ADVANCEMENT OF ELEARNING IN HIGHER EDUCATION IN THE CASE OF KAZAKHSTAN

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ABSTRACT

Kazakhstan is a country with a very high level of literacy in which international standards have been implemented for higher education. Through the last decades, the Republic of Kazakhstan has taken severe steps to implement electronic technology and virtual training to diversify elearning. Thus, IT specialists and experts in developing virtual research laboratories at the university level need to be included in this process. Every year there is an increase in the number of citizens who are willing to build their "digital" culture, and many people from Kazakhstan are ready to acquire new knowledge via elearning at universities and in the workplace. This study noted readiness six factors that propel the adoption of elearning: technological, human resources, content, leadership, educational, and cultural readiness—with technological readiness and content readiness being the most important. It also examined several challenges to elearning implementation and further noted that there is a lack of adequate time to manage a large number of students online in elearning lessons, but this is the least of challenges for advancing elearning. Elearning is further affected by time constraints to create course content. Additionally, this study concluded that a heavy workload was the major challenge that marred the advancement of elearning and thus ranked first among the challenges.

Key words: higher education, elearning, learning process, innovations

INTRODUCTION

According to Roza and Raushan (2014), the advancement of higher education in Kazakhstan is in line with general trends in global education systems. There are various factors included in it, such as the emergence of new technologies, the modernization of higher education, the presence of high-speed connections, and access to innovations. A rise in the economic standing of citizens in Kazakhstan has also impacted technology in the field of education. Ahn et al. (2018) noted that state programs that increased industrial and innovative developments are the reason behind the global incorporation of elearning. The primary objective of such technology is designed to provide the best available resources and education services to every stakeholder in the learning process. From 2011 to 2015, certain measures by the authorities lead to the advancement of elearning, including understanding the items associated with the higher education system, comprehending the regulatory foundations of elearning systems, which includes gathering primary statistics based on international standards and regulations for using elearning systems. Also, the advancement of university-based internet resources by renowned higher institutions of learning along with upgrading of elearning systems are two factors driving innovation.

However, there are issues that hinder the progress of elearning in Kazakhstan. The current study examines the advancement of elearning platforms in Kazakhstan with a focus on the challenges to and factors driving the adoption of these platforms.

LITERATURE REVIEW

Technological Acceptance Model (TAM)

The technological acceptance theory is an information system model that shows how users of a system accept and utilize a given innovation (Lai, 2017). The actual utilization of a system is considered the end point, and Lai (2017) noted that it is at this point that people want every other person to be able to use the technology and the behavioral intentions are understood, which are critical for leading people towards the utilization of a technology. Behavioral intentions are affected by attitudes and how individuals perceive certain innovations. Erasmus et al. (2015) stated that this model suggests that when an individual is presented with an innovation, various factors influence how they use the technology. Basically, this model is based on two concepts: the perceived value of the technology and its ease-of-use. The perceived usefulness (PU) is the extent to which one believes that utilizing a given innovation would increase one's productivity (Abdullah & Ward 2016). In other words, it is a measure of whether or not an individual considers a given technology to be useful for the purposes or objectives an individual wants to achieve. On the other hand, the perceived ease of use is the belief that the exploitation of a given innovation would be effort-free. If the new technology is easy to use, the barriers to using it are eliminated. Contrarily, if the new technology is not easy to use, the attitude of the users is likely to be negative, and therefore, they will fail to take advantage of the innovation.

The model mentioned above is useful for this investigation as it helps explain the advancement of elearning in higher education. The advancement of elearning in colleges and universities in Kazakhstan is influenced by a number of factors including the usefulness and user-friendliness of the elearning platform. It can be argued that when the targeted users in Kazakhstan find elearning to be beneficial to them, they are more likely to exploit such innovations. Thus, if the platforms are user friendly, then people probably would accept the improvement of the technology as an innovative solution for addressing education concerns in the country.

Advancement of Elearning in Kazakhstan

Over the years, the government of Kazakhstan has put considerable effort into reforming the education industry to bring it up to global standards. In 2011, Nurassyl et al. (2015) noted that the government had launched a project through its education ministry to modernize the elearning system. The project was formed to formulate the strategic lines of education policy in Kazakhstan and to implement elearning platforms. It was based on the following eight objectives:

1. Updating or regulating the frameworks for incorporating information technology into education.
2. Increasing the training of education stakeholders on the usage and management of elearning in Kazakhstan.
3. The establishment of domestic digital educational resources in Kazakhstan.
4. Formation of the digital education system and increased computer usage.
5. Updating the hardware and software used for elearning.
6. Establishing regulations for the Kazakhstan internet environment.
7. Upgrading the technological support infrastructure in the education system in Kazakhstan.
8. Adopting and implementing a standardized information system for the management of education.

