

DIGITALNA TRANSFORMACIJA: POVEZANOST PROMJENA U DRUŠTVU I OGRANIZACIJAMA

DIGITAL TRANSFORMATION: THE CONNECTION OF CHANGES IN SOCIETY AND ORGANIZATIONS

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SAŽETAK

Cilj je ovoga rada definirati utjecaj digitalne transformacije na organizacije koje prolaze kroz proces transformacije te povezanost promjena u organizacijama i društvu u cjelini. Digitalna transformacija započinje procesom inovacija u visokim tehnologijama, a onda se preljeva na društvene aktivnosti. Organizacije su suočene s izazovima prilagodbe kako bi zadržale odnosno izgradile nove konkurentske prednosti. Kontinuirani proces inoviranja omogućuje, ali i prisiljava organizacije na kontinuiranu izgradnju konkurentskih prednosti. Inovacije u području visoke tehnologije izravno djeluju na društveno okruženje i trajno utječu na kulture društava i organizacija. Digitalnoj transformaciji je prethodio proces digitizacije, kao proces pretvaranja analognih u digitalne podatke, te proces digitalizacije cjelokupnih proizvodnih procesa. Suvremene organizacije koriste nove modele upravljanja poslovnim procesima, temeljene na digitalnoj transformaciji i korištenju visokih tehnologija što je izravno djelovalo na promjene unutar društvenih zajednica koje su u interakciji s organizacijama.

Ključne riječi: *digitizacija, digitalizacije, digitalna optimizacija, digitalna transformacija.*

ABSTRACT

The aim of this paper is to define the impact of digital transformation on organizations undergoing the transformation process and the connection between changes in organizations and society as a whole. Digital transformation begins with the

process of innovation in high technologies, and then spills over into social activities. Organizations are faced with adaptation challenges in order to maintain or build new competitive advantages. The continuous process of innovation enables, but also forces organizations to continuously build competitive advantages. Innovations in the field of high technology directly affect the social environment and permanently affect the cultures of societies and organizations. The digital transformation was preceded by the digitization process, as the process of converting analog data into digital data, and the process of digitization of the entire production process. Modern organizations use new models of business process management, based on digital transformation and the use of high technologies, which directly affected the change within social communities that interact with organizations.

Keywords: *digitization, digitalisation, digital optimisation, digital transformation*

1. UVOD

1. INTRODUCTION

Digital transformation is the process that introduces changes in the business model of an organisation, which facilitates the business transformation in one of two fundamental ways: by reducing business process expenses or by increasing efficiency. Furthermore, digital transformation defines business activities by reducing financial expenses linked to innovations and by increasing the efficiency of management boards. [1]. It was proven that digital transformation has a positive

influence on all business activities and sectors within organisations, and its initial implementation makes itself felt in the new way of creating strategic plans that use the outcome of the digital transformation to build competitive advantages of the organisation [2]. Through business digital transformation and digital optimisation, organisations develop capacities that spread beyond cost cutting strategies and build completely new revenue generation models. In the automotive industry, digital transformation proved to be the fundamental competitive advantage building strategy directly impacting productivity growth [3]. By analysing the organisation development in the context of resource development, digital transformation directly influences prerequisites' creating for process innovation and innovation development that will ensure new competitive advantages of the organisation [4]. Optimising business processes elevates accuracy, timeliness and precision of business operations execution, which directly influences better resource usage, decreased production costs and greater profitability of the organisations [5]. One can deduce that digital transformation plays a significant role in promoting export activities of a company, and in decreasing operating expenses through reduced import of high added value resources. This paper reviews the historical development of the digital transformation, transformation stages and the influence of the digital transformation on

organisations. Digital transformation influences an organisation's environment in a way so as to change the social environment, i.e., changes occur within company culture. Changes in the organisations' environment manifest themselves as changes in strategy and structure of the organisations that have accepted the new resources using models linked to digital transformation of business processes.

