

HALAL ASSURANCE MANAGEMENT SYSTEM IN CHICKEN BROILER INDUSTRY

Mohd Hasli Ramli^{1*}, Arieff Salleh Rosman^{1,2}, Aqeel Khan³, Nurrulhidayah Ahmad Fadzillah⁴, Ahmad Muhyuddin Hassan¹, Abdul Basit Bin Samat @ Darawi¹, Zilal Saari^{1,2}, Mifedwil Jandra⁵, Nor Azwa Omar Jami⁶

¹Islamic Civilization Academy, Faculty of Social Sciences & Humanity, Universiti Teknologi Malaysia.

²Center of Research for Fiqh Science & Technology (CFIRST), Ibnu Sina Institute for Scientific and Industrial Research (ISI-SIR), Universiti Teknologi Malaysia.

³School of Education, Faculty of Social Sciences & Humanity, Universiti Teknologi Malaysia.

⁴International Institute for Halal Research and Training (INHART), International Islamic University Malaysia.

⁵Universitas Islam Negeri Sunan Kalijaga, Yogyakarta, Indonesia.

⁶Sertwo International Sdn Bhd

*hasli@graduate.utm.my

Received: 17.02.2020

Revised: 10.03.2020

Accepted: 13.04.2020

Abstract

Department of Islamic Development Malaysia (JAKIM) had made it compulsory for the application of Malaysia halal certificate at industry level to implement Halal Assurance System (HAS). The main purpose and focus to develop this halal system was to upgrade the integrity of halal product which was based by the 'Farm to Fork' concept that involved from the raw material production up to the end user in the chain. In the application of HAS, specifically in Malaysia the focus was only at the level of receiving of raw material until the end user, instead of started from the highest chain of food supply which involved the broiler chicken farm industry. Therefore, qualitative methodology through document analysis was used in order to obtain the source of information and to explain the element of HAS such as Halal Critical Point in broiler chicken farming activities. Other than that, issues related to the halal control such as animal feed, medication source and animal welfare also discussed in this paper to discover HAS application on farm level. This systematic system and halal certification policy will benefit on farming sector and make it able to be the main reference to halal player's integrity because it will give benefit the consumer from the whole of the halal food chain

Keywords: Halal Assurance System, Broiler Chicken Farm, Halal Critical Point.

© 2020 by Advance Scientific Research. This is an open-access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>)
DOI: <http://dx.doi.org/10.31838/jcr.07.07.190>

INTRODUCTION

In the development of halal Malaysia concept by JAKIM couple of initiative had been released to ensure the integrity of halal in order for food industry to produce food which full fill the halal handling system and concept. Hence, since 2013 Department of Islamic Development Malaysia (JAKIM) had enrolled an initiative to make it compulsory for any application of Halal Certificate related with multinational industry to implement Halal Assurance System in the production of halal product. Apart from that, food industry player also recommended to create this system where it functioned as additional value to the halal management, thus will increase consumer's trust toward halal food product. (Muhammad Mazuan & Zalina, 2018).

The main guideline of Halal Assurance System or known as HAS was established by Department of Islamic Development Malaysia (JAKIM) in order to meet the requirement of Halal Standard Certification System and for the system itself to be effective in managing comprehensive halal system starting from the 'From Farm to Fork' concept. Therefore, industrial party had to provide HAS procedure as a guidelines to meet the requirement of Halal Certificate and validation of halal integrity. In particular, the main element that has to be developed was the establishment of control center in which each process and steps will be meticulously checked according to HAS concept in halal *thoyibban* food (HT) production concept (Kohilavani et al., 2013; Syed Fazal Ur Raheem, Neio, & Demirci, 2018). In order to study how the implementation of HAS and development plan for 'Halal Critical Control Point' (HCCP), this research need to explore on activities of chicken farming to identify critical control point that involved in chicken broiler industry.

According to Hafiz, Marhani and Syazwani (2012), implementation of this system had receive less discuss because it just focus on awareness level and assumption of consumer to the ready-product. Nevertheless, halal food chain should be inspected from the halal food chain integrity aspect starting from the top which is right from the level of live-stock farm breeding. Then, according to Omar, Jaafar & Osman (2013), the implementation of HAS at the early stage which is from the chicken breeding farm itself, may cultivate understanding and awareness among industry and community that involve directly with the halal food chain concept. In the previous research, according to Omar et al. (2013), 'Halal Toyibban' concept discussed only focus on Halal Critical Point at the logistic and storage stage which is from the breeding farm to slaughtering premises.

