

Exploring Digital Transformation in Organizations: A Typological Perspective

Mirela Andreea Tudose

National University of Science and Technology Politehnica, Bucharest, Romania

andreea.tudose04@gmail.com

Abstract: Due to its rapid expansion, as well as the numerous implications it has at the organizational level, digital transformation has become an increasingly discussed topic in studies and specialized works. However, it is often treated as a homogeneous phenomenon, leading to a limited understanding of the multitude of forms it can take. This paper aims to address this issue, referring to a specific typology of digital transformation - the one proposed by Hanelt et al (2021). Specifically, it conceptualizes digital transformation as a multidimensional phenomenon, structured into four categories – Technology Impact, Compartmentalized Adaptation, Systemic Shift and Holistic Co-evolution. From a methodological point of view, the paper has a literature-based approach, supported by the analysis of illustrative examples, for each category, of relevant international organizations. Thus, a better understanding of how the adoption of digital technologies has different impacts at the organizational level is facilitated, from limited effects related to the technological side, to profound transformations of the entire organizational structure simultaneous with those of the external environment. The main findings highlight that digital transformation is a complex, heterogeneous and context-dependent phenomenon. In other words, similar technologies can lead to significantly different outcomes depending on organizational conditions and specific factors. From a practical perspective, the article is useful for managers and practitioners, who can be supported in the effort to more effectively manage digital transformation processes within the organization, by clearly identifying the type of desired change and the level at which it manifests itself. Therefore, the proposed typological approach facilitates the analysis and observation of different digital transformation trajectories and provides a useful framework for future research.

Keywords: Digital Transformation, Organizational Change, Intra-Organizational Focus, Contextual Scope.

1. Introduction

Digital transformation has become an increasingly important topic for both researchers and managers and decision-makers at the organizational level. Since this complex and continuous process produces significant changes – positive or negative depending on how it is implemented and managed – in the way it works, attitudes, behaviors and performance level of employees, organizations are required to pay special attention to these aspects. In this sense, the first step is understanding the concept, characteristics, types and potential effects of digital transformation.

In response to this need, there are studies that address different perspectives of digital transformation, explaining and emphasizing its multidimensional character. An example in this sense is the typology proposed by Hanelt et al. (2021), which conceptualizes digital transformation as a process that can take different forms depending on its scale and impact within the organization and the environment in which it operates.

Considering all this, the main objective of this paper is to explore and illustrate with concrete case studies this typology in order to better understand how digital transformation manifests itself within organizations. The paper contributes to the existing literature by providing a synthesized and structured analysis of the typology under discussion, integrating its four categories into a unitary analytical framework. This article also aims to draw attention to the role that the internal context at the organizational level, but also the external one, of the sector/industry within which it operates, plays in establishing the direction of the organization's digital transformation. Last but not least, the present study could be useful for managers and practitioners who seek to deepen the phenomenon of digital transformation in order to make more informed and, therefore, more effective decisions, by explaining and exemplifying some possible types of digital transformation and their implications.

2. Methodology

This paper adopts a qualitative, exploratory approach, oriented towards theoretical clarification and exemplification, with the objective of illustrating different types of organizational digital transformation based on the specific classification developed by Hanelt et al. (2021). This classification is used as the main tool to structure the analysis, evaluating the type of digital transformation in the selected case studies according to the focus of intra-organizational processes and the breadth of the contextual scope.

This article is a conceptual work, which is mainly based on the existing literature – and in particular on the study by Hanelt et al. (2021) on the typology of digital transformation - and on a synthesized analysis carried out by the author on illustrative case studies from international organizations. The methodological approach of this paper does not involve the collection of primary empirical data, but aims to develop a coherent analytical perspective by integrating and interpreting established theoretical frameworks and secondary sources.

The selection of case studies was carried out using a theoretical sampling strategy, with the aim of illustrating in a relevant way the four types of digital transformation identified within the proposed classification. The cases were chosen so that each of them predominantly illustrates one of the analytical categories, allowing a clear comparison between distinct types of transformation.

