Digital Resilience Formation During Covid and Before Covid- A Thematic Analysis in Higher Education Context

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Extended Abstract

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Abstract

These days, the indispensability of digital resilience copes up the challenging covid situation. This study investigates a digital resilience formation process in the context of higher education since it is one of the most disrupted sectors caused by the Covid pandemic. In this study, we explore what are the dimensions of the digital resilience formation process, whether and how do these dimensions differ in importance between before the pandemic and during the pandemic? The purpose of this research is thus twofold. First, to build a model of the multidimensional digital resilience formation process in the education domain. Second, collecting articles and using two different datasets, seeks to compare the relative importance of the dimensions between two different timelines (past covid era and during the Covid pandemic era), using semantic content and quantitative content analysis.

Keywords

Digital Resilience dimensions, pandemic, higher education, semantic analysis, quantitative analysis.

Introduction

Resilience is the capacity of individuals, groups, or communities to respond and cope with any external or internal shock/crisis such as one caused by natural calamity or pandemic, by bouncing back or moving forward to adopt the disruptive change excreted by the shock (Roberts et al. 2015). Luthar (2003) addressed that resilience "represents the manifestation of positive adaptation despite significant life adversity. Resilience is not an individual attribute that can be directly measured; rather, it is a process or phenomenon that is inferred from the dual coexisting conditions of high adversity and relatively positive adaptation in spite of adversity". Digital resilience, a subset of resilience, represents the process of surviving major exogenous crises using digital means. It is the inherent strength of any individual, physical or digital entity to utilize information system or by designing, deploying, and using digital systems to quickly recover from or adjust to major disruptions or crises (Fong Boh et al. 2020) and adapt to any adversity and to continue its identity. For instance, to deal with consumer satisfaction issue, a digitally resilient information system can use data analytics to analyze vast volumes of consumer data to provide better service to them.

Digital resilience can be identified as a key adversity resolution component in organizations, institutions, communities (Brennan, 2001; Amann and James, 2015). The importance of digital resilience has been addressed from different perspectives, including technological (Briscoe and Marinos, 2009), information or data security (Blay and Investigator, 2019; Nica, 2019; Petrenko and Vorobieva, 2019), big data angle (Amann and James, 2015), social (Bjola and Papadakis 2020), institutional (Zh and Remote, 2020), behavioral, psychological (Park, 2015; Harris and Johns, 2020) economic(Gatehouse, 2020), game-theoretic (Perreault 2017), and managerial, organizational approaches (Kohn, 2020). Based on Linkov (2019) digital resilience can be described as a single most powerful strength-based existence sustaining tool for an institution or organization in the landscape of any threat. At the time of this study, the COVID 19 virus has become an existential threat in form of a pandemic that claimed millions of lives (Worldometer 2020). One of the most affected domains is the higher education (UNESCO 2020a, 2020b). Numerous studies demonstrated importance of digital transformation and asked the educational authority to prepare for radical changes in the event of a pandemic (Kristóf 2020) however, higher education did not consider designing 360-degree online higher education, and demonstrated their poor condition of institutional digital resilience (Merkl-Davies, Doris M.; Brennan 2001). The question of whether the higher education was resilient enough for the forthcoming digital era of learning (Houlden and Veletsianos 2020) thus became relevant. In the context of institutional crisis, digital resilience can be understood as the interplay of balance and collaboration between people, process, information, and technology (Casalino et al. 2020) to manage risk by seizing digital opportunities. Digital resilience in the higher education is argued to fosters the shock-absorbing capability of the institution's people, process, and technology. The digital resilience in the higher education thus justifiably can be intellectualized as the process of digital innovation or digital transformation that provides the capability to institutions to deal with a crisis and thrive in it, by utilizing the balanced interaction between its people, process, and technology. The digital resilience formation of the higher education is significant since digital teaching and learning have been predicted as the primary mode of imparting education during long term crisis (Dill et al. 2020).

Despite the importance of the digital resilience formation in fostering higher education's capability, however, research has been relatively scarce in this domain. More specifically, there has been no research to best of our knowledge on how digital innovation or transformation is capable of enhancing the inherent ability of higher education. This research thus aims to focus on the digital resilience formation in the higher education. The overall objective of this study is twofold. First, we propose a multidimensional digital resilience model that captures and exhibits the complex phenomena of the digital resilience formation in the higher education. Second, based on the identified dimensions, we will utilize semantic content analysis and quantitative content analysis to contrast and compare the digital resilience formation perspectives taken by the practitioners and academic researchers before and after the Covid-19 pandemic. These viewpoints reflect the concept of the digital resilience formation in the higher education. Specific **research questions** are: what dimensions in the digital resilience formation can be identified in academia? Whether the formation of the digital resilience process is being shifted due to covid crisis, if yes then which were the emphasized dimensions that formed the digital resilience process before the pandemic, and what are the emphasized dimensions that are forming the digital resilience process during the pandemic?

This paper is organized as follows, background provides rationale of digital resilience formation and how it is justified to extend into higher education. Based on this **literature review**, on the next section we will propose the digital resilience formation **model** in the context of higher education and will formulate our first proposition which is followed by the discussion related to the next propositions. The next section will present the **data collection** (completed) and **research methodology** (in progress). Research implication section will present the **expected research and practical implications** of this study and conclusion.

