

“The role of digital technologies in higher education institutions: The case of Kazakhstan”

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THE ROLE OF DIGITAL TECHNOLOGIES IN HIGHER EDUCATION INSTITUTIONS: THE CASE OF KAZAKHSTAN

Abstract

The ways of education development are changing, which is largely determined by the introduction of digital technologies and the desire to improve the efficiency of management of educational processes at universities. Therefore, this study aimed to identify the challenges and opportunities in universities related to the use of digital technologies (social media tools, digital online platforms, digital learning platforms) in higher education institutions in Kazakhstan. A sample included respondents ($N = 69$) from 16 educational institutions in Kazakhstan that combined teaching (conducting training courses or working with students) and administrative management (management or planning of the educational process). The data were obtained using an offline questionnaire and processed using SWOT methodology. Representatives from 16 public and private universities responded to the questionnaire: the rector (2%) and two vice-rectors (3%), deans of faculties (23%), directors, and heads of various departments of universities (71%) were interviewed (managers are engaged in teaching). As a result, six thematic outcomes demonstrated the opportunities for technology application in education: enhancing management quality, motivation, access to electronic resources and materials, transparency and objectivity in grading, the possibility of implementing distance learning, and simplification of routine tasks. It is also noteworthy to mention five thematic outcomes as challenges, which encompassed issues with security, technical errors, reduced communication, dependency, and complexities in grading.

Keywords

education, digital technology, higher education, educational institutions, management, university, Kazakhstan

JEL Classification

I21, I23, O32

INTRODUCTION

Studying new technologies in the educational environment is a vital aspect of modern pedagogical research. With the development of new technologies and their integration into the educational process, educational institutions worldwide must adapt to new teaching and management methods. The use of digital technologies in education transforms teaching and learning methods and offers new approaches to managing educational processes (Pohekar, 2018; Keser & Semerci, 2019; Uzunboylu, 2019; Lucero et al., 2021). Digital technologies, i.e., online platforms and media communicative tools used by higher education institutions, contribute to improving the learning process (Hussaini et al., 2020; Wiyono et al., 2021). The application and development of digital technology can revolutionize research approaches but also require comprehending possible problems and obstacles (Usman, 2016; Keržič et al., 2019). While digital technologies offer extensive benefits, they also pose challenges regarding the digital divide. Access to reliable internet and digital devices remains a concern, particularly for students in

remote or lower socioeconomic areas (Foulger et al., 2012; Usman, 2016; Grynshyna et al., 2023). For this reason, it is critical to study the effect of digital technologies on the education process to effectively develop universities.

During the period of intensive digital technology development, many teachers widely used new teaching methods to simplify the educational process. At the same time, special attention should be paid not only to software but also to approaches to the management of educational institutions and the use of digital technologies in education. New trends in the educational environment include the use media tools, such as Instagram and TikTok. In addition, administrative and managerial personnel in higher education institutions use digital learning platforms, such as Herro Study and Moodle Platform, to prepare lectures and practical classes. However, digital technologies are used not only to conduct classes with students but also to organize the learning process and perform functions such as supervision, control, and monitoring. These changes are especially relevant for countries with economies in transition, such as Kazakhstan, where integrating new technologies into the educational process is becoming a critical factor in the development of human potential and the economy as a whole. Given the diversity of previous results, there is a need to determine whether effective use and management of digital technologies in higher education institutions is critical to improving the quality of education.

1. LITERATURE REVIEW

In an era of rapid technological change, the role of digital technologies in higher education has attracted the attention of the scientific society. It is necessary to understand how digital technologies affect knowledge management and change educational paradigms. The use of digital technologies in higher education institutions has become increasingly prominent and influential, fundamentally reshaping various aspects of the educational landscape. The advent of online learning platforms and interactive software has expanded the boundaries of traditional learning. Research shows that these tools improve learning and offer new opportunities, such as blended learning models. In particular, Cheaney and Ingebritsen (2006) found that students in online learning environments performed slightly better on average than those who studied the same material through traditional face-to-face learning. Digital technologies in education are a means of transforming the educational process and increasing accessibility (Liao et al., 2007; Selwyn, 2007). Thus, digital technologies have expanded access to higher education, forcing universities to evaluate their current structures and make radical decisions to improve them (Jongbloed et al., 2008).

The ubiquity of digital learning materials has increased the flexibility of learning and made it possible to provide quality education in remote areas using social innovation tools and software

(Dawson & Daniel, 2010; Cassidy et al., 2016; Daineko et al., 2020). Flexible learning using digital technologies to provide services should be adapted to meet the needs of students in higher education institutions (Tarhini et al., 2017). It is fundamental that teachers use digital educational technologies. Students should be accessible, which helps to collaborate and establish connections (Bower, 2019). In addition, an innovative distance learning program specializing in programming and computational thinking should be developed with an emphasis on the practical application of digital technologies (Falcinelli & Moschetti, 2021). The influence of social factors on teachers' perceptions regarding the use of blended learning methods in teaching includes values, norms, and roles that influence teachers' technology acceptance behavior (Anthony Jnr., 2022).

Many educational institutions have recently updated their online learning systems, creating favorable conditions for both non-traditional and traditional students and teachers to achieve their educational goals. As Hussein (2011) noted, integrating digital technologies is not just an alternative that education institutions should consider but a key element of the educational process. In turn, using technology in higher education institutions establishes attitudes toward teaching and managing the educational process (Kohan et al., 2017). Lucero et al. (2021) argued that digital learning results from rational design and planning.

