# DIGITAL TRANSFORMATION OF HIGHER EDUCATION AS A FACTOR IN UKRAINE'S INTEGRATION INTO THE EUROPEAN EDUCATIONAL SPACE

## *TRANSFORMAÇÃO DIGITAL DA EDUCAÇÃO SUPERIOR COMO FATOR DE INTEGRAÇÃO DA UCRÂNIA AO ESPAÇO EDUCACIONAL EUROPEU*

## *ЦИФРОВА ТРАНСФОРМАЦІЯ ВИЩОЇ ОСВІТИ ЯК ЧИННИК ІНТЕГРАЦІЇ УКРАЇНИ ДО ЄВРОПЕЙСЬКОГО ОСВІТНЬОГО ПРОСТОРУ*

**Roman Pasichnyi**
ORCID 0000-0002-4687-3523
Lviv Polytechnic National University
Lviv, Ukraine
roman.y.pasichnyi@lpnu.ua

**Viacheslav Serhieiev**
ORCID 0000-0001-7859-0408
State University "Zhytomyr Polytechnic"
Zhytomyr, Ukraine
serhieiev-vs@ztu.edu.ua

**Sergii Shevchenko**
ORCID 0000-0002-0079-3069
Dnipro State University of Internal Affairs
Dnipro, Ukraine
alphabeta.7373@gmail.com

**Nina Petrukha**
ORCID 0000-0002-3805-2215
Kyiv National University of Construction and Architecture
Kyiv, Ukraine
n.ninna1983@gmail.com

**Bohdan Hryvnak**
ORCID 0000-0002-4593-3862
Ivano-Frankivsk National Technical University of Oil and Gas
Ivano-Frankivsk, Ukraine
gryvnak.2906@gmail.com

**Abstract.** The article aims at outlining challenges and prospects of digital transformation in Ukrainian higher education (HE) in the landscape of European integration prospects. Based on content analysis and system approach, it is demonstrate that digital transformation in education goes far beyond digitalization and covers organizational behavior and business processes architecture. Accordingly, attempts to introduce advanced digital solutions into the organizational landscape of higher education institution (HEI) in many cases leads to failure or at least does not bring full range of expected results. Special attention is paid to the concept of digital maturity as the notion, most fully describing the essence of digital transformation. Based on the cases of Hungary and Norway as two opposite examples of HE digital transformation effectiveness, the prospects for Ukrainian HE in this domain are outlined.

**Keywords:** higher education; digital transformation; digital divide; digital maturity, European educational space, EU educational landscape

**Resumo.** O artigo tem como objetivo delinear os desafios e perspectivas da transformação digital na educação superior ucraniana no contexto da integração europeia. Com base na análise de conteúdo e na abordagem sistêmica, demonstra-se que a transformação digital na educação vai muito além da digitalização, abrangendo o comportamento organizacional e a arquitetura de processos empresariais. Assim, as tentativas de introduzir soluções digitais avançadas no cenário organizacional das instituições de ensino superior frequentemente levam ao fracasso ou, pelo menos, não alcançam a gama completa de resultados esperados. Uma atenção especial é dada ao conceito de maturidade digital, que descreve de forma mais abrangente a essência da transformação digital. Com base nos casos da Hungria e da Noruega, apresentados como exemplos opostos de eficácia na transformação digital da educação superior, são delineadas as perspectivas para a educação superior ucraniana nesse domínio.

**Palavras-chave:** educação superior; transformação digital; desigualdade digital; maturidade digital, espaço educacional europeu, paisagem educacional da UE

**Анотація**. Стаття має на меті окреслити виклики та перспективи цифрової трансформації української вищої освіти у ландшафті євроінтеграційних перспектив. На основі контент-аналізу та системного підходу показано, що цифрова трансформація в освіті виходить далеко за межі цифровізації та охоплює організаційну поведінку та архітектуру бізнес-процесів. Відповідно, спроби впровадження передових цифрових рішень в організаційний ландшафт вищого навчального закладу у багатьох випадках призводять до провалу або, принаймні, не приносять повного спектру очікуваних результатів. Особливу увагу приділено поняттю цифрової зрілості як дефініції, що найбільш повно описує сутність цифрової трансформації. На основі кейсів Угорщини та Норвегії як двох протилежних прикладів ефективності цифрової трансформації вищої освіти окреслено перспективи української вищої освіти в цій сфері.