The analysis is based on secondary data, published case studies, organizational analyses and public sources regarding the digital transformation processes of the selected organizations, being used to identify the dominant patterns of change relevant to the dimensions of the established framework. The actual process consisted of a comparative analysis of the case studies, carried out by relating each of them to the key dimensions of Hanelt and his colleagues' classification.

Given the heterogeneous nature of the phenomenon and the diversity of effects it implies on organizations, it is necessary to establish a clear conceptual understanding. In this context, this article is guided by the following research question:

How can the types of digital transformation at the organizational level be differentiated depending on the scale of the changes and the organization's relationship with the external environment in which it operates?

3. Understanding the Concept of Digital Transformation

In studies and specialized works, the terms “digital transformation”, “digitization” and “digitalization” are often used interchangeably. Although these concepts are closely related, they can (and should) be defined distinctly. Verhoef et al. (2021) consider that digital transformation consists of three phases/stages: digitization, digitalization and digital transformation itself. Although the three phases are not completely distinct and there may be overlaps, digital transformation can be considered the result of the first two, as it builds on the experience gained in the initial two stages.

Digital transformation, the broadest and deepest phase, involves fundamentally changing the way the organization uses digital technologies, in order to develop a new digital business model, based on the creation and exploration of sources of additional value (Verhoef et al., 2021). The process should focus on competitive advantage through the constant implementation of new technologies, in order to improve their user experience and reduce costs (Lamarre, 2023), including by integrating technologies such as artificial intelligence or cloud computing, which can increase the competitiveness of companies by streamlining their operations (Marr, 2023).

However, the definitions of digital transformation have undergone some changes with the chronological evolution of the phenomenon, as well as its understanding. In this sense, one of the first proposed definitions considers digital transformation to refer to “the changes that the digital technology causes or influences in all aspects of human life” (Stolterman & Fors, 2004, p. 689), while later definitions formulated by researchers focus on improving the organization as a result of implementing DT – “the changes that the digital technology causes or influences in all aspects of human life” (Fitzgerald et al, 2013, p. 2); “a new and modern term in business and technological literature is usually defined as integration of digital technology into business that results in, sometimes fundamental changes in business operation and delivery of value to customers” (Mičić, 2017); “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies” (Vial, 2019, p. 118); “A fundamental process of change, facilitated by the innovative use of digital technologies, accompanied by the strategic capitalization of key resources and capabilities, aimed at radically improving an entity” (Gong, & Ribiere, 2021, p. 12).

Nowadays, more and more organizations, regardless of state, industry or sector, are showing an increased interest in developing and adopting digital transformation, generally out of a desire to remain competitive, especially as a result of the use of digital tools such as Artificial Intelligence or Internet of Things (Bresciani, Ferraris, & Del Giudice, 2018). However, it is important to mention that although the changes brought about by digital transformation within organizations have entailed numerous benefits, such as increased productivity, flexibility and efficiency, they also imply a series of unintended side effects with negative impact (Tudose, 2025).

4. Typology of Digital Transformation

Hanelt et al. (2021) discuss digital transformation using a four-perspective typology, as a result of analyzing and combining two dimensions – contextual scope (which refers to the scope of approach, from a narrow one focused on specific technologies or processes, to an extended one relating to the entire organization) and the change process within the organization (how focused the organization is on changes as a result of TD in its internal processes). Thus, the four proposed perspectives are: technological impact, systemic change, compartmentalized adaptation, and holistic co-evolution.

