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Digital Transformation in Higher Education Institutions: a Systematic Literature Review

Mario Gay[1], Ilaria falvo[2], Benedetto Lepori[2]

[1]Head of IT Services, Università della Svizzera italiana, Lugano, Switzerland. [2]Faculty of Communication and Cultural Society, Institution of Communication and Public Policy, Università della Svizzera italiana, lugano, Switzerland

Research Domains

Digital University and new learning technologies (DU)

Abstract

On the scholarity debate on Digital transformation in higher education (HE), we conducted a systematic literature review (SLR) to both identify existing research gaps and applied the DT process in the Higher education literature. We constructed our theoretical concepts, based on organizational definition of DT, with a framework synthesis approach. This framework, and the related subthemes has been applied to select 3652 documents suitable for full-text analysis. We performed a second analysis with VOSviever software to identify presence of clusters. Three main clusters interrelated within them: DT is related to teaching, learning in higher education context; DT as an innovation dimension in business, management in an entrepreneurship context and digitalization as a software innovation initiative for user. We consider our SLR in position to carry out important implications for understanding the mechanisms behind the DT in HEIs and informing future public policy decision in promoting a sustainable change in HEI.

Full paper

Introduction

Much of the research related to the Digital Transformation (DT) in the context of Higher Education Institutions (HEIs) has focused on the impact of introducing specific digital technologies on educational practices such as learning (Mohamed Hashim et al., 2022) changing the learners' experience (Sharpe et al., 2010), educational outcomes (Mohamed Hashim et al., 2022). However, much less attention has been paid to the broader implications brought by DT for HEI's organisational structures, including the transformation of organisational processes or roles, modes of service delivery and interaction with the environments. These concepts, used frequently in the field of organisational studies, can be described as elements of organisational change "that is triggered and shaped by the widespread diffusion of digital technologies" (Hanelt et al., 2021). In this paper, we undertake a systematic literature review on digital transformation in higher education with the goal of both identify [BL1] existing research gaps and to "integrate, juxtapose, and by other means develop theory" (Carter & Washispack, 2018). Specifically, we adopted an approach described by Seuring et al. as 'theory extension', that is, borrowing of theory from a different field, "thereby enriching the studied content and broadening the available theoretical repository" (Seuring et al., 2020). The research is divided into two distinct parts. In the first part, we explore how the concepts related to DT have been applied in the HE context; this includes a detailed analysis of the definitions of DT in the management literature and its main dimensions . In the second part, we develop a systematic review of DT in higher education to analyze how these dimensions has been applied to higher education and to identify research gaps.

Background and theoretical framework

The concept of DT is both broad and 'fuzzy', with the boundaries of its application varying significantly depending on the context. Several authors highlight not only the lack of an unambiguous definition of "digital transformation" but also the partial overlap between the terms 'digitisation', 'digitalisation' and 'digital transformation (Reis et al., 2018; Hausberg et al., 2019; Bockshecker et al., 2018). In relation to our focus on an organizational perspective, DT is often defined as the radical change of organizations' key characteristics—such as organisational

structures, business model and value proposition—resulting from the adoption of digital technology (Matt et al., 2015; Remane et al., 2017) and the consequent organisational change (Vial, 2021; Hanelt et al., 2021). Particularly relevant is the multi-dimensional framework proposed by Hanelt et al. (2021), which includes three main dimensions—contextual conditions, mechanisms and outcomes—each with several subcategories. However, the Hanelt's framework has been developed for organizations without specifically considering the context of HEIs and some of their specific dimensions. Our contribution was adapted the Hanel's framework, adding new dimensions identified in the analysis of 30 DT definitions founded in the literature and also considering the literature review of Vial (Vial, 2019) (table 1).

Table 1: New framework synthesis

Contextual Conditions	**Mechanism**	**Outcomes**
Contextual conditions trigger and shape digital transformation	*Mechanisms link contextual conditions with outcomes*	*Consequences of DT on organizations*
New Digital technologies Social Media Software Mobile Embedded Devices	Business Strategy Leadership Communication strategy (interaction) Implementation of strategy	New Business Models Enhancing Costumer Experiences/Products Streamlining Operation Increase revenue Compete with others
Digital Capabilities Human capabilities	Digital Innovation IT-Business transformation Digitalization Big-data Digital economy Enterprise Resource Planning	Organisational Structure/System Automation process Information flow Capabilities Actions Functioning System

	Enterprise Resource Planning Functioning System (ERP) Data-driven	
Consumer Demand	IT-security Privacy	Performance and Value Improve performance (events, practices, models) Capture Value/Value creation
Digital Transformation organizational awareness		
Barriers		

Methods

To address our research aims, we conducted a SLR, synthesizing all published and available research (Torgerson, 2003) on the status of scholarity debate on digital transformation in higher education (HE). The SLR was finalized in June 2022, and refers to the period of 1980 to June 2022 and it was applied the following inclusion and exclusion criteria (table 2) with the specific searching string (table 3).

The search for studies, based on the criteria discussed above, was carried out on the Scopus Core Collection database. Appling the search queries described in table 3, produces a 4992 references in June 2022, which were screened for relevancy on the basis of title and abstract, and yielding 3652 documents suitable for full-text screening. The following analysis was performed using the VOSviever software (Van Eck & Waltman, 2010), the use provide a combination of technique for mapping and clustering (Van Eck & Waltman, 2010). This method helped us to identify presence of cluster.

Table 2. Inclusion and exclusion criteria.