The critical factor for successful integration is the competence of educators in determining when, where, and what practices to use. Student satisfaction is closely related to teaching approaches, and even teachers with no changes showed high levels of satisfaction (Englund et al., 2017). Particular attention is paid to the blended learning method, which combines traditional classes and online learning, namely, the effectiveness for teachers and students and factors influencing teachers' perception (Keržič et al., 2019). The importance of successfully integrating digital technologies into the educational process largely depends on the ability of teachers to determine the optimal moments for their application, and it is also a great way to reduce costs and make better use of resources (M. A. Camilleri & A. C. Camilleri, 2017).

Despite conflicting evidence on the benefits of digital technology, there is growing recognition of its positive impact on student experiences and learning outcomes. According to the technological pedagogical content knowledge, a significant improvement in knowledge revealed a significant increase in students' confidence in using digital technology and successful integration into the educational process (Wood et al., 2005). In addition, using digital tools optimizes the learning process, helps create content, and makes learning more meaningful (Borthwick et al., 2015). According to Montrieux et al. (2015), digital educational technologies, which serve as a tool for improving educational methods, are becoming increasingly important in higher education institutions. The widespread use of digital technologies in educational institutions leads to a simplification of the organization of the educational process and the performance of functions such as supervision and control.

Accordingly, the most common limitations arising from the transition to online learning include inequalities in access, technical and practical training, interpersonal communication, and difficulties in assessing progress. However, shortcomings are observed, such as limited content and technology knowledge growth, differences in access to technical resources within practice, and challenges matching course material to student needs (Foulger et al., 2012). Resource difficulties are associated with the need for adequate provision of investments, maximum utilization, and

proper management of an educational institution (Usman, 2016). Technological difficulties such as poor internet connection and lack of technical training significantly affect the learning process's effectiveness (Abu Talib et al., 2021). Nevertheless, the transition to online education provides certain benefits and prospects. Online platforms also provide modern communication and discussion, creating a conducive environment for academic interaction (Martin & Borup, 2022).

Digital online tools aim to ensure efficiency, affecting the pedagogical process. In addition, digital technologies ensure the achievement of the goals and the intended result of educational activities (Keser & Semerci, 2019; Uzunboyly, 2019). Thus, technologies are used not only to conduct classes with students but also to increase the efficiency of the educational process through functions such as supervision, control, management, etc. Egoeze et al. (2018) noted that digital technologies are tools that improve the administrative activities of higher education institutions and transform teaching methods. Pohekar (2018) investigated various functional areas and found that using digital technology for data management in higher education institutions has an excellent impact on administrative services/management in universities. Haripriya et al. (2019) examined data collected from faculty and administrative staff of educational institutions who noted the positive use of digital trends in education.

Digital learning allows one to use various ways of providing educational materials. Hussaini et al. (2020) have shown that Google Classroom effectively improves student access and attentiveness to learning. The knowledge and skills gained through this digital learning platform make students active learners and provide meaningful feedback. In turn, many digital platforms are seen as the development of online learning using technology in a new normal environment for students and teachers, considering the use of Google Classroom, Zoom, Google Meet, Skype, etc. (Santiago et al., 2021). The teaching process at all levels of education, including universities, has shown that most of the problems are related to Internet bandwidth and quotas (Wiyono et al., 2021). The experience of the Kyiv National University of Culture and Arts on the use of Microsoft Teams, Zoom, and Google

Meet in the educational process during quarantine, as well as in conditions of military aggression, is particularly interesting (Grynshyna et al., 2023). The SWOT analysis showed that Zoom was most often used based on the analysis of teachers' practice. Nevertheless, Microsoft Teams has significant potential for further development.

The experience of Kazakhstan showed that the main obstacles to reforming the educational system with a focus on the digitalization of education are insufficient development of infrastructure, untrained teaching staff, and uneven provision of access to the Internet (Ibrayeva & Yegemberdiyeva, 2022). Problems with the Internet system's inability to cope with the dramatic increase in online learning have challenged the effective implementation of distance learning and highlighted the technical challenges facing digital transformation in education. Moreover, emphasis was placed on the importance of transitioning from classical universities to innovative research educational institutions and implementing innovations in higher education systems. Consequently, introducing digital technologies implies significant and qualitative changes in the qualification requirements for university teaching staff and researchers (Bordiyanu & Mambetkazyev, 2022; Kireyeva et al., 2023; Kangalakova et al., 2023).

The literature review highlights the significant impact of digital technologies on the educational environment. Their integration promises not only to improve the quality of education but also to provide new perspectives to develop the educational system. Therefore, an unexplored area is how and to what extent digital technologies affect higher education and how these technologies can improve the efficiency of educational process management. Thus, this study aimed to identify the challenges and opportunities in universities related to using digital technologies (social media tools, digital online platforms, and digital learning platforms) in higher education institutions in Kazakhstan.

2. METHODOLOGY

This study uses SWOT analysis to interpret the survey results to identify strengths, weaknesses, opportunities, and threats that may affect relevance and

conclusions. This approach can determine what resources are available to solve them (strengths), what limitations exist (weaknesses), and what external factors can contribute to and hinder problem-solving (opportunities and threats). SWOT analysis, which has become widespread in strategic management, allows for formulating strategic directions and making informed decisions. For universities, researching the questions posed will allow them to use their internal resources more effectively and improve the scientific competencies of academic staff. In addition, the paper seeks to determine the ranking according to the technical indicators (IQAA) of the universities and, based on the rating, to study the latest digital technologies used in managing the educational process in Kazakhstan's higher education (see Table 1).