Therefore, this paper will discuss and analyze closely on the implementation of principle in food assurance system along with HAS that had become an important element within food chain and animal breeding and farming industry. This paper adhere to qualitative methodology through document analysis that involved literature material resources such as guidelines and manual which related to management of HAS. Study on this resources gave a clear view and input about the issue and requirement of HAS specifically in broiler chicken industry.

LITERATURE REVIEW

1) Halal Concept and Food Safety in Food Industry

From the terminologies of halal (حلال) is an arabic word which means permissible or unforbidden by syara' law (Kamus Dewan, 2016). From the language view, halal means permissible and from terminology view, the halal word means those which are not forbidden. From Islamic perspective, it involved the harmony

and prosperity concept among community regardless of nation, religion and culture. For muslim, halal food concept is a command from Allah to ensure a healthy body, mind and spirit. On the other hand, for non-muslim halal was understood as safe, pure and healthy product and give advantage to the mankind in food resources (Suhaimi,2005). Generally, halal concept that was applied in human life was clearly stated in the Quran verses below:

"And eat what Allah has provided for you (which is) halal and good. And fear Allah, in whom you are believes."

(Surah al-Ma'idah: 88)

Based on the above verses, it is clear that intake of halal and even good food source or '*Halal Thoyyibban*' will give advantage to the humankind to raise Allah's pleasure and blessing, so it is compulsory for humankind to opt for clean, pure and halal to get benefit in spirit, soul and body (Saadan Man & Zainal Abidin (2014). Therefore, halal food concept can be referred according to Malaysia halal standard based on Islamic law was as below:

- Does not stem from or consists of any part of or item from animals that are forbidden to Muslims by Islamic law, or animals that have not been slaughtered according to Islamic law.
- Does not contain any substance that is considered impure in Islamic law.
- Is not prepared, processed or manufactured using equipment or utensils that are not free from impurities as defined by Islamic law.
- That, in the preparation, processing or storage stage, does not come in contact with or is stored near any kind of food that that are considered impure by Islamic law.

Other than producing food according to halal concept, cleanliness and safety aspect of food also should be emphasized so that is free from any sources that may harm community such as contamination form bacteria, pathogen-carrier disease. In conclusion halal food concept is not only free from any forbidden entity, it will also give good impact to the consumer. Other than that, aspect of cleanliness assurance system and food safety that was implemented today, was based on some guideline application like *Good Hygiene Practice (GHP)*, *Hazard Analysis Control Point (HACCP)* and *ISO series* - International Standard Organization. All the system mentioned above are the common quality system used which are complement to each other in halal system of Malaysia (Sani & Dahlan, 2015).

2) The Need of Element in Halal Assurance System

According to Malaysia Halal Certification System, which is established by JAKIM authorities, had gave good opportunity to those in halal food industry to upgrade or revise current halal certification system so that food product produced become more competent and assured. The guidelines of Halal Certification System (HCS), introduced by JAKIM are still new in Malaysia compared to other countries. Most of those in halal industry gave good commitment in the development of Halal Certification System to assure the halal integrity and reputation in marketing of halal food product (Rahman et al., 2017). In HCS, it is a documentation mechanism system to control, supervise, improve and prevent any misconduct in halal system or contamination of haram product during processing of food. This system become a catalyse and established by those in food industry in order to supervise product produced was surely halal and safe.

According to Nik Muhammad, Isa & Kifli (2009); Jamaludin, Kamarudin, & Ramli (2015) and Shafii & Zain (2015), it is stated that HCS is a managing system and halal documentation that should be implemented by producer for assurance of halal status

to the food product produced. The principle of system exist based on this 3 concept which are including zero limit (no haram substance used in production), zero defect (no haram product produced) and zero risk (no risk should be taken by producer or industry involved in halal product aspect). In the context of this research, HCS referred to halal managing system which involved procedure development, documentation and practicality in an organization to ensure the halal farm animal product meet the principal of halal and *thoyyibban* concept in farming sector industry. According to Shafii & Zain (2015), in their literature stated that HCS referred as documentation that cover halal policy, guidelines, or development of halal manual, Halal Analysis Control Point, operational procedure, technical reference, administration system, halal, documentation system, socialization and training program, halal internal audit, amendment action system and continual improvement.

