

Research Paper: Factors Affecting the Entrepreneurial Supply Chain in Disasters in Iran From the Perspective of Experts



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ABSTRACT

Background: Supply chain includes all related parts that directly or indirectly meet the customers' demands. During disasters, the supply chain disrupts. It seems that paying attention to innovation and entrepreneurship can solve some of these disruptions. This study was conducted to extract the factors affecting the technology-oriented entrepreneurial rescue supply chain in the Red Crescent Society from experts and specialists in Iran.

Materials and Methods: This qualitative content analysis was conducted in 2020. Using the content analysis method, the considered criteria were collected through open-ended questions and interviews. To determine the desired indicators, 30 people were interviewed in-depth in a purposeful manner using snowball sampling. The thematic analysis method was also used to analyze the interviews.

Results: A total of 30 experts with a mean age of 46 years were interviewed, of whom 21 cases were male. Also, 16 cases had a PhD degree, and 14 had a Master's degree. After analyzing and extracting the criteria from the interviews, 123 codes were obtained. Finally, the codes were divided into two classes: supply chain management and technology indicators. The supply chain management class included subclasses of customer integration, supplier integration, internal integration, and innovative orientation. The technology indicators class included subclasses of individual characteristics, attitudinal factors, educational factors, technical factors, economic factors, environmental factors, and human and managerial factors.

Conclusion: Supply chains are essential for entrepreneurship because of the involvement of different parts of the Red Crescent Organization of Iran in joint activities. Because of the expansion of entrepreneurship issues in the supply chain, presenting a technology-oriented comprehensive model of the entrepreneurial supply chain in the Red Crescent Organization is of great importance. In today's competitive environment, supply chain management is a strategic and robust basis for the Red Crescent Organization to achieve success and competitive advantage.

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1. Introduction

More than 31 types of natural disasters occur in Iran. Iran is among the 10 accident-prone countries in the world. Also, 50% of the population of Iran is exposed to floods and 90% to earthquakes [1]. Various organizations took part in the search and rescue and distribution of medical aid in disasters. However, the Red Crescent plays a major role in this field. Disasters destroy infrastructure and homes, leaving people in need of relief and medical supplies. Besides reducing the suffering of victims, prompt and fair distribution of relief and medical items will reduce the costs of aid organizations in crisis.

The supply chain includes all related parts that directly or indirectly meet the demands of customers. These parts include manufacturers, suppliers, carriers, warehouses, retailers, and customers and are concerned with activities, such as new product development, marketing, executive operations, distribution, financial services, customer service, and so on [2, 3]. The entrepreneurial supply chain, innovation, and growth are made possible through identifying opportunities, having a business plan and risk management, integrating entrepreneurial processes, and investing in the supply chain [4]. To achieve a sustainable supply chain, determining different strategies is one of the best steps to consider sustainability criteria [5, 6]. In this regard, supply chain management as a practical approach and targeted method can effectively provide and optimize economic resources in various processes such as crisis management and meeting the social, health, medical, and other needs of the affected community [7-9].

In the structure of relief organizations, especially the Red Crescent, regarding providing resources, there is no specific strategy and program for production, identification, and distribution with an entrepreneurial approach, and the Red Crescent mainly takes part in preparing and distributing items in critical situations. In this regard, for the first time, this qualitative study was conducted in 2016 in Iran to extract the factors affecting the entrepreneurial supply chain of rescue and relief in the Red Crescent organization with an emphasis on technology from the perspective of experts and specialists.

2. Materials and Methods

This qualitative study using content analysis was conducted from June to January 2020. Using the content analysis method, the desired criteria were collected through semi-structured interviews.

Study participants

The participants comprised the Red Crescent rescue experts, university professors, Red Crescent Society rescue theorists, writers, and researchers. The inclusion criteria were having work experience in crisis management for at least 2 years and having at least a master's degree in a field related to crisis management. To determine the desired indicators, 30 people were subjected to an in-depth interview. The purposeful and snowball sampling method was done, i.e., each specialist introduced the next specialist. After obtaining verbal consent and assurances about the confidentiality of the data, the researchers performed face-to-face interviews using open questions, also recorded the interviews with the consent of the participants.

Data collection

The data collection was done using semi-structured interviews by asking the following questions like "What aspects of the supply chain in disasters do you think cause problems? What are the solutions?" and "Which criteria can be effective for the entrepreneurial supply chain in disasters?" Based on the answers given by the participants, the rest of the follow-up and exploratory questions was proposed to clarify the concept and deepen the interview process. The interviews lasted between 30 and 120 minutes. The interviews were conducted in a quiet place and ended with data saturation.

