

Type of Risk in Halal Food Supply Chain: A Review

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Abstract— The main purposes of this paper are to identify the type of risks involved in the halal food supply chain (HFSC) in articles published in the context of halal management. The study utilized an extensive literature review of current halal management literature specifically in relation to the food supply chain. The study has found nine significant risks in the halal food supply chain which is the human resource, processing risk, logistic risk, raw material risk, halal certification, traceability, market characteristic, outsourcing practices, and product characteristic. The study indicates types of risks in HFSC is very important to develop effective strategies in the future in order to secure the integrity of the halal supply chain.

Keywords— *food supply chain, Halal food, Types of risk, Supply chain risk*

1. Introduction

There is many studies that have performed to quantify the risks in the food supply chain for example study by [1] and [2], however, there is a lack of studies that have been made to identify risks in HFSC. Moreover, [3] mentioned, there are very limited works dealt with risk management in halal management. Thus, the need to have proper risk management research is important to ensure food safety, health issue and *halalness* to securing all the stages in the supply network [4]. Special attention and endorsement need to the halal network to secure halal integrity along the supply chain. To maintaining quality, integrity, lack of control of food standards and Muslim sensitivity, the halal supply chain is complicated to manage and design [5], [6]. Due to that, it is exposed to a higher risk of getting contaminated with haram elements that

would affect the status of halal production [3], [7], [8]. To secure halal integrity in the supply chain, the industrial players and academia should emphasize the supply chain risk study in order to ensure the sustainability of halal practices specifically in food sectors. Understanding the types of risk is very important to develop effective strategies HFSC in the future. Thus, this paper reviews various articles in halal management to identify potential risks in HFSC.

2. Literature Review

The practitioners must take a full understanding of the chain in order to secure the sustainability of the business. Identification and management of risk is the most important issue in supply chain management. [9]. In the supply chain, risk can be defined as potential variances that interrupt the objective of the organization that contributes to the value of the outcomes [10]. The increasing of production variety, more customers demand and highly interconnected distribution network are related to uncertainties in the food supply chain [11-15]. As such, the globalization of sourcing in the food supply chain has increased the vulnerability of HFSC [3].

[16] organized risk into three clusters which is an internal risk related to operational control, external risk related to supply and demand, and network risk related to environmental. In the food supply chain, [11] introduced five clusters which is a macro-level risk, demand risk, supply risk, product risk, and information risk. According to [17], there are several factors that give potential risk to the food supply chain which is from the input of raw material (farms), processing stage, logistics, local authorities, government involvement, and supply

chain partners. Meanwhile, the halal supply chain risk can be found in the process of the business, logistic control, resources of the supply chain, and supply chain structure [18].

3. Research Methodology

The study reviewed halal management publication articles published between 2010 and 2018. The purpose of this approach to figure out potential risk or critical factors in the HFSC that has been published in the academia database. By having the problem of lack in halal management study about risk management, the study taking main points what is a potential risk and what in critical factors contributed to the success of the HFSC.

This study adopted a research methodology from [19], as illustrated in figure 1. First, the search terms "*supply chain*" AND "*halal*" AND "*risk*" for the title, abstract, keywords, and thereafter main text. Second, the study review of the articles based on the scope and extracted the articles based on Web of Science, Scopus, Google Scholar databases and the main popular publisher databases such as Springer, Elsevier, Taylor & Francis, and Emerald Insight. Due to the limited of halal management articles publication, whereas research papers, conceptual papers, literature review papers, proceeding papers, book chapters, and others related to the study were included for this review. Third, the criteria have been determined and it was utilized to performing filtering of articles. The criterion is based on the content in the abstract, keywords and the title of the articles related to the halal management. Fourth, the listing of references was shortlisted carefully to evaluate in order to ensure the relevant articles were included in the study. Finally, each article was thoroughly reviewed to ensure the content of the articles fit into the context of halal management. This study has found 280 articles in the field of halal management, however only 146 articles related to the study.

