The Importance of a Quality Management System in the Digital Transformation of Higher Education

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The application of digital technologies in the field of higher education can have an impact on increasing competitive advantage. Global technological trends require higher education institutions to continuously adapt to contemporary business market demands. These business trends also require continuous improvement of organisational performance. Integrating digital technologies into teaching and non-teaching activities represents a complex process. In this sense, this paper aims to highlight the importance of the quality management system in the digital transformation of higher education. Highlighting the importance of the quality management system in digital transformation is significant due to the systematic approach of modern management systems in the global market environment. This paper can contribute additional knowledge to the managerial structures of higher education institutions in a changing market environment.

Key Words: *Quality management system, higher education institutions, digital technologies, digital transformation*

1. INTRODUCTION

During 2020, following the declaration of the COVID-19 pandemic and the introduction of states of emergency by governments worldwide, higher education institutions around the world largely suspended traditional (classroom-based) modes of teaching [1, 2, 3]. This development marked a turning point and established a precedent for numerous organisational systems, including those in higher education. Additionally, this turning point played a pivotal role in initiating digital transformation. In recent years, the rapid advancement of digital technologies, the expansion of the Internet, and the increased capacity for data storage and transfer have contributed to education today being markedly different from education in the past. The digital transformation of the quality management system in higher education, according to [4], encompasses a wide range of technological achievements. Digital transformation includes innovative approaches in all aspects of the teaching and non-teaching process. Furthermore, digital transformation implies the application of modern digital technologies in order to increase the efficiency and effectiveness of the operations of higher education institutions [5]. It is known that the application of digital technologies also affects business productivity.

Also, the application of digital technologies affects the satisfaction of the requirements of the relevant stakeholders of higher education institutions. Throughout all previous social changes, the quality management system has been successful because this system represents a strong basis for transformational initiatives and strategies [6]. The quality management system of digital transformation is a system that should meet the established requirements of the application of

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digital technologies for satisfying the relevant stakeholders of higher education institutions. The quality management system provides a systematic approach in digital transformation [5]. In order to achieve digital activity and increase the productivity of higher education institutions, the key factors that stand out are training and education for the application of digital technologies [7]. In addition to knowledge and skills, material resources are key parameters in achieving quality goals related to digital transformation in higher education [8]. Continuous investments in the development and improvement of information technology infrastructure in higher education are a key dimension [9]. Although the development of digital technologies in higher education is gaining increasing importance, there is a lack of research on the impact of digital technologies on the field of higher education [10]. There is also a lack of literature that describes the connection, application, as well as the importance of the quality management system in the process of digital transformation [5]. Reducing uncertainties regarding the creation of an agile quality management system that should respond to new requirements related to digital transformation in higher education within the global market environment is an issue that could be considered a priority. Thus, the aim of the paper is to highlighting the importance of the quality management system in digital transformation in higher education.

2. LITERATURE REVIEW

2.1 Quality of higher education

All organisational systems apply quality management measures. Accordingly, higher education institutions are not exempt from these managerial activities [11]. Management responsibility exists at all levels of governance in higher education institutions, while higher leadership is expected to ensure greater effectiveness, primarily of the teaching process, as well as transparency in funding sources [12]. The generally accepted concept and framework is the establishment of a quality management system in higher education. Quality in higher education is directly related to the level of customer satisfaction, primarily of students.

Quality in higher education is multidimensional, and a more advanced quality management system is expected to result in higher levels of student satisfaction with educational services. The importance of the quality management system in higher education is increasingly recognised [13]. Focusing on quality represents a strategic approach for universities worldwide. This is supported by the fact that higher education institutions constitute a fundamental pillar and a driving force behind a country's development. Therefore, it is essential for all higher education institutions to regularly measure, monitor, analyse, and improve not only their teaching processes but also their non-teaching processes [14]. Investing efforts in improving the quality of higher education services is directly related to enhancing the competitive advantage of higher education institutions, as well as increasing the level of student satisfaction as direct customers of higher education services. On the other hand, a higher level of student satisfaction is correlated with a higher level of quality of higher education services. Direct participation and engagement of students in decision-making is considered a very significant activity in ensuring quality. Quality in higher education has long been characteristic of the United States and Western European countries compared to developing countries, which should invest additional efforts in ensuring quality in higher education. Increasing the focus on quality in higher education is also imposed by the global environment.

