

Supply Chain Responsiveness: Dimensions, Relationships and Impact on Performance

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Abstract

The increasing pace in the industry and the growing complexity of supply chains worldwide are incremental phenomena demanding changes and adaptation in terms of Supply Chain Management (SCM). However, no one could anticipate the profound impact caused by changes in demand during the Covid-19 pandemic, the magnitude of the disruptions, and their effects for such a long period. Companies need to reorganize and transform to accommodate and respond to shortages, market shifts, or product changes. More than being efficient, supply chains need to be responsive. Responsiveness enables supply chains to deliver the right product, at the right place, within an adequate time frame. However, research on how to develop responsive strategies applied to SCM is still scarce. As a concept, Responsiveness is well-defined and accepted as a relevant topic in the field. Some studies present conceptual models of responsiveness based on dimensions to be developed and managed by companies. Volume, product, and process have been proposed as dimensions of responsiveness. More recently, a new foundational theory emerged, addressing the dynamic potential of the supply chain and identifying responsiveness as the base upon which to build knowledge. According to this theory, responsiveness is achieved by combining five dimensions: adaptability, flexibility, agility, improvisation, and resilience. On the one hand, these dimensions represent no novelty to the field of SCM; on the other hand, there needs to be a clear indication of the right combination to achieve the desired level of responsiveness. In addition, it is relevant to ascertain the relationships identified between the dimensions. When an improvement in one of the dimensions leads to the same result in another one, synergies might be harvested. Still, it is necessary to consider the hypothesis of having dimensions competing for the same resources. In situations where such tensions arise, it is essential to discern and manage conflicting perspectives.

This study adopts a theoretical responsiveness model proposed in the literature as the starting point for the work developed. The responsiveness dimensions included in the model are studied from two perspectives: first, the right combination of dimensions for the intended level of responsiveness and, second, the tensions between the different dimensions. In what concerns the first perspective, dynamic capabilities facilitate reaching the adequate combination of dimensions and pursuing the right strategy to achieve responsiveness. Regarding the second perspective, paradox theory provides a framework for understanding and managing tensions between responsiveness dimensions arising from competition for resources and inner conflicts. Finally, the impact of responsiveness on performance is studied, considering the moderating role of industry clockspeed, as different industries vary in pace, the company's position in the supply chain, and environmental uncertainty.

Keywords (12 font)

Supply Chain Management, Responsiveness, Dynamic Capabilities, Paradox Theory, Industry Clockspeed

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Biographies

Carla Cruz is a PhD student in Mechanical Engineering and a researcher at the Faculty of Sciences and Technology of the University of Coimbra. She holds a Degree in Industrial Engineering and Management and a Post-Graduation in Operations Management from the University of Aveiro. She worked as an Assistant Lecturer at the School of Technology and Management of the Polytechnic Institute of Bragança for 18 years. She taught basic and applied statistics, operations research, operations management, forecasting methods, innovation, and technology transfer. She enjoys living in between the focus of research activities and the excitement of teaching and communicating. Her main research interests are in Operations Management and Supply Chain Management.

Luís Miguel D. F. Ferreira is an Assistant Professor of Operations and Supply Chain Management at the Mechanical Engineering Department of the University of Coimbra. He received his PhD from the Technical University of Lisboa. He participated in several national and European research projects, and his research interests include topics related to Sustainability and Supply Chain Management, and has published in journals such as *Supply Chain Management: an International Journal*, *Journal of Cleaner Production*, *Production Planning and Control*, *Sustainable Production and Consumption*, *Journal of Manufacturing Systems* among others.