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An RFID enabled monitoring system for a meat supply chain network

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The food sector has a prodigious focus and is gaining importance in today's global economic business, particularly as the global demand of food is expected to double by 2050. Furthermore, the safety and quality of food products have become major concerns for customers. In the context of Halal food, trade of Halal food has been spreading at a rapid pace. Meantime, Halal food consumers are increasingly concerned about the integrity of Halal-food related products in terms of production, transportation and storage along an entire supply chain network as it is important for Halal food products these consumers purchase from supermarkets are truly Halal. Unlike non-Halal food, this requires Halal food suppliers who are able to monitor a Halal food supply chain network providing adequate information of Halal food sold in supermarkets and these information data can also be easily accessed by Halal food consumers. This paper presents a framework in development of an RFID-enabled monitoring system for a Halal Meat Supply Chain (HMSC) network design for enhancing traceability of integrity and safety of Halal meat products throughout its entire supply chain. Notwithstanding, implementing such a monitoring system is subject to additional investment cost that might compromise the chain costs. Thus, a multi-objective optimization model was developed and used for investigating an economic feasibility of the proposed RFID-enabled monitoring system and it was validated through a case study. The results demonstrate the economic feasibility of the proposed monitoring system since a reasonable project can be achieved.

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