2. DIGITALNA TRANSFORMACIJA U OKOLINI ORGANIZACIJE

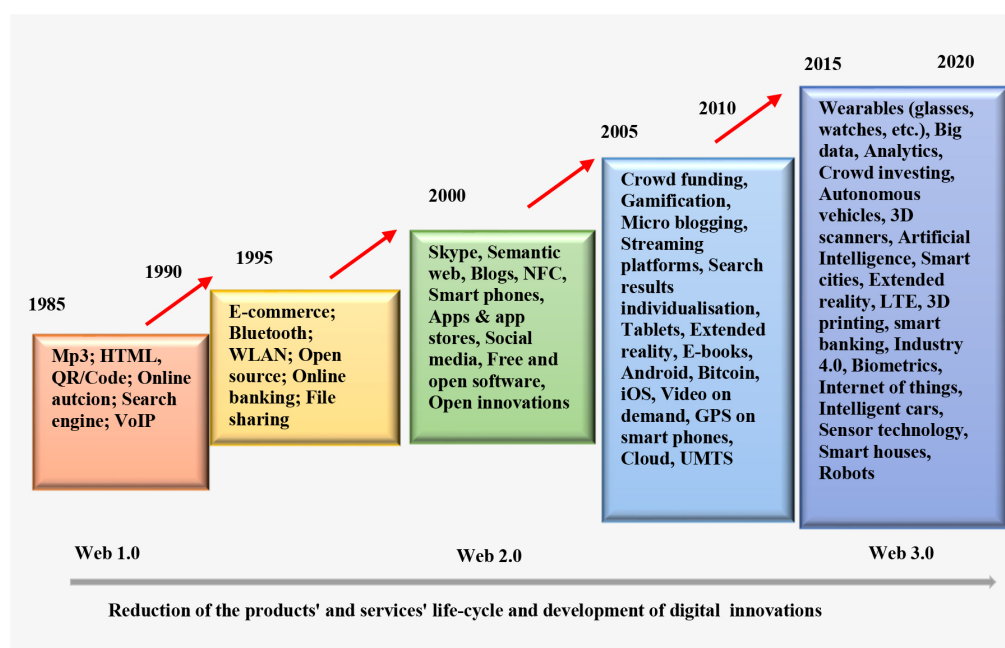
2. DIGITAL TRANSFORMATION IN THE ORGANIZATION'S ENVIRONMENT

Digital transformation is a much broader concept than business process transformation. It directly impacts changes in society that take place along with the technology development and improvements in the IT sector.

2.1. POVIJESNI RAZVOJ DIGITALNE TRANSFORMACIJE

2.1. HISTORICAL DEVELOPMENT OF DIGITAL TRANSFORMATION

Digital transformation is a continuous process that gets accelerated by each new technological



Slika 1 Točke preokreta u transformaciji na temelju IT tehnologija, Izvor: Dapp, 2017.

Figure 1 Turning points in transformation based on IT technologies, Source: Dapp, 2017

solution. Digital transformation is a much broader concept than business process transformation precisely for the reason that it starts in the IT sector, as shown in Figure 1 [6]. Generally, digital transformation can be viewed in the context of ways of using the Web model. Profound social changes, linked with digital technologies, commence around 1985 in the Web 1.0 model. The chroniclers of the digital transformation recognise this process in the invention of the “compact disc” as the fundamental digitalisation change in society, followed by the inventions of e-mail and personal computer as the fundament of the future digital revolution [7].

The end of 1990's and the “dot.com burst” phenomenon have marked the end of the Web 1.0 model, and the beginning of the new era of digitalisation along with the communication linked to it in the Web 2.0 model. Web 3.0 is currently in use, and the Internet and Web models chroniclers already anticipate the possibility of the development of Web 4.0.

Digital transformation has facilitated abrupt development of innovations, with majority of them being in the area connected to the disruptive innovations [8]. Digital transformation and the disruptive changes within the industry have marked a completely new economic and technological paradigm within societies [7]. Web 2.0 and the development of smart phones were the turning point of the digital transformation development towards the contemporary models. The contemporary society is quicker to experience the effects of the mobile devices transformation, the “big-data“ model, social media, cloud business, artificial intelligence, etc. [9]. The music industry was one of the first industries to go through the process of revenue transformation where the revenue from selling physical sound carriers was replaced by subscriptions to streaming platforms [10].

2.2. FAZE DIGITALNE TRANSFORMACIJE

2.2. DIGITAL TRANSFORMATION STAGES

The oldest stage in the digital transformation process of organisations is placed in the middle of the last century and the appearance of cybernetics. The emersion and the development of the first computers, and the development of the cybernetics linked to it, have directly impacted the digitisation of a part of the existing business processes so as to transfer information and data into the digital format. Verhoef et al. (2019) have analysed the specificities of the digital organisations' development, and have found three fundamental stages in the digital transformation process, and they divided them into: digitisation, digitalisation and digital transformation [5]. The multidisciplinary approach to research has encompassed the period from the very beginning of the digital technology development as well as the guidelines for the development of using the digital technology in the future. The three fundamental development stages in the digitalisation development of an organisation, i.e., digitisation, digitalisation and digital transformation were determined by Behahmed and Hansal (2019), examining the capability of an organisation to retain their customers [11]. The research has covered the period from using electronic devices that were recording different forms of interaction with the customers, all the way to smartphone communication. The development and transformation of digital technology from organisation digitisation to digital transformation of operations is presented in Figure 2.