Data analysis

Immediately after the interviews, the interview texts were transcribed verbatim, and the classes and subclasses were extracted. The data analysis was done manually. The thematic analysis method was used to analyze the content using the qualitative approach of Graneheim and Lundman. The thematic analysis consists of 6 steps as follows: 1) familiarity with the data, 2) creating basic codes, 3) searching for classes and subclasses, 4) reviewing classes and subclasses, 5) defining and naming classes, and subclasses and, 6) report [10]. After analyzing the text of the interviews, 186 codes were extracted, which were categorized by removing duplicate codes and re-analyzing them.

Rigor

Guba and Lincoln's criteria were used to ensure the accuracy of qualitative data and examine their trustworthiness, transformability, dependability, and confirmability [11].

Ethical considerations

The following ethical considerations were considered: 1) ensuring the confidentiality of personal information, 2) providing research information to participants, 3) obtaining written consent from experts, 4) appreciation to all participants, 5) receiving the code of ethics from the Islamic Azad University, 6) ensuring that the content is used only for research and delete audio files after writing the results, and 7) providing the research results to the interviewees.

3. Results

Thirty participants were subjected to in-depth semi-structured interviews. The experts had an average age of 46 years, and 21 cases were male. Also, 16 subjects had a PhD degree, and 14 a Master’s degree. The average work experience of experts was 15.2 years. Table 1 presents the demographic characteristics of the experts.

After analyzing and extracting the criteria from the interviews, we obtained 123 codes, i.e., the factors affecting the entrepreneurial supply chain of rescue and relief in the Red Crescent Organization with an emphasis on technology. Finally, the codes were divided into two classes: supply chain management and technology indicators. The supply chain management class had subclasses of customer integration, supplier integration, internal integration, and innovative orientation. The technology indicators had subclasses of individual characteristics, attitudinal factors, educational factors, technical factors, economic factors, environmental factors, and human and managerial factors. The classes and subclasses extracted from the interviews regarding the technology-oriented entrepreneurial supply chain in the Red Crescent Organization are presented in Table 2.

The following are some of the statements stated by the interviewed experts. A 30-year-old male expert in Health in Disasters and Emergencies said about customer integration subclass: “When a disaster strikes, a wide range

of governmental and non-governmental organizations and the public provide the necessary equipment and relief items, and many of them may deliver items directly to the victims, such as the Kermanshah earthquake. Integration and coordination of suppliers can lead to better supply chain management”.

A 49-year-old male expert in crisis management recalled about supplier integration subclass: “Top Red Crescent suppliers share their production time schedules with us. Also, in the Red Crescent, we shared our production program with our main suppliers to have a relatively good supply chain in disasters”.

A 56-year-old male expert in crisis management said about environmental factors subclass: “Environmental analysis, such as SWOT and PESTLE can determine the economic, political, and social situation of the supply chain and the problems that may occur while providing relief”.

4. Discussion

This study aimed to determine the factors affecting the technology-oriented entrepreneurial supply chain of rescue and relief in the Red Crescent Organization. By reviewing studies conducted in Iran and worldwide, no study or model was found on the entrepreneurial supply chain in disasters. Therefore, similar studies were considered. Attitudinal, educational, and personal characteristics of individuals, economic, environmental, and technical factors directly impact the entrepreneurial supply chain in disasters. Improving cultural, social, and economic skills can provide a resilient and coordinated supply chain in disasters.

Supply chain management as a practical approach and purposeful method can effectively provide and optimize economic resources in various processes, such as crisis management and meeting the social, health, and medical needs of the affected community. Consequently, it should be noted that the traditional view of the supply

Table 1. Demographic characteristics of the experts

Row	Specialty	No.	Mean Age (y)	Gender		Education	
				Male	Female	Master’s Degree	PhD
1	Crisis management	13	41.5	10	3	14	0
2	Health in disasters and emergencies	17	48.5	11	6	0	16
	Total	30	46	21	9	14	16

Table 2. Classes and subclasses regarding the technology-oriented entrepreneurial supply chain