Table 1. Technologies used by Kazakhstan's higher education institutions

Category	Social media tools	Digital online platforms	Digital learning platforms
Digital technologies	Instagram Facebook TikTok LinkedIn Twitter	Microsoft Teams Zoom Moodle Hero Study Google Meet	Moodle Hero Study Front Platonus Sistema univer Wsp.Kz Canvas

In order to answer the research questions, the steps are as follows:

1. Define the object;
2. Define the current situation on the use of digital media social tools in universities of Kazakhstan;
3. Survey university administration representatives, who combined management activities and teaching;
4. Process the result;
5. Conduct the SWOT analysis;
6. Process the challenges and opportunities.

The questionnaire was sent to 34 universities in Kazakhstan, and only 16 responded. The survey period is from July 21 to September 13, 2023. The

questionnaire was compiled based on the literature review; the questions were divided into three blocks. The first block includes general questions about respondents. The second block is the main questions on the use of digital technologies at the university and the satisfaction with these digital online platforms by universities. The third set of questions is devoted to studying the use of digital learning platforms and respondents' satisfaction with these technologies in the process of organizing training.

Visualization and description were used when describing the first block, and the main groups of respondents by age and work experience were identified. A word cloud was used when describing the second block, the use of digital technologies in the educational process in the SWOT analysis.

2.1. Descriptive statistics of respondents

There are only 64 universities in Kazakhstan, each of which is managed by one rector, one vice-rector for digitalization, one to two deans of the Faculty

of Economics/Information, and there are also an average of two to three heads of the IT department, academic department, departments and others (in large universities). In total, according to calculations, the total sample of the management team is 379. According to this sample, approximately 41% of managers are engaged in teaching. In particular, 5 rectors, 10 vice-rectors, 45 deans, and 96 heads of departments, departments of science, and departments of digital development. During the survey, 69 questionnaires were collected, which is 18% of the total number of university administrators or 71% engaged in teaching activities (Figure 1).

The functional form of Pareto theory in its classical form shows the ratio between the main components of the whole set as 20/80. About 20% of people may have an opinion that expresses 80% of the results or points of view. Suppose one considers the opinion of the university administration. In that case, the greatest understanding of the use of digital technologies at the university is shown by respondents who can consider questions from both university managers and teachers. There are not many such managers (41% of the total) and

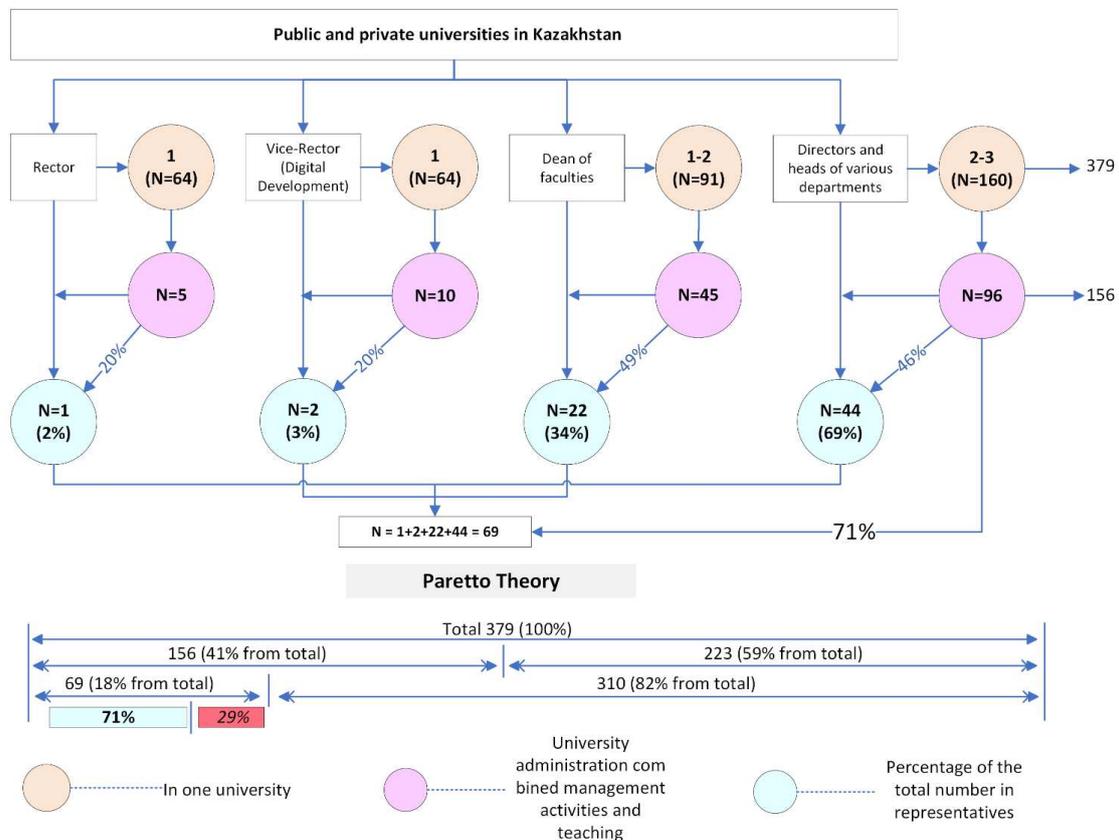


Figure 1. Description of the study sample

Table 2. Demographic data of university administrators

No.	University	Female	Male	(N)
1	al-Farabi Kazakh National University	11	0	11
2	L.N.Gumilyov Eurasian National University	1	3	4
3	S.Seifullin Kazakh AgroTechnical University	3	1	4
4	K.Satbayev Kazakh National Research Technical University	1	1	2
5	Almaty Management University	4	1	5
6	Kazakh-British Technical University	5	1	6
7	Karaganda University of Kazpotrebsouz	0	1	1
8	Eurasian technological university	2	0	2
9	Turan University	2	1	3
10	Kazakh Ablai Khan University of International Relations and World Languages	1	0	1
11	International Information Technologies University	1	2	3
12	Narxoz University	2	1	3
13	K.Zhubanov Aktobe Regional University	3	1	4
14	International Education Corporation	2	1	3
15	Kazakh-Russian International University	1	0	1
16	Kenzhegali Sagadiyev University of International Business	11	6	17

