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Digital Transformation and Resilience: Dimensions and Interactions

Oussama Abidi
https://orcid.org/0000-0002-7918-3975
Aix Marseille Univ, CERGAM, Aix-en-Provence, France

Jean-loup Richet
https://orcid.org/0000-0002-6595-5460
IAE Paris-Sorbonne, Université Paris 1 Panthéon-Sorbonne, France

Claudio Vitari
https://orcid.org/0000-0002-2191-5205
Aix Marseille Univ, CERGAM, FEG, Aix-en-Provence, France

ABSTRACT

Recent global events, notably the COVID-19 pandemic, have posed significant challenges to information systems (IS) companies, highlighting the critical importance of system resilience and its relationship with digital transformation (DT) during disruptive times. Despite this, there is a notable lack of literature examining the interactions between DT and resilience. To address this gap, this article presents a comprehensive review of the various types of interactions between these two concepts. Drawing on 73 articles published between 2010 and 2021 in leading IS research journals, our study identifies multiple dimensions of both DT and resilience. Mobilizing these dimensions, we explore their interactions to enhance our understanding of their causal dynamics. This review provides valuable insights for researchers and practitioners interested in the mutual interactions between DT and resilience, especially in the context of disruptive events.

KEYWORDS

Resilience, Digital Transformation (DT), Dimensions, Interactions, Causality

INTRODUCTION

During the first decade of the twenty first century, information systems (IS) revolutionized the business and organizational landscape. This transformation, along with recent global events such as the COVID-19 pandemic, has highlighted the critical need for resilience and digital transformation (DT) within the IS community. The emphasis on resilience and DT aims to enhance our understanding of IS behavior and reinforce the ability of organizations to adapt and thrive in the face of external challenges (Floetgen et al., 2021; Muller et al., 2013; Lanzolla et al., 2020).

Many businesses now recognize the importance of resilience to overcome and adapt to external shocks in the long-term (Floetgen et al., 2021; Yoo & Roh, 2021). Moreover, what were once "nice to have" functionalities of IS have now become a "must-have" for organizations. Those who were already aware of the potential of IS have demonstrated greater resilience against exogenous shocks such as COVID-19 (Pee et al., 2021).

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In the context of DT, its potential in improving the quality of life and driving growth has been well established. Therefore, it is essential to prioritize this subject in management agendas (Frik et al., 2021; Gholami et al., 2021). DT has become imperative for most organizations in our ever-evolving world (Gong & Ribiere, 2020). Furthermore, it has proven remarkably efficient in seeking solutions to navigate obstacles and prevent further damages during crises (He et al., 2023; Gholami et al., 2021).

Regarding the interactions between DT and resilience, Zhang et al. (2021) underscore the increasing importance of understanding the impact of DT on organizational resilience. Similarly, Hess et al. (2020) highlight the need to examine how DT can alter system characteristics, including resilience. Verhoef et al. (2021) also emphasize the necessity for scholars to focus on the interplay between resilience and DT. This investigation is essential, as it can clarify how organizations adapt to external factors. Despite their significance, the role of DT in enhancing organizational resilience remains largely unexplored (He et al., 2023; Zhang et al., 2021). Floetgen et al. (2021) further note that, although there is a pressing need to develop resilience on a broader scale, few studies address how DT impacts the resilience of higher-level systems or contribute to organizational resilience building. Additionally, there is a notable lack of theoretical and practical integration between these two domains (Heeks & Ospina, 2019).

From these insights, it becomes clear that there is a significant gap in understanding the various interactions between resilience and DT. Gaining a deeper understanding of these interactions can offer valuable insights for both the research community and managers, shedding light on how IS behave under normal conditions as well as when coping with external factors or critical events. Such understanding is crucial for making informed decisions, considering the ramifications of these decisions and their dynamic effects on resilience and DT initiatives within organizations. To address this gap, this paper aims to provide a comprehensive analysis of the interactions between resilience and DT. Specifically, the research question explored is: What are the types of interactions between resilience and DT? Unlike previous studies that have focused on single cases, external factors, or limited circumstances, this paper seeks to develop a framework that categorizes the different types of interactions. This framework will not only enhance our understanding of these interactions but also offer a tool that can be validated through real-world applications, helping to explain and predict the behavior of IS.

This paper takes a mutual interaction perspective to explore the relationship between the DT and resilience. To achieve this goal, this document is organized as follows: first, we explore the existing literature related to the main goal of this paper, followed by an explanation of our research methodology. Then, we provide definitions of DT and resilience from our selected paper sample, followed by a literature review presenting our results. We then discuss the findings and explore potential areas for future research. Finally, we conclude with the possible application field of this study.

LITERATURE REVIEW

Resilience has its roots in various disciplines. Originating in the ecological realm in the 1970s, it initially described an ecosystem's ability to withstand environmental pressures and disturbances (Holling, 1973). Resilience emphasizes the capacity to absorb shocks, adapt to changes, and maintain essential functions, which is crucial for biodiversity and human well-being. Over time, the concept of resilience expanded into information systems (IS). Studies underscore the importance of resilience in disaster response and emergency management. For example, Sakurai & Chughtai (2020) discuss IS functionality during earthquakes, advocating for frugal designs to reinforce resilience. Vecchiola et al. (2013) provide a framework for resilient design. Wang et al. (2010) introduce a measure for recovery in IS service companies, while Sarkar et al. (2016) presents a model for IS resilience planning within large organizations.

For DT, it can be traced back to the advancements in computers and electronic data processing within organizational workflows. Prior to this, organizations relied on paper-based processes and

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