



Analysing the Halal Risk along the Supply Chain for Food Truck Businesses: A Suggestion for an Innovation

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ABSTRACT

According to the new development in MPPHM 2020, halal certification can be applied to mobile premise where all food and beverage preparation and processing is done on-site, eliminating the need for a separate central kitchen. Unlike the previous MPPHM 2014, mobile premise enterprises can only seek for halal certification for the central kitchen, not the food truck. As a result, operators and owners require some form of direction and reference to help them establish a system that may help them apply for halal certification by managing the risks of food contamination, particularly from al-najs and non-halal materials, as well as food safety issues. This will be accomplished by creating software for the Halal Risk Management Plan and analysing the potential risks of contamination along the supply chain for food truck enterprises, starting with procurement and ending with the end consumer. Although there is a broad application for halal auditing and traditional risk management software, it is not tailored to the food truck industry. As a result, a mobile app related to the Halal Risk Management Plan for Food Truck must be developed to assist food truck operators as well as halal auditors in complying with the certification requirements by analysing potential contamination risks along the supply chain. Food truck owners and operators, as well as halal auditors, can be alerted to all potential halal risks to make the auditing process easier.

ABSTRAK

Mengikut perkembangan baharu dalam MPPHM 2020, pensijilan halal boleh digunakan untuk premis mudah alih di mana semua penyediaan dan pemprosesan makanan dan minuman dilakukan di tapak, menghapuskan keperluan untuk dapur pusat yang berasingan. Tidak seperti MPPHM 2014 sebelum ini, perusahaan premis mudah alih hanya boleh mendapatkan pensijilan halal untuk dapur pusat, bukan trak makanan. Akibatnya, pengendali dan pemilik memerlukan beberapa bentuk arahan dan rujukan untuk membantu mereka mewujudkan sistem yang boleh membantu mereka memohon pensijilan halal dengan menguruskan risiko pencemaran makanan, terutamanya daripada bahan al-naj dan bukan halal, serta isu keselamatan makanan. Ini akan dicapai dengan mencipta perisian untuk Pelan Pengurusan Risiko Halal dan menganalisis potensi risiko pencemaran di sepanjang rantaian bekalan untuk perusahaan trak makanan, bermula dengan perolehan dan berakhir dengan pengguna akhir. Walaupun terdapat aplikasi luas untuk pengauditan halal dan perisian pengurusan risiko tradisional, ia tidak disesuaikan dengan industri trak makanan. Hasilnya, aplikasi mudah alih yang berkaitan dengan Pelan Pengurusan Risiko Halal untuk Food Truck mesti dibangunkan untuk membantu pengendali trak makanan serta juruaudit halal dalam mematuhi keperluan pensijilan dengan menganalisis potensi risiko pencemaran di sepanjang rantaian bekalan. Pemilik dan pengendali

trak makanan, serta juruaudit halal, boleh dimaklumkan tentang semua potensi risiko halal untuk memudahkan proses pengauditan.

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1. Introduction

One of the biggest consumer segments on the globe is the halal market. From a business standpoint based on the research by Wilson (2014), the phrase halal implies products and services that observe the Shariah law and acceptable to Muslim customers. The request for halal goods and services is driven in part by the rising number of Muslims, among other things (Lever and Miele, 2012), increased consumer knowledge (Aziz and Chok, 2013), positive non-Muslim acceptance (Wilkins et al., 2019), and migration (Abdul-Talib and Abd-Razak, 2013). According to a well-known source on the Islamic economy called the State of the Global Islamic Economy Report, the halal business is currently worth \$2.2 trillion and is expected to grow to \$3.2 trillion by 2024 (Dinar Standard, 2019). This vast and wealthy industry presents a lucrative opportunity for governments, investors, and corporations.

The halal food business is impressively growing in the halal market. By 2021, the market value of this company, which was valued US\$1.173 trillion in 2015, had reach US\$1.914 trillion (Thomson Reuters, 2017). Aside from that, the worldwide halal market accounts for almost 20% of the whole food sector, with demand for halal products anticipated to rise to 70% by 2050 (Munich Personal RePEc Archive (MPRA), 2016). As food is a necessity of life that provides energy and nutrients for growth, halal food is also an important feature of food choices for Muslim customers because it is their responsibility to follow religious obligations and prohibitions. According to the Pew Research Center's Forum on Religion & Public Life, the world's Muslim population is expected to grow by nearly 35% over the next 20 years, rising from 1.6 billion in 2010 to 2.2 billion by 2030. This corroborated the previous figures indicating In today's business, the halal market has emerged as one of the most profitable and powerful markets as a result of the expanding Muslim population.

