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DIGITAL TRANSFORMATION IN HIGHER EDUCATION: DRIVERS, SUCCESS FACTORS, BENEFITS AND CHALLENGES

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ABSTRACT

Digital transformation (DT) is rapidly penetrating all spheres of human life, and higher education is no exception. This process is inevitable and ensures competitive advantage and other benefits for Higher Education Institutions (HEI) in case of success. Due to the COVID-19 pandemic, HEIs worldwide were forced to completely transform their working methods and go digital in a very short period. Some institutions are more successful in this transformation by possessing the ability to overcome DT challenges and combining internal and external success factors.

This research aims to identify what drives digital transformation in Higher Education Institutions, what benefits are there for them, what challenges they need to overcome, and what are the success factors of digital transformation in higher education.

Design/methodology/approach – The current study employs a two-phase methodology: an umbrella review of scientific literature and a synthesis of independent experts' opinions using the Delphi method.

Findings – The research has identified several drivers, benefits, success factors, and challenges of digital transformation in higher education not mentioned in the previous literature. A few drawbacks of digital transformation were also recognized during the study. The COVID-19 impact on DT in HEIs was briefly discussed.

Research limitations/implications – The theoretical conclusions are based on the results of an umbrella review of the literature, which were then compared with the experts' opinions. Future research shall be performed by analysing the current research findings with the findings from other empirical studies on the topic. More in-depth research is recommended in the field of digital transformation drivers and the adverse effects of digital transformation in higher education.

Practical implications – The research results allow management and academic personnel to have a fresh look at the factors that foster or hamper the digital transformation and further development of Higher Education Institutions.

Originality/value – The research complements the body of knowledge about the drivers, enablers, and effects of digital transformation in higher education which are not studied

widely enough in the existing literature. The findings of the study provide new insight into the development of higher education in the light of digital transformation.

Keywords – *Benefits, Challenges, Digitalization, Digital Transformation, Drivers, Higher Education, Success Factors, University*

Introduction

Digital transformation nowadays is one of the most important megatrends imposing changes and disruptions in the labour market, industries, and educational system (Mello et al., 2020), calling into question the traditional ways of interaction and interdependencies among businesses (Subramaniam et al., 2019). Digitalization has become an inevitable part of any sphere of human activity with the development of digital technologies and under the constant pressure from the external environment. It is essential for a business to stay competitive, thus looking for ways to reduce costs while at the same time offering new products and services to the clients. Government and public sector organizations are forced to become digitalized, making their services more accessible to the general public (Mergel et al., 2019), especially during COVID-19 caused restrictions and lock-down. The culture and entertainment sector undergo digital transformation following social trends and becoming boundless. E-commerce adds its share to the global digital transformation trends, changing the basics of the trade entirely. Aconsiderable share of marketing and communication is being done in the digital environment and by digital means. Even the travel industry, which seemed unreal a few years ago, is undergoing a digital transformation; travel moves to the digital world too. Digitalization opens vast opportunities in the field of medicine, making it more accessible to the entire population regardless of geographic location and helping to overcome various restrictions, including those caused by COVID-19. Digitization of processes leads to improving products and services and enhancing organizational changes (Mergel et al., 2019). Businesses and organizations are forced to re-think and re-envision their operational processes, customer experience, and business models leading to digital transformation (Westerman et al., 2011). Digital transformation involves “a progressive re-thinking of the use of advanced technologies and the ways to use technology to bring about progress in people’s lives and processes” (Asad et al., 2021).

The transition to a digital environment is possible due to rapid technological advancements being integrated into various areas, including education. The education sphere is going through a real digital transformation that began long before the COVID-19, driven by the opportunities that new digital technologies offer, social trends, competition, stakeholders’ requirements,

and needs to become more efficient (Benavides et al., 2020). COVID-19 has undoubtedly served as a powerful accelerator in this process, causing a massive and rapid shift towards online learning, usage of online learning tools, remote work, and the change of the curriculum. As a response to the crisis, new strategies needed to be developed to employ more innovative solutions (Ratten, 2020). Schools, Higher Educational Institutions, vocational education establishments, adult learning, and business training firms were forced to quickly adapt to the new reality by employing digital technologies and completely transforming teaching and learning processes.