**Ключові слова**: вища освіта; цифрова трансформація; цифровий розрив; цифрова зрілість, освітній ландшафт ЄС

## 1. INTRODUCTION

The twenty-first century is characterized by technological advancements. Higher education institutions are leveraging technology to improve teaching, learning, faculty performance, and student management. Digitalization and digital transformation are increasingly pervasive across higher education (HE) and its landscape. Higher education institutions (HEIs) have been infiltrated by the technical advancements brought about by the Industrial Revolution 4.0, which pushes institutions to deal with a digital transformation on all levels. Applying digital transformation concepts to the HEI domain is a developing subject that has sparked recent attention, since it allows for the description of complex connections between players in a digitally assisted education domain. However, there are certain special obstacles in this arena. In particular, the findings of Benavides et al. (2020) reveal that it is definitely a new subject, as none of the discovered DT in HEI plans have been developed in a comprehensive manner. At the same time, a change in research on HE digital transformation from technology to social aspects/perspectives is an indicative of the nature of difficulties - the social domain (see Fig. 1). This circumstance necessitates more research on how higher education institutions can grasp DT and meet the present requirements imposed by the fourth industrial revolution.

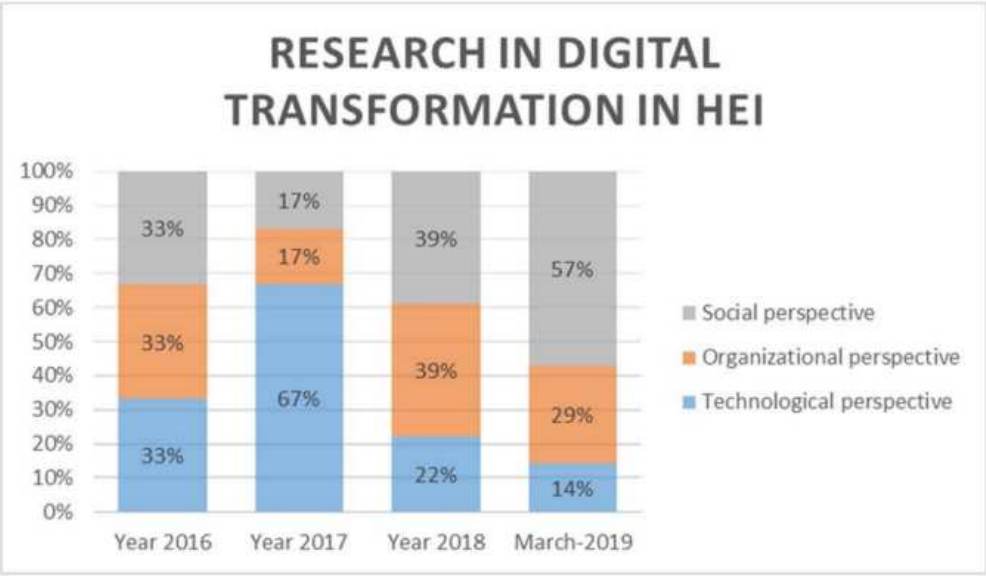


**Figure 1.** Percentage of research in digital transformation in HEIs (Benavides et al., 2020)

One of the key challenges is the digital divide, which has its roots in the social realm. In the context of higher education, students are clearly divided. Those with enough material resources may keep up with the academic pace without difficulty, however others in economically disadvantaged positions may have serious and crucial issues that frequently influence their academic achievement. For example, a bad internet connection might prohibit someone from routinely attending online classes, interacting with peers on multiple platforms, or delivering assignments on time. Another type of digital divide, as a rule, arises between students and faculty, related to their differing statuses as "digital natives" and "digital immigrants", i.e., the contrast between those who grew up with ICT and those who had to incorporate it into their routines as they grew older, and this problem is especially prevalent among higher education staff (Benavides et al., 2020).

Gomes and Dias (2024) conducted recent study on the variability of the digital divide and internet use among people of the 28 European Union (EU) nations. The categories are defined using three digital divide indicators from the Eurobarometer Surveys: frequency of internet access, methods of internet access, and online activity. The category clustering technique classifies internet users into six groups: non-users, basic users, information exchangers, instrumental users, socializers, and advanced users, each with its own socio-demographic profile. The study identifies important socioeconomic and demographic profile characteristics that characterize these trends, such as age, education, gender, employment, kind of community, and geographic location. A significant digital gap has been identified in several nations. Notably, Romania, Greece, and Bulgaria have the highest number of non-users, highlighting the importance of specific policy initiatives (Borodin et al., 2023). The authors correctly state that these findings give critical insights for the European Commission's digitization agenda, implying that more nuanced and targeted policies are required to achieve equal digital access throughout the EU.

