens but also halalan toyyiban chicks that satisfy the HSC standard. Thus the halal integrity, current poultry processing steps and CHPSC described in this study may be utilised as a guide to maintain the HSC in all the poultry industries. Furthermore, the study of the quality attribute revealed the importance of Halal slaughtering process and suggest for improvement of the formulation of poultry based products.

Acknowledgment

The authors would like to express appreciation for the support by all the academic staff of Islamic Business School, University Utara Malaysia.

5. References


