

Designing supply chain scenarios and investigating how it affects relevant variables in the National Company of Southern Oil-bearing Regions

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Receive:

14 September 2023

Revise:

14 December 2023

Accept:

20 February 2024


Abstract

The purpose of this research is to design supply chain scenarios and examine how it affects the relevant variables in the National Company of Southern Oil-bearing Regions. The method of this applicable research is qualitative, and analytical-survey in terms of the method of data collection. Fuzzy Delphi was used to collect information. The statistical population of the research includes the collection of experts working in the procurement and goods affairs department of the National Company of Southern Oil-bearing Regions, selected by judgmental sampling method, and the most knowledgeable people, as many as 14 persons, were selected as members of the statistical sample. Questionnaires and interviews were used to obtain primary data. The research questionnaire includes 50 components in 5 paradigms of resilience, lean, agility, knowledge management, and jihadi management. Delphi method and Kendall's correlation coefficient were used for the validity of the questionnaire, and Cronbach's alpha method was used to calculate the reliability of the research questionnaire. Analysis of the research data carried out by the Rizad scenario. Three supply chain scenarios were designed in order to investigate how they affect the relevant variables, as follows: increasing shipping capacity, increasing the volume of orders, and reducing the time of sending orders. The results of the surveys showed that the excessive increase in the sending capacity, the increase in the volume of orders, and the decrease in the time of sending the orders will have their own positive and negative results, which the creation of a favorable and optimal situation based on the various outputs of the model will be fruitful in the context of adopting the organization's policy.

Keywords:

supply chain scenarios, shipping capacity, order volume, order shipping time, knowledge management, jihadi management

Please cite this article as (APA): Mirshekar, A., Amirnejad, G., Hemati, M., & Kangarani Farahani, A. (2024). Designing supply chain scenarios and investigating how it affects relevant variables in the National Company of Southern Oil-bearing Regions. *Journal of value creating in Business Management*, 4(1), 250-278.

 <https://doi.org/10.22034/jvcbm.2024.425235.1241>



Publisher: Iranian Business Management Association

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Extended Abstract

Introduction

Today, in the global economy, fierce competition among companies has caused them to operate in conditions of uncertainty; as a result, they face high risks. Risks have negative effects on the supply chain of companies and can lead to profitability and competitive advantage (Ravanestan et al, 2017). The supply chain can be defined as a chain that connects different actors from the customer to the supplier through production and services, in which the flow of materials, information, and finance are effectively managed to meet business needs (Jafarnjad & Mohseni, 2015). Therefore, it is necessary for organizations and companies to achieve the desired result in order to smooth the production and remove obstacles in this wide range of global competition market activities, to implement a new approach to their production management and operations, which is the implementation of resilient supply chain management. Strengthening the supply chain can significantly reduce its vulnerability to various types of risk (Yuan et al, 2010). In the meantime, one of the largest companies in Iran and the world is the National Company of Southern Oil-bearing Regions, which currently incurs a lot of expenses for the country, especially in the supply of goods and materials, due to its large income. It faces many problems, including the lack of a supply chain view, lack of responsiveness and customer satisfaction, slow speed, high cost, large and inefficient storage, etc. (Shishehbori & Shojaei, 2022). Therefore, in this research, we decided to design and examine the scenarios of the supply chain and how it affects the relevant variables in the National Company of Southern Oil-bearing Regions. Therefore, in this research, the researcher intends to answer the basic question: what are the scenarios of the supply chain and how they affect the relevant variables in the National Company of Southern Oil Regions?

Theoretical Framework

Supply chain

A supply chain is defined as a set of related organizations that work together to control, manage, and improve the flow of materials, products, services, and information from the point of origin to the point of delivery (the final customer) to satisfy customer needs at the lowest possible cost to all members (Rezaian fardoie et al, 2023), and supply chain management includes a set of systematic internal and external activities of a company that organizes and directs all business processes within the supply chain in a codified manner and with a holistic view, and its goal is to optimize those processes with minimum costs and maximum efficiency (Mirshekar et al, 2022).