3) Halal Assurance System Management in Malaysia

Growth of halal food industry had take place in Malaysia since 1970's and currently advancing along with current food technology. With the rapid growth of food industry along with the development of Halal Food Certification System by JAKIM as early as 1974 till now to cover the need in industry and muslim's demand on the halal product. Generally, the competent authorities JAKIM had implement standard guidelines to be used as main and formal reference in Malaysia's Halal Certificate which is MS 1500 be used (Production, preparation, handling and storage - General guidelines)

Halal standard had been used for the first time since 2004 and had been improvised and revised for third time at early 2019 which is MS1500: 2019 (Department of Standardt Malaysia, 2019). Establishment of halal standard by Department of Standard Malaysia (DSM) are for the main reference to handle and provide halal fodd starting from receivment of raw material to the ready-product. Since then, authorities had took proactive steps and initiative to develop and improvise current halal certification system by developing halal assurance system as a main condition in applying halal certificate in Malaysia.

Its not only MS1500 used, but another standard guidelines also used such as MS1480 Hazard Analysis and Critical Control Points (HACCP) dan MS1514 (Good Manufacturing Practice for Food) also used to strengthen and complementing in the need of food production (Lau, Jamaludin, & Mei Soon (2016). Furthermore, HAS had underwent transformation and improvement on the guidelines produced by JAKIM at early of 2019 which was '*Manual Draft of Malaysia Halal Management System*' in which it was still under revision process and recommendation stages (JAKIM, 2019).

It become a turning point to the development of the system in which there are additional of new elements and it become a main requirement for industry player's especially those in multinational stages, small to medium industries to develop this HAS in their company's organisation accordingly. This is one of the positive progress from JAKIM and industry entrepreneur to intensify more about the integrity and quality of halal food. Therefore, to empower and increase exposure to the industry, a lot of other inciative done such as customer education about the halal system, HAS was implemented in order to increase understanding and application according to halal system. (Jamaludin et.al, 2015; Hassan, Arif & Sidek, 2015).

According to from portal of Halal Industry Development Corporation Sdn Bhd- HDC (2018), the percent of multinational and small-to-medium industry that compulsory to implement HAS was 74%. From the percent above, that the requirement for documentation and implementation of HAS an food sector industry were at the highest level and might having escalation every year. Based on the previous research, the principal of HAS focused on the prevention of any harm and disobedience to the

halal status in product production (Estuti, Syarif & Hermanianto, 2005; Anuwar, Tamkin, Roslan & Nor, 2017; Anwar, 2018).

Alternatively, statement be debated by Rahman & Abdul (2017), the origin concept pf HAS as a system which focused on minimizing forbidden risk to the halal product and not solely depending on the analysis of last product recieved. In contrast to the statement by Sawari & Ghazali (2014) and Muhammad Mazuan & Zalina (2018) stated that halal management system functioned as supportive system which established by organization and user in order to identify the halal status from the raw material up to the ready-product were assured and even monitored by company's organisation. This issues had been addressed in previous research halal concept. This issues also had been debated in previous research which related to to the halal concept and combine with another conventional quality system which is HACCP.

According to Kohilavani et al. (2013), Lau, Jamaludin, & Mei Soon (2016), Rejaii & Arianfar (2016) dan Demirci, Soon, Jan Mei & Wallace (2016), the combination of HACCP principles with Halal concept was a backbone in the development of HAS. Therefore, usage of this combination system will give advantage towards credibility level, integrity on the status of halal product and at the same time assured the food safety level from any contamination of haram substances. In the articles by Demirci et al. (2016), halal system application that was used with HACCP system was still a new in the aspect of of halal assurance management. Hence, he stated about the aplication of this combination system which give positive impact to the halal assurance status of a product. Conversely, that system had some of weaknesses if it is be implemented. One of it was the difference in the interpretation of the halal concept and system between different scholars and authorities.

However in Malaysia, JAKIM and DSM had co-operate together to come out with iniciative and improvement toward Manual Procedure Malaysia Halal Certification (MPHM), Manual System Halal Management (MSHM) which involved with preparation of documentation, the need of HAS and Malaysia halal standard (MS1500:2019). All of the guidelines and manual was reviewed with much details according to industry requirement and they have to meet all the Islamic law based on the understanding of Islamic scholar in Malaysia. If viewed from the development of HAS since it was established in 2011, there are changes ocured in the its requirement and implementation. The changes was on the scope of guidelines usage which involved multinational, small to medium industry (JAKIM,2019). This required compinent in MSHM can be referred at the Table 1.0 below:

Table 1.0: Requirement Component Suggested SPHM (2019). Quoted from Manual of Malaysia's Halal Handling System 2019 (JAKIM, 2019)