In this context, digital transformation of HE in Ukraine as a factor of country' integration into the European educational space is not easy process, especially in the conditions of the current war and perspective post-war reconstruction. The war deepened digital divide within Ukraine, and many educational institutions now face difficulties in progressing efforts of digital transformation, and Russia' attacks on Ukrainian critical infrastructure aggravate the situation. Under these conditions, comprehensive investigation of the specifics an factors of influence in digital transformation of higher education, with analysis of cases and best practices, is highly relevant for strengthening Ukraine' perspective of effective integration into the EU' educational space.

## 2. THEORETICAL FRAMEWORK OR LITERATURE REVIEW

According to studies, digital technology may frequently upset an organization's status quo, forcing it to undergo a fundamental transformation of its business infrastructure to guarantee alignment with strategy (Antonopoulou et al., 2023).

Martin-Barbero (2020) correctly notes that building a virtual culture in universities would need inventive and creative execution, as well as open leadership and an innovative mindset. Learning technology should not be viewed as a mere utility, but rather as an intellectual opportunity. Instructional design, multimedia creation, and data analysis are critical (Vasylevska et al., 2022). Scholars from all disciplines will need to be motivated, directed, and well-equipped as their courses and programs are redesigned and modified for a new and uncertain future.

Adopting new technologies is not enough for universities; it requires a significant shift since, as McCusker and Babington (2015, p. 2) note, it entails a strategic transformation that involves information, processes, technologies, human elements, and much more. Hess et al.

(2016) define digital transformation (DT) as changes in an organization's business model triggered by the adoption of developing digital technologies, resulting in changes to organizational structures, products, or services. As a result, new and emerging technologies provide opportunities to improve and transform the university's business processes in order to create value by converting the use of technology into value by attracting more students and improving student and staff experiences, resulting in the anticipated benefits and results.

Researchers such as Hoskins (2018), Yesner (2020), etc. note that today's students, who demand a flexible, individualized, and real-time educational experience, are the ones putting the most pressure on institutions to modernize. The student experience must be at the forefront of the university's goal. The idea that students, the company's customers, are at the center of digital transformation and that technology is only a tool is reinforced by university leaders interviewed in Stokes et al.'s (2019) study (94% of respondents have an opinion that the most important outcome of digital transformation is enhancing the student experience, while 84% make emphasis on meeting students' demands). Prasanna and Choudhury (2013) assert that happy students are a university's best advertisement. Additionally, the goal of the digital transformation of higher education is to develop new ways of working in order to provide user-centered services, according to Spies (2017) and Seres et al. (2018). A university may be competitive if it uses technology to evaluate the needs and behavior of researchers, teachers, and students and to give the greatest experience possible, claim Hoskins (2018) and Kane et al. (2017).

In this context, digital transformation represents organizational shift at all levels (Orellana et al., 2019; Grajek, 2020), the establishment of a new business model, the redesigning of the whole business model, and a new changes-driven business model (Minina & Mabrouk, 2019; Wildan Zulfkar et al., 2018). Digital transformation results in the ability to enable new processes (Grajek, 2020; Orellana et al., 2019), offer a product or service with new features (Limani et al., 2019), as well as a cultural, organizational, and operational change in an organization (Kreutzer et al., 2018). The goal is to create a value proposition that extends beyond technology and has an influence on society by providing value to stakeholders and implementing strategic change (Ronteau et al., 2022).

Instead of digital transformation, Kane (2017, p. 223) defines it as "digital maturity", or the capacity to respond appropriately to the evolving digital competitive environment, adding that the "response is generally learned rather than instinctive". Fernandez et al. (2023) correctly state that executives in digitally mature businesses realize the need of taking the long view, since the end point of digital change is always evolving. They should develop plans that account for what is on the horizon and make the aims a reality through technological and procedural improvements.

Digital transformation is a set of profound and well-coordinated changes in workforce, culture, and technology that allow for new educational and operating models and change an institution's operations, strategic directions, and value proposition, according to research by EDUCAUSE, a nonprofit organization whose goal is to lead the way, advancing the strategic use of technology and data to further the promise of higher education (EDUCAUSE, 2020). The first attempt to collect information on the Dx phenomenon's manifestation in higher education was the EDUCAUSE Digital Transformation (Dx) study project. The purpose of this project was to investigate the potential and problems that the Dx journey would present, as well as to enhance the general awareness of Dx in higher education. The EDUCAUSE specialists caution that a lot of individuals confuse digital transformation with other information technology applications in both personal and professional life, such as digitization (of analog information) and digitalization (of processes). However, Dx differs greatly from both of them. It has greater effect and is more intricate (see Fig. 2).