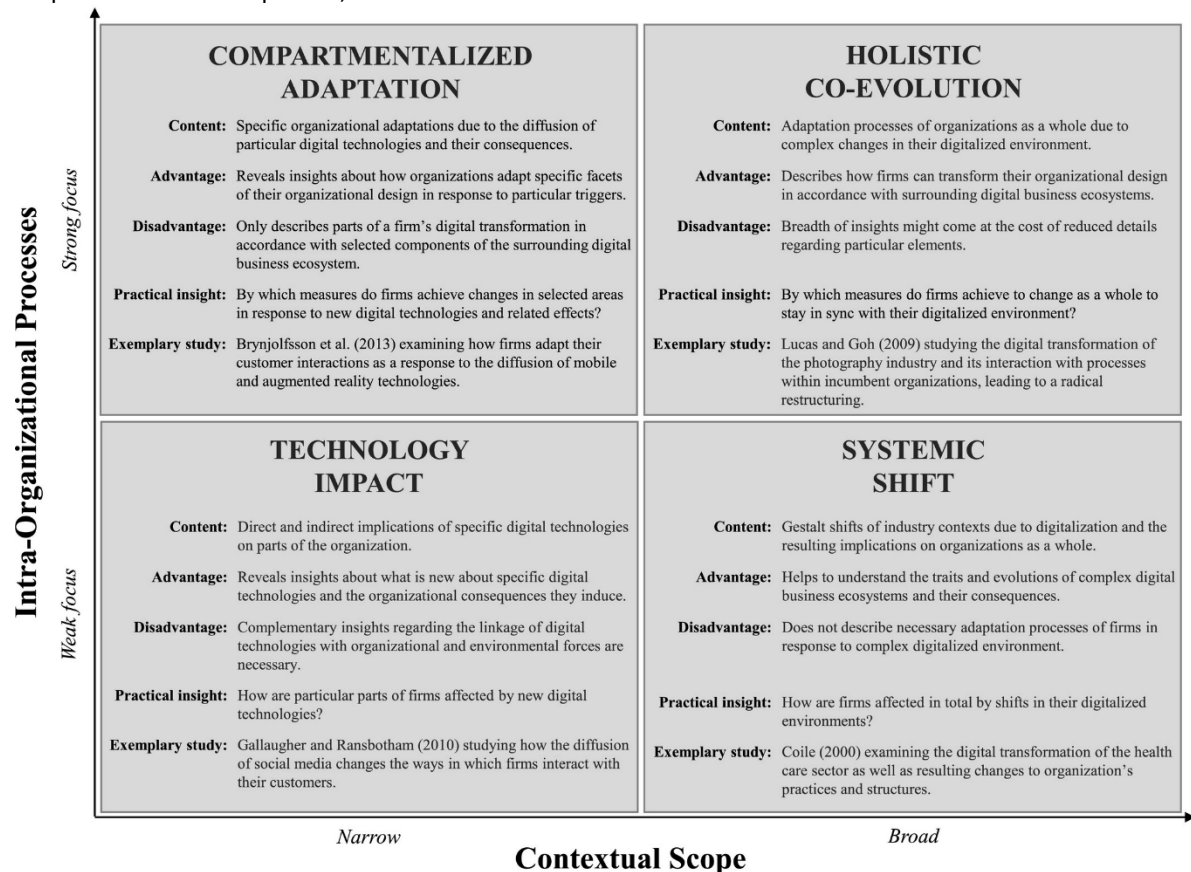


Figure 1: Typology of digital transformation perspectives

Source: Hanelt et al. (2021)

Technological impact is characterized by a narrow contextual scope and a reduced interest in changes to the organization's processes and involves direct and indirect effects of the adoption of digital technologies on some departments/parts of the organization, having the main advantage of identifying the novelties generated by the implementation of TD within the organization.

Compartmentalized adaptation involves a narrow contextual scope, but an increased interest in intra-organizational changes. This perspective analyzes how the organization adapts to digital transformation by changing certain processes or components of it accordingly, and its main advantage is that it shows concretely how organizations adopt certain changes in response to the emergence of new technologies.

Systemic change combines a broad contextual scope with little interest in internal change processes. This refers to the overall changes in a particular industry as a result of digital transformation, as well as the implications of these changes for organizations in that industry. The advantage of this perspective is that it facilitates a better understanding of the characteristics and trends of ecosystems undergoing digital transformation, not just at the level of a company, but as a systemic wave affecting all companies in an industry.

Holistic co-evolution represents the most integrated approach, referring to profound changes across the entire organization as a result of adopting digital transformation. These organizational changes occur simultaneously with changes in the entire system in which it operates – partners, customers, etc. Within this approach, the transformation is not an isolated one, but has an impact on the entire structure of the company, and the main

advantage is that it provides an overview of the changes that have occurred, as well as how organizations can become innovative and adaptable in a general context deeply impacted by digital transformation.