To achieve these objectives, the Ministry of Education and Science identified two active participants, the National Center of Information (NCI) and the Association KazRENA. The NCI is a body of members that work to make sure the activities of the education ministry in Kazakhstan are in line with the incorporation of information technology into education. Meanwhile, the Association KazRENA operates on the principle of establishing and conveying online data facilities for every stakeholder in the scientific and educational spheres of the country (Sapargaliyev, 2019). The association is made of members from the
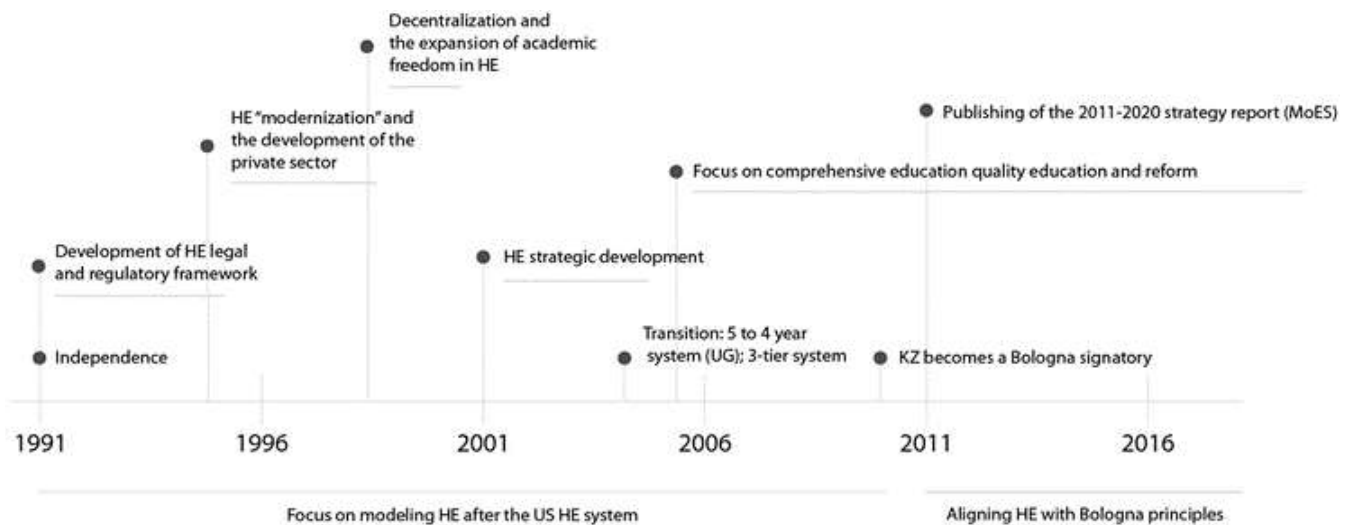
Figure 1. Education Restructuring Timeline in Kazakhstan (1991–2020) (From Ahn et al. [2018])

scientific and education networks of Kazakhstan and was established to provide high-speed internet connections to over sixty research and educational centers in Almaty, Astana, Pavlodar, and Taraz, among other areas. These two organizations work in conjunction with the Ministry of Education and Science to standardize university e-resources and establish a national portal for elearning.

According to Sapargaliyev (2018), the most notable activities given to these organizations include setting up their own web sites to provide different learning materials and information to students, faculty, and applicants and increasing the number of portals available at institutions of higher learning. These organizations are also included in the development and establishment of digital education resources for various specialties and areas of learning. They also form the foundation of internet resources for establishing elibraries and connecting to existing digital libraries online. Under these organizations is the responsibility for the coordination of distance learning start-ups and the formation of online research laboratories in institutions of higher learning in various disciplines and specialties.