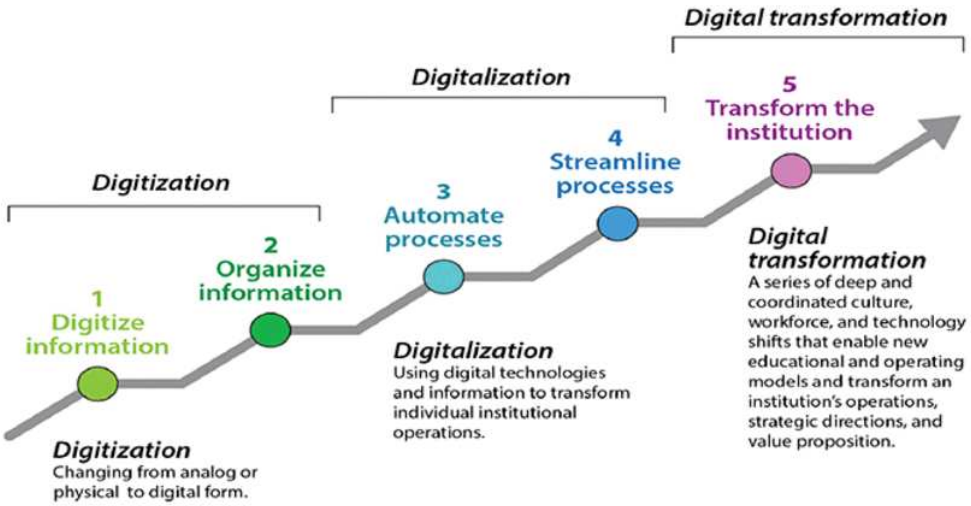


**Figure 2.** Digital transformation in context (EDUCAUSE, 2020)

EDUCAUSE identifies three key Dx indicators: changes in the workforce, culture, and technology. This strategy appears to be offering solid foundations for a thorough digital revolution in HE that addresses all crucial areas.

## 3. METHODOLOGY

The work uses a systemic and dialectical approach. The principles of objectivity, systematicity and historicism act as key philosophical and methodological principles of the study. The use of the dialectical method allows identifying the internal logic of the study of the digital transformation in higher education. The process approach and the comparative analysis method are also applied. Content analysis and elements of case study method are employed as a research tool.

## 4. RESULTS AND DISCUSSION

Over the last decade, a variety of digital technologies have assisted and partially automated different organizational operations in higher education. Audiovisual technologies were employed to enhance teaching, ERP software was used for back-office support, such as handling student registrations and university facilities, and digital library databases gave online access to materials such as books and journals. Students can also access a variety of digital resources, including online library databases for published books, reports, and datasets, as well as a digital learning management platform for instructional materials and lecture recordings. Furthermore, most faculty members used a variety of digital technologies for research and teaching purposes, including research output repositories, timetabling and venue databases, lecture recording dashboards, research funding management platforms, and payroll, HR, and recruitment platforms, among others. Ukraine was not exempt from these processes. In a new research, Ukrainian scientist Holovniia (2023) examines how current technology breakthroughs might convert higher education from a standard academic center to a one-of-a-kind educational-scientific-innovation complex. The researcher rightly argues that in order for a modern higher education institution to be recognized as innovative, it must transform from an ordinary academic center into a unique university complex - an educational, scientific and innovative complex. This complex must develop scientific and innovative activities, create the necessary infrastructure to support these processes and ensure close interaction between educational, scientific, and innovative activities. The study focuses on studying the degree of

virtualization and digitalization in higher education institutions. Holovniia (2023) believes that based on the description of the digitalization process of higher education institutions presented by her, it is possible to identify the potential of digital platforms and resources in the innovative activities of educational institutions, taking into account virtualization and uberization. The researcher argues that the digital platforms and resources used in the innovative activities of higher education institutions and presented in Figure 3 contribute to achieving the following results (Holovniia, 2023):

- Development of new educational information publications thanks to the capabilities of digital educational platforms, such as media courses and flexible courses
- Conducting online tests, with the possibility of up to 15 attempts
- Participation in scientific competitions at the national level
- Technical capabilities for citing and working with digital platforms for university teachers and researchers.