The developing and the evolving food industry created a new trend in which restaurant owners sold their meals that use vehicles. As a result of this brilliant innovation, they are now mobile, attracting a wide range of clients. The practise of retailing easy-to-prepare, quick-to-serve meals from vehicles is called as food trucks. Ibrahim (2011) explains a food truck as a transportation with the capability of preparing and cooking food as well as the mobility to travel from one strategic point to another. The rising urban community's desire for simple, fast, and readily available meals offers a compelling case for the rapid growth of food truck operations. People in cities must seek an alternative for their dining needs due to their hectic lifestyles, lengthy working hours, and expensive living expenses (Shahwahid, Bakar & Eksan, 2018). Food truck service is expected to grow rapidly, not only because it offers a unique experience and novel cuisine at low costs, but also because it requires far less capital to start a mobile food premise business than a regular brick-and-mortar restaurant (McLaughlin, 2009).

To entice customers to buy their meals from food truck operators, they have increased the variety of food available. This is due to the fact that quite a few numbers of these owners and consumers are Muslims, and with an increasing number of non-Muslims dominating the food sector, Halal certification of food is becoming increasingly important. There is a special rule for a Muslim consumer when it comes to deciding what foods and beverages to eat and drink. In principle, the rule states that foods labelled halal are permitted to eat or drink, while items labelled haram should be avoided by Muslims. The concept of halal and goodness (tayyib), which refers to things that are hygienic, pure, safe, non-toxic, and of excellent quality (al-Qurtubi, n. d.; al-Tabari, n. d.; al-Suyuti, 1990; Ibn 'Ashur, 1984), is used to determine halal food. Halal food must also be tayyib, which indicates that it must be of good quality, clean, and safe to consume.

As a result, this concept is relevant from the beginning to the finish of the production process. This covers the steps involved in preparing, manufacturing, and distributing food until it is served to customers (Arif & Sidek, 2015). A proper risk identification is required to assure halalness, food safety, and health issues in mobile food premise enterprises. As a result, this article suggests a mechanism that could assist them in obtaining halal certification and identifying potential risks in mobile food premise operations. This will be accomplished by creating software for a Halal Risk Management Plan and analysing the potential hazards of contamination along the supply chain for food truck enterprises, beginning with procurement and ending with the end consumer.

2. Literature Review

According to Shahwahid, Bakar, and Eksan's (2018) research, the Malaysian public and local authorities are concerned about the status of halal food as well as the contamination issue along the supply chain. Food truck operators as entrepreneurs who are mostly involved in halal foods, specifically in food processing and food services, cannot avoid adhering to aspects of the halal concept such as GMP (Good Manufacturing Practice) and GHP (Good Hygiene Practice). Starting from the hygiene, the security, the packaging, the shipping, the labelling, the pricing, the hospitality until the customer service related to food products, all of these must be taken into consideration. This is because consumers become more conscious of the food they consume, one of the most significant components of halal foods for them is the product's safety and quality, as well as the lack of any najis or dangerous substances (Yaacob, Rahman, & Jaafar, 2018).

Foodborne infections have emerged as a result of contamination caused by inappropriate handling, preparation, and storage along the food supply chain process, according to Hu, Edlund, Davis, and Kaufman (2016). Previous research by Al-Shabib, Mosilhey, & Husain (2016); da Cunha, Cipullo, Stedefeldt, & de Rosso (2015); Sabbithi et al., (2017) has also revealed that food handlers are responsible for foodborne diseases caused by inappropriate food handling in cooking and chilling process, as well as food contamination caused by poor personal hygiene or other cross contamination sources.

Based on research by Ali, Tan, & Makhbul (2013), the halal character of the raw materials, the halal food requirements, and the understanding that the facilities used in processing products must not be cross-contaminated with najis or non-halal ingredients or products are still being overlooked by food vendors. Among the major challenges handled by the halal food services industry is the shortage of the personnel that understand Syariah requirements and implement the knowledge into real industrial practise so that they can conform with safe food handling procedures consistent with the *halalan tho'yyiban* concept (A.Siti Mashitoh et al., 2013). Riaz & Chaudry (2003) in their research stated that this will have a significant impact, as the status of halal food may change to haram if it comes into contact with najis or non-halal food products.

Consumers have placed a high value on the creation of halal meals. As previously said, today's consumers recognise that halal compliance encompasses the whole supply chain, from raw material sourcing to manufacture, transportation, storage, and handling. Suhaiza et al., 2015; Suhaiza et al., 2015; Suhaiza et al., 2015). They are aware that contamination threats will have an impact on the safety and quality of halal food products. Hence, the purpose of this study is to determine which risk factors contribute to halal food product contamination in mobile food premise businesses. This is to assist halal food truck operators in keeping halal food products from being contaminated during the full food preparation process.