71% of them were selected. Suppose one considers the whole number of respondents (379 people) and the number of questionnaires collected (69). In that case, the final ratio for the sample is 18/82, which confirms the representativeness of the opinion according to Pareto's theory about the use of digital technologies. Regarding teaching titles, 10% of respondents belong to the category of professors, 12% of respondents hold the position of associate professor, 27% of respondents have the position of associate professor, and the category of senior teachers comprises the majority of respondents, 51% (Table 2).

The largest number of respondents is observed at Kenzhegali Sagadiyev University of International Business (17), and al-Farabi Kazakh National University (6). The total number of university administration representatives is 69, of which 51 are women and 18 are men. This means that women comprise approximately 73.9% of the total number of respondents, and men comprise approximately 26.1%. Table 3 presents demographic data and gender division of university administrators.

Table 3. Distribution of respondents by age

Experience	Women	Men	(N)
More than 30 years	3	0	3
Over 50 years old	0.06	0.00	
Less than 5 years	8	8	16

Experience	Women	Men	(N)
20-30 years old	0.10	0.22	
31-40 years old	0.04	0.17	
41-50 years old	0.02	0.06	
From 10 to 20 years	11	6	17
31-40 years old	0.16	0.06	
41-50 years old	0.06	0.22	
Over 50 years old	0.00	0.06	
From 20 to 30 years	17	3	20
20-30 years old	0.02	0.00	
41-50 years old	0.22	0.17	
64 years old	0.02	0.00	
Over 50 years old	0.08	0.00	
From 5 to 10 years	12	1	13
20-30 years old	0.04	0.00	
31-40 years old	0.18	0.06	
41-50 years old	0.02	0.00	
TOTAL	51	18	69

In the categories "20-30 years old" and "41-50 years old," women comprise the largest of university administration representatives. In the categories "31-40 years old" and "over 50 years old," the share of women is also noticeable but less compared to the two previous categories. In the range from five to 10 years of experience, 5.6% of respondents are men. In the categories "20-30 years old" and "41-50 years old," men comprise a smaller share among university administration representatives. In the categories "31-40 years old" and "over 50 years old," the share of men is slightly higher but remains lower than the share of women.

3. RESULTS

3.1. Communication policy of Kazakhstan universities

The Independent Agency for Quality Assurance in Education (IQAA) plays a significant role in the field of education, annually providing ratings of educational programs and the quality and reputation of educational institutions in Kazakhstan. This rating shows the level of equipping universities with various technological resources. In addition, the rating results show what measures are needed to improve the quality of educational services due to competition between educational institutions. The Agency conducts accreditation and audit of educational programs and educational institutions to ensure their compliance with established quality standards. Institutions seeking to improve their positions in the ranking are working to enhance the quality of teaching, internal management, infrastructure improvement, and scientific research. Government agencies (the Ministry of Science and Higher Education, Atameken, etc.) use these ratings to distribute grant funding and develop education policy.

The main assessment items have eight criteria:

- a) website dimensions (determined by the number of web pages);
- b) content (determined by the number of documents posted on the site);

- c) website updates;
- d) design and ease of site navigation;
- e) representation of the site in the state, Russian, English and other languages;
- f) number of visits;
- g) number of links to the site;
- h) website speed.

To calculate the criteria, third-party services are used (Google, Megaindex, Site Analysis - PR-CY). Experts from the IQAA-Ranking Agency assess the design and usability of websites. Table 4 shows the ranking of university website assessments over the past five years.

Universities strive to create digital communities around their brands, create an alluring image, and promote their educational programs. For this and other reasons, universities use media communicative tools such as Instagram, TikTok, Facebook, Twitter, etc. These social media tools facilitate the exchange of knowledge and experience and create strong links between students, academicians, and graduate students. This includes publishing information about the education quality achievements of students and academicians and organizing events and promotions to attract potential students. Universities provide up-to-date information for current students regarding

Table 4. Rating the quality of websites of Kazakhstani universities

No.	University	Abbreviation	Rank	Number of points
1	al-Farabi Kazakh National University	KazNU	1	44.46
2	L.N.Gumilyov Eurasian National University	ENU	4	30.75
3	S.Seifullin Kazakh AgroTechnical University	S.Seifullin KATU	8	22.2
4	K.Satbayev Kazakh National Research Technical University	Satbayev University	9	20.12
5	Almaty Management University	AlmaU	31	13.51
6	Kazakh-British Technical University	KBTU	32	13.49
7	Karaganda University of Kazpotrebsouz	KEUK	35	13.24
8	Eurasian technological university	ETU	39	13.2
9	Turan University	Turan	43	13.03
10	Kazakh Ablai Khan University of International Relations and World Languages	KazUIR & W	49	12.54
11	International Information Technologies University	IITU	64	11.99
12	Narxoz University	Narxoz	68	11.81
13	K.Zhubanov Aktobe Regional University	Zhubanov University	78	11.21
14	International Education Corporation	IEC	96	9.85
15	Kazakh-Russian International University	KRIU	98	9.59
16	Kenzhegali Sagadiyev University of International Business	UIB	99	9.41