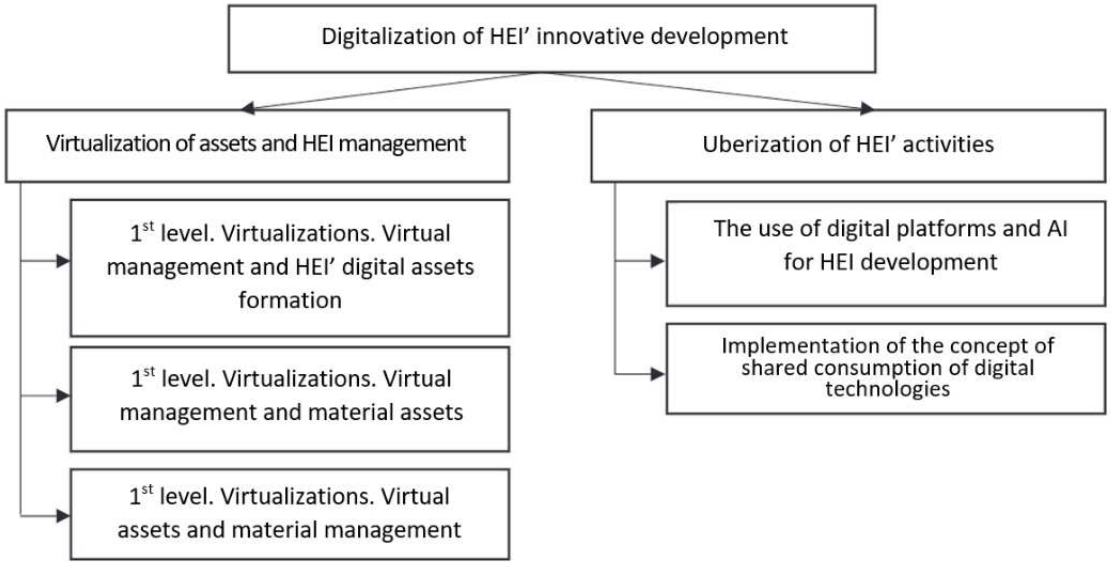


**Figure 3.** Model of digitalization of higher education based on asset virtualization and uberization of processes (Holovniia, 2023)

Also, the study argues that the use of artificial intelligence algorithms has the potential to significantly improve the educational sphere, making it relevant to modern realities. Holovniia (2023) also writes that to create a cloud-oriented educational environment in higher education, it is advisable to apply a hybrid service model of its structure. This model includes educational cloud services and electronic management resources available to users through cloud hosting. This means that resources are stored on virtual servers located in data centers or on virtual cloud servers, which implies a hybrid approach to the use of server capacity.

It should be noted that this vision is quite representative for Ukrainian higher education concerning digital transformation: technology and outsourcing are seen as the core and actually the only foundation for successful digital transformation. However, lack of attention to organizational behavior significantly decreases the effectiveness of DT.

Meanwhile, digital transformation in higher education refers to the integration of digital technology across a university or other tertiary institution, to the point where it fundamentally alters how it runs and provides value to students and staff. True transformation, as opposed to a one-time project or improvement, is comprehensive and necessitates a strategic approach

including many campuses, universities, departments, and stakeholders such as students, professors, and administrative personnel.

Higher education institutions must now embrace digital revolution. However, the procedure is not straightforward due to the following issues.

**'Customer' expectations**

With a customer base predominantly comprised of digital natives, colleges are under strong pressure to provide the finest digital experiences possible. Students anticipate engaging and smooth experiences when dealing with their institutions online, but are frequently let down by poorly connected systems and, in some cases, user interfaces from a bygone digital era. In order to secure quick wins, organizations frequently rush through specific initiatives rather than investing in broader digital transformation plans (OECD, 2021).

**Lagging investment**

In Workday recent survey of 1,150 senior executives about their digital transformation efforts, just 5% of higher education leaders said that at least half of their daily activities had been digitalized. This compares to 18% of all questioned executives, indicating that many colleges and universities have yet to devote the time, money, and effort required to satisfy their stakeholders' expectations in the twenty-first century. While other industries have long recognized the need of digitization, many colleges have underinvested in their digital estates, resulting in outdated systems, skills, and architectures.

**Siloed departments**

One of the most significant hurdles for higher education institutions seeking digital transformation is the complexity of the institutions themselves. Universities often have several colleges, schools, sites, and departments functioning under a same umbrella, therefore data silos are the rule rather than the exception. This is worsened further by academics' inclination to prioritize their discipline over their employers (Budiyanto et al., 2024). Data is at the core of digital change, yet obtaining such information may be challenging in a world where gates and obstacles are not only in existence, but also fiercely defended.