3. Research Methodology

This research reviewed halal management articles related to foods, food trucks, risks, risk assessment, and innovation. The purpose of this study is to identify possible halal dangers or important elements in mobile food premises enterprises that have been recorded in scholarly databases. Due to the lack of halal management study about risk management in the stated areas of research, the study took the main points of what is a potential halal risk and what critical factors contributed to the success of the mobile food premise businesses. All of the information can assist in developing a system, specifically a software to innovate halal risk management for the mobile food premise owners and operators as well as the halal auditors.

From a study by W. Ho, T. Zheng, H. Yildiz, and S. Talluri (2015), a research approach has been adopted. The method will be further explained by the image in figure 1. The study used the search terms "food" and "food truck" and "halal supply chain" and "risk" and "risk assessment" and "innovation" for the title, abstract, keywords, and main text. The papers were then extracted using the Web of Science, Scopus, and Google Scholar databases, as well as the major publisher databases including Springer, Elsevier, Taylor & Francis, and Emerald Insight. Next, the study examined the publications based on their scope. Due to the limitation of halal management articles for publishing, other sources related to the topic, including research papers, conceptual papers, literature review papers, ongoing papers, and book chapters, were included for this evaluation. After that, the criteria were decided upon and applied to the articles. The criteria are based on the titles, keywords, and abstracts of papers dealing with halal management, and the collection of references was heavily scrutinized to determine the applicability of the studies' publications. The substance of each item was then carefully examined to make sure it was suitable for halal management. Only 55 of the 140 papers in the topic of halal management that were discovered for this study were really linked to it. The following Figure 1 can be referred on the steps for literature review.

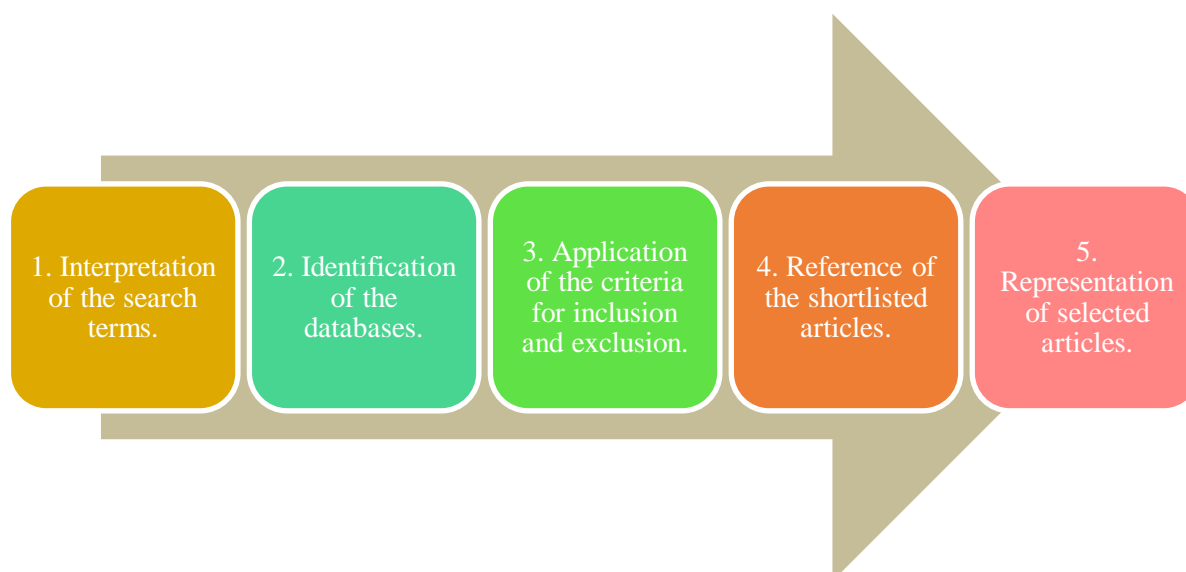


Figure 1. *Steps for Literature Review*

4. Determining Potential Halal Risks in Mobile Food Premise Businesses

The issues of halal risks in mobile food premises enterprises are still in its infancy and not being well researched by academics and practitioners. However, there is a substantial number of pertinent research that may be examined at and acknowledged in order to gain understanding about the subject. According to Noordin et. al. (2014), the most relevant research is the risks in the halal supply chain. The reason is that the food products' halal status must be preserved throughout the supply chain process, not just at the preparation, processing, and handling stages. In the halal supply chain process specifically during transportation, there are five primary risk categories for contamination hazards for halal food products, as shown in Figure 2.