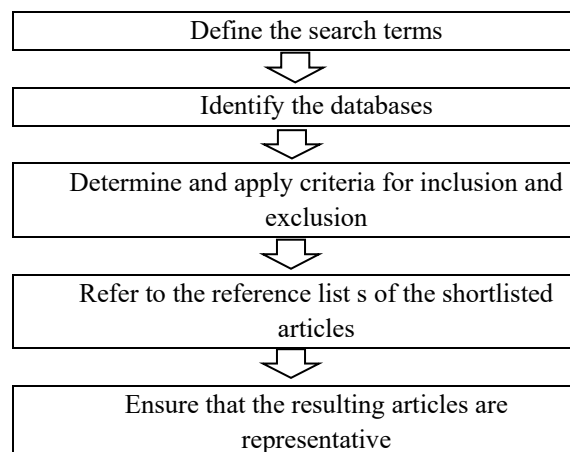


Figure 1. Research Methodology For Literature Review

4. Types of Risk in Halal Food Supply Chain

In this section, the study reviews various articles in halal management to identify potential risks in the HFSC. There are nine significant risks in the HFSC which is human resource, processing risk, logistic risk, raw material risk, halal certification, traceability, market characteristic, outsourcing practices, and product characteristic.

4.1 Human resource

The success of implementation HFSC starts from the capability of the human resource in the organization. The understanding of the halal requirements by internal employees is a crucial part to ensure the halal process in the production [20]. [21] mentioned, all internal staff is the critical success factors to ensuring a halal food management system is successfully implemented in the business. Meanwhile, a study by [22] found out business performance is not really good due to the top management are not well manage risks in the HFSC. Furthermore, [23] added, human error in the supply chain structure can give rise to the issue of halal integrity. Thus, developing fundamental, knowledge, service and skills of halal become a necessity in order to ensure human factors well understand in the halal industry [24], [25]. In halal practices, knowledge of the employee, management commitment and service play a big role in the production of halal in order to manage the raw material from suppliers, possessing of the products, storing the products and distributing the products to the consumer.

4.2 Processing risk

Food processing is a stage to convert raw materials into another form of food [26]. The processing stage is a crucial stage whereby risk assessments are taken into account to ensure the food safety of the production [27] and to determine the quality of the halal products [28], [29]. Contamination (mixed with haram elements) and spoilage risk in food processing can lead to a significant breach of halal integrity in the food chain. Thus, [30] mentioned halal processing is free from impurity (*najis*) or contamination and harmful sources. It is clear that halal practices very important in the food context consumption of safety, healthy and integrity. In halal food processing, the supply chain is vulnerable to different risks at a different stage along its supply chain. [31] mentioned a processed food is supply risk sources that hold the possibility of containing materials that are prohibited in Islam. Thus, during the manufacture of halal products, it is imperative that all possible sources of contamination be eliminated [32], [33].

4.3 Logistic risk

The issue in halal integrity has seen as an invisible in logistic context [23]. According to [31], logistics is the main supply risk sources that hold the possibility of cross-contamination materials in the business operation. For example in the transportation context are actors in an HFSC can bring a big issue in the food chain such as cross-contamination of halal products and non-halal products. Meanwhile, there are conventional logistics with high standards has permitted to transport halal food products [34]. Moreover, there is a refrigerator truck were used to transport halal product and at the same time also transport non-halal products [35]. However, the logistic context clearly is to facilitate segregation to ensure the halal product is not direct contact with the non-halal product [36]. Although the conventional that practices high standards of compliance can transport halal food there is no guarantee the *halalness* of the food transported without having halal certification.

4.4 Raw material risk

[37] stressed the main source of food contamination comes from raw material factors which are it's contaminated to the environment and

transportation of raw material. Meanwhile, the input of suppliers must come from halal species if the firms produce the animal-based product or product based on marine, plant, minerals, and chemicals should be permitted in sharia law or authorized by authority body in the origin country. Food manufacturers believed the purity of raw material guarantee by halal certification [26]. The *halalness* of raw materials is a one-key factor ensuring integrity in halal food [38], [39]. Hence, strategic cooperation with suppliers should be seriously taking into account in order to ensure the *halalness* of the raw materials [40].

4.5 Halal certification

Halal certification becomes a trademark for business and label of assurance to the consumers [41]. It is similar to the other international food standards, but it more emphasized Islamic principles. It is channel information to the Muslim that food is safe to consume accordingly to the Sharia law [42]. [43] found out halal certification is very significant towards a willingness to pay halal products because the consumers very concern about religiosity and ingredient of products. Thus, consumers can ensure the authenticate of product is halal through the halal certification. Nevertheless one of the main challenges of obtaining the certification is due to the lack of understanding of the halal certification process itself [44]. The other side, authority body such as JAKIM should deliver good service quality to the client in order to ensure the client fully understands the halal certification [45]. The study by [46] found that JAKIM had not met food manufacturers' expectations in all five service quality dimensions, especially the empathy dimension.