Karimi et al, (2022) investigated the effect of strategic supply chain management on the performance and orientation of the supply chain by analyzing the mediating role of resilience. The results showed: 1- strategic supply chain management has a significant direct effect on the direction of the supply chain, 2- strategic supply chain management has a significant indirect effect on the direction of the supply chain (through the agility and strength of the chain), 3- Strategic supply chain management does not have a significant direct effect on supply chain performance, 4- Strategic supply chain management has a significant indirect effect on supply chain performance (through agility and chain strength), 5- Chain agility plays a significant mediating role in the relationship between strategic management of the supply chain, and the performance and direction of the chain. 6- The strength of the chain has a significant mediating role in the relationship between the strategic management of the supply chain and the performance and orientation of the chain.

Ramezani et al, (2022) in a research entitled "Designing a closed-loop supply chain of perishable products: a scenario-based two-stage stochastic planning approach" used discrete

scenarios for scenario creation and assumed that the probabilities and the conditions of each scenario are predetermined. Finally, they performed sensitivity analysis on key parameters to check changes on costs.

Research methodology

The method of this applicable research is qualitative, and analytical-survey in terms of the method of data collection. Fuzzy Delphi was used to collect information. The statistical population of the research includes the collection of experts working in the procurement and goods affairs department of the National Company of Southern Oil-bearing Regions, selected by judgmental sampling method, and the most knowledgeable people, as many as 14 persons, were selected as members of the statistical sample. Questionnaires and interviews were used to obtain primary data. The research questionnaire includes 50 components in 5 paradigms of resilience, lean, agility, knowledge management, and jihadi management. Delphi method and Kendall's correlation coefficient were used for the validity of the questionnaire, and Cronbach's alpha method was used to calculate the reliability of the research questionnaire.

Research findings

Analysis of the research data carried out by the Rizad scenario. Three supply chain scenarios were designed in order to investigate how they affect the relevant variables, as follows: increasing shipping capacity, increasing the volume of orders, and reducing the time of sending orders. The results of the surveys showed that the excessive increase in the sending capacity, the increase in the volume of orders, and the decrease in the time of sending the orders will have their own positive and negative results, which the creation of a favorable and optimal situation based on the various outputs of the model will be fruitful in the context of adopting the organization's policy.

Conclusion

The current research was conducted with the aim of designing supply chain scenarios and investigating how it affects the relevant variables in the National Company of Southern Oil-bearing Regions. The results of this research are in agreement with the findings of researchers such as Samiei et al, (2023), Ramezani et al, (2022), Khan et al, (2022), Karimi et al, (2022), Piya et al, (2022), Kazancoglua et al, (2022), Juan et al, (2022), Momeni & Zereshki (2021), Shafaghizadeh et al, (2021), Malmir et al, (2020), and Haghghatpanah et al, (2019). (Karimi et al, 2022) in the results of their investigations showed that 1- strategic supply chain management has a significant direct effect on supply chain orientation, 2- strategic supply chain management has a significant indirect effect on supply chain orientation (through the agility and strength of the chain), 3- strategic supply chain management does not have a significant direct effect on the performance of the supply chain, 4- strategic supply chain management has a significant indirect effect on the performance of the supply chain (through the agility and strength of the chain), 5- Chain agility has a significant mediating role in the relationship between supply chain strategic management and chain performance and orientation. 6- The strength of the chain has a significant mediating role in the relationship between the strategic management of the supply chain and the performance and orientation of the chain.

According to the results of the research, the following suggestions were presented:

An excessive increase in the sending capacity, an increase in the volume of orders, and a decrease in the time of sending orders will have their own positive and negative results, and the creation of a favorable and optimal state based on the various outputs of the model will be very fruitful in the context of adopting the organization's policy, so it is suggested by

increasing the sending capacity, it will partially help to improve the efficient management of the supply chain, and its unnecessary increase can cause excess capacity and waste of resources. By simulating the system, it is possible to achieve its optimal level by parametrically changing this variable, and it can be continuously monitored and re-evaluated over time. It is suggested to ensure the accumulated amount of confidence, the capacity of the organization's warehouses, and the limitation of resources.