The digitisation has originally represented the data transformation into the “0” and “1”, i.e., into the digital form of data storage. The data stored in this form were used for further



Slika 2 Faze digitalne transformacije, Izvor: osobna izrada, 2023.

Figure 2 Stages of digital transformation, Source: Own illustration, 2023.

processing and data transfer [12]. Digitisation is the modification of analogue data into digital records, and has come to be as the result of the development of information technologies that facilitate the everyday business processes and have significantly reduced the operation costs [5] [13]. The digitisation is defined as the process of converting information from analogue into digital form which results in changes in the existing business model in order to ensure added value to all the stakeholder on the process. The digitisation represents the transformation of the analogue technology into the digital format [11] [12] [14].

Business digitalisation determines the way in which the digital technology transforms the existing business processes [5]. Digitalisation, i.e., implementation of digital technologies, has provided a big opportunity and a significant challenge to individuals, organisations, eco-systems and whole societies in building new business and social processes [7]. The digital technology was in the focus of this transformation trend, and it is defined as a combination of information, computer, communication and data distribution technologies and linking all of the stakeholders of the process [15] [16]. Digitalisation refers to the socio-technical method of adopting the digitalisation techniques to improve the social and institutional context [17]. For this reason, digitalisation didn't focus solely on cost saving, but includes also the development of process that improves the citizen's experience [5].

The digital transformation is a change in the whole organisation that leads to the development of new business models, which has an impact on the whole organisation vertically and its ways of doing business; it transcends the digitalisation which refers to the modification of simple processes and tasks [5]. The digital transformation refers to "the process which has the goal of improving the entity by instigating significant changes of its properties through a combination of information, computer, communication and connecting technologies" [18]. Digital transformation is a broader concept than digitalisation, i.e., digitalisation is a part of digital transformation. Digitalisation has contributed to the spread of digital technologies

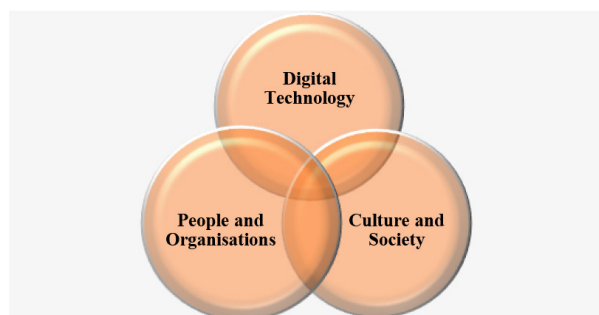
in society, and the process has implicitly influenced changes in the way people behave and are connected. Digital transformation manages the adaptations to the changes caused by digitalisation in order to ensure sustainable development [19]. Scientists very often use both terms simultaneously, i.e., digitalisation and digital transformation when referring to the same phenomenon, but in practice there is an effort to find the difference between the two terms [20]. Both terms are derivatives of digitalisation, which is the technological transformation of analogue information into the digital format [21]. The digital transformation of organisations implies a change to the revenue building model, not only using the digital technology. Revenue generation change from selling physical goods to subscription on a platform is an example of the digital transformation in The New York Times corporation [22]. In literature, we can find several definitions of digital transformation, and the most frequently used one is that it is using technology to radically improve the performance of an organisation [11].

2.3. UTJECAJ DIGITALNE TRANSFORMACIJE NA DRUŠTVENE PROMJENE

2.3. THE IMPACT OF DIGITAL TRANSFORMATION ON SOCIAL CHANGE

The digital transformation is most often mentioned in the context of the transformation of business operations within organisations, but the influence and the reach of the digital transformation is a much broader process. The concept of the digital transformation is divided into two basic categories: the transformation of technical systems and the influence of the digital transformation on social systems [21]. The digital transformation of technical systems is linked to the development of cloud computing, internet of things, platform ecosystems, big-data analytics, etc. [23]. Changes within social systems can be recognised as the changes of the culture and the structure of societies, the changes linked to the behaviour of people and their life habits, goals, procedure changes and the order of executing jobs, etc. [24]. The fundamental changes

directly linked to the digital transformation are divided into three sets of changes: a) changes and development of technology, i.e., use of the digital technologies; b) changes within social communities linked to the culture changes, and c) changes linked to the influence of the digital transformation on people and organisations. The three fundamental sets of changes are shown in Figure 3.



