

The Risk Management for Infant Formula Milk Supply Chain based on AHP Model for Risk Mitigation and Maximize the Safety

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Abstract

The first product in a baby's diet that makes a difference in their health is infant milk. Infant Formula Milk (IFM) has experienced many turbulences throughout history and has always been a target for smugglers and those attempting to make illegal high profits. The biggest scandal in Chinese IFM trading occurred in 2008, and the recent massive recall of IFM products in the US in February 2022 following the recognition that the products contained microbial contamination. Among the bacteria found are Salmonella Newport and Cronobacter Sakazakii. Throughout this study, the objective is to identify the most critical risks that may affect the quality of IFM in the supply chain and determine mitigation strategies to improve the performance measurement of IFM in the supply chain. We are developing a model to reduce adulteration and contamination rates in the IFMSC and maximize safety. The steps to achieve the study objectives include: 1) Identifying the importance of IFMs for infant nutrition and their risks. 2) Establishing mitigation criteria for evaluating the performance of the IFMSC to maximize its quality; and 3) Analyzing each mitigation criteria to maximize the safety of IFMs. Based on pairwise comparisons conducted by professionals in Food Supply Chain (FSC) decision-making, the Analytic Hierarchy Process (AHP) model is used to analyze and prioritize mitigation alternatives. According to the contamination quality risk agent, the mitigation alternative (QR.M2) ranks highest. It illustrates how important it is to avoid risk when dealing with public health, especially the health of infants, and how IFM must undergo precise testing and quality checks at every stage of the supply chain to ensure its quality.

Keywords

Infant formula milk, Milk quality, Supply chain risks, Risk mitigation.

Biography

Mona Haji is currently a PhD candidate of the Logistics and Supply Chain Management Program within the Engineering Management and Decision Sciences Division at the College of Science of Engineering (CSE), Hamad Bin Khalifa University (HBKU) in Doha, Qatar. Her field of interest is Logistics and Supply Chain Management. She published several papers in international journals addressed public health and how to ensure food quality and drug safety. In addition to her experience in materials and store management, she has also established maintenance contracts. She has a MSc in Engineering Management from the Science and Engineering Department, University of Qatar, and BSc in Mechanical Engineering from the Science and Engineering Department, University of Colorado at Denver, USA