4.6 Halal traceability

The main purpose of the traceability system is to gather all various information related to the business operation along the supply chain. This system will assist the organization to minimize unsafe or poor quality products and also contributes to the minimizing potential for inferior interest, liability and recalls [47]. Information from the traceability system is very important when the organization facing the food safety crisis and contributes to the efficiency of managing the product recall [48]. For food manufacturers, efficient traceability in supply chains, especially

food supply chains has the potential to reduce risks and costs associated with foodborne disease and eliminate food safety hazards [36]. In the halal context, the guarantees halal becomes more interest by Muslim consumers. By obtaining information from halal authority allows the consumers to get information about the product [49]. In a study by [50], consumers also can identify halal products by utilized online traceability in Indonesia. Furthermore, the effectiveness of traceability is important to trace and mitigate the potential risk that can disrupt the halal global supply chain [35]. A study by [51] was successfully used a single nucleotide polymorphism panel for meat traceability of halal beef by meat-blood pairs. This is very important to the food manufacturer or government to detect non-halal supply from the supplier especially they come from non-Muslim countries. Thus, information and communication technologies give a big role in order to assist practitioners in fostering the halal business to become more competitive.

4.7 Market characteristic

Market characteristics rely on the supply and demand of the halal product. The market requirement from local or international will determines the vulnerability of the HSC. Halal market global gives motivation to the firms to ensure mitigation risk and halal food integrity by practitioners [24], [6]. Meanwhile, if the supply raw material comes from a non-Muslim country it can be exposed to the direct contact of the non-halal products [18]. [6] and [3] stressed there is a higher integrity risk with global supplier especially they come from non-Muslim countries and it requires more extensive risk management than suppliers from Muslim countries. Thus, suppliers from non-Muslim countries require a strong partnership in order to ensure the *halalness* of the products [52].

4.8 Outsourcing practices

Outsourcing logistics can be referred to as a third-party logistics service that provides transportation, warehouse, packaging & handling, inventory management and sourcing of skilled and unskilled workers [6], [7]. Nevertheless, it makes the supply chain becomes longer and it lead to difficult to track the quality of the product along the supply chain [53]. Additionally, [37] stressed the source of

food contamination comes from food packaging, distribution, and storage of packaged food and transport of packaged food. Meanwhile, outsourcing services for food processing needs proper management in order to secure halal food production [26]. The major risks in outsourcing services can contribute to the contamination with the non-halal product during transportation [54]. Thus, halal integrity not only focuses on internal operation but outsourced operational required in order to ensure halal practice in particular activity outsourced [29].

4.9 Product characteristic

A product's characteristic is very important in halal aspects whereby the consumers easily determine the halal product specifically food-based products. [55] mentioned product characteristics are part of the holistic concept of halal and should reflect halal products regarding cleanliness, safety, health, and nutrition. According to [3], animal-based products and finished products from non-Muslim countries require more extensive risk management to ensure the product is free from prohibited elements according to Sharia law. For example, halal meat requires more proper segregation for ensuring the integrity of halal food [56]. Moreover, frozen products or unitized products have major implications on the structure of HFSC specifically in the context of risk [18].

5. Conclusion and Recommendation

This review paper indicates an initial knowledge-based view for developing an effective strategy for managing risk hinges on first understanding the types of risk in the supply chain. Many studies in the conventional supply chain utilize proactive or reactive approaches in order to manage the risks in the supply chain. The identifying of types of risks is an initial stage for applying a proactive or reactive strategy. Based on the discussed literature, the study provides useful nine significant types of risk in the HFSC. Thus, this type of risk should be taken into account for halal practitioners to secure the integrity in HFSC.

The study recommends analyzing empirically these types of risk in the food manufacturer in order to quantify which type of risk is more prominent. The type of risk can be mitigated if it were identified and classified into various clusters for ease of monitoring.