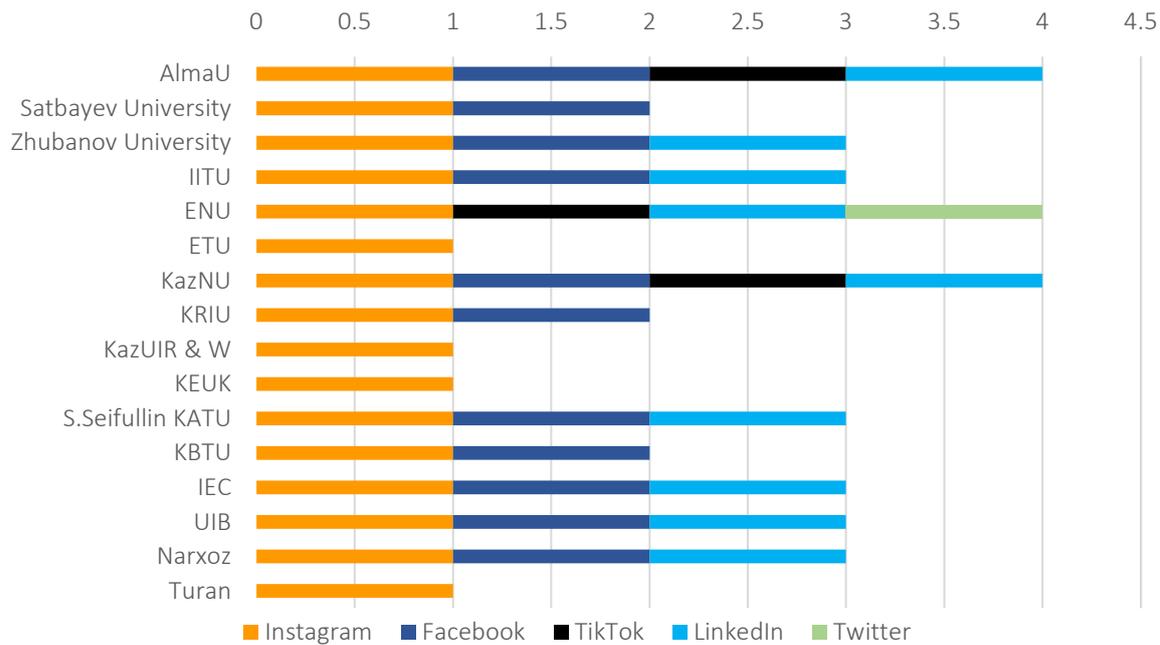


Figure 2. Social tools of Kazakhstani universities

timetables, academic events, research opportunities, and other aspects of student life. Universities also use media communicative tools to exchange scientific research, find and attract partners for joint projects, and participate in academic debates.

The application of digital social tools is a strategically important instrument for universities, which allows effective interaction with various stakeholders and achieves diverse goals in marketing, education, and research. Figure 2 shows information about the social networks that universities use for communication.

Accordingly, Instagram is a popular visual content and widespread tool for attracting students and promoting the university. The majority of universities are also present on Facebook. This social network is one of the earliest widespread communication and information exchange platforms. Only two universities from the presented sample, AlmaU and ENU, have accounts on TikTok. They can create short and exciting content for students and youth. Several universities, including Aktobe Zhubanov University, IITU, ENU, KazNU, S.Seifullin KATU, IEC, UIB, and Narxoz University, have profiles on LinkedIn. This demonstrates their commitment to creating business connections. Only one university, ENU, has a Twitter account. This indicates that this network is not widespread among universities in Kazakhstan.

3.2. Use of digital technologies by universities

The technical equipment of universities plays a decisive role in the management of higher education, as it provides the means for modern teaching and research. First, it allows for effective learning in distance and flexible formats, which becomes critically essential to modern challenges such as epidemics and global crises. In addition, technical equipment and software help expand access to education and scientific resources, which contributes to the development of inclusiveness and a global educational network. Finally, technical equipment allows universities to support and develop scientific research, providing access to digital technologies essential for scientific productivity and innovative development. Figure 3 shows the average value of respondents' opinions about the technical equipment of their university.

Respondents provided a variety of assessments of their universities' technical capabilities on a nine-point scale, with most universities scoring close to low. This may indicate respondents' dissatisfaction with the current level of technical equipment and resources in their educational institutions. The data conclude that respondents rated most universities low in technical quality. However, some institutions, such as UIB and KazNU, were rated