While the government of Kazakhstan is focused on growing its marketplace, it is believed that the preservation and creation of intellectual and human capacity is the key to moving the economy towards the desired digital standards. The country's leadership is focused on getting Kazakhstan to be among the 30 most competitive nations in the world and has thus focused on realizing coherent policies for running exploration and development activities. The country has also been cultivating strong national innovation systems that concentrate on the development strategy for the entire country. However, there are several socio-economic factors that impede the country's progress towards achieving these goals. These are the hurdles:

1. Innovation Economy

Roza and Raushan (2014) argued that Kazakhstan has little experience in pursuing an innovative marketplace. The country's economic pointers indicate that it has a lower level of income, and its index on knowledge application in the economy reveals that it compares to nations such as Kenya and Mongolia—places where earnings are significantly lower than average. A rigorous analysis of Kazakhstan suggests that the development of effective programs of support and innovation is still one of its weakest points with regard to its move towards an innovation system. It is essential to note that innovation activities in this country are mostly local and are entirely geared towards adopting and implementing the national innovation development program. This is also the top priority of the government as it attempts to find innovative ways to improve the nation's education system. The primary goal of the national innovation policy is to form a state-of-the-art education system that offers high-quality training for a new cohort of lucrative and ground-breaking projects. Saiymova et al. (2018) observed that Kazakhstan is attempting to integrate the processes of various other developed nations that started their journey

towards prosperity by strengthening their education system. They accentuated the fact that the primary means of fostering a competitive economy is through the sharing of knowledge in institutions of higher learning. In this regard, universities and other institutions are on a special mission to incorporate technological advancements in their learning processes to help facilitate economic success in the country. Such innovations include the accomplishments of elearning platforms that are being touted by colleges and universities as critical for innovation and research.

2. Government Support for Innovative Foundations in the Country

The Strategy of Industrial and Innovation Development of Kazakhstan for 2003–2005 holds that the country's education structure should be more dynamic so it can keep up with the progressions of globalization and computerization. Kazakhstan has a clear public policy for the types of reforms the country wants to attain in the education system and the training of human resources, particularly in institutions of higher learning and innovation management. Roza and Raushan (2014) observed that the digitization of the education system that is being carried out is based on understanding other industrialized nations that work in close collaboration with various stakeholders in their education industry. The reforms in the education sector of Kazakhstan are meant to be detailed and cater to all aspects of the nation's culture.

Despite the support of the government and its push towards a digitized education system, various problems of strategic significance have been noted that affect the effective advancement of elearning platforms in Kazakhstan. For starters, it is apparent that the training structure of the country is imbalanced., and government policies are also ineffective with a weak national self-education market (Dalayeva, 2013). These factors result in a decrease in the quality of education offered at different institutions and a devaluation of local certificates (Kurmanov & Petrova, 2019). The government has recognized that it ought to develop appropriate policies and regulations that would lead to the standardization of employee training and implement the desired legislation to support the adoption and the advancement of elearning platforms in the country.

3. Infrastructural Investment and Development

Kazakhstan has invested a lot in developing the infrastructure of the country. Sapargaliyev (2018) noted that elearning in any country is mainly driven by the technological infrastructure, and Kazakhstan has, over the years, experienced an increase in internet and mobile penetration due to the dispersion of this technology. This investment has significantly influenced the advancement of elearning in the country with various establishments adopting and implementing the technologies to their advantage.

Research Questions

To carry out this investigation, the following research questions were asked:

- What factors facilitate the advancement of elearning in Kazakhstan?
- What are the challenges being faced by Kazakhstan's learning institutions in adopting elearning platforms?

RESEARCH METHODOLOGY

The methodology used in any investigation depends on the objectives and the research questions guiding the study. For this study, a qualitative research approach was selected. Lewis (2015) considered the qualitative research approach to be a scientific research technique that is instrumental in investigating human behavior, opinions, themes, and motivations. This approach was selected because it can identify and evaluate information that is rich in content, and it is considered the best research technique for situations where the investigator's budget is small and so are the sample sizes. In studies that focus on a small number of participants, the subjects are evaluated through qualitative approaches such as interviews and surveys.

Study Participants

With the objective of investigating the advancement of elearning in Kazakhstan, the target population for the survey was institutions of higher learning in the country. Rimando et al. (2015) defined a target population as the total sum of individuals, groups of individuals, or objects that an investigator is interested in generalizing to reach a conclusion. Target populations often share similar attributes and behaviors, which makes it easy to generalize the findings of a study. In selecting the target population for this study, we ensured that the

institutions had been in operation for not less than three years. This formula ensured that the study relied only on those institutions that had enough information to inform its findings. Additionally, the research was conducted in a manner so the study selected only those institutions that had adopted elearning platforms. We used purposive sampling to identify the population used to inform this study. Etikan and Bala (2017) considered purposive sampling as subjective sampling, where the investigator uses their judgment when identifying members of the population to be involved in the investigation. The sampling approach was settled on because the size of the population was small and, therefore, it would allow us to use personal judgment in realizing the sample size. In survey, 1336 people were questioned.