5. Results and Further Discussions

5.1 Technology Impact – Nike

For this category, an illustrative example is represented by the company Nike. Thus, the use of social networks has produced significant, but still limited, changes in terms of the channels and ways in which the company interacts with customers. Social media platforms, as specific digital technologies, have expanded and intensified the company-customer interaction in the case of Nike, especially by adopting specific marketing strategies and customer relationship management. In this context, the company has moved from predominantly unidirectional forms of communication to more complex, high-frequency, bidirectional interactions, with a strong message oriented towards engagement and real-time feedback, promoting the building of online communities around the brand.

The adoption of these digital practices does not imply, at least in the initial stages, radical changes in organizational processes or business model, although it significantly increases brand visibility and the degree of consumer involvement (Chai, 2024).

Therefore, the Nike case is representative of the Technology Impact category, highlighting the fact that digital tools can generate effects on some departments/parts of the organization.

5.2 Compartmentalized Adaptation – L'Oréal

L'Oréal is a good example of the compartmentalized adaptation category, more precisely through the integration of the ModiFace tool, a digital solution based on augmented reality that gives users (customers) the opportunity to virtually test the company's cosmetic products through a mobile application (Jessen et al., 2020).

Although this innovation has assumed a strong focus at the organizational level on the changes brought about by digital transformation, the area of approach (contextual scope) is narrow, oriented towards marketing processes, customer journey, product management and even brand communication. In other words, the implementation of the application aimed to improve the customer experience with the help of digital tools, quantified in increasing the company's profitability. Researchers have already discussed the benefits that can be brought by the use of augmented reality in the customer decision and purchase process (de Ruyter et al., 2020; Flavián et al., 2019), and companies such as L'Oréal have demonstrated that these solutions can be put into practice.

Therefore, the L'Oréal example shows how organizations can use digital tools to adapt specific internal processes or components, but in a limited context, without transforming the entire business model.

5.3 Systemic Shift – DBS Bank

Digital transformation in the banking sector represented an important systemic change, resulting from several factors such as the pressure exerted by FinTechs, new market contexts, rapid technological evolution, as well as openness from top management (Diener, & Špaček, 2021). Therefore, banks are under considerable pressure to digitally transform and adopt a more customer-centric approach in an effort to remain competitive.

In this context – of a banking industry marked by change – a concrete example for the Systemic Shift category is DBS Bank, one of Asia's leading financial services groups. DBS Bank has initiated a broad transformation process at the company level, which has gone beyond the boundaries of a single department/part thereof, implying a coherent reconfiguration of its organizational culture, processes and structure. In this sense, digital transformation involved the use of digital platforms, the modernization of IT infrastructure, as well as the implementation of agile methodologies in terms of decision-making, coordination and collaboration at the organizational level. Also, interaction with customers has been changed by integrating digital tools within banking operations (Shaaban, 2024).

Hence, the DBS Bank case shows how digital transformation can act as a catalyst for systemic change, generating important modifications at the organizational level, which are not limited to certain departments or processes, but reflect a systemic transformation triggered in response to changes at the industry level.

5.4 Holistic Co-evolution – Amazon

A representative example of the most comprehensive approach to digital transformation, holistic co-evolution, is the company Amazon, which has developed and implemented an intelligent virtual assistant based on cloud technology and artificial intelligence, Alexa. The evolution of this Amazon digital tool has coincided with that of the associated digital ecosystem, with mutual influences between internal changes occurring at the company level and general transformations in the environment in which it operates. Through this digital initiative, Amazon not only reorganizes its own structure, processes and organizational culture, but also contributes to building a system of relationships between users, developers and digital service providers. From the perspective of co-created value, the complex digital platform Alexa supports the creation of synergies, the integration of resources and the collaboration between stakeholders - such as service and product providers, application developers, end users - the added value being thus generated at the level of the entire ecosystem in which the company operates (Schmidt, Alt, & Zimmermann, 2026).