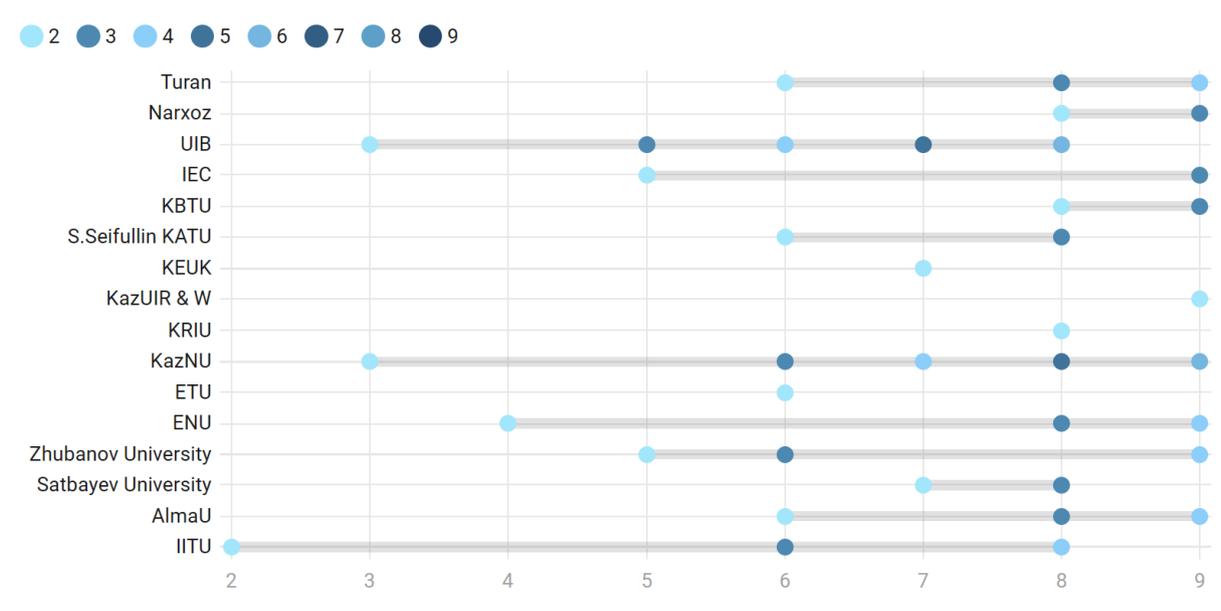


Figure 3. Average values for the level of technical equipment

as having a higher technical style. This may indicate significant investment and improvements in technical digital infrastructure. The survey results highlight the importance of further developing the technical base of universities in Kazakhstan. Low assessments of technical equipment can serve as a signal to university administrations about the need to invest in modern equipment to improve the educational process.

University classroom platforms provide effective and flexible learning in the modern educational environment. These platforms create virtual

classes and courses, which allows students to gain knowledge even remotely, which is especially important in the face of global challenges, such as the COVID-19 pandemic. In addition, using digital online platforms with interactivity and adaptation functions allows universities to individualize the educational process, considering each student’s needs and level of training.

Table 5 presents respondents’ answers to the question “What digital online platforms does your university use to conduct classes?”

Table 5. Digital online platforms used in the universities

University	Microsoft Teams	Zoom	Moodle	Herro Study	Google Meet
AlmaU	x	x		x	
Satbayev University	x				
Zhubanov University	x				
IITU	x				
ENU	x	x	x		
ETU	x				
KazNU	x	x	x		
KRIU		x			X
KazUIR & W			x	x	
KEUK		x			
S.Seifullin KATU	x	x			
KBTU	x	x			X
IEC		x	x		X
UIB	x	x	x		
Narxoz University	x	x	x	x	X
Turan University			x		X

Table 6. Digital learning platforms for grading at the universities studied

University	Moodle	Hero Study	Front	Platonus	Sistema univer	Wsp.Kz	Canvas
AlmaU		x					
Satbayev University		x					
Zhubanov University					x		
IITU				x			
ENU				x			
ETU				x			
KazNU	x			x	x		
KRIU				x			
KazUIR & W	x	x					
KEUK				x			
S.Seifullin KATU				x			
KBTU					x	x	
IEC	x						
UIB	x		x				
Narxoz University	x	x					x
Turan University	x						x

Among educational institutions in Kazakhstan, the most popular platforms are Microsoft Teams and Zoom. These digital platforms allow students and teachers to conduct classes and exchange information and documents in real time. Many universities prefer a combined approach and use both platforms simultaneously. The Moodle platform has also become widespread in educational institutions. This digital software provides the ability to create virtual classes and access educational materials online. The Herro Study platform is used by three universities in the sample (AlmaU, KazUIR & W, and Narxoz University), but information about it is limited. It provides specialized tools for online learning. Several universities also use Google Meet but to a lesser extent. This platform enables video conferencing and information sharing.

Universities also use digital learning platforms to record the attendance of students, which allows for monitoring student activity and assessing their educational activities (Table 6).

The overall conclusion is that universities in Kazakhstan are actively adapting to the digital educational environment, using a variety of online platforms to support the learning process and improve communication among students and teachers. The choice of a specific platform depends on the institution's needs, available resources, and ease of use for academic staff. This demonstrates the importance of effective

resource management and strategic planning in managing a university in a rapidly changing educational environment.

3.3. Systematic method for assessing challenges and opportunities of using digital technologies by universities

Conducting a SWOT analysis of the use of technology in education will allow for the systematizing and evaluation of the critical aspects of using digital technologies in the educational process. A clear understanding of the strengths and weaknesses, as well as the opportunities and threats, will help develop management strategies that make the most of this technology, considering the context of the educational institution and its goals. A word cloud is used to construct the SWOT analysis matrix, which produces a tag cloud. Using the key concepts, it is possible to determine which concepts are crucial when working with educational platforms (Figure 4).

The survey results indicate numerous benefits of using digital technologies, including increased motivation, increased accessibility and effectiveness of education, and improved quality of educational processes. The main thematic categories into which respondents' answers can be divided are as follows:

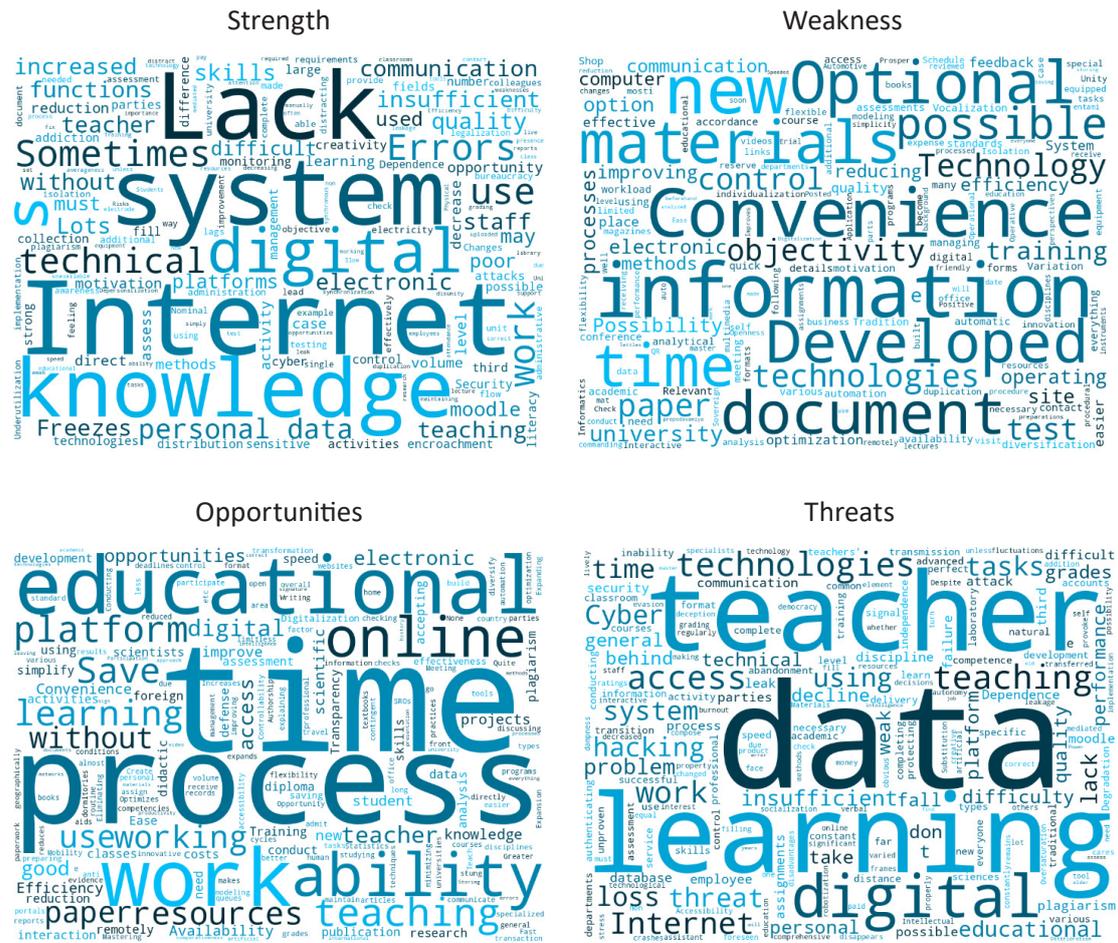


Figure 4. SWOT analysis of using digital technologies in universities

- a) Administrative and organizational improvement – “Availability of electronic document management and scheduling flexibility;”
- b) Increasing motivation and effectiveness of learning – “Interactive learning and multimedia resources,” “Quick access to materials and assessments,” “Improving the quality of disciplines and reducing the time to master the material,” and “Positive changes in the management of educational processes;”
- c) Convenience and reduction of labor costs – “More free time,” “Efficiency and transparency,” “Reduction of paperwork,” and “Acceleration of communication and operational management;”
- d) Technological innovation and accessibility of materials – “Use of specialized programs and tools,” “Digitalization of educational materials,” and “Saving time and storing information in one place;”
- e) Transparency and objectivity – “Objectivity of testing and assessment,” “Transparency in assessment and access to information,” and “Transparency of automatic calculation of final scores;”
- f) Distance learning and communication – “Opportunities for distance learning” and “Opportunities for holding meetings and conferences.”

These answers reflect the various aspects and benefits of using digital technologies in the learning process.

Classifying problems into different categories allows for better-organized information and highlights critical aspects. It helps manage and ana-

lyze problems, allowing for more effective strategic decision-making and resource management. Lecturers, when using educational technologies in universities, face some problems that can be classified based on the data provided:

- a) Reduction in direct communication and motivation – “Reduction in the amount of direct communication between students and teachers,” “Insufficient ability to assess skills,” and “Decreased level motivation for learning with insufficient knowledge of digital technologies;”
 - b) Security and privacy issues – “Concerns about data security and cyber attacks,” “Collection and distribution of sensitive personal data by third parties,” and “Personal data leaks when working with new tools;”
 - c) Technical problems – “Technical errors, delays, and lags,” “Problems with an Internet connection and power supply,” “Insufficient technical support and synchronization,” and “Problems with Internet availability and speed;”
 - d) Organizational and administrative issues – “Difficulties in organizing work with platforms and bureaucracy” and “Changes made by the administration and additional requirements;”
 - e) Assessment and testing – “Problems with assessment and testing, including plagiarism,” “Errors in marking and difficulties in correcting them,” “The need for training and development of digital skills,” and “Lack of awareness and lack of skills in using digital platforms.” This classification allows to briefly covering the main themes and issues highlighted in the respondents’ responses.
- b) Development of information competencies (managing the research process) – “Development of information competencies,” “Increasing the availability of materials,” “Expanding the contingent due to geographical distance,” and “Supporting international research networks and projects;”
 - c) Convenience and efficiency (managing of university curricula and resources) – “Ability to conduct online courses,” “Optimization of time and reduction of time costs,” and “Saving time;”
 - d) Automation and transparency (managing of educational processes and student performance) – “Automation of the process,” “Ability to directly assign grades,” and “Transparency in the automatic calculation of final scores;”
 - e) Innovation and transformation of the educational process (managing of educational processes) – “A variety of new didactic techniques,” “Effective use of digital educational platforms,” and “Easing routine and reducing time spent;”
 - f) Learning process and interaction (managing student interaction and academic staff) – “Improving the learning process,” “Ability to discuss and defend online,” “Reducing transaction costs,” “Speed in explanation,” and “Increasing the ability to participate online.”