Dimension	Inclusion criteria	Exclusion criteria
Subject of study	HE institutions: e.g., universities, universities of applied sciences, research institutes.	Not HE organizations: e.g., national HE systems, HE field, perceptions of categories of actors.
Scope of transformation	Substantial, far-reaching, long-lasting change: e.g., changes in remote delivery of curricula equivalent to face-to face delivery.	Change limited in scope and/or depth.
Type of documents	Scholarly peer-reviewed documents: articles, book chapters, conference proceedings, editorial of conference proceedings.	Practitioner literature, grey literature.
Language	English	Not English
Time frame	1980 (It development period) – June 2022	Before 1980

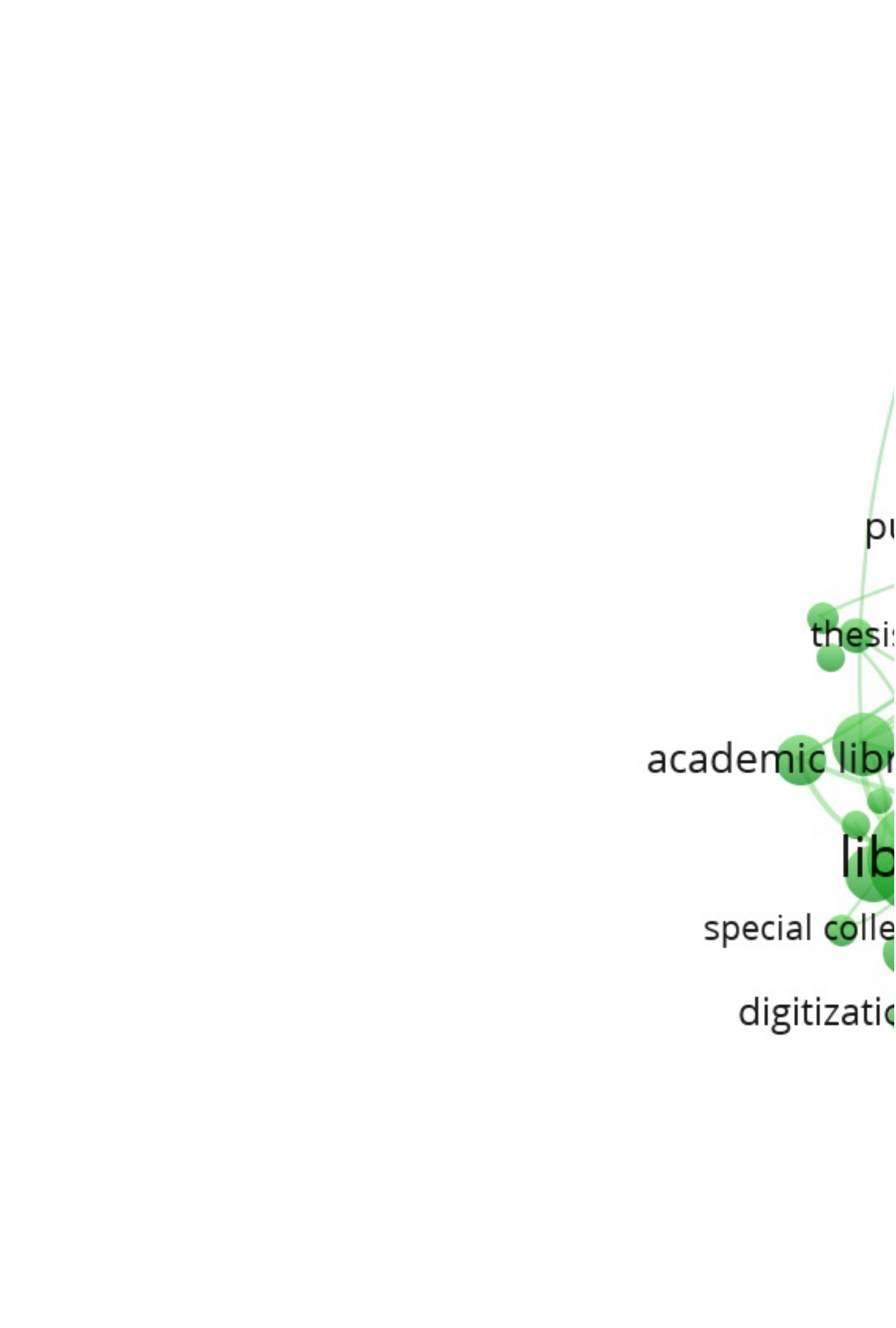
Table 3. Searching string

Concepts	Searching string
Digital transformation (*1)	TITLE-ABS-KEY (“digital transformation" OR "digitali?ation" OR "digiti?ation")
Higher education institutions (*2)	TITLE-ABS-KEY ("higher education" OR "higher education institutions" OR "post-secondary institutions" OR "universit*" OR "academia" OR "academ*" OR "HEI" OR "HE" OR "tertiary education"
(combination) (*1) AND (*2)	

Initial findings

Figure 1 presents the word co-occurrence map based on titles, abstracts and keywords of the identified documents. The map recognized the presence of three main clusters interrelated within them. In red, it is presented digital transformation is related to teaching, learning in higher education context with dimensions of skills and competence. In blue, DT as an innovation dimension in business, management in an entrepreneurship context. Lastly, in

green, digitalization as a software innovation initiative for user.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Conclusion

We assume that our results may have significant implications for understanding the mechanisms underlying the DT in HEIs and informing future public policy decision in promoting a sustainable change in HEIs.

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