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Possible scenarios of sustainable supply chain in dairy industry with future research approach

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Abstract

The current research aims at the possible scenarios of the sustainable supply chain in the dairy industry with a future-research approach. The research method is qualitative and applicable, and a descriptive-survey in terms of data collection. The statistical population of the research includes 11 expert professors (academic experts), experts and specialists working in the country's dairy industries (industry experts), and independent customers and researchers (public stakeholders). The non-probability sampling method is purposeful (judgmental) and snowball. Effective factors and key uncertainties in the dairy industry were identified by the fuzzy Delphi method; then three compatible scenarios were identified with the help of Wizard Scenario software. According to the findings of the research, the factors influencing the driving forces and key uncertainties on the future of the sustainable supply chain in the dairy industry were identified, which include: foreign trade and communication regulations, the state of competition laws, attention to health and safety issues and standards, attention to Inventory maintenance for each product unit, foreign exchange rate fluctuations, inflation rate fluctuations, the cost of raw material production, the cost of spoilage of dairy products, and the motivation and willingness amount of private investors to invest in the dairy industry. The results of the research showed that after identification of the possible states for each of the key uncertainties using the Wizard Scenario software, three compatible scenarios were obtained with the titles "prosperous", "realistic" and "incurable". On the other hand, it was determined that the foreign exchange rate and inflation have the greatest impact on other factors and the future of the dairy industry.

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Extended Abstract

Introduction

Many companies suffer countless losses due to the lack of future-research strategy, which is apparently not possible to diagnose, but with the vision of future-research and its effect on the integration of the supply chain, it is possible to create value in the chain (Shafiee et al, 2020), and (Nirmala et al, 2021). Studies in the field of dairy industries show that despite its great importance, this industry is facing global challenges such as climate change, diversity of nutrition for the growing population, ensuring food security and reducing social and environmental effects in the use of limited resources. Dairy industry has a major contribution to the added value and employment of the agricultural sector. In today's competitive environment, most companies pay special attention to supply chain management as a strategic and powerful core to reach the boundaries of success and competitive advantages. Therefore, the dairy industry needs a change in the entire supply chain in order to enjoy environmental and social sustainability in addition to cost effectiveness. Experts believe that this industry needs innovation in order to achieve sustainability. The supply chain includes all activities related to the flow and conversion of goods from the stage of conversion of raw materials to the final products, as well as information flows related to them. The food supply chain (especially dairy industries) is one of the most sensitive supply chains because it is directly related to the health of people and society (Ghyasi, 2021). Therefore, in this research, the researcher intends to answer the basic question: what are the possible scenarios of the sustainable supply chain in the dairy industry with a future-research approach?

Theoretical Framework

Futurology

Futurology is a systematic and collaborative process that provides information about the future and creates medium-term to long-term perspectives, in such a way that it aims to make decisions and mobilize joint actions. In other words, in future research, they depict the future so that planners can design the way to reach it (Fazli & Gholizadeh, 2020).

Supply chain

Sustainable supply chain management is an integrated technique that can take into account all economic, social and environmental aspects. Sustainable supply chain management means strategy, transparent integration and achieving the social, environmental and economic goals of a company in the systematic cooperation of the key processes of the company within it to improve long-term economic performance. During this period, the necessary measures will be investigated for the use of sustainable supply chain management to improve environmental, social and economic performance (Moalem et al, 2022).

Elyasi & Teimoury (2023) presented a model for applying the meta-method of critical systems to improve sustainability in the supply chain of agricultural products in Iran (focusing on the sustainable supply chain of rice). Sustainability is the ability of the supply chain to overcome unpredictable events. The criteria of the sustainable supply chain of rice are: the environmental mechanisms of the sustainable supply chain; casual economic conditions of sustainable supply chain.

Samiei et al, (2023) investigated the identification of benefits and financial costs of sustainable supply chain under conditions of uncertainty in manufacturing companies admitted to the Tehran Stock Exchange. The results showed that 30 articles, 210 codes, and 24 concepts were extracted from the selected articles, which include the capability of the order process management process, the capability of the customer relationship management process, the capability of the demand management process, the capacity and capability of the

resource management process, the time to market , buyer credit, electronic platforms, coordination and cooperation in the supply chain to improve service performance, synchronization of financial decisions, sharing of innovative information related to finance, supplier relationship management process capability, service performance management process capability, interdepartmental interaction of supply chain companies, inventory financing, product innovation, reverse factoring, cash flow incentive alignment, supply chain working capital, bank credit for supply chain financing, Supplier integration, recycling management, supply chain disruption risk, supply chain transportation management, changes in estimates and their basis as sustainable supply chain resources, and costs in conditions of uncertainty.

Research methodology

The research method is qualitative and applicable, and a descriptive-survey in terms of data collection. The statistical population of the research includes 11 expert professors (academic experts), experts and specialists working in the country's dairy industries (industry experts), and independent customers and researchers (public stakeholders). The non-probability sampling method is purposeful (judgmental) and snowball.

Research findings

Effective factors and key uncertainties in the dairy industry were identified by the fuzzy Delphi method; then three compatible scenarios were identified with the help of Wizard Scenario software. According to the findings of the research, the factors influencing the driving forces and key uncertainties on the future of the sustainable supply chain in the dairy industry were identified, which are: Foreign trade and communication regulations, the state of competition laws, attention to health and safety issues and standards, attention to inventory maintenance for each product unit, foreign exchange rate fluctuations, inflation rate fluctuations, the cost of raw materials production, the cost of spoilage of dairy products, and the amount of motivation and willingness of private investors to invest in the dairy industry. The results of the research showed that after the possible states for each of the key uncertainties were identified with the help of the Wizard Scenario software, three compatible scenarios were obtained with the titles "prosperous", "realistic" and "incurable". On the other hand, it was determined that the foreign exchange rate and inflation have the greatest impact on other factors and the future of the dairy industry.

Conclusion

The current research has been carried out with the aim of the possible scenarios of the sustainable supply chain in the dairy industry with a future-research approach. The results of this research are in agreement with the results of Elyasi & Teimoury (2023), Samiei et al, (2023), Karimi et al, (2022), Ramezani et al, (2022), Else et al, (2022), Agnusdei et al, (2022), Jianying et al, (2021), Moalem et al, (2022), Kershyar (2020), Vakeili & Goli (2020), and Ravanesh (2019). From the perspective of future research; Moalem et al, (2022) have examined the future trends of the sustainable supply chain; but their focus has been on changing consumer expectations with regard to environmental factors. However, the current research has paid attention to all dimensions and issues affecting this industry, of which environmental factors are only one. Jianying et al, (2021) studied the future of sustainable and green dairy supply in a research and showed that environmental trends have a significant impact on this industry. Meanwhile, the results of the current research show that in Iran, the key factors and driving forces for the dairy industry are mainly economic and political. The foreign exchange rate and the inflation rate are two key factors that have the greatest impact

on other key factors and shaping the future of the dairy industry in Iran. In addition to this, future research in various fields, including the determination of service quality strategies (Elyasi & Teimoury, 2023) and (Else et al, 2022) has been used.

Based on the opinion of experts, the following strategies are offered to benefit from the secure future of the sustainable supply chain in the dairy industry:

1. planning and formulating appropriate policies using the experience of advanced countries in the dairy industry; market study in order to know the demands and expectations of the target market and penetrate new markets;
2. Avoiding the adoption of unsustainable tariff policies that lead to irreparable losses for dairy companies;
3. Providing suitable facilities for sending business teams to visit prominent dairy industry exhibitions in the world.