Due to increasing competition for the best students, teachers, and researchers, Higher Education Institutions shall be at the forefront of digital transformation processes, pioneering in the implementation and the related research (Benavides et al., 2020) as they develop new knowledge capabilities that may become a valuable source of innovation (Ratten, 2020). HEIs are constantly looking for innovative ways of teaching and learning, and how to use technologies to advance educational settings (Asad et al., 2021). In response to the COVID-19 crisis, new online knowledge delivery models were created, enabling more knowledge to be used in a digital format, thus making it more accessible in a timely and practical manner (Ratten, 2020). The former teaching methods have become obsolete and these no longer meet the needs of students; the traditional in-class face-to-face learning is considered monotonous and unproductive, while the online environment makes learning more flexible and decentralised, yet engaging and more dynamic (Mello et al., 2020).

Digital transformation in Higher Education Institutions can be viewed from different perspectives – as social, organizational, and technological change and has several dimensions: teaching, infrastructure, curriculum, administration, research, business process, human resource, extension, digital transformation governance, information, and marketing (Benavides et al., 2020). It can also be viewed as a link to changes in organizational structure, strategy, and adopted technology to align systems and practices with the new demands of the digital era (Alenezi, 2021).

Digital transformation is impossible without a clear strategy (Vindaca& Lubkina, 2020); it is crucial to understand DT's drivers and potential benefits for Higher Education Institutions and their stakeholders. For digital transformation to succeed, the barriers and success factors must be considered before and during the implementation process. The research conducted among 500 managers and teams working on digital projects at Higher Education Institutions in United Arab Emirates (UAE), for example, shows that team and individual traits, team integration, process, and technology significantly positively affect digital transformation in HEIs (Bettayeb & Al Marri, 2021). Digital transformation in Higher Education

Institutions may have certain drawbacks and negative impacts to be considered, e. g., the limited possibilities to replace real-life experience in an online environment and limited socialization opportunities (Ratten, 2020; Popova et al., 2020).

Due to the complexity caused by several internal and external factors, e. g., changes in demands for education, decreasing number of students, and increasing operational costs, the digital transformation process in higher education becomes very challenging (Alenezi, 2021). Although there are already several studies on the drivers, benefits, success factors, and barriers of digital transformation in higher education that had been identified in the previous literature, and the number of studies on the subject has accelerated during the last two years, there is still no concept unifying all aspects of digital transformation in higher education. Very few research mentions the negative impact of digital transformation in higher education, broadening global social inequalities is being one of them (Erdmann et al., 2021). By performing an umbrella review of the literature followed by an empirical study, the authors tend to cover this gap.

Methodology

Umbrella review

To get an overview and clear understanding of what is already known about the digital transformation drivers and success factors in higher education; the barriers that may hinder the process, and the benefits that are already identified in the previous literature, an umbrella review – a review of literature reviews (Booth et al., 2012) as a method was selected. An umbrella review allows synthesizing the knowledge that already exists and can be used in practice and what is unknown, providing insight for further research directions (Grant & Booth, 2009). The method was chosen as it allows to highlight the reviews covering a broad problem and aggregate findings from the previous studies that have already addressed the specific questions.

For the search for literature reviews, the electronic databases Web of Science (WoS) and Scopus were used as the most comprehensive scientific information databases containing high-quality publications in various fields of knowledge. The authors conducted the following search: (“digital transformation*”) AND (“higher education institution*” OR universit*) AND (“systematic literature review” OR “SLR” OR “systematic mapping”). Only literature review articles in the English language were considered. The search resulted in finding 43 literature reviews. After removing duplicates, 29 articles were left for further review. After reading the full text of the articles, only 12 articles were found to qualify for further analysis.