**Lack of personnel experience**

Digital transformation is significantly simpler when aided by a tech-savvy and passionate team. Unfortunately, higher education institutions frequently struggle to secure the complete support of academics who feel they know more than administrators. This can be a considerable challenge, especially when combined with employees who lack strong digital skills. When embarking on a digital transformation journey, it is critical to understand the digital capabilities of individuals affected; yet, one UK survey discovered that only 14% of higher education teaching staff had received an evaluation of their digital skills and training needs (Waller, 2022).

Thus, the challenges of DT in higher education are not unique for Ukraine or other Eastern European countries. However, these countries have their unique challenges. OECD (2021) summarized main challenges of Hungary, impeding the country of achieving high level of higher education digital readiness. Corresponding strengths and challenges are given in Table 1.

**Table 1.** Assessment of digital readiness of Hungarian higher education (OECD, 2021)

| Strengths | Challenges |
|---|---|
| **Digital infrastructure and data** | |
| • The majority of institutions have access to basic network infrastructure (HBONE+), which is thought to be of excellent quality.<br>• Broadband is available on most campuses.<br>• Nearly all incoming college students have the necessary digital devices, including a desktop computer, laptop, and smartphone.<br>• Alleged openness of institutions to well-established digital solutions.<br>• International standards are met by digital authentication systems.<br>• Expanding access to scientific databases via a variety of subscriptions offered by Electronic Information Services.<br>• The majority of the time, data systems (like FIR) are available to institutions, centrally maintained, and comply with the law. | • Some institutions have problems with their intra-institutional Wi-Fi.<br>• Digital networks utilized by different institutions are not standardized.<br>• Students use social media and their own devices to exchange information with one another.<br>• A low computer-to-student ratio and a failure to include personal gadgets into instructional procedures.<br>• There is little financial support for replacing IT infrastructure, such as computers and legitimate software licenses.<br>• Specialized tools and software for research and teaching are rarely acquired, and when they are, they are rarely utilized.<br>• Legal use of software is observed rarely.<br>• Higher education institutions do not have enough IT support.<br>• Poor knowledge of cloud-based technologies and high phone-related expenses (no Voice over Internet Protocol [VoIP] systems).<br>• Institutions do not incorporate data systems (like FIR) into their daily decision-making process. |
| **Digital teaching, research and engagement** | |
| • Sound number of organizations work on creating digital material.<br>• Expanding collaboration between academia and business, particularly in the ICT sector. | • Variability in the roles and characteristics of individuals engaged in the creation of digital material.<br>• The quality of the digital resources and assistance used in the classroom varies.<br>• For teaching in digital learning contexts, teacher competences are insufficient.<br>• Lack of internal programs for the professional development of teachers.<br>• Centralized management of instructional activities that incentivize in-person interactions. |
| **Students' experience and learning** | |
| • Through specialized training courses on cutting-edge digital technology topics, such as the Competence Center at the University of Óbuda and its impact on HEIs in northern Hungary, requirements to participate in a digitalized world - and particularly with the ICT sector -are being incorporated into some educational programs on a daily basis.<br>• ICT and STEM (science, technology, engineering, and mathematics) education programs for young people have proven to be effective.<br>• With the assistance of competence centers, job counseling, professional orientation, international mobility, and language instruction are all partially provided online. | • The continued use of "traditional" methodological techniques in practice, seminars, and lectures in higher education.<br>• The quality of the digital resources and assistance used in the classroom varies.<br>• Both domestic and foreign online programs are not recognized by the accrediting organization.<br>• Digital competences are lacking among adult learners.<br>• There is a quantitative and qualitative lack of IT workers in the job market (high dropout rates, few training candidates).<br>• The usage of text-heavy resources, such as downloaded PDF files, is not supported by learning materials that promote high-quality e-learning.<br>• Digital libraries are rarely used, and most institutions' current libraries are only partially digital.<br>• Credits earned through non-formal learning are seldom recognized or transferred. |

Thus, as can be seen from the table, digital ecosystem in Hungarian HE is not built, and the created landscape is rather digitalized than digitally transformed. The same problems are characteristic for Ukrainian HE.