Literature Review

Digital resilience itself can be difficult to observe and measure directly. Therefore, to investigate the dimensions affecting the digital resilience-building process in the higher education and conceptualize the digital resilience formation model as a set of interconnected dimensions, we follow a three-step approach: first based on basic rationales and background concepts we propose that digital resilience as a set of interdependent abilities in which each dimension reflects the ability use/expand its use of digital technology. Second, we collect digital innovation and transformation related articles of two different concepts divided by pandemic crisis (without and with covid crisis) in this study, detailed source information is provided in data collection section. Third, we compare and contrast the difference between before and after covid situation regarding the digital resilience perception. We utilize this approach since articles are one of the best sources to observe the understanding of the stakeholders and have predictive power (Weller and Anderson 2013); therefore, the digital resilience formation in the context of the higher education can be conceptualized using this method.

Basic Rationale of Digital Resilience Formation

Resilience is conceptualized as a dynamic developmental process of adaptation or process of positive adjustment (Luthar 2003), and has been defined as "the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances" by reorganizing the microsystems and macrosystems of any entity (Sameroff and Fiese 2000). Based on the concept of the domain of economics (Robinson 1939), digital resilience is conceptualized as a balance between risk and capacity, where people, processes, and technology have to play their respective roles. Extending these concepts into the domain of education, digital resilience can be argued as a process of successful adaptation by reorganizing people, process, technologies in the higher education in face of any threat.

Entities in Higher education

The reason for this study to explore digital resilience in the education industry lies in the fact that the higher education is one of the worst-hit sectors by the pandemic and it needs digital support to function normally. However, it has been seen as one of the most "resistant social institutions ever created" entrenched in instructional methods of teaching and very slow to adapt to the changing realities of technology (Anderson et al. 2012). This section draws upon literature to lay the foundation of the higher education in terms of people process and technology. The first two entities in academia are students and teachers, they are envisioned as learning partners (Ahmad 2015), whose interpersonal relationship was thought to be disrupted with a rift by technology (Fullan 2013), paved the imperative of "new higher education of learning" by utilizing technology that is efficient, easy to access and use and which can be applied to solve real-world problems (Ahmad 2015). The third entity is information technology, the first factor of this entity is technology, it refers to the well-established devices, media, tools, technologies, platforms, and emerging systems used as conduits to create flexibility, responsiveness, and networking between educators and learners for teaching and learning purpose (McKee 2017; Piper 2002). Grounded on the fifth-generation digital technology, mentioned by McKee (2017), IT in today's higher education can be conceptualized as an intelligent flexible pedagogical standard that supports teaching, learning, research, administration, enrolment, commerce, publishing, and distribution of learning content. The second aspect of IT is related to information, its management and security (Bjola and Papadakis 2020).
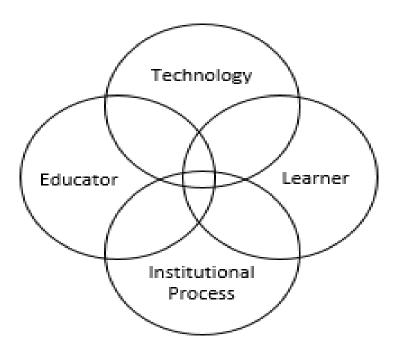
Figure 1. Key Entities of Higher Education

The fourth entity is an institutional process that consists of two factors: structural and operational (Welch 2010). The structural aspect refers to the, re/design of policies, plans, budgets, that strategize the core functions, support functions of any establishment. For the higher education, core functions include teaching, learning, research (Wolski et al. 2020), support includes IT support, infrastructural support. Core functions can be performed by using different forms of operations. Forms of operations are methodological practices that operationalize the core functions(Weller and Anderson 2013). In the changed version of higher education, there are many recognized teaching/learning operation that includes face-to-face, postal correspondence, correspondence with telephone support, correspondence augmented with audio and then videotape, broadcast, computer-mediated, blended in-class teaching and learning, and now by digital education on the Web using a synchronous or asynchronous method (McKee 2010). Figure 1, depicts the entities of any higher education, with mode as remote learning.

Discussion and Conclusion

This study offers three contributions. **Theoretical**, the study proposes a literature-based dimensional framework of digital resilience formation in higher education, which in our knowledge is the first attempt of a theory-based approach by which multiple dimensions of digital resilience may be investigated empirically. **Practical**, the dimensional framework should be better able to inform, not only the higher education sector but other organizations also, from multiple angles, how closely their people, process and technical capacity matches to the proposed dimensional framework to theoretically and logically label themselves as digitally resilient organization. **Methodologically**, the research employs both automated keyword extraction and manual intervention to develop keyword-based search-strings for, clear interpretation, and mapping of terms to validate the proposed dimensional factors. Which is a new approach to bridge widely researched practical issues with a theoretical standpoint. In the **future** we plan to collect those first-hand content and intend to compare the relative importance placed on our proposed dimensions by more successful institutions compared to the others.

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