Delphi method

The Delphi method provides a systematic approach to building consensus. The Delphi method is based on a research question assigned to a selected group of experts according to their knowledge and expertise. The panel completes several questionnaires to develop and narrow the criteria in response to a particular question. The Delphi method is a purposeful way to serve as a basis for decision-making. It creates consensus and generally answers research questions. The Delphi method has three main features – anonymity, controlled feedback from the interaction, and statistical group response. It is valuable that the method is anonymous, as it reduces the likelihood that the status of more influential group members could divert other members' responses. (Olsen et al., 2021). For the Delphi method, a group of experts (five male and five female) from Higher Education Institutions in the positions of lecturer, associated professor, professor, and education quality experts from Latvia, Lithuania, Netherlands, Belgium, Saudi Arabia (but teaching also in UK and USA), Finland and Slovenia were asked to complete the questionnaires. In the first round, they were asked to identify the drivers, benefits, success factors, barriers, and drawbacks of digital transformation in higher education. Additionally, they were asked "What do you think would have been a scenario for digital transformation in higher education if the COVID-19 pandemic would not have happened?". In the second round, they were asked to prioritize the identified aspects. However, Kendall's coefficient of concordance W varied from 0.20 to 0.26; therefore, the third round of the questionnaires was performed with W ranging from 0.54 to 0.66.

Results

Umbrella review findings

The research shows that there are many drivers for digital transformation in higher education and that this transformation benefits Higher Education Institutions, students, and the whole society. The success of the transformational process depends on the various factors and on the ability of the institutions to overcome specific barriers. The research also revealed some disadvantages of DT in HEIs.

Drivers

The main drivers for digital transformation in HEIs, according to the results of an umbrella review of the selected literature, is the need to provide students with digital skills and capabilities according to the demands of the current labour market and the digital world, as well as the need for HEIs to optimize their processes and to adapt to the changing legislation and business environment to stay competitive. Table 1 represents the findings on the drivers of DT in higher education.

Benefits

There are numerous benefits from digital transformation in HEIs described in the selected articles, the main ones being the flexibility of studies and the opportunity to ensure high-quality student-centred learning at the same time improving productivity and operational activities (see Table 2).

Table 1. Digital transformation drivers in higher education

Source	DT drivers
Matkovic et al., 2018; Benavides et al., 2020	Availability of digital platforms and content for teaching, learning, and research
Benavides et al., 2020	Contemporary educational standards
Llewellyn, 2019; Benavides et al., 2020; Mello et al., 2020; Alenezi, 2021	Flexible response to the needs of the labour market requiring digital literacy and digital skills
Benavides et al., 2020; Alenezi, 2021	Students' demands and expectations (improved student experience, digital curriculum, unrestricted 24-hour access to all information)
Benavides et al., 2020	The opportunity to study without the barriers of time and space
Sanchez, 2020; Benavides et al., 2020	New social requirements, legislative and regulatory changes,
Kopp et al., 2019; Sanchez, 2020; Alenezi, 2021	Competition
Ratten, 2020; Alenezi, 2021	COVID-19 crisis
Matkovic et al., 2018; Sanchez, 2020; Alenezi, 2021	The need to simplify operations and increase efficiency

Table 2. Digital transformation benefits for higher education

Source	DT benefits
Benavides et al., 2020; Alenezi, 2021	Innovative pedagogical methodologies
Drieschner et al., 2019; Vindaca & Lubkina, 2020; Sanchez, 2020; Ratten, 2020; Benavides et al., 2020; Alenezi, 2021	A flexible and personalized student-centred learning environment
Benavides et al., 2020; Alenezi, 2021	Improved existing operations
Benavides et al., 2020	Enhanced productivity
Kopp et al., 2019; Benavides et al., 2020	Costs saving for students and HEI
Drieschner et al., 2019; Mello et al., 2020; Alenezi, 2021	Improved quality of learning
Llewellyn, 2019; Mello et al., 2020	Unlimited in time access to information
Alenezi, 2021	Enhanced collaboration and engagement
Alenezi, 2021	A higher number of instructors, teachers, experts, and speakers can be accessed globally.
Drieschner et al., 2019	Improved students' performance

Success Factors

The success of digital transformation depends on many internal and external factors (see Table 3), the most important being the digital strategy, leadership, and communication, decisions based on data, digital business models, and the availability of digital solutions and infrastructure.