Meanwhile, digital transformation focuses on the application of technology to key strategy or operational difficulties rather than specific technologies itself (Azoury & Hajj, 2024). It is not "technology for the sake of technology", technology as a 'thing in itself', but rather a means of boosting stakeholder value and accelerating cultural and technical development. Without this knowledge, the adoption of even the most cutting-edge and powerful digital technologies (in particular, AI-based) into HE institutions' operations will be patchwork, will not provide the expected results, and in some circumstances may be detrimental. This predicament is reminiscent of attempts to digitally convert businesses at the start of the DT boom. Many of them chose pricey well-advertised solutions without considering concerns such as architecture compatibility with existing corporate IS, staff skills, business process structure, and organizational culture. As a result, a large number of DT projects seemed unsuccessful, and in many cases impacted current IS and business processes (Habibova & Jafarov, 2019; Habibova, 2023; Rodríguez et al., 2023; Silva et al., 2024).

Meanwhile, successful higher education institutions (HEIs) are transitioning to a new form of university known as digital universities. One should keep in mind that this paradigm entails not just implementing new technology, but also building an organizational strategic transformation that incorporates information, processes, human elements, and so on (Gavkalova et al., 2023; Lappo & Soichuk, 2022; Silva & Nantes, 2023). Because an organization's digital maturity corresponds with the extent of its digital transformation efforts, Fernandez et al. (2023) sought to identify digital transformation initiatives (DTI) undertaken by higher education institutions (HEIs), as well as the new processes and technology employed to accomplish them. According to the authors, a HEI's digital maturity (DM) will increase if it implements: a) digitalization initiatives (DI), which are technology-driven initiatives aimed at optimizing business operations to achieve specific benefits, primarily related to cost reduction or making processes faster and more efficient; b) IT governance best practices (ITGI), which are intended to support better strategic decision-making regarding IT; and c) digital transformation initiatives (DTIs), which are business-driven initiatives aimed at creating new business processes that require overall strategic organizational change, utilizing the newest digital technologies, and providing high value to all stakeholders.

According to Molina-Carmona et al. (2019), digital maturity is an ongoing process that advances as a result of IT governance, digital transformation projects, and digitalization (which might include digital management or innovation initiatives). The authors suggested Digital Maturity Model for Universities (md4u) grid (see Fig. 4).