Slika 3 Temeljni skupovi promjena povezani s digitalnom transformacijom, Izvor: osobna izrada, 2023.

Figure 3 Fundamental sets of changes associated with digital transformation, Source: Own illustration, 2023

The development and application of the digital technologies have directly impacted the changes in the environment, and have imposed the rhythm and the direction of social changes. In order to understand the influence of the digital technologies, it is necessary to observe different techno-economic subsystems constituting them and their distribution within different subsystems [25]. Continuous technology development has directed researches towards the technological aspects of the digital transformation, while more ancient studies have highlighted the need of researching organisational changes that were the prerequisite of the operations' digital transformation. The newest studies have focused on the technological aspects of digital transformation [26], while others have pointed out the need for organisational changes [27].

The digital transformation leads to social changes, which are directly linked with the change and development of technology [28]. All of it, eventually leads to the irreversible culture changes in a society. Those changes capture societies, organisations and individuals who use and adopt digital technologies [29]. The key elements of change are directed to “the socio-economic changes” (which are manifested

in multiple levels in the society structure, i.e., economic activities in a society) and “digital changes” (which are linked to the “socio-technical” changes). All of those changes share a common characteristic, being that there is no single best solution for all, but different solutions that can be good for some, but worse for other participants in the process [30].

The digital transformation is primarily directed towards people, while business and technology trail behind. The digital transformation, defined and accepted in such a manner, which prioritises people, has to be placed above processes, metrics, data or the way of thinking of technologies [31]. In the process of the digital transformation, the soft side is the connected employee who is the foundation of the transformation process [32]. In the context, there is a “talent paradox” [33], since the employees today need not only the specific and constantly changeable technical skills, but also the “soft working skills” in the world of common creation and co-operation in the field of knowledge and skills [34].

3. DIGITALNA TRANSFORMACIJA U ORGANIZACIJAMA

3. DIGITAL TRANSFORMATIONS IN ORGANIZATIONS

The business processes' digital transformation has directly impacted the changes of the organisations' business paradigm. In a moment, the digital transformation is no longer a choice, but the sole possibility of survival within industries.

3.1. STRATEGIJSKI STUPOVI DIGITALNE TRANSFORMACIJE U ORGANIZACIJI

3.1. STRATEGIC PILLARS FOR DIGITAL TRANSFORMATION IN ORGANIZATION

Sivarman (2020) has likened the digital transformation with the gold rush in California in the beginning of the 19th century. Several mining companies have discovered gold and have started attracting everyone else to join the search for gold. This effort led to the discovery of other

metals in California, but also oil, as the most important, albeit insignificant at the time. Most of the mining companies went bankrupt except for the biggest ones or those which have transformed and have built their competitive advantages on other metals and oil [35]. In the contemporary world, all of the biggest corporations have been affected by the digital transformation, and it has become the prerequisite for the long-term survival in the industry. The global leader, Nike, has transformed from a sports apparel manufacturer into a personalised and adapted sportswear manufacturing platform [36]. Netflix has transformed from a movie-renting company to a content distribution platform, much like Spotify [37]. Global trends dictate individual narratives which direct disruptive transformations within industries, thus changing the rules of business and continuously create, but are also a warrant of new products and services development. Short of that, there would be no new jobs and professions [38].

The fundamental managerial strategies as well as the changes connected to the digital transformation always primarily refer to the people, while all the other affected factors trail behind. In the four fundamental pillars that the digital transformation in organisations leans on,

Sivarman (2020) points out: people, processes, technology and culture. All four pillars are equally important and form an indivisible entity which enables digital transformation processes within organisations [35].

3.2. TRADICIONALNE ORGANIZACIJE NASUPROT DIGITALNIM ORGANIZACIJAMA

3.2. TRADITIONAL ORGANIZATIONS VERSUS DIGITAL ORGANIZATIONS

Scientific researches that focused on the analysis of the differences between the traditional and the digitally transformed organisations have determined seven fundamental factors that determine the difference. The factors are listed in Table 2 below, and Bosch and Olsson define them as transformations in the fields of: business model, business ecosystem, data collecting and processing, system architecture, R&D process, and organisation and organisation culture [39].

The Bosch and Olsson study (2020) was structured as the development of an organisation’s revenue generation model. The revenue building transformation starts

Tablica 1 Strategijski stupovi digitalne transformacije u organizaciji, Izvor: Sivarman, 2020.