Table 3. Success factors for digital transformation benefits in higher education

Source	DT success factors
Benavides et al., 2020; Alenezi, 2021	Teachers' ability and willingness to innovate
Benavides et al., 2020; Ratten, 2020; Vindaca & Lubkina, 2020	Digital infrastructure for teaching (digital and learning platforms)
Benavides et al., 2020	Reorganization of administrative units
Drieschner et al., 2019; Benavides et al., 2020	Digital competencies and capabilities for teaching and research
Kopp et al., 2019; Drieschner et al., 2019; Benavides et al., 2020; Vindaca & Lubkina, 2020	Well planned digital strategy
Benavides et al., 2020	Educational materials created in digital formats
Kopp et al., 2019; Benavides et al., 2020; Vindaca & Lubkina, 2020	Digital business model
Drieschner et al., 2019; Benavides et al., 2020; Alenezi, 2021	Decisions based on data
Kopp et al., 2019; Benavides et al., 2020; Alenezi, 2021	Leadership and communication
Benavides et al., 2020	Self-managed teams in the working environment
Kopp et al., 2019; Benavides et al., 2020; Alenezi, 2021	Technical and pedagogical guidance and support services for teachers and researchers
Kopp et al., 2019; Benavides et al., 2020	The right mindset and shared understanding
Kopp et al., 2019	Availability of financial resources in the budget

Barriers

Many studies are concentrated on DT barriers in higher education. Aditya et al. (2021a), in their state-of-the-art study of the digital transformation barriers in higher education based on a structured literature review, have identified 22 barriers that formed nine categories shown in Figure 1.

The barriers identified in the reviewed literature are represented in Table 4. It is worth noting that the lack of the same factors that are

mentioned as success factors can become barriers. At the same time, the new impacting factors not mentioned before are IT security risks and students' digital literacy.

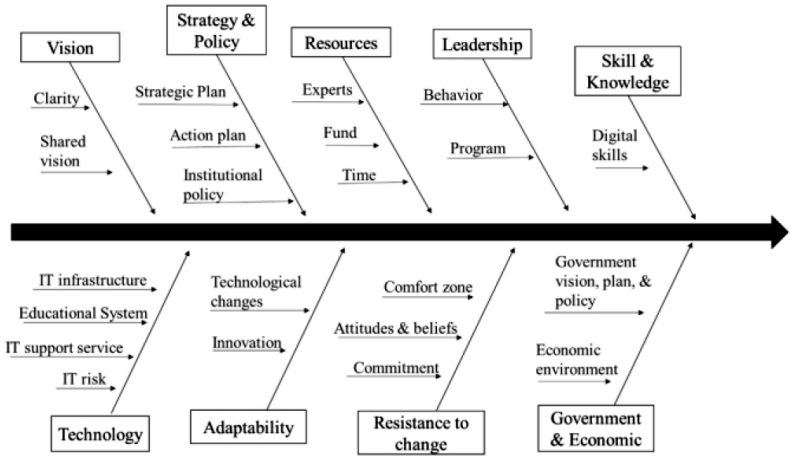

Figure 1. The fishbone diagram of barriers to digital transformation in higher education (Aditya et al., 2021a)

Table 4. Digital transformation barriers in higher education

Source	DT barriers
Aditya et al., 2021a; Aditya et al., 2021b; Alenezi, 2021)	Lack of clear vision and strategy
Aditya et al., 2021a; Aditya et al., 2021b	Institutional policy and strategy, decentralized decision making
Kopp et al., 2019; Sanchez, 2020; Benavides et al., 2020; Aditya et al., 2021a; Aditya et al., 2021b	Insufficient financial resources
Aditya et al., 2021a; Aditya et al., 2021b	Leadership skills and behaviour
Kopp et al., 2019; Aditya et al., 2021a; Aditya et al., 2021b; Alenezi, 2021	The low level of the digital literacy (both from students and teachers)
Aditya et al., 2021a; Aditya et al., 2021b	No innovation or change-oriented mindset
Aditya et al., 2021a; Aditya et al., 2021b; Alenezi, 2021	Human resistance to change
Sanchez, 2020; Aditya et al., 2021a; Aditya et al., 2021b	Government vision, plan, and policy
Aditya et al., 2021a; Aditya et al., 2021b	Economic environment
Aditya et al., 2021a	Educational system