2.2 Defining digital transformation in the field of higher education

New trends in digital forms and tools, and the rapid development of information and communication technologies have contributed to a transformative new form of knowledge society, which affects the economic development of a country [15]. Mapping the path to the sustainability of higher education is digital transformation, and higher education institutions need to redesign their strategies and policies in that direction, which can provide a pathway to sustainability, as noted in the study [8]. Higher education institutions are expected to be ready to adapt to new changes imposed by the global market environment [13]. Digital transformation encompasses the integration of all digital aspects into the functioning and operations of higher education institutions [16]. This enables the managerial structures of higher education institutions to monitor and analyse information in real time [16]. The digital transformation of higher education represents a set of aspects of technological achievements, while the application of quality standards helps regulate the digital transformation [16]. However, modern digital tools alone are not sufficient; the agility of higher education institutions is also required. The agility of higher education institutions is particularly important because the global environment demands new competencies. Ministries responsible for higher education, together with the managerial structures of higher education institutions, should establish strategic frameworks regarding digital transformation. These frameworks should serve to meet the needs and expectations of all relevant stakeholders. According to research [16], shaping higher education in the digital era represents a priority issue for most managerial structures.

Investments associated with digital transformation represent investments in the sustainable future of higher education institutions' operations [13]. Therefore, the development of strategies for digital transformation represents the construction and development of a sustainable competitive advantage for higher education institutions.

Table 1. Defining the Digital Transformation in Higher Education

Description	References
Digital transformation involves the adoption and application of modern technologies, that is, a change in the way organisations operate.	[5]
Digital transformation involves fundamental changes in organisational systems, which through the transformation process create new values, that is, a model in which the application of information and communication technologies impacts organisational systems and business processes.	[17]
Digital transformation contributes to direct and opportunity cost reduction.	[18]
Digital transformation in higher education refers to organisational changes achieved through the application of digital technologies to improve organisational performance.	[19]
Digital transformation in higher education has been diverse and predominantly depended on the digital competence of academic staff.	[20]
Digital transformation in education presents new challenges, but also creates new opportunities and benefits.	[21, 9]
Digital transformation requires a complete redesign of the teaching model, as well as the adoption of digital models through the modernization of study programmes that could serve to meet the needs and expectations of all relevant stakeholders, primarily students.	[22]
Digital transformation represents a process of introducing changes through the application of innovative digital technologies and the redesign of strategies and policies leading to business sustainability.	[8]
Digital transformation in higher education is defined as a phenomenon that eliminates old patterns while developing new, innovative models to achieve more efficient operations.	[23]

According to the available literature, it is often stated that the terms digitalisation and digital transformation can be equated, however, these two terms differ because digital transformation is a broader concept than digitalisation. Additionally, in the context of digitalisation and the application of technological advancements in organisational systems, many researchers note that it remains unclear whether digitalisation has spread evenly across the world or is more characteristic of developed countries. Also, some studies, such as [4], indicate that traditional higher education institutions operated as more closed systems and, unlike the economy, were perhaps less prepared for changes in the global environment. Considering the very rapid development of digital technologies in higher education, this field requires specific definitions due to its potential and power [13]. Table 1 presents different definitions of the quality management system of digital transformation in higher education.

2.3 Quality management system and digital transformation in higher education

In recent years, universities have been undergoing a transformation process by introducing digital technologies into teaching and non-teaching processes [13]. The application of digital technologies has become a challenge worldwide. Higher education institutions are the foundation of the development of any society. Moreover, higher education institutions have the power and capacity to reorient society [8]. While digital technologies are well integrated into the educational process, there is a lack of research on the level of representation, application, and the effects of applying digital technologies in higher education [24]. According to geographical regions, the level of technology integration varied and primarily depended on the degree of economic development, as well as infrastructural development [16].

Overall, the implementation of digital technologies was predominantly associated with developed countries. Although the application of digital technologies in higher education has been discussed and studied for some time, it appears to remain in an early stage, particularly when considered from the perspective of research on their benefits [13]. The integration of digital technologies into the field of higher education represents a complex process [25]. These complexities arise from the increasingly rapid technological progress through which the concept of the quality management system has changed and developed [6]. One of the complexities can be viewed from the aspect of the importance of an adaptive quality management system, which should be capable of responding effectively and efficiently and adapting to new requirements. New requirements incorporating innovative approaches have also emerged from the growing complexities of higher education institution operations. Higher education is unique because it involves sensitive processes, particularly those related to tea-

ching. Innovative approaches in accordance with the requirements of digital transformation in higher education include:

- The digitalisation of teaching, which includes the application of various digital platforms and tools, digital boards, interactive content and similar,
- Digital support for students, such as the automation of student services, digital chatbots for information, digital indexes and records and similar,
- Data management and analytics, which includes the collection and analysis of student data, the effectiveness of teaching, student engagement in the teaching process and similar,
- The digitalisation of management processes, such as e-documents, the automation of administrative tasks, electronic archives, digital workflows for accreditation, committees and similar,
- The improvement of quality and internal procedures, which includes the digital monitoring of quality indicators, the automation of teaching effectiveness, digital dashboards for quality and similar,
- The development of digital competences of teachers and students, which includes training and courses in digital fields and similar,
- Infrastructure and security, which includes the development of Wi-Fi networks, virtual classrooms, data protection and cybersecurity, the development of the digital environment and similar.