Table 1 Strategic pillars for digital transformation in organization, Source: Sivarman, 2020.

Strategic Pillars	Forces of Change and Opportunity	Enabling Lever
People	<ul style="list-style-type: none"> • Always connected, informed, social and networked • Value collaboration and reviews of others • Expect instant gratification, personalisation, convenience, price-value, speed 	Connected employee
Process	<ul style="list-style-type: none"> • Sentiment-centric—Peer and public reviews are sought by employees and companies to drive project, personnel and strategy decisions • Agile - Quick, high-quality, small, high-performance teams • Collaborative and Decentralised operations and decision-making 	Agile Connected systems Data driven
Technology	<ul style="list-style-type: none"> • Technology advances such as Artificial Intelligence, Machine Learning, Data Analytics, Robotic Process Automation, Internet of Things, Cloud Computing and so on are fuelling a wave of disruption • Digitally native user experience focus needed across levels to be successful 	Cognitive intelligence User Interface / User Experience
Culture	<ul style="list-style-type: none"> • Customer obsession—Design thinking, placing customer delight rather than the product or internal process at the centre of strategy • Accelerated execution—New technology adoption by being oriented towards innovation, agile execution and continual improvement • High-performance teams—Collaboration and co-creation in transparent, agile teams that promote a culture of meritocracy 	Digital workplaces Design thinking Agile teams

Tablica 2 Suprotstavljajnje tradicionalnih i digitalnih organizacija: ključne karakteristike, Izvor: Bosch, Olsson 2020.**Table 2** Contrasting traditional and digital companies: Key characteristics, Source: Bosch, Olsson 2020.

Dimensions	Traditional company	Digital company
Business model	Transactional model where customers buy products periodically	Continuous value delivery model based on services; monetization through KPIs and expectation of continuous improvement
Business ecosystem	One-dimensional value network from suppliers to product company to customer	Multidimensional business network with multiple avenues for monetization using products, data, and other assets
Data	Customer has full ownership of its data and with limited (if any) access to it by the product company	The product company has ownership of customer data and uses it as an asset in product development and improvement and as an asset that is monetized with customers, for example, data-driven service offerings
System architecture	Deeply integrated architecture optimized for minimal bill of material cost. Focus is on freezing the architecture after design and a “big bang” release	Modularized architecture separating parts that evolve at different frequencies through APIs (mechanics, electronics, software). Focus is on facilitating continuous evolution and release
R&D process	Process dictated by mechanical design and manufacturing constraints. Focus on planning and prediction in order to minimize cost due to late changes and quality issues	Process focused on fast feedback loops facilitated by continuous deployment and data streams. Focus on experimentation and continuous learning
Organization	Hierarchical organization with functionally organized departments	Empowered, cross-functional teams responsible for different aspects of value delivery
Culture	Atoms-over-bits mindset and with a tendency for local optimization.	Bits-over-atoms mindset in which people deliver on the company mission and take on responsibilities based on what is needed

with the sales of physical products, as trading commodities on the market, and reaches its peak by using artificial intelligence, machine learning and deep learning. The transformation process of a classical organisation into a digitally managed organisation goes through the service implementation phase that is being offered along with the product, for the service later on to become the fundamental competitive advantage. This is followed by the service monetisation phase that does not necessarily include sales of products to final customers, i.e., everything is tailored according to the customers' wishes based on the already collected and processed data. In the final phase of a digitally transformed organisation, the complete process is managed by digital technology. The organisation's digital transformation is directly connected with changes in post-industrial societies. The shift from traditional or linear production into digitally managed production includes also changes in the value chain of post-industrial organisations [40].

4. ZAKLJUČAK

4. CONCLUSION

The digital transformation is a continuous process that spreads to new areas of management and production with every new technological discovery. The level of the digital transformation within an organisation is often talked about as a snapshot of an organisation's development, but a more appropriate term would be a film, because the transformation is an uninterrupted process composed of an unlimited number of individual situations, or snapshots. Very often, scientists deem the beginning of the digital transformation to be the memory disc that enabled storage of digitalised content, which was the turning point in the digitalisation of production processes. Saving digital data on a memory disc is acceptable as the moment which marked digitalisation, but the invention of smartphones is the moment when the full digital transformation of business processes and social communities started. The digital transformation has enabled a completely

new business process paradigm, one in which the sales of a physical product has been replaced by a completely new ways of monetising products and services. The digital transformation has entered all the social processes and is an indivisible from the changes it has prompted in business processes.

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