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Source	DT barriers
Benavides et al., 2020; Sanchez, 2020; Aditya et al., 2021a; Aditya et al., 2021b; Alenezi, 2021	Unsuitable IT infrastructure and support services
Benavides et al., 2020; Sanchez, 2020; Aditya et al., 2021a; Aditya et al., 2021b	IT security risks
(Aditya et al., 2021a) (Aditya et al., 2021b) (Alenezi, 2021)	Lack of human resources
Aditya et al., 2021a; Aditya et al., 2021b	Lack of implementation action plan, lack of time, other priorities
Kopp et al., 2019	Lack of pedagogical skills and experience
Aditya et al., 2021b	Difficulties embedding IT into higher education

Drawbacks

There are certain drawbacks of digital transformation in higher education, like students missing live communication with teachers and fellow students; the same applied to the teachers; the teachers not being able to receive immediate feedback (Popova et al., 2020). However, in the studied literature reviews only a few drawbacks were found (see Table 5).

Table 5. Drawbacks of digital transformation in higher education

Source	DT drawbacks
Alenezi, 2021	Fear that job security is threatened
Alenezi, 2021	Longer than expected return on investment
Sanchez, 2020; Alenezi, 2021	Missing students' interaction and engagement
Sanchez, 2020	Mobile devices as a source of distraction for students
Sanchez, 2020	Lack of time for teachers

Experts' opinion

According to the experts' opinion, the drivers for DT in higher education are (shown by diminishing importance):

1. Increased demand for access to education regardless of physical space/ location.
2. Business agility (need to adapt quickly to COVID-19 pandemic as an example).

3. Technological advancement (availability of modern tools for greater students' experience, a broad range of choices for online learning).
4. Addressing quickly changing labour market needs – pressure from industry and other stakeholders.
5. Innovation as a priority for HEI (managers' personal interest in being innovators or early adopters (innovation diffusion curve); determination to innovate in essence (not only in words, but with a real action plan)).
6. National strategy for education. (Integration of technology usage skills in the study content, which promotes the increase of digital abilities of young specialists).
7. Possibility to use specific digitization opportunities, such as personalized study plans, virtual mobility, and others)
8. Demand for life-long learning.
9. Competition between HEIs to enrol new students into their programs.
10. The usage of technological and scientific developments by competitors.
11. Social e-trends.
12. Opportunity to include students with special needs in the study process.
13. Profitability (costs reduction needs and possibilities, such as increased efficiency of administrative and study processes by using paperless and digital technologies)

As the main driver, the experts consider the increased demand for flexible learning (in industrialized countries to allow a flexible lifestyle; in developing countries due to the immense global need for increasing access to education at all levels), so the study process can be ensured regardless the physical location and can be adapted to the student's needs. Also, the essential factor is the constantly changing external environment and the need for HEI to adapt and stay competitive in the new conditions. Technology development plays an essential role as the DT driver. It provides multiple opportunities to make the study process more effective and efficient in both the cognitive and emotional dimensions of learning.

Digital transformation brings the following benefits for Higher Education Institutions, according to the experts' opinion (shown by diminishing importance):

1. Increased access to education for a diverse group of learners (like working students), also to some extent, regardless of socio-economic background and geographical location.
2. Improved learning efficiency and quality using digital tools, e. g., virtual and augmented reality.
3. Flexibility (the possibility of individual adjustment of the difficulty of study and the time availability of students. Flexibility to continue learning and teaching from remote locations).

4. Cost efficiency (efficient use of resources (teaching, administrative, premises) for the institution and for the learner (including timesaving).
5. Synergy – collaboration, shared learning spaces, methodology, and materials.
6. Competitive advantage (broader possibilities to attract international academics, researchers, and more students).
7. Easy control over the education process (use of technology to track students' progress. Teachers can use the online tools to experiment and provide almost instant feedback).
8. Enhancement in skills portfolio and motivation of students and teachers.
9. Opportunities for self-study in both asynchronous and synchronous modes.
10. Virtual international mobility when the teaching staff and students can get international experience without being physically abroad.
11. Increased responsiveness to external demands.
12. Routine task substitution (some more routine tasks, like teaching and instruction could be performed by AI in the future, while the human brain concentrates on creative development and evaluation).
13. An interactive and engaging online and hybrid teaching/learning experience.
14. Higher learners' employability in the global market through open opportunities for virtual international education.