Category of Small and Micro Industry	Category of Big and Medium Industry
Internal Halal Comittee(IHC)	Halal Assurance System (HAS)
1. Halal policy 2. Control of raw material 3. Traceability	1. Halal Policy 2. Appointment of Halal Executive 3. Internal Halal Comittee 4. Halal Risk Control 5. Raw Material Control 6. Internal Halal Audit 7. Training program 8. Traceability 9. Implementation of control measure 10. Laboratory lab analysis 11. Development of product recall procedure 12. Documentation system and management of records

Therefore was that HAS development was not only for application of Malaysia Halal certificate but it also increase compliance and trust among Muslims. Its even important in emphasizing halal integrity and in preventing any potential harm that may accur along the production process of halal product. In the context of this research, eventhough HAS only focus on production of halal food industry, it may give significant impact to the farming sector of halal animal in which it should be monitored from the first food chain. In conclusion, this research shown that a complete HAS should be started from the early stage of halal food supply.

4) Necessity of HAS in Chicken Broiler Industry

The development of assurance system in the production of meat-based food will focus on the slaughtering premises which involved halal slaughtering rocess to the level of process of broiler chicken production (Omar et al., 2012; Saidin, Rahman & Abdullah, 2017). Contamination or any forbidden element may occur in th whole stages of food supplier such as breeding farm, manufacturer, logistic, slaughter house, meat processing, retailers and consumer (Spiegel et al., 2012). Other than that, it will not only harm the health of the animal but it will affect the health of community if the safety and cleanliness of meat was contaminated. Farm product either animal or plants based, must be free from any harm such as bacteria, pathogenic bacteria, poisonous and all the residues like vaccination and excessive usage of antibiotic.

In the context of HAS necessity at the broiler chicken breeding stages was assumed as a yet unexplored system and was still not included in Malaysia's Halal Certification's scope and MPPHM. However, HAS implementation been seen as a system that capable of preventing any chances of contamination and unlawful activities. According to Islamic perspective, livestock animals should be fed with halal and safe food or they will spread disease to human being (Shahdan *et al.*, 2016).

The desicion of halal assurance in chicken broiling breeding sector, the sources of their food plays an important role. Animal food is defined as any raw, fully or half-processed material given directly to the farm animal (Codex Alimentarius, 2008). Usually, industrial waste form slaughtering premises which include blood, feather, fat or chicken carcass was recycled to produce animal food which is high in nutrient and contribute to the rapid growth of broiler chicken (Mead, 2004). Meanwhile, growth hormone also used to reduce maturity period and at the same time contribute to the increase in weight in broiler chicken. As a

result, cancer risk and disease infection in human and resistance toward disease may occur. According to syariah's concept, the forbidden (haram) materials used in sources of animal food was categorized as faeces and it can give a harmful effect to the consumer's health.

In the farm industry, animals food issues which didn't meet Islamic laws were well known in Malaysia. It consist of internal organ, swines faeces and sewage from breeding farm which was fed to animal deliberately. This issues occur due to lack of understanding in about halal concept and reduce the production cost among the farmer and breeder. Other than that, farmer entrepreneurs had lack understanding about the causes and effect of animal food resources to halal status of the animals meat (Saidin *et. al*, 2017).

The issues of feed meal sources also should be emphasized. According to syariah concept by Jamaludin, Ramli & Rahman (2017), animals food should consist of healthy and nutritious food to make sure that their meat is halal, uncontaminated and give benefits to consumer. According to halal status, if farm animal was given forbidden food such as contaminated material and faeces continuously, then automatically the animal itself is haram (forbidden). In others research, which debated on animal feed issues by Muflih, Ahmad, Jamaludin, & Nordin (2017) stated that were a lot of breeding farm that provided high protein content in animal's food from the sewage of chicken processing industry or any animals that had doubtful halal status. According to him, its not only the final product that has to be compliance to the halal principal, but then include the component of feeds content also should be free from najis material such as blood, sewage from slaughtering premises, product from insects and swine.

Referring to farm feed meal which related to safety on food, author had discover couples of relationship between safety issues and halal concept towards broiler chicken's food resources which fulfill HAS concept. In the previous research by Abdullah, Khaled dan Ahmed (2010), studied was involving in accessing aflatoxin and heavy metals in farm animal food. According to author, the content of aflatoxin and heavy metals in feed meal composition will give negative impact to the broiler chicken in which it will affect growth rate, rate of food intake and may lowered their immune system. Normally heavy metals give negative impact to health of chicken in which it will lead to attack of cardiovascular system, kidney failure, and weak bone structure. To conclude, it is recommended that animals food should be free from aflatoxin and the method of feedmeal storage should be in good practice. Therefore, safety issues of animal's food should be emphasized especially in the status certainty and halal system should be closely followed to ensure the good health of the animals.

