

Exploring Antifragility Principles in Humanitarian Supply Chain: The key Role of Information Systems

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Abstract : The COVID-19 pandemic has been a major and global disruption that has affected all supply chains on a worldwide scale. Consequently, the question posed by this communication is to understand how - in the face of such disruptions - supply chains, including their actors, management tools, and processes, react, survive, adapt, and even improve. To do so, the concepts of resilience and antifragility applied to a supply chain have been leveraged. This article proposes to perceive resilience as a step to surpass in moving towards antifragility. The research objective is to propose an analytical framework to measure and compare resilience and antifragility, with antifragility seen as a property of a system that improves when subjected to disruptions rather than merely resisting these disruptions, as is the case with resilience. A unique case study was studied - MSF logistics (France) - using a qualitative methodology. Semi-structured interviews were conducted in person and remotely in multiple phases: during and immediately after the COVID crisis (8 interviews from March 2020 to April 2021), followed by a new round from September to November 2023. A Delphi method was employed. The interviews were analyzed using coding and a thematic framework. One of the theoretical contributions is consolidating the field of supply chain resilience research by precisely characterizing the dimensions of resilience for a humanitarian supply chain (Reorganization, Collaboration mediated by IS, Humanitarian culture). In this regard, a managerial contribution of this study is providing a guide for managers to identify the four dimensions and sub-dimensions of supply chain resilience. This enables managers to focus their decisions and actions on dimensions that will enhance resilience. Most importantly, another contribution is comparing the concepts of resilience and antifragility and proposing an analytical framework for antifragility—namely, the mechanisms on which MSF logistics relied to capitalize on uncertainties, contingencies, and shocks rather than simply enduring them. For MSF Logistics, antifragility manifested through the ability to identify opportunities hidden behind the uncertainties and shocks of COVID-19, reducing vulnerability, and fostering a culture that encourages innovation and the testing of new ideas. Logistics, particularly in the humanitarian domain, must be able to adapt to environmental disruptions. In this sense, this study identifies and characterizes the dimensions of resilience implemented by humanitarian logistics. Moreover, this research goes beyond the concept of resilience to propose an analytical framework for the concept of antifragility. The organization studied emerged stronger from the COVID-19 crisis due to the mechanisms we identified, allowing us to characterize antifragility. Finally, the results show that the information system plays a key role in antifragility.

Keywords : antifragility, humanitarian supply chain, information systems, qualitative research, resilience.

Conference Title : ICIM 2024 : International Conference on Information and Management

Conference Location : Copenhagen, Denmark

Conference Dates : June 13-14, 2024