The main benefits are that digital transformation opens opportunities to get an education at any time, from any location, with the possibility to adjust the learning pace and for very diverse groups of students who did not have such an opportunity due to unavailability of education in a home country, unsuitable time for studies, not being possible to combine studies and work, and the increased quality and efficiency of learning.

Among the success factors identified by the experts, the internal factors and capabilities play a leading role (shown by diminishing importance):

1. Strategic decision about DT based on perceived benefits supplemented with the action plan, policies, and procedures.
2. Holistic approach, involvement of all stakeholders, interdepartmental cooperation/collaboration.
3. Digital tools should be piloted, tested, and evaluated before being taken into wide use in education.
4. Computer literacy of users (teachers and students) and competencies of teaching staff to develop multimedia presentations, online examinations, web-based tests, and other digital tools for online and hybrid classes.
5. Support system for the development of the knowledge and skills of the teaching staff.
6. Transformation of the institution's culture.

7. Appropriate provision of technology, e-tools (Zoom, Microsoft Teams, Google meet, Discord, Moodle BigBlueButton), and workplace equipment for studies and research.
8. Sustainable approach – focus on the long term (not a sprint, but a marathon).
9. Stable Wi-Fi in the country/region.
10. Technology governance model (the strategic use of technologies for business success and risk prevention supplemented with the relevant policies and precise technical specifications for implementing innovations).
11. Availability of learning analytics and open data for research.
12. Effective continuous monitoring of distance teaching and learning, instant communication and feedback.
13. Financial capability of HEI.
14. Adapting obsolete teaching methods to the existing reality of youngsters through digital tools.
15. Support from the government
16. Possession of profound solutions for information security and personal data protection.

As it was also found in the previous research, the strategy is the key for digital transformation for universities and other HEIs supported by the holistic approach, cooperation, collaboration, and involvement of all relevant stakeholders. The quality of digital tools and solutions shall be tested for suitability for the learning process; it is essential to understand the consequences in terms of quality of learning for brain activity and emotional development.

Due to the complexity of HEIs processes and multiple stakeholders, digital transformation may encounter many barriers and challenges (shown by diminishing importance):

1. Lack of clear digital transformation strategy developed by the leaders of educational institutions.
2. Lack of motivation (from managers and personnel).
3. Resistance to change of the involved – people prefer to get acquainted with what they do and reject to move out of their comfort zone.
4. Lack of or insufficient financial resources.
5. Missed culture shifts inside institutions.
6. Insufficient competencies of teaching staff.
7. Misunderstanding the digital transformation as a simple teaching transfer from analogue to digital media.
8. Lack of support system for the development of the knowledge and skills of the teaching staff.
9. Low availability of technologies and e-tools (hardware and software).

10. Legal issues (digital transformation of education on an international level is hampered by the fact that educational matters are within the legal mandate of nation-states, who decide on technical solutions, providers, platforms, and software).
11. Ethical considerations (how to guarantee equal access to digital tools and methods, not to increase a global digital divide between countries).
12. Inadequate payment to teachers for additional work during the transformation.
13. Retaining and achieving the same learning outcomes of the courses, which require practical learning activities (in real laboratories, in a real practical environment, in actual field visits, in real internships) to acquire and maintain knowledge and skills.
14. Insufficient exchange of experience that hinders skills development (both for teachers and students).
15. Lack of successful business models.
16. Ambiguity in costs benefits.

Here again, the strategy and the motivation of the involved stakeholders (the lack of it) are shown as the main DT barriers, together with the resistance to change, which confirms the finding of the previous studies.

Although many factors may hinder digital transformation, and the process itself is complicated and extended in time, the experts have identified only a few drawbacks:

1. The preparation required for DT might make it less flexible. It might become more difficult to change the curriculum and address hot topics immediately.
2. Increased inequality among students due to different IT equipment at home.
3. Overloading students with additional assignments.
4. Considerably higher workload of teachers.
5. Difficulties in maintaining students' attention.

All experts have agreed that the digital transformation of higher education is an inevitable process, the COVID-19 playing only the role of the accelerators of the process, not being the driver.