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References

- [1] S. M. Ali, M. A. Moktadir, G. Kabir, J. Chakma, M. J. U. Rumi and M. T. Islam, "Framework for evaluating risks in food supply chain: Implications in food wastage reduction," *Journal of Cleaner Production*, Vol. 228, pp. 786-800.
- [2] T. T. Assefa, M. P. Meuwissen and A. G. O. Lansink, "Price risk perceptions and management strategies in selected European food supply chains: An exploratory approach," *NJAS-Wageningen Journal of Life Sciences*, Vol. 80, pp. 15-26.
- [3] M. Tieman, "Halal risk management: combining robustness and resilience," *Journal of Islamic Marketing*, Vol. 8, No. 3, pp. 461-475, 2017.
- [4] M. M. Khalid, M. A. Z. Yaakob, M. D. Mohd Sirajuddin, A. Bhari, and M. Mahfot, "Risk analysis in the halal food industry: An exploratory study," in *Contemporary Issues and Development in the Global Halal Industry*, Singapore: Springer Singapore, 2016, pp. 67-79.
- [5] M. Tieman and M. R. Darun, "Leveraging blockchain technology for halal supply chains," *Islam and Civilisational Renewal*, Vol.8, No. 4, pp. 547-550, 2017.
- [6] M. H. Ali et al. "Extenuating food integrity risk through supply chain integration: the case of halal food," *Industrial Engineering and Management Systems*, Vol. 13, No. 2, pp. 154-162, 2014.
- [7] S. Zailani, M. R. Shaharudin, K. Razmi, and M. Iranmanesh, "Influential factors and performance of logistics outsourcing practices: an evidence of Malaysian companies," *Review of Managerial Science*, Vol. 11, No. 1, pp. 53-93, 2017.
- [8] E. M. Elias, M. N. M. Nawi and M. A. A. Pozin, "Improving 3rd party halal local service providers in halal logistics: the driving factors from Malaysian f & b manufacturing perspectives," *International Journal of Supply Chain Management*, Vol. 8, No. 1, pp. 644-652, 2019.
- [9] S. S. Heidari, M. Khanbabaei, and M. Sabzehparvar, "A model for supply chain risk management in the automotive industry using fuzzy analytic hierarchy process and fuzzy TOPSIS," *Benchmarking: An International Journal*, Vol. 25, No. 9, pp. 3831-3857, 2018.
- [10] K. Kumar, M. K. Tiwari, and R. F. Babiceanu, "Minimisation of supply chain cost with embedded risk using computational intelligence approaches," *International Journal of Production Research*, Vol. 48, No. 13, pp. 3717-3739, 2010.
- [11] A. Diabat, K. Govindan, and V. V. Panicker, "Supply chain risk management and its mitigation in a food industry," *International Journal of Production Research*, Vol. 50, No. 11, pp. 3039-3050, 2012.
- [12] P. Amorim, E. Curcio, B. Almada-Lobo, A. P. F. D. Barbosa-Póvoa, and I. E. Grossmann, "Supplier selection in the processed food industry under uncertainty," *European Journal of Operational Research*, Vol. 252, No. 3, pp. 801-814, 2016.
- [13] R. M. Radzi, I. M. Saidon, and N. A. Ghani, "Risk mitigating strategies in the food supply chain by Japanese food companies in Malaysia," *International Journal of Management and Applied Science*, Vol. 3, No. 1, pp. 89-93, 2017.
- [14] K. Govindan, "Sustainable consumption and production in the food supply chain: A conceptual framework," *International Journal of Production Economics*, Vol. 195, pp. 419-431, 2018.
- [15] Z. Zhu, F. Chu, A. Dolgui, C. Chu, W. Zhou, and S. Piramuthu, "Recent advances and opportunities in sustainable food supply chain: a model-oriented review," *International Journal of Production Research*, Vol. 56, No. 17, pp. 5700-5722, 2018.
- [16] U. Jüttner, H. Peck, and M. Christopher, "Supply chain risk management: outlining an agenda for future research," *International Journal of Logistics: Research and Applications*, Vol. 6, No. 4, pp. 197-210, 2003.
- [17] S. Dani and A. Deep, "Fragile food supply chains: reacting to risks," *International Journal of Logistics: Research and Applications*, Vol. 13, No. 5, pp. 395-410, 2010.
- [18] M. Tieman, J. G. A. J. van der Vorst, and M. C. Ghazali, "Principles in halal supply chain management," *Journal of Islamic Marketing*, Vol. 3, No. 3, pp. 217-243, 2012.
- [19] W. Ho, T. Zheng, H. Yildiz, and S. Talluri, "Supply chain risk management: A literature review," *International Journal of Production Research*, Vol. 53, No. 16, pp. 5031-5069, 2015.
- [20] S. Zailani, K. Kanapathy, M. Iranmanesh, and M. Tieman, "Drivers of halal orientation strategy among halal food firms," *British Food Journal*, Vol. 117, No. 8, pp. 2143-2160, 2015.