Therefore, the digital transformation in the case of Amazon, through the integration of the virtual assistant Alexa, does not only involve the adoption of a new digital technology, but also involves a profound change in the way it coordinates its activity, processes and collaborations with a series of key actors, in order to create a personalized and innovative experience. Simultaneously, this transformation has laid the foundations for significant developments in the interaction between developers, users and external partners, as well as in their interaction with the actual platform.

Ultimately, the Alexa case illustrates a holistic digital transformation, in the sense that changes at the organizational level as a result of adopting digital transformation and those occurring at the ecosystem level – increasingly digital – take place simultaneously, in a co-evolutionary process that has an impact on all actors involved.

The classification proposed by Hanelt and colleagues (2021) highlights that digital transformation is a complex phenomenon, which is not homogeneous, and can be classified into distinct categories depending on the area of approach to digital transformation at the organization level, the level at which it is focused on the changes that have occurred as a result of digital transformation in its internal processes, as well as the organization's relationship with its external environment. The table below represents a comparative synthesis in this regard, describing the main characteristics of each category, in order to better understand the conceptual and empirical differences between them.

Table 1: Summary of Digital Transformation Types According to Hanelt et al. (2021)

Typology	Main Level of change	Illustrative Case Study	Short Description
Technology Impact	Technological	Nike	Digital technologies generate specific effects on the channels and the way of communication and interaction with customers, without producing significant changes at the level of organizational structure or processes.
Compartmentalized Adaptation	Intra-organizational (localized – parts/departments)	L'Oréal (ModiFace tool)	Digital instruments adopted at the organizational level produce changes at the level of certain processes or its components, having a narrow area of approach, focused on specific technologies or processes.
Systemic Shift	Organizational and sector/industry level	DBS Bank	Changes at the sector/industry level as a result of the generally manifested digital transformation determine profound reconfigurations of organizational strategies, structures and processes.

Typology	Main Level of change	Illustrative Case Study	Short Description
Holistic Co-evolution	Organizational and ecosystemic	Amazon (Alexa intelligent virtual assistant)	Digital transformation impacts the entire organization, but it occurs simultaneously with the transformation (co-evolution) of the ecosystem in which it operates.

Source: Author's adaptation based on Hanelt et al. (2021)

6. Conclusion

In conclusion, this paper has conducted an analysis of the phenomenon of digital transformation in the organizational environment from a typological perspective, based on the classification proposed by Hanelt and collaborators. This refers to four categories – Technology Impact, Compartmentalized Adaptation, Systemic Change and Holistic Co-evolution – demonstrating that digital transformation is a complex, multidimensional phenomenon, with different impact depending on the level of application and the attention paid by the organization to these aspects.

The identification and analysis of representative empirical examples - case studies from internationally known companies - for each category of the typology supports a deeper understanding of digital transformation, showing the diversity of manifestations that it can take at the organizational level, as well as the importance of the internal situation of the organization and the sector/industry in which it operates. From a theoretical point of view, the analysis supports the usefulness of Hanelt et al.'s classification as a relevant tool for digital transformation research, and from a practical perspective, the described results support the fact that organizations have the opportunity to set the type of targeted change as a result of digital transformation if they understand and apply such a typology.

Future studies could explore the ways in which organizations can move from one category to another within the digital transformation typology, as well as the internal and external driving factors of these transitions.

This study has a number of limitations. The analysis is mainly based on the study of empirical examples from secondary sources, selected for illustrative purposes. Also, although useful from an analytical point of view, selecting a specific typology of digital transformation - in this case the one proposed by Hanelt and others - involves the risk of oversimplification regarding the multidimensionality of the digital transformation phenomenon and the multitude of situations in which organizations may find themselves on this journey.

Ethics Declaration

This paper contains a literature review and does not involve human participants, experiments, or the collection of personal data. Therefore, ethical approval was not required for this study. The research adheres to ethical guidelines for academic integrity, ensuring that all sources are cited and acknowledged appropriately. There are no known conflicts of interest related to this study.

AI Declaration

The author confirms that no artificial intelligence-based tools were used except for formal qualitative purposes, grammar and spelling checking, and formatting assistance. However, the final version of the manuscript has been reviewed and approved by the author to ensure accuracy, integrity and originality. Generative AI tools were not used to create or analyse the content of this work.

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