Generally in Malaysia, current animal feed product available on market was mostly imported from others country in order to accomodate the necessisty. Nowadays, with rapid growing economy there were many kind of feed meal resources which consist of animal and plant based. They are benefited from inovation which based on genetic engineering defined as (*Genetically Modified Organism, GMO*) which involved modifying process of genetic structure, genetic addition of an organism to produve variant or new species (Ikram & Mohd Azam (2014). Consequently, this issues become a polemic among worldwide community. Therefore, issues of food based on GMO technonology will be further explained in the previous study by Abdul Rahman, Abd Rahman & Hafiz (2013) through document analysis that was related with GMO's based on food safety and halal perspective aspect. In this research, couples of benefit about GMO's based food was explained in which it give good impact to the farmers economy due to food material in cereal form had such a good quality and high resistance to disease or pest. Based on Malaysia Halal Standard in MS1500 through 95th Muzakarah of International Fatwa Committee on 2011, decided that modified food genetic which sourced from halal and pure

organism was halal. However, if its not from the halal source, then it will fall on haram status (JAKIM, 2015). From the statement above, it was recommended that any animal feed provided to farmer to be known of the status and sources.

Disease attack was such a serious harm in chicken broiler breeding. This can prevent the growth and rate of food consumed by chicken and may cause in high death rate. In the aspect of farm management, prevention steps of disease transmission should be such an important aspect and continuously to produce good quality of meat. Vaccine usage and antibiotic was a medication to the chicken and was an important component to ensure their healthiness and safety. Generally vaccine define as chemical substance that able to kill or weaken the causative agent when it is injected to body as it will produce immunity against certain disease. (Kamus Dewan, 2016). According to Department of Veterinary Service (2015), in the vaccination process it defined that vaccine substance are biological substances that increase immunity toward disease and it contained certain agent that are similar to causative agent. Vaccine cause it to be weakened and inactivated. Then, the agent will stimulate immune system to recognize agen as antigen and protect the body from the disease.

Other than providing optimum health to the broiler chicken, vaccination also important in the welfare aspect of animal and broilers health. Vaccination is not only focused on health aspect of animal but it also may decrease contamination risk of meat by harmful bacteria which absolutely give impact on quality and safety of food (Wijaksani, Razak & Singh, n.d). Those disease caused by harmful bacteria and virus were *Newcastle disease, Avian Influenza (AI), Infectious Bronchitis, Infection Bursal Disease, Marek's Disease, Infection Coryza, Infection Laryngotracheitis, Egg drop Syndrome, Fowl Pox* and *Fowl Cholera* (Department of Veterinary Services, 2012).

In the context of handling and halal thoyiban concept, medication usage become one of the important aspect in broiler industries. Generally, requirement for Malaysian Halal Certificate scope is not clearly stated even on the level of animal farming. In MS ISO22000:2012 (*Food Safety Management System- Organisation requirement in food chain (Malaysia Standard Department, 2012)*), explained that handling of food safety started from sources of raw material for animal food, production and processing till the last consumers should be free from harmful hazards which will affect the product quality. This concept also emphasized on handling system and systematic tracing system of drugs material producer of veterinar. Other than that, this standard also involved current quality system like HACCP system and GMP. Therefore it was recommended to particularize, refine the main substances in the vaccine and antibiotic, handling procedure, storage and medication dose rate that fulfill halal toyiban concept and HAS so that it will not harm farms animal and assured saftey till the last user in the food chain.

In the chicken broiler breeding activities, welfare of the animal itself should be important. According to Department of Veterinary Services (2015), definition of animal welfare referred to something that animals can be adapted in surrounding such as being healthy, comfortable, getting sufficient food supply, adequte nutrition, safe from harmful surrounding, not in painful and stress condition. According to Shahdan, Regenstein & Rahman (2017), affirmed that welfare concept on animal is a new concept in Malaysia, compared to other countries that give strong support in fight for the animal welfare. According to him, animal welfare should include free from disease, hungry, thirst and fear. They should be looked up in a good manner because they have right to savor good life. A good animal welfare strongly connected to disease control, medication treatment by veterinar, good food handling system and should be treated humanly.