3. THE IMPORTANCE OF A QUALITY MANAGEMENT SYSTEM IN THE DIGITAL TRANSFORMATION OF HIGHER EDUCATION

The digital transformation of higher education represents a successful educational system because the development and application of a digitalisation model can improve the overall educational system and thereby impact the increase of competitive advantage [13]. The application and adoption of a key combination of elements such as Artificial Intelligence (AI), Cloud Computing (CC), and Big Data (BD) can influence the improvement of performance in delivering higher education services [13]. The results of a research study [5] show that the quality management system has a significant contribution to digitalisation in organisational systems because digital technologies provide a wide range of services to customers. Changes such as flexibility, the time dimension, and cost reduction thereby force organisational systems to adopt and apply digital technologies in their operations. It is well known that quality management is recognised as a important element influencing the achievement of sustainable business development in higher education [9]. Higher education institutions have significant capacity, a key role, and the power to reshape society as a whole.

Significant parameters of digital activity in higher education, according to the authors of the research study [7], are institutional, organisational, and administrative. These factors of higher education institutions, including infrastructural and technical equipment, teaching skills, and digital teaching, as segments that form a set of parameters for assessing digital activity and the maturity of digital transformation in a particular higher education institution, are directly connected with the quality management system. The sustainable education through the adoption and enhancement of digital technologies in higher education is vital for societal advancement and human potential development, particularly in the context of developing countries [10]. Quality management plays a significant and active role in the digital transformation process [5]. Quality management activities can support digital transformation through four stages: planning, implementation, development, and adaptation of digital transformation to the specific processes of organisational systems [5].

4. CONCLUSION

This paper highlights the importance of the quality management system as an agile system that should respond to new requirements related to digital transformation in higher education within the global market environment. The aim of the research is to highlight the significance of a quality management system in the digital transformation of higher education.

The advancement of digital technologies imposes new demands on the business and educational environment, which implies the adoption and application of innovative models [26]. Quality management system activities can contribute to the strategy of higher education institutions for continuous improvement, as well as achieving a competitive advantage [13]. Technological elements such as digitalisation of teaching, digital support for students, data management and analytics, digitalisation of management processes, improvement of quality and internal procedures, development of digital competences of teachers and students, infrastructure and security should be integrated into teaching and non-teaching processes in order to create new values that serve to meet the needs and expectations of all relevant stakeholders, primarily students. The application of digital tools in education can have an impact on improving the performance of higher education institutions [27]. Additionally, the complexity of the quality management system for digital transformation requires a systematic approach to this area in order to develop an agile and

evolutionary model that can contribute to creating a competitive advantage for higher education institutions, taking into account the potential and power of applying digital technologies in all processes within higher education institutions.

One of the main limitations of this paper lies in its theoretical orientation. Empirical research into the achievements in the application of digital technologies could provide additional insights that would help higher education management to better understand these changes and to establish clearer guidelines for integrating quality management system frame-works with technological advancements.

This is further supported by many studies which highlight the lack of information on the application of digital technologies in organisational systems, and particularly within higher education. Future research could also investigate other organisational contexts and broader applications.

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REZIME

ZNAČAJ SISTEMA UPRAVLJANJA KVALITETOM U DIGITALNOJ TRANSFORMACIJI VISOKOG OBRAZOVANJA

Primena digitalnih tehnologija u oblasti visokog obrazovanja može imati uticaj na povećanje konkurentske prednosti. Globalni tehnološki trendovi zahtevaju od visokoškolskih ustanova kontinuirano prilagođavanje savremenim zahtevima poslovnog tržišta. Ovi poslovni trendovi takođe zahtevaju kontinuirano unapređenje organizacionih performansi. Integrisanje digitalnih tehnologija u nastavne i nenastavne aktivnosti predstavlja složen proces. U tom smislu, ovaj rad ima za cilj ukazivanje na značaj sistema menadžmenta kvaliteta u digitalnoj transformaciji visokog obrazovanja. Ukazivanje na značaj sistema menadžmenta kvaliteta u digitalnoj transformaciji važno je zbog sistematičnog pristupa savremenih sistema upravljanja u globalnom tržišnom okruženju. Ovaj rad može doprineti dodatnom znanju menadžerskim strukturama visokoškolskih ustanova u promenljivom tržišnom okruženju.

Ključne reči: *Sistem menadžmenta kvaliteta, visokoškolske ustanove, digitalne tehnologije, digitalna transformacija*