Class	Subclass	Codes
The technology-oriented entrepreneurial supply chain of rescue and relief in the Red Crescent Organization		
Supply chain management	Customer integration	Communication through information networks
		Mechanization of the customers' orders
		Sharing market information with customers
		Demand forecast by customers
	Supplier integration	Fast ordering
		Sharing schedule
		Helping to improve supply processes
	Internal integration	Integrating data with internal activities
		Integrated inventory management
		Using interdisciplinary teams in the development of processes
Innovative orientation	Using interdisciplinary teams in the development of products	
	Attention to innovation	
	The need for innovation	
	Development of new resources	
Technology indicators	Individual characteristics	Active search for innovative ideas
		Measuring and evaluating innovative ideas
		Using emails for communication
		Using social networks for notification
		Using search engines and databases
		Online chat on the Internet
		Using up-to-date and new resources
		Communicating with people online
		Using application software
		Attitudes towards technology and creativity
	Attitudinal factors	Ease and speed in obtaining favorite information
		Interest in education
		Using Internet
		Translation of practical English texts
	Educational factors	Communicating with experts in education
		Using educational files
		Using multimedia files for training
		Facilitating research activities
		Preparing required articles
	Technical factors	Access to websites
Access to required information		
Access to entrepreneurial resources		
Economic factors	Cost of internet access and subscription to scientific sites	
	Cost of receiving articles	
Environmental factors	Free and low-cost participation in entrepreneurship courses	
	Calm environment	
	Lack of space and time limits	
	Feeling relaxed while using the library	
Human and managerial factors	Welcoming creative thinking	
	Existence of background for acceptance and support of new ideas	
	The importance of entrepreneurship by managers	
	Achieving sustainable income through entrepreneurial management	

chain focuses mainly on cost, quality, and on-time delivery, whereas the entrepreneurial supply chain considers growth and innovation in addition to cost, quality, and delivery that are essential factors for success, but in today's highly competitive market, they are not enough for the entrepreneurial supply chain [7-9, 12, 13]. In the customer integration subclass, the codes of communication through information networks, mechanization of the customer ordering, sharing market information with customers, and forecasting customer demand were extracted.

In the supplier integration subclass, the codes of quick ordering, sharing schedule, and helping to improve procurement processes were extracted. In the internal integration subclass, the codes of integration of data with internal activities, integrated inventory management, use of interdisciplinary teams in developing processes, and interdisciplinary teams in product development were extracted. In the innovation orientation subclass, the codes of attention to innovation, the need for innovation, development of new resources, active search for innovative ideas, and measuring and evaluating innovative ideas were extracted. Attitudinal factors emphasizing technology have been discussed as effective indicators of the entrepreneurial supply chain of rescue in the Red Crescent population. Understanding the attitude of entrepreneurs in each society can be highly effective in understanding better how to develop entrepreneurial activities and their consequences [14].

Because of the significant differences in the attitudes of entrepreneurs in different countries and the importance of this combination, the most critical indicators for detecting and measuring attitudinal factors in the Red Crescent Organization of Iran are unknown. The attitude of the Red Crescent staff towards new technologies can determine the direction of their activities in the supply chain. According to the views of experts, evaluating the usefulness of the Internet, exchanging information, and measuring the critical role of the Internet, etc., from the perspective of Red Crescent staff, are appropriate metrics to measure the attitudinal factors. The positive and dynamic attitude of the staff of the Red Crescent towards entrepreneurial activities will result in the growth and formation of an effective chain in the organization. The Red Crescent Organization can play an essential role in providing the entrepreneurial supply chain by changing the attitude of employees towards technology using educational tools and infrastructure.

Increasing the incidence of natural disasters and their impact on the earth requires effective preparedness against these disasters. Goal-based planning has been

used to minimize the time in the routes before setting time targets for delivering relief items [15]. The potential and extent of damage from natural disasters cannot be measured in many cases. In addition, the risks faced by communities are increasing as the world's population increases. Developing an effective program and communication system to coordinate all groups before, during, and after disasters will lead to effective response [16].

Today, because of the importance of economic activities with an entrepreneurial approach, selecting and adopting the type of paradigms and economic applied approaches play an important role in obtaining positive results and effective performance of the Red Crescent. To achieve a sustainable supply chain, the strategic factor is one of the best steps to consider sustainability metrics [17]. Consequently, supply chain management as a practical approach and purposeful method can effectively provide and optimize economic resources in various processes, including crisis management and meeting the social, health, and medical needs of the Red Crescent. Entrepreneurial provision of search and rescue in the Red Crescent population with emphasis on technology depends on the attention to human and managerial factors, environmental factors, economic factors, technical factors, educational factors, personal characteristics, and finally, attitudinal factors. Among the mentioned factors, environmental factors, as well as managerial and human factors, play a role in the development of the entrepreneurial supply chain more than other factors. Finally, without considering the influential factors that have been studied in the present study, it will not be possible to create an entrepreneurial rescue supply chain.

One of the limitations of the study was the lack of access to all experts. Attempts were made to select experts with the full knowledge and awareness in this study. This study was only researched the Red Crescent, which was another limitation of the study. So the results might be different in other relief organizations.