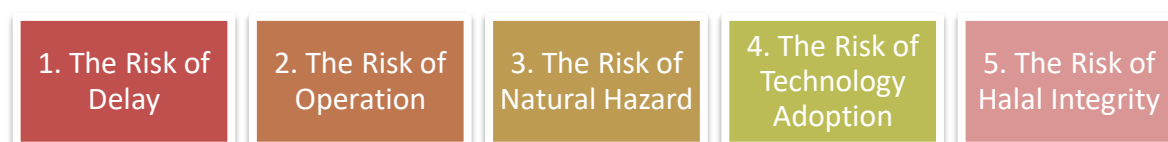


Figure 2. *Risk Categories during Transportation in Halal Supply Chain Process*

Source: Yaacob et al. (2018)

A study on supply chain risk management by Yunus et. al. (2014) established that the quality of the food arrangement process depends on the factors of the risk. The whole supply chain will be affected when the delay risk takes place and the contamination risks for halal food products will increase. The value of halal food products will be affected if the distribution time exceeds the product's life span.

For the risk of operation in the company's everyday operations, food products contamination will increase if the distribution process takes longer than usual (MH Zulfakar, F Jie, and C Chan, 2012). The exposure to biological, chemical, physical, human, and environmental natural hazards will directly impacted the status of the food products. Thus, to preserve halal and reduce the danger of spoilt food, the halal supply chain process must be managed by competent individuals at the appropriate time, using the appropriate method.

The chances of food contamination during food product lead-time delivery, according to Tarmizi et. al. (2014), can be caused by natural hazards which can be regarded a disruptive risk. Floods, traffic jams, climate change, weather changes, fires, and other natural disasters are a few examples of natural hazards that might disrupt the food supply chain process along the route. Disruption risks may create a delay in the delivery of food items, raise the danger of infection, and impact the halalan toyyiban aspects of the food products. This means that natural hazard issues must be evaluated often and effectively, especially when it comes to frozen food and easily-spoilt goods.

Al-Mazeedi, H. M., Regenstein, J. M., & Riaz, M. N. (2013) and Neio Demirci, M., Soon, J. M., & Wallace, C. A. (2016) both concluded that the causes of contamination risks in product handling were due to a lack of knowledge and preparedness on the part of manufacturing and logistics firms to adopt technology for everyday operations. Aiming to reduce the danger of product cross-contamination, maintain the halal status of food products, and ensure their safety characteristics, a traceability system must be integrated into a company's operations.

The halal food industry can attain halal integrity if the food is procured, manufactured, processed, stored, and distributed in line with Islamic laws. To increase halal integrity while dealing with businesses and activities relevant to halal food services and commodities, facilities and equipment must be enhanced, and staff members must undergo regular training (Thomas et. al., 2015). By doing all of these, the halal status of the food products in the whole supply chain will be protected and guarded until it reach the consumers.

Another nine considerable risks were identified in the halal food supply chain by Azmi et. al. (2020). These risks included the ones associated with human resources, processing, logistics, raw materials, certification for halal food, traceability, market characteristics, outsourcing practises, and product characteristics. The identification of the significant risks made monitoring easier and concurrently guaranteed the integrity of the halal food supply chain. For operational risks based on the research, it might include things like human resources, processing hazards, logistic risks, and raw material risks. While halal certification and traceability will be explored under halal integrity threats and so on and they may all be linked.