- [21] A. N. Ahmad, R. Abdul Rahman, M. Othman, and U. F. Ungku Zainal Abidin, "Critical success factors affecting the implementation of halal food management systems: Perspective of halal executives, consultants and auditors," *Food Control*, Vol. 74, pp. 70–78, 2017.
- [22] E. M. Elias, S. N. Othman, and N. A. Yaacob, "Relationship of spirituality leadership style and SMEs performance in halal supply Chain," *International Journal of Supply Chain Management*, Vol. 6, No. 2, pp. 166–176, 2017.
- [23] M. H. Ali, K. H. Tan, and Z. M. Makhbul, "Mitigating halal food integrity risk through supply chain integration," *Asia Pacific Industrial Engineering and Management System*, Vol. 44, pp. 1-12, 2013.
- [24] M. M. Khairuddin, N. A. A. Rahman, M. F. Mohammad, Z. A. Majid, and M. F. Ahmad, "Regulator Perspective on Halal Air Cargo Warehouse Compliance," *International Journal of Supply Chain Management*, Vol. 7, No. 3, pp. 202–207, 2018.
- [25] N. A. A. Rahman, M. Fakhruhnizam, Mohammad, S. A. Rahim, and H. M. Noh, "Implementing air cargo halal warehouse: insight from Malaysia," *Journal of Islamic Marketing*, Vol. 9, No. 3, pp. 462–483, 2018.
- [26] M. H. Ali and N. Suleiman, "Eleven shades of food integrity: A halal supply chain perspective," *Trends in Food Science & Technology*, vol. 71, pp. 216–224, 2018.
- [27] S. M. Barlow *et al.*, "The role of hazard- and risk-based approaches in ensuring food safety," *Trends in Food Science & Technology*, Vol. 46, No. 2, pp. 176–188, 2015.
- [28] M. H. Ali and N. Suleiman, "Sustainable food production: Insights of Malaysian halal small and medium sized enterprises," *International Journal of Production Economics*, Vol. 181, pp. 303–314, 2016.
- [29] M. H. Ali, K. H. Tan, and M. D. Ismail, "A supply chain integrity framework for halal food," *British Food Journal*, Vol. 119, No. 1, pp. 20–38, 2017.
- [30] A. R. Ambali and A. N. Bakar, "Halal food and products in Malaysia: People's awareness and policy implications," *Intellectual Discourse*, Vol. 21, No. 1, pp. 7–32, 2013.
- [31] T. Fujiwara and R. M. Ismail, "Supplier management system in Halal food supply chain: A case study approach," *International Journal of Supply Chain. Management*, Vol. 7, No. 3, pp. 216–220, 2018.
- [32] I. Hussain, S. U. Rahman, A. Zaheer, and S. Saleem, "Integrating factors influencing consumers' halal products purchase: Application of theory of reasoned action," *Journal of International Food & Agribusiness Marketing*, Vol. 28, No. 1, pp. 35–58, 2016.
- [33] A. Bujang, Z. M. Noor, and N. Abdullah, "An Overview of Toyib Aspect of Halal Food Production in Meat and Meat Products," in *Proceedings of the 3rd International Halal Conference*, Singapore: Springer Singapore, 2018, pp. 467–478.
- [34] A. A. A. Apandi, I. U. J. Ooi, F. Abd. Rahman, and A. Muhammad, "MS2400-1:2010 Certification for Hauliers: A Risks Mitigating Solution?" in *Proceedings of the 3rd International Halal Conference*, Singapore: Springer Singapore, 2018, pp. 247–257.
- [35] S. Zailani, Z. Arrifin, N. A. Wahid, R. Othman, and Y. Fernando, "Halal traceability and halal tracking systems in strengthening halal food supply chain for food industry in Malaysia (a review)," *Journal of Food Technology*, Vol. 8, No. 3, pp. 74–81, 2010.
- [36] A. M. Saifudin, N. Zainuddin, E. M. Elias, S. N. F. Samsuddin, and A. A. Osman, "Reviewing the Contributors towards the Performance of the New Islamic Supply Chain Model," *International Journal of Supply Chain. Management*, Vol. 7, No. 4, pp. 151–157, 2018.
- [37] C. Nerin, M. Aznar, and D. Carrizo, "Food contamination during food process," *Trends in Food Science & Technology*, Vol. 48, pp. 63–68, 2016.
- [38] M. H. Ali, Z. M. Makhbul, K. H. Tan, and A. H. Ngah, "Augmenting Halal Food Integrity through Supply Chain Integration," *Jurnal Pengurusan*, Vol. 48, pp. 21–31, 2017.
- [39] E. Ermis, "Halal status of enzymes used in food industry," *Trends in Food Science & Technology*, Vol. 64, pp. 69–73, 2017.
- [40] D. Kitayama, M. Takanokura, M. Ogiya, S. H. R. Eksan, and M. H. Ali, "A Study on the Halal Food Supply Chain in Japan from an Inbound Perspective," in *Proceedings of the International MultiConference of Engineers and Computer Scientists*, 2018, vol. 2, pp. 1–6.
- [41] M. S. Ab Talib, A. B. A. Hamid, and M. H. Zulfakar, "Halal supply chain critical success factors: A literature review," *Journal of Islamic Marketing*, Vol. 6, No. 1, pp. 44–71, 2015.
- [42] M. S. Ab Talib, "Motivations and benefits of halal food safety certification," *Journal of Islamic Marketing*, vol. 8, no. 4, pp. 605–624, 2017.
- [43] W. Ahmed *et al.* "Critical success factors affecting the implementation of halal food management systems: Perspective of halal