5. Conclusion

Supply chains are essential for entrepreneurship because of the involvement of different parts of the Red Crescent Organization of Iran in joint activities. Because of the expansion of entrepreneurship issues in the supply chain, presenting a technology-oriented comprehensive model of the entrepreneurial supply chain is essential. In today's competitive environment, supply chain management is a strategic and powerful basis for the Red Crescent Organization to achieve success and competitive advantage. According to the classes and subclasses

extracted from the interviews, it is possible to help the Red Crescent Organization prepare for a proper response to disasters and the resilience of the supply chain.

Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed of the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

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References

- [1] Soltani A, Alaedini F, Shamspour N, Ahmadi Marzaleh M. Hazard Assessment of Iran Provinces based on the Health Ministry Tool in 2019. *Iranian Red Crescent Medical Journal*. 2021; 23(1):e204. [DOI:10.32592/ircmj.2021.23.1.204]
- [2] Fatorachian H, Kazemi H. Impact of industry 4.0 on supply chain performance. *Production Planning & Control*. 2021; 32(1):63-81. [DOI:10.1080/09537287.2020.1712487]
- [3] Schniederjans DG, Curado C, Khalajhedayati M. Supply chain digitisation trends: An integration of knowledge management. *International Journal of Production Economics*. 2020; 220:107439. [DOI:10.1016/j.ijpe.2019.07.012]
- [4] Kusi-Sarpong S, Gupta H, Sarkis J. A supply chain sustainability innovation framework and evaluation methodology. *International Journal of Production Research*. 2019; 57(7):1990-2008. [DOI:10.1080/00207543.2018.1518607]
- [5] Liao SH, Hu DC, Ding LW. Assessing the influence of supply chain collaboration value innovation, supply chain capability and competitive advantage in Taiwan's networking communication industry. *International Journal of Production Economics*. 2017; 191:143-53. [DOI:10.1016/j.ijpe.2017.06.001]
- [6] Seman NAA, Govindan K, Mardani A, Zakuan N, Saman MZM, Hooker RE, et al. The mediating effect of green innovation on the relationship between green supply chain management and environmental performance. *Journal of Cleaner Production*. 2019; 229:115-27. [DOI:10.1016/j.jclepro.2019.03.211]
- [7] Hahn GJ. Industry 4.0: A supply chain innovation perspective. *International Journal of Production Research*. 2020; 58(5):1425-41. [DOI:10.1080/00207543.2019.1641642]
- [8] Heaslip G, Kovács G, Haavisto I. Innovations in humanitarian supply chains: The case of cash transfer programmes. *Production Planning & Control*. 2018; 29(14):1175-90. [DOI:10.1080/09537287.2018.1542172]
- [9] Wang M, Asian S, Wood LC, Wang B. Logistics innovation capability and its impacts on the supply chain risks in the Industry 4.0 era. *Modern Supply Chain Research and Applications*. 2020; 2(2):83-98. [DOI:10.1108/MSCRA-07-2019-0015]
- [10] Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006; 3(2):77-101. [DOI:10.1191/1478088706qp063oa]
- [11] Schwandt TA, Lincoln YS, Guba EG. Judging interpretations: But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Evaluation*. 2007; 2007(114):11-25. [DOI:10.1002/ev.223]
- [12] Cao C, Liu Y, Tang O, Gao X. A fuzzy bi-level optimization model for multi-period post-disaster relief distribution in sustainable humanitarian supply chains. *International Journal of Production Economics*. 2021; 235:108081. [DOI:10.1016/j.ijpe.2021.108081]
- [13] Zvikaramba A, Kruglikov SV, Zimucha T, Chinakidzwa M. Disaster response supply chain in a city: The role of SMEs. *International Journal of Supply Chain and Operations Resilience*. 2020; 4(1):85-101. [DOI:10.1504/IJSCOR.2020.105952]
- [14] Mishra V, Sharma MG. Understanding humanitarian supply chain through causal modelling. *South Asian Journal of Business and Management Cases*. 2020; 9(3):317-29. [DOI:10.1177/2277977920958084]
- [15] Nagurney A, Masoumi AH, Yu M. An integrated disaster relief supply chain network model with time targets and demand uncertainty. In: Nijkamp P, Rose A, Kourtit K, editors. *Regional Science Matters*. New York City: Springer; 2015. pp. 287-318. [DOI:10.1007/978-3-319-07305-7_15]
- [16] Kumar S, Havey T. Before and after disaster strikes: A relief supply chain decision support framework. *International Journal of Production Economics*. 2013; 145(2):613-29. [DOI:10.1016/j.ijpe.2013.05.016]
- [17] Shareef MA, Dwivedi YK, Kumar V, Hughes DL, Raman R. Sustainable supply chain for disaster management: Structural dynamics and disruptive risks. *Annals of Operations Research*. 2020; 1-25. [DOI:10.1007/s10479-020-03708-3]