Classification of answers according to the weaknesses of using digital platforms in university education can be as follows:

- a) Technical problems and accessibility – “Insufficient level of information competence,” “Lack of constant access to the Internet and insufficient signal transmission speed,” “Difficulty of conducting professional laboratory work in natural science and technical disciplines in digital format,” “Difficulty of grading work if they submit assignments on time,” and “System failure, power supply or communication failure;”
 - b) Security and confidentiality – “Data hacking threat,” “Personal account hacking threats,” “Inadequate system for protecting teachers’ personal data,” and “Employee data leakage;”
- a) Access to electronic resources (managing of educational resources at the university) – “Use of electronic educational resources,” “Working with electronic textbooks and teaching aids,” and “Accessibility of obtaining knowledge;”

The answers on opportunities identify business processes for managing educational institutions that provide more effective decision-making and optimization of management tasks:

- a) Access to electronic resources (managing of educational resources at the university) – “Use of electronic educational resources,” “Working with electronic textbooks and teaching aids,” and “Accessibility of obtaining knowledge;”

- c) Training and adaptation – “The need for training and development of digital skills,” “Difficulty for senior employees in mastering technology,” and “Data loss and cyber attacks as a threat to older teachers, which can lead to job loss;”
- d) Administrative and organizational aspects – “Complete transition to distance learning and abandonment of traditional teaching technologies,” “Difficulties in organizing work with platforms and bureaucratic processes,” “Information oversaturation and the risk of teacher burnout,” and “Substitution of grades and the ability to access data third parties;”
- e) Dependency and social aspects – “Dependence on the Internet and technology, which can lead to loss of interest on the part of students,” “Robotization of teaching and lack of verbal communication,” and “The threat of losing the human factor in the educational process.”

This classification systematizes and organizes various aspects of problems associated with digital technologies in education. Managing technical issues and accessibility requires developing infrastructure and supporting students and faculty. Ensuring the security and confidentiality of data is also an essential aspect of management, requiring the development of policies and measures to protect information. In addition, management should control learning and adaptation processes. Administrative and organizational aspects include resource and process management, and dependency and social aspects require change management and attention to social and psychological aspects of digital technology implementation in the educational process.

4. DISCUSSION

Based on the results of previous studies, several conclusions can be drawn. First, universities actively use social media tools to exchange knowledge and information about the quality of education and attract students. Media communicative tools also serve as a platform for exchanging scientific research and finding partners for joint projects, which is in contact with Daineko et al.

(2020). Second, respondents’ estimates indicate a low level of technical equipment in universities in Kazakhstan. This highlights the need to invest in modern equipment and digital technologies to improve the educational process (Usman, 2016). Third, popular digital online platforms for conducting training sessions were identified – Microsoft Teams, Zoom, Moodle, and Herro Study. Fourth, universities in Kazakhstan sometimes use technologies to record student attendance, which helps monitor their activity and evaluate educational activities. Suganthi et al. (2017) discussed the need to use facial recognition systems to account for attendance. University managers should implement the use of this system of automatic attendance accounting everywhere. This frees teachers from manually setting attendance and provides additional time for academic activities.

The results of this study are consistent with Pohekar (2018), confirming the importance of using digital technology in the educational process. In fact, this paper contributes not only to the academic discourse of Kazakhstan but also to a broader scope in terms of the need to use new methods that can be applied in the educational field to improve both the educational process and administrative functions. In addition, from the presented classification of advantages and problems, it is necessary to emphasize the importance of management in the educational sphere.

Effective management makes it possible to maximize the benefits of digital technologies, such as increasing student motivation, improving access to education, and improving the efficiency of educational processes (Egoeze et al., 2018). At the same time, management also has to solve problems related to technical aspects, data security, administrative and organizational difficulties. It is important to pay attention to adapting academic staff and students to the use of digital technologies in the education environment. Equally important for management is that the university has a support service available to teachers, which can help them master new skills without stress. A feedback chat that would show the presence of existing technical errors and help managers to get to the bottom of problems faster and eliminate them faster. In addition, it is possible to hold master classes twice a year in which more experienced colleagues would share their success.

CONCLUSION

The study aimed to identify the challenges and opportunities in universities related to using digital technologies (social media tools, digital online platforms, and digital learning platforms) in higher education institutions in Kazakhstan. Based on this goal, various digital learning and online platforms accelerates the process of management activities and generally increases its effectiveness. The proposals arising from the results of the analysis are as follows.

First, managing technical issues and availability requires developing infrastructure and supporting students and academic staff. Universities must reconsider funding in the direction of increasing investments in technology and the development of an open digital educational environment. Second, ensuring the security and confidentiality of databases is also an essential aspect of management, requiring the development of an internal policy and a set of measures to protect information. Third, insufficient information competence and the need to teach digital skills among teachers are notable problems affecting the successful use of educational technologies. Therefore, management in education should consider the age difference of academic staff and provide support to the older generation in the form of staff training and the creation of consulting service centers capable of giving quick feedback on technical issues.

Administrative and organizational aspects include resource and process management, and dependency and social aspects require change management and attention to digital technology implementation's social and psychological aspects in the educational process.

The study findings revealed that insufficient infrastructure support and data security issues are weaknesses in adopting digital tools. Future research could focus on finding solutions to improve infrastructure and data security. A deeper exploration of this issue may identify optimal digital technology integration strategies.

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