Other than standard guidelines that produced by DVS, Malaysia government had take initiative to draft a particular act to the animal welfare which is Animal Welfare Act 2015 (Act 772) which outlined 21 aspect including custody and welfare aspect of farm animal (Akta Kebajikan Haiwan. (2015). In the syariah perspective animal welfare and freedom should consist of free from thirst, hungry, animal should be comfortable in cage, free from painful condition, injury and disease. This concept had been practiced by some of the farmer traditionally and also during slaughtering of animal during Adha Eid (Suhaimi, 2005). Several aspect in animal welfare was outlined below by 'Good Farming Practice' (Department of Veterinary Services, 2012) especially in broiler's industry:

1. Selection of suitable farm site
2. Complete infrastructure and facility at farm
3. Good management of workers welfare
4. Handling of food drink supply for animal
5. Farming handling
6. Reford management of farm site
7. Sanitation management of farm
8. Farm waste management
9. Pollution management
10. Vaccine and Medication usage
11. Farm Biosecurity Management

Therefore, based on the list above, it can be concluded that those programme had give advantage to both of the farmer and community. One of the benefit was farm animal and animals farm product was assuredly safe, high quality and free from any diseases. For community, good farm practice will give good food safety up to the last user in the food chain. Therefore, after all the explanation about factor and necessity of animal food resources, medication and animal welfare, it can be concluded that implementation of HAS especially in the stages of broiler chicken breeding was still a new thing in Malaysia and less discussed among competent authorities and researchers. So, it is recommended that handling system should be started from the hatching of broiler eggs to the delivery process of live chicken to the slaughtering premises so that it fullfills the halal and thoyiban concept.

CONCLUSION AND SUGGESTION

Halal and haram issues are always become a polemics especially on meat status issues. Malaysia halal food industry had been developing HAS in which it is a necessity on applying halal certificate. From the context of halal food chain, animal feed source, medication issues and animal welfare also one of the important aspect that should be looked up. Therefore, application of effective HAS may help industry players especially in farming industry and at the same time it maintain the credibility as it benefits all in the community starting from early stages in halal food chain. Furthermore, it increase awareness among community especially consumer to aware that the source of halal food starting right from earlier stage at poultry supply chain. This research also recommend that HAS to be applied to another livestock and as well as fisheries industry sectors.

ACKNOWLEDGEMENT

This article is part of a research analysis entitled 'Halal Critical Control in Halal Assurance System at Chicken Farm' Fundamental Research Grant Scheme funded by Ministry of Higher Education Malaysia, registered under vot. 5F193 at Universiti Teknologi Malaysia.