Data Analysis

Data collected for this investigation were first modified, verified, and then fed into a processor and analyzed by using the Statistical Package for Social Science. The package offered us the ability to extensively handle data and various statistical evaluation routines that can evaluate small to large amounts of information (Asthana & Bhushan, 2016). For the examination of the data, we implemented descriptive statistics such as ratios and frequencies and utilized the inferential statistic to analyze its data. Multiple regression analysis was exploited for evaluating the data. This analysis was instrumental in understanding the relationship between the constants listed in Table 1. The purpose of Table 1 is to analyze the data.

FINDINGS AND DISCUSSION

Descriptive Analysis

The findings of the investigation demonstrate that its variables had a significant positive relationship with the advancement of elearning in Kazakhstan. The promotion of elearning was connected to the readiness of organizations in terms of technological, human resources, content, educational, leadership, and cultural readiness. Using a correlation significant at $p < 0.01$, Table 1 was generated.

Apart from the correlation analysis, the study also used multiple regression analysis to evaluate the data. This technique helped us establish the predictive correlation between the independent constant and the dependent constant. This

research shows that the relationship between the eight constants proposed in the investigation and elearning implementation were analyzed based on $p < 0.001$. The results from the regression analysis showed that the six factors significantly affected the advancement of elearning in Kazakhstan. Responses from the study participants indicated that technological and content readiness were the leading drivers for enacting elearning in the country.

Table 1. Correlation Analysis

Correlations		
Items	**Pearson Correlation**	**Elearning implementation**
Technological readiness	Pearson Correlation	.915**
	Sig. (2-tailed)	.000
	N	516
Human resource readiness	Pearson Correlation	.769**
	Sig. (2-tailed)	.000
	N	516
Content readiness	Pearson Correlation	.885**
	Sig. (2-tailed)	.000
	N	516
Educational readiness	Pearson Correlation	.764**
	Sig. (2-tailed)	.000
	N	516
Leadership readiness	Pearson Correlation	.876**
	Sig. (2-tailed)	.000
	N	516
Cultural readiness	Pearson Correlation	.826**
	Sig. (2-tailed)	.000
	N	516

Other findings indicated that the intention to take desired actions to implement elearning platforms in universities was also an important feature towards the advancing elearning in Kazakhstan. It is also notable that the respondents recognized that large scale redesigning of courses for elearning platforms called for strong collaborations between instructors, IT professionals, and management in advancing elearning platforms. Additionally, the subjects of the study also noted that human resource readiness significantly influenced the adoption of elearning platforms in the country. Leadership readiness and organizational culture were observed to be the least influential factors in the advancement of elearning in Kazakhstan.

These results are similar to those of Hetrick (2019), who demonstrated the importance of being ready technologically to adopt and implement elearning solutions. Moreover, programs run on technological infrastructure and there needs to be enough technical backing to support infrastructural implementation. Additionally, the findings of Mynbayeva and Anarbek (2016) and the concerns raised by the Kazakhstan Ministry of Education support the results of this study, which notes that content readiness is also a critical feature in advancing elearning in institutions of higher learning. Nabi et al. (2017) demonstrated the importance of content for advancing elearning platforms. In this case, the argument is that content is key and that without the desired content, online platforms will not be useable. Human resource readiness, as well as a positive attitude towards the advancement of elearning, were also observed to be critical factors supporting the findings of the current study.

Challenges Faced by Kazakhstan in Advancing Elearning

The study also sought to explore the challenges faced by Kazakhstan in adopting elearning solutions. Table 2 below represents the findings of the investigation.

From Table 2, it is apparent that heavy workload and insufficient internet connection were critical issues that impacted the advancement of elearning in institutions of higher learning in Kazakhstan. The study also noted that the lack of adequate time to cater to the significant number of students online in elearning lessons was the least serious challenge for advancing elearning in universities and colleges in Kazakhstan. The adoption of computer-based learning was also found to be affected by the availability of time to come up with elearning materials and to participate