Discussion

Digital transformation nowadays is a megatrend across industries (Ebert & Duarte, 2018), with the educational sector being no exclusion. Higher education is crucial for societal and economic development (Ratten, 2020; Teixeira et al., 2021). The main objective of education is to ensure the students have the necessary skills to succeed in the future (Teixeira et al., 2021) and emotional intelligence to collaborate and build relationships

(Mello et al., 2020). The digital transformation in higher education can be considered from different aspects, namely learning and teaching, administration and management, curriculum, and, finally, infrastructure (Alenezi, 2021). The increasing competition from massive open online courses (MOOCs) as well as between the universities for the most exemplary students, lecturers, and researchers (Kopp et al., 2019) urges HEIs to look for new ways of working, transforming their business processes, products and services that they are offering (Benavides et al., 2020). The results of the research confirm that HEIs need to optimize their processes to adapt to a fast-changing environment. Digital transformation in HEIs is driven by the need to satisfy increasing labour market's demands by ensuring students have the necessary digital skills to stand out in a globalized digital environment, as well as by satisfying the needs of society by providing accessible education and qualitative, flexible, student-centred learning opportunities. The availability of new digital solutions and tools for more engaging and qualitative studies forces HEIs to keep up with the times and transform.

Strategy, leadership, collaboration, and involvement of the stakeholders are critical factors for the successful digital transformation overcoming the natural resistance to change. The availability of digital tools and platforms suitable for education plays an essential role in the transformational process. According to the experts, the availability of financial resources is not a critical success factor for digital transformation, but lack of or insufficient financial resources is a serious barrier. The availability of resources in the budget is mentioned as a success factor in the literature. At the same time, high costs and insufficient investment may hinder digital transformation (Kopp et al., 2019). Among the benefits for the students, cost-saving opportunities as the result of digital transformation were discovered (Benavides et al., 2020).

It is often assumed that modern students are "digital natives," having all the necessary digital skills for the digital teaching environment; however, some authors argue that it is not so, especially for the first-year students. Besides, there is no comprehensive research on what digital skills students bring from school to their higher education journey (Kopp et al., 2019). The research findings show that one of the barriers found in the literature is the lack of digital skills and competencies among the students. At the same time, experts agree that students' digital literacy is one of the most critical factors for the digital transformation in HEIs. Therefore, further research could be conducted in that direction.

The higher education sector was one of the most affected by the COVID-19 pandemic. For the universities and other Higher Education Institutions, it meant transitioning the ''traditional'' teaching experience to the online mode via technology in a short period. In such situation,

online education providers were already in an advanced position, using AI and analytic tools to provide on-demand and personalized learning (Felipe et al., 2021). To stay competitive, HEIs should adjust to a new reality, and the digital transformation is the only way forward. Even though the impact of COVID-19 was mentioned in previous research as one of the drivers for digital transformation in HEIs (Erdmann et al., 2021), the experts are united in the opinion that the process of digital transformation is natural and inevitable for higher education; COVID-19 has just accelerated it.

Conclusion

Digital transformation covers the entire organization beyond digitization and digitalisation, thus benefiting the whole HEI. Nevertheless, the barriers and success factors for effective DT in higher education depend on various internal and external factors.

Digital transformation at HEI is an important step as universities are crucial for the supporting labour market with employees being able to adapt to the business world having necessary technical and scientific knowledge and skills such as programming and AI (Teixeira et al., 2021). It is also imperative to stand out from the competition and provide flexible student-centred educational services in the era of disruptions we live in. Higher Education Institutions transform their processes and business models by implementing new educational practices via technology. The question is no longer whether the digital transformation of HEIs is to be, but rather how they shall proceed to be more successful and competitive. The strategy, motivation, and involvement of the stakeholders are critical success factors in this process.

The research also revealed that the poor digital literacy of students may be one of the barriers to digital transformation and that further and in-depth research is required regarding the digital skills and capabilities that students have at the beginning of their studies at HEIs.

Digital transformation in higher education is not a panacea; it has certain disadvantages, however, these are not studied in the existing literature.

The research provides contribution by demonstrating a better understanding of drivers, benefits, drawbacks, success factors, and barriers and the interrelationships among these factors for the implementation of the digital transformation in higher education and giving an insight into the possible future research directions.

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