- executives, consultants and auditors,”* Food Control, Vol. 74, pp. 70-78, 2018.
- [44] M. R. Razalli, “*Managing Halal certification supply chain: Determinants success factors framework for a hotel performance,*” International Journal of Supply Chain Management, Vol. 7, No. 1, pp. 149–154, 2018.
- [45] S. Z. S. Marzuki, C. M. Hall, and P. W. Ballantine, “*Restaurant managers’ perspectives on halal certification,*” Journal of Islamic Marketing, Vol. 3, No. 1, pp. 47–58, 2012.
- [46] B. Badrudin, Z. Mohamed, J. Sharifuddin, G. Rezai, A. M. Abdullah, I. A. Latif and M. G. Mohayidin, “*Clients’ perception towards JAKIM service quality in Halal certification,*” Journal of Islamic Marketing, Vol. 3, No. 1, pp. 59–71, 2012.
- [47] M. M. Aung and Y. S. Chang, “*Traceability in a food supply chain: Safety and quality perspectives,*” Food Control, Vol. 39, No. 1, pp. 172–184, 2014.
- [48] S. Khan, A. Haleem, M. I. Khan, M. H. Abidi, and A. Al-Ahmari, “*Implementing traceability systems in specific supply chain management (SCM) through critical success factors (CSFs),*” Sustainability, Vol. 10, No. 1, pp. 1–26, 2018.
- [49] M. S. Ab Talib and T. A. Chin, “*Halal food standard implementation: are Malaysian firms proactive or reactive?*” British Food Journal, Vol. 120, No. 6, pp. 1330–1343, 2018.
- [50] D. S. Sayogo, “*Online traceability for halal product information: perceptions of Muslim consumers in Indonesia,*” Journal of Islamic Marketing, Vol. 9, No. 1, pp. 99–116, 2018.
- [51] J. Zhao *et al.*, “*A panel of SNP markers for meat traceability of Halal beef in the Chinese market,*” Food Control, Vol. 87, pp. 94–99, 2018.
- [52] M. Tieman and M. C. Ghazali, “*Principles in halal purchasing,*” Journal of Islamic Marketing, Vol. 4, No. 3, pp. 281–293, 2013.
- [53] Z. Wu and M. Pagell, “*Balancing priorities: Decision-making in sustainable supply chain management,*” Journal of Operations Management, Vol. 29, No. 6, pp. 577-590, 2011.
- [54] S. Khan, M. Imran Khan, A. Haleem, and A. Rahman Jami, “*Prioritising the risks in Halal food supply chain: an MCDM approach,*” Journal of Islamic Marketing, 2019. <https://doi.org/10.1108/JIMA-10-2018-0206>
- [55] A. B. Mohamad and H. Hassan, “*The influences of halal integrity on product adaptation strategy for global trade,*” International Business Management, Vol. 5, No. 6, pp. 421–426, 2011.
- [56] M. Tieman, M. C. Ghazali, and J. G. A. J. van der Vorst, “*Consumer perception on halal meat logistics,*” British Food Journal, Vol. 115, No. 8, pp. 1112–1129, 2013.