REFERENCES

1. Ab Rahman, S., Abd Rahman, A., & Hafiz Aliaziz, M. (2013). Genetically Modified Organisms (GMOs) and the Issue of Safety and Halal in Malaysia. *Australian Journal of Basic and Applied Sciences Aust. J. Basic & Appl. Sci.*, 7(712), 238–244. Retrieved from www.ajbasweb.com
2. Abd Rahman, A., Singhry, H. B., Hanafiah, M. H., & Abdul, M. (2017). Influence of perceived benefits and traceability system on the readiness for Halal Assurance System implementation among food manufacturers. *Food Control*, 73, 1318–1326. <http://doi.org/10.1016/j.foodcont.2016.10.058>
3. Akta Kebajikan Haiwan. (2015). Jabatan Perkhidmatan Veterinar Malaysia. Retrieved [www.dvs.gov.my/dvs/resources/user_1/DVS%20pdf/Kebajikan%20Haiwan/Akta_Kebajikan_Haiwan_2015_\[Akta_772\]_Bahasa_Melayu.pdf](http://www.dvs.gov.my/dvs/resources/user_1/DVS%20pdf/Kebajikan%20Haiwan/Akta_Kebajikan_Haiwan_2015_[Akta_772]_Bahasa_Melayu.pdf)
4. Anuwar, K., Tamkin, J., Roslan, M., & Nor, M. (2017). Manual Prosedur Pensijilan Halal Malaysia Sebagai Suatu Aplikasi Memenuhi Keperluan Konsep Halalan Tayyiban: Suatu Analisis. *Online Journal of Research in Islamic Studies*, 4(1), 1–16. <http://doi.org/10.15364/ris17-0401-01>
5. Anwar, M. K. (2018). The Urgency of Halal Assurance System for Product Reliability. *International Journal of Islamic Business and Economics*, 2(2), 119–125
6. Codex Alimentarius. (2008). Code of the Practice on Good Animal Feeding. CAC/RCP 54-2004. Retrieved from http://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspac.e.fao.org%252Fsites%252Fcodex%252Fstandards%252FCAC%2BRCP%2B54-2004%252FCXP_054e.pdf
7. Demirci, M, N, Soon, Jan Mei and Wallace, C. A. (2016). Article Positioning Food Safety in Halal Assurance Positioning Food Safety in Halal Assurance. *Food Control*, 70, 257–270.
8. Department of Standard Malaysia. (2019). Malaysian Standard: MS1500: 2019 (*Halal Food: General requirement – Third Revision*). Kuala Lumpur: Standard Malaysia.
9. Department of Veterinary Services. (2012). Garis Panduan Pelaksanaan Amalan penternakan Baik bagi Pensijilan Skim Amalan ladang Ternakan (SALT), 35.
10. Dewan Bahasa dan Pustaka. (2016). Kamus Dewan. Edisi Keempat. Kuala Lumpur: DBP.
11. Estuti, W., Syarieff, R., & Hermanianto, J. (2005). Pengembangan konsep sistem jaminan halal di rumah potong ayam.pdf. *Jurnal Teknologi Dan Industri Pangan*, XVI.
12. Halal Industry Development Corporation. (2018, February 9). Halal Certified Statistics. Retrieved from the HDC Global Halal Support Centre website: http://www.ghsc.com.my/publisher/alias/halal_certified_statistics?dt.driverAction=RENDER&pc.portletMode=view&pc.windowState=normal&pc.portletId=hadirGraph-web.hadirWebPortlet
13. Hassan, M. H., Arif, S., & Sidek, S. (2015). Knowledge and Practice for Implementing Internal Halal Assurance System among Halal Executives. *Asian Social Science*, 11(17).
14. Ibu Pejabat Perkhidmatan Veterinar. (2012). Garis Panduan Pelaksanaan Amalan penternakan baik Bagi Pensijilan Skim Amalan Ladang Ternakan (SALT). Kementerian Pertanian dan Industri Asas Tani. Malaysia.
15. Ikram Ismail & Mohd Azam Yaacob. (2014). Adakah GMO mudarat?. 5 Oktober, Harian Metro.
16. Jabatan Perkhidmatan Veterinar. (2015). Arahan prosedur tetap veterinar Malaysia- Vaksinasi. Kementerian Pertanian Dan Industri Asas Tani Malaysia. No. Dokumentasi: APTVM 22(b):1/2010.
17. JAKIM. (2015). Kompilasi Pandangan Hukum, Muzakarah Jawatankuasa Fatwa Bagi Hal Ehwal Ugama Islam Malaysia. Cetakan Kelima. Crystal Creative Empire. Malaysia.
18. JAKIM. (2019). Draf Manual Sistem Pengurusan Halal Malaysia 2019. Jabatan Kemajuan Islam Malaysia. Retrieved