5. Innovating the Management of Halal Risks in Mobile Food Premise Businesses

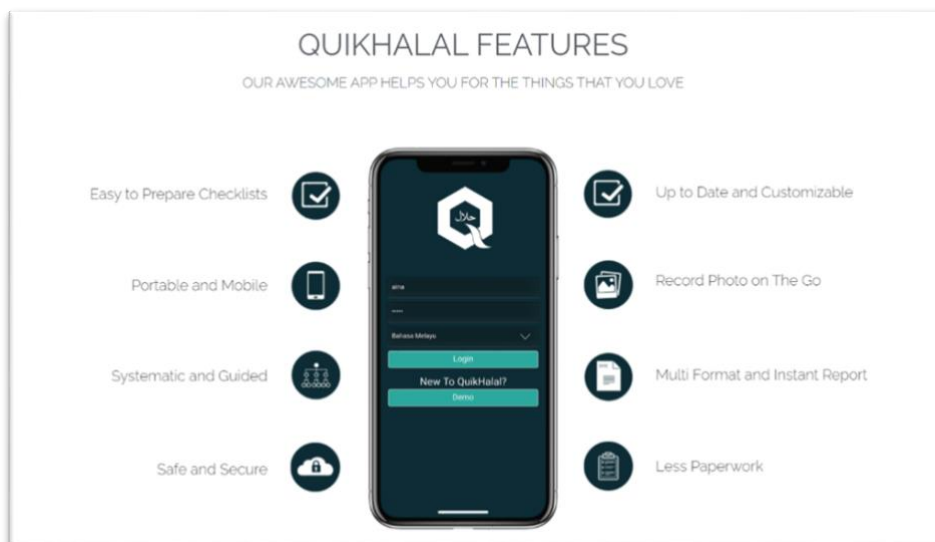


Figure 3. *The QuikHalal App*

Source: Salama (2017)

The QuikHalal application, created by academics at Universiti Teknologi Malaysia (UTM), was released in 2017. According to an article in Halal Focus, the programme may help and speed up halal audit management by supporting and speeding up audit arrangement, systematic data collection, automatic report preparation, and effective information sharing. This application was also recognised by JAKIM, and it adhered to the Malaysian Halal Certification Schemes' standards. The biggest feature of this programme is that it has created a checklist that can be customised based on the kind and size of the business and is automatically updated when a new standard is introduced. However, in terms of halal risk management for food trucks, this application focuses on the overall halal certification application process rather than specific halal concerns. As a result, there is still a need for a halal risk management tool, particularly for food trucks, as there is a new inclusion in the MPPHM 2020. To mitigate halal risks, a checklist tailored to mobile food premise businesses must be developed.

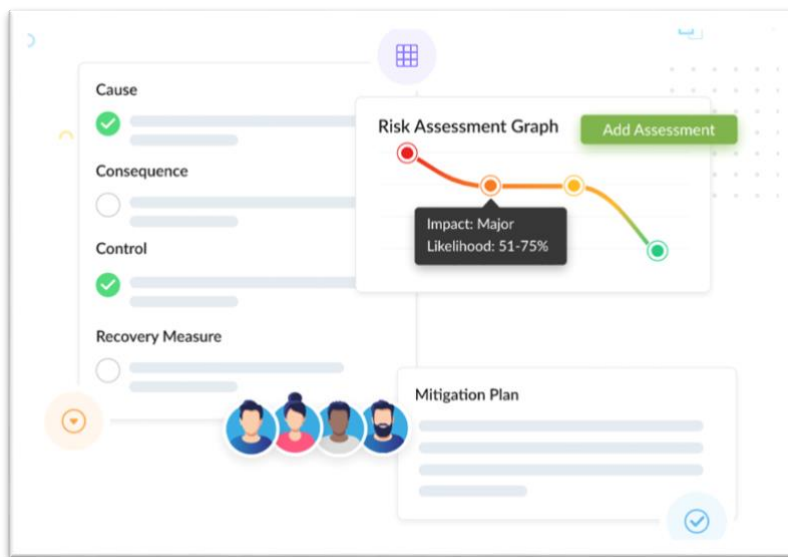


Figure 4. *nTask Software*

Source: <https://www.ntaskmanager.com/> (2021)

The figure above illustrates an existing software application called NTaskManager that may be used, as well as a recommendation for halal risk management innovation. This tool, which may be used in conjunction with the QuikHalal application to detect, analyse, classify, categorise, mitigate, and communicate risks, can be used as a reference.

However, this programme is a generic risk management tool that can be used to handle any type of risk, not simply halal issues for mobile food premise business. As a result, in order to innovate halal risk management for mobile food premise, it is proposed that both programmes be connected so that they may be used specially to aid food truck owners and operators in identifying and managing potential halal hazards. A prepared checklist from the first application, the QuikHalal, can be applied as well, but the details must be related to halal risks for food trucks. Then a risk assessment system as in nTask software can be applied to communicate and mitigate the halal risks as detailed in the prepared checklist.

6. Conclusion and Recommendation

The first step in establishing a proactive or reactive approach for keeping halalan toyyiban elements of food items and services is to identify risk categories. All of the risk explanations and discussions may be applied to mobile food premise businesses and taken into consideration by food operators to maintain the halalan toyyiban's integrity. The present programme and software can be utilised as a reference for the innovation idea, with adjustments to meet the halal risk management for mobile food premise businesses. Future research on the programming side of the innovation is recommended, as it is a difficult task to develop and make a reality. Integration also must be made to ensure that it truly can accommodate food truck owners and operators and ease their burden of managing halal risks and applying for halal certification.

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