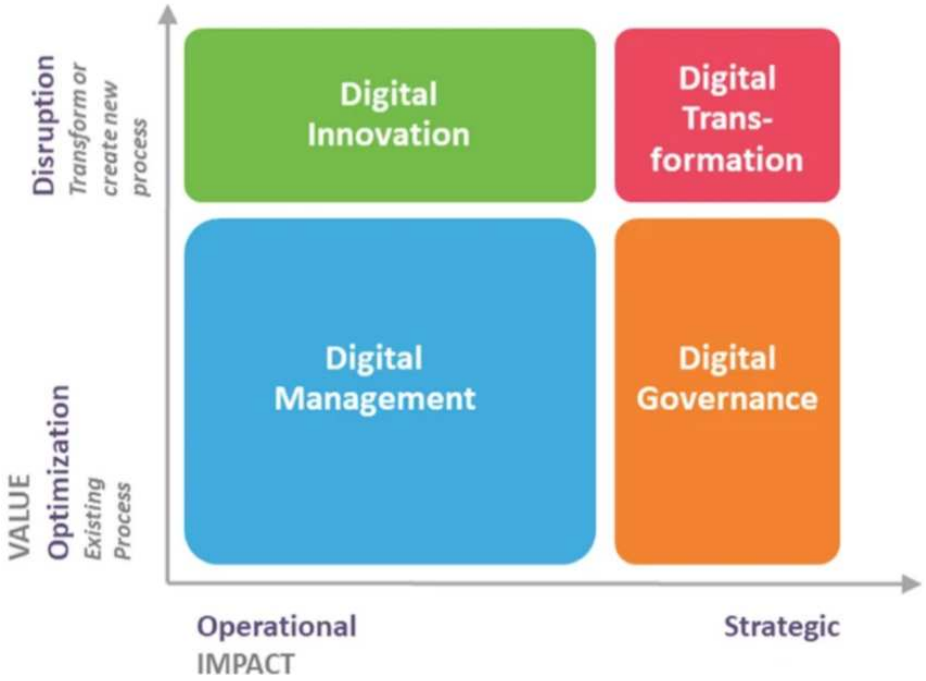


**Figure 4.** Digital Maturity Model for Universities (md4u) grid (Molina-Carmona et al., 2019)

Digital developments in higher education in the Nordic region are examined by Pinheiro et al. (2023). The authors view it as a first step in deciphering a complex and emerging phenomena. The authors propose three key analytical components as a starting point for efforts to analyze the numerous empirical manifestations of DTs in higher education. The first component relates to the significance of the contextual factors that support DTs. In order to fully understand the ways in which actors, ideas, values, preferences, resources, and processes interact (in non-linear and complex ways) and produce both intended or planned and unintended or emerging effects at the macro (system), meso (organizational), or micro (sub-unit, individuals, program, etc.) levels, the examination of DTs in HE must be expanded to encompass system-wide (actors and institutions) and organizational-specific (internal change or adaptation) factors in addition to the local classroom setting (Pinheiro et al., 2023). This entails closely monitoring elements related to the political economy that supports HE systems and HEIs at the macro or system level, such as changes in governance regimes. Over the past three decades or so, HE systems around the world, including those in the Nordic countries, have been the focus of reforms inspired by New Public Management (NPM) that emphasize accountability, efficiency, and quality (Hazelkorn et al., 2018; Pinheiro et al., 2019). This is true for many other branches of the public sector as well. Although the outcomes of these changes have varied somewhat among nations, there has been a general shift in favor of ex-post systems of supervision and control that are based on the combination of policy tools.

The significance of a number of components that act as mediators at the system level is the second crucial aspect mentioned by Pinheiro et al. (2023). Technologies - more especially, the type, extent, and goals of the technological platforms being used - are mediators that need to be taken into account while dissecting DTs in HE, according to the authors. The phenomena known as “platformization” is the result of the introduction of big data, learning analytics, and artificial intelligence (AI) into higher education (Perrota, 2021). Implementing learning management systems (LMSs) is a crucial component of this.

The impacts that result from the introduction (and subsequent adaption) of digital technologies and platforms in higher education are covered in the third component.

There are notable disparities in how different actors envision the intended content and goals of DTs, especially between many teaching staff and central management, administrators, and support services, according to the findings and analysis of the study conducted in the Norwegian context by Pinheiro et al. (2023). This is due to the historical tension (antecedents in our conceptual framework) between a top-down push towards DTs and the reluctance among several teaching staff to proceed as quickly as envisaged by central management (in alignment with administrative support services). This crucial aspect, which appears to be lacking from a lot of organizational readiness literature, is that the degree of agreement or disagreement over the real nature of the change the organization is preparing for influences what "readiness" truly is. In other words, perceptions of changes and whether or not they are desirable also influence the valence of change. In Norway and the Nordics, consensus culture is less about dictating what should be changed and more about legitimizing change (or opposition to change) through democratic and employee-involvement processes that are viewed by all parties as essential to the organization's continued existence as a valid social entity (Karpa et al., 2023). This also explains why rank-and-file academic staff are required to adopt a consensual viewpoint that does not put them in direct opposition to the leadership, just as leaders are not allowed to be overly pushy in their attitude and recommendations.

It is not unexpected that Denmark achieved 69.6% coverage of fundamental digital skills in the 2024 edition of the Digital Decade report (2024), compared to the EU average of 55.6%, given the unique methods taken by Nordic higher education towards digital transformation. As a result, Denmark now meets 87% of the EU 2030 objective, which calls for 80% of EU citizens to have at least rudimentary digital skills. When HE digital transformation is done well, the consequences are obvious. To promote innovation and research and development in the direction of a successful digital ecosystem, Denmark is involved in a number of projects, including those involving the EdTech industry. When it comes to selecting digital tools, schools and educators have more freedom to choose between those offered by the commercial sector or by the government (locally or centrally). In order to guarantee security and interoperability, the government enforces standards and regulations and, to some extent, promotes and directs their purchase (OECD, 2023).

Overall, the consideration of two representative examples of Hungary and Norway shows the presence of different approaches to digital transformation and digital maturity in HE even within the EU. However, Ukraine, while being in the process of European integration, is in a beneficial position in the sense that it has benchmarks and outlining of tremendous experience accumulated by European countries on the way of HE digital transformation. Applying and adapting this experience properly, and combining it with strong national educational traditions, Ukraine can become a full-fledged member of EU educational community and landscape.

## 5. CONCLUSION

The main point of the conducted research is that digital transformation involves not only equipping teachers, students, and administrative staff with the latest technology solutions and platforms, but the creation of new processes with great and strategic value to the higher education institutions. It is never too late to begin becoming more digitally mature, and the process is never complete. Ukrainian HEIs have all the chances to enter the array of leaders in European higher education, in case if both at the regulatory level and the level of every HEI right strategies and change plan will be designed and implemented, with taking into account both best practices and challenges of HE digital transformation in various EU regions and countries.

Our study provides some implications for both research on digital transformation and university practice. The results could be useful to HE sector regulators and HEIs leaders in

Ukraine and serve as inspiration to begin to increase digital maturity at their HEI and point out the route to continue the process.

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