Chapter 13
Risks in Sustainable Food Supply Chain Management

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ABSTRACT

Sustainability is the important factor in the food sector, due to the large demand worldwide. Sustainability in food sector is not accepted globally as per the growing demand of food. Because of business risks, uncertainty, government policy, technology, innovation, etc. So, in this article we will discuss about the risks in adoption of sustainable food supply chain management (SFSCM) and ranking the risks by using Fuzzy Analytic Hierarchy Process (FAHP) technique. We acknowledged various SFSCM related risks and suitable correlation among the identified risks. Ranking the risks by using Fuzzy AHP approach based on their priorities. Nine risks were identified from literature survey and expert's views. Risks like safety, technology, and legal and monetary of food, etc., are barriers in successful adoption of sustainability in the food sector. The risks related some terms which were found according to Indian culture and lifestyle of Indians.

INTRODUCTION

Sustainable manufacturing and distribution are relevant and timely issue in production economics. This is mainly serious for the food industry. In many of the developing or developed countries food is the largest manufacturing sector (Gustavsson, Cederberg, Sonesson, Van Otterdijk, & Meybeck, 2011; Brown, 2012). But still food industries fighting with food wastages, food security and public health. Supply Chain

DOI: 10.4018/978-1-7998-5354-1.ch013

Management (SCM) is a management term in which we manage the whole process from raw material to the final product. SCM has its own limitations so company's moves to sustainable supply chain management (SSCM). Addition of sustainability in the process is the demand of present era. Sustainability is defined as to use the things in a sustainable manner for better future. Sustainability includes three factors like environmental protection, social responsibility and economic practice (Li, Wang, Chan, & Manzini, 2014). SSCM is applied in different industries like food, dairy, medical, automobile and many more.

Sustainable food supply chain management (SFSCM) mainly deals with the forward processes like procurement of materials, manufacturing, packaging and distribution along with reverse processes such as reuse of collected materials, so as to attain the sustainability concept in food supply chain. SFSCM is a powerful tool to reduce the wastages during the whole process and very important for environment protection. But the execution of SFSCM in industry is not so easy because, they are many hurdles in the path. So, the SFSCM is mainly focused on the integration of sustainability concept in food supply chain by removing the risks. Risk is an important factor for the successful adoption of SFSCM. Risks may be of different types in food supply chain, like market risk, operational risk, legal risk, regulatory risk, economic risk and many more. These risks are the hurdles/barriers for the execution of sustainability concept in food supply chain effectively. In addition to this, India is the best example where risks are always at their top in food supply chain. Organization and government are failed to implement sustainability concept in the supply chain successfully. Risk encompasses impacts on company's economic wealth. The probability that an adverse event will occur and the consequences of the adverse event, the combination of these two factors creates risk. The effect of these risks would disturb the sustainability concept in food supply chain (Wang, Chan, Yee, & Diaz-Rainey, 2012). In addition to, it is projected to determine and investigate the risks with an objective to rank them for the successful implementation and understating of SFSCM practices in industry. The first aim of the current study is to determine the risks related to SFSCM adoption. Second, aim of the current study is to analyze the risks and rank them for managing the adoption of SFSCM. But, analyzing of risks is not so easy due to uncertainty in data and decision (Wang, Chan, Yee, & Diaz-Rainey, 2012). To remove the vagueness or uncertainty in the process to analyze the risks, it is planned to use fuzzy theory with (AHP) analytic hierarchy process technique. The AHP technique (Saaty, 1980; Aouam, Lamrani, Aguenaou, & Diabat, 2009) is most common and important to rank the multi criteria decision model but having some limitations regarding the vagueness in the data and judgments. To remove the uncertainty fuzzy set is proposed with AHP to attain the aim of the current research.

The rest of the paper is planned as follows. Literature reviews of SFSCM and their risks; explains about the adopted solution methodology; result and discussion and their managerial implications; explains the conclusions and limitations as well as future scope of the present research.

LITERATURE REVIEW

This section summarizes the literature on sustainable food supply chain management, risks and the use of Fuzzy AHP for the successful adoption of SFSCM.