- from
<http://www.halal.gov.my/ckfinder/userfiles/files/draf/DR AF%20MHMS-National%20Consultation.pdf>
19. Jamaludin, M. A., Kamarudin, N., & Ramli, M. A. (2015). Halal Executive's Perception Towards Halal Training Programme Based on Training Needs Analysis. *The International Journal of Humanities & Social Studies*, 3(1), 1–10.
 20. Kohilavani, Zzaman, W., Febrianto, N. A., Zakariya, N. S., Abdullah, W. N. W., & Yang, T. A. (2013). Embedding the Islamic dietary law in accordance to the HACCP approach. *Food Control*, 34(2), 607–612. <http://doi.org/10.1016/j.foodcont.2013.06.008>
 21. Lau, A. N., Jamaludin, M. H., & Mei Soon, J. (2016). Quality assurance and halal control points for the food industry. *Nutrition and Food Science*, 46(4), 557–570.
 22. Md. Sawari, S. S., & Ghazali, M. A. (2014). Amalan Standard Halal Di Negara-Negara Asia Tenggara. *UMRAN - International Journal of Islamic and Civilizational Studies*, 1(1). (EISSN: 2289-8204),
 23. Mead, G.C., (Ed.) (2004). Poultry meat processing and quality. CRC press: Woodhead Publishing Limited.
 24. Mohd Hafiz Zulfakar, Marhani Mohammad Anuar, Mohammed Syazwan Ab.Talib. (2012). Conceptual Framework on Halal Food Supply Chain – Integrity Enhancement. Science Direct. *Procedia. Social And Behavioral Science*. 121, 58-67.
 25. Muflih, B.K, Ahmad, N.S, Jamaludin, M.A. and Nordin, N. F. (2017). The concept and component of contaminated animals (Al-Jallalah Animals). *International Food Research Journal*, 24, 436–440. Retrieved from <http://www.ifrj.upm.edu.my>
 26. Muhammad Mazuan, R., & Zalina, Z. (2018). Pelaksanaan Sistem Pengurusan Jaminan Halal Di Rumah-Rumah Sembelihan Ayam Halal Dan Isu-Isu Berkaitan: Satu Sorotan Literatur. *Journal of Shariah Law Research*, 3(1), 105–124.
 27. N. Abdullah Alkhalaf, A. Khaled Osman & K. Ahmed Salama (2010). Monitoring of aflatoxins and heavy metals in some poultry feeds. *African Journal of Food Science*, 4(4), 192–199. Retrieved from <http://www.academicjournals.org/ajfs>
 28. Nik Muhammad, N. M., Isa, F. M., & Kifli, B. C. (2009). Positioning Malaysia as Halal-Hub: Integration Role of Supply Chain Strategy and Halal Assurance System. *Asian Social Science*, 5(7), 44–52. <http://doi.org/10.5539/ass.v5n7p44>
 29. Omar, E. N., Jaafar, H. S., & Osman, M. R. (2012). Assessing Halalan-Toyyiban Food Supply Chain in the Poultry Industry. *International Halal Conference 2012 (INHAC)*, 0(2011), 4–5.
 30. Omar, E. N., Jaafar, H. S., & Osman, M. R. (2013). Halalan Toyyiban Supply Chain of the Food Industry. *Journal of Emerging Economies and Islamic Research*, 1(3), 1–12.
 31. Rejaai, M., & Arianfar, A. (2016). Halal food : A systemic review. *International Journal of PharmTech Research*, 9(7), 340–345.
 32. Saadan Man & Zainal Abidin Yahya (2014). Halalkah Makanan Kita?. Terbitan Pertama. PTS Publication & Distributor Sdn Bhd.
 33. Saidin, N., Rahman, F. A., & Abdullah, N. (2017). Animal Feed: Halal Perspective. *International Conference on Humanities, Social Sciences and Education (HSSE'17) London (UK)*, 20-21(March). <https://doi.org/10.17758/URUAE.UH0317018>
 34. Sani, N. A., & Dahlan, H. A. (2015). Current Trend for Food Safety and Halal Measures. ASEAN Community Conference 2015, Bangi, Malaysia, 11–12.
 35. Shafii, Z., & Zain, S. (2015). Halal Assurance Mechanisms in Halal Industry: An Appraisal On Its Effectiveness Towards Continuous Halal Assurance and The Way Forward. *Proceedings of INTCESS15- 2nd International Conference on Education and Social Sciences*, 1430–1438.
 36. Shahdan, I. A., Regenstein, J. M., Shahabuddin, A. S. M., & Rahman, M. T. (2016). Developing control points for halal slaughtering of poultry. *Poultry Science*, 95(7), 1680–1692.
 37. Shahdan, I. A., Regenstein, J. Mac, & Rahman, M. T. (2017). Critical limits for the control points for halal. *Poultry slaughter*, (96), 1970–1981.
 38. Suhaimi Ab. Rahman. (2005). Pengurusan Produk Halal. Penerbit Universiti Putra Malaysia. UPM Press.
 39. Syed Fazal Ur Raheem, Neio, M., & Demirci. (2018). Assuring Tayyib from a food safety perspective in Halal food sector : a conceptual framework. *MOJ Food Processing & Technology*, 6(2), 170–179.
 40. Triary Wijaksana, T., Razli bin Abdul Razak, M., & Singh Gardir Singh, M. (n.d.). ASEAN Good Animal Husbandry Practices for Layers and Broilers Food Safety Module. ASEAN-Australia Development Cooperation Program Phase II. Retrieved from <https://www.asean.org/storage/images/Community/AEC/AMAF/OtherDocuments/ASEAN%20Food%20Safety%20Module%20GAHP%20For%20Layers%20and%20Broilers.pdf>
 41. Van der Spiegel, M., van der Fels-Klerx, H. J., Sterrenburg, P., van Ruth, S. M., Scholtens-Toma, I. M. J., & Kok, E. J. (2012). Halal assurance in food supply chains: Verification of halal certificates using audits and laboratory analysis. *Trends in Food Science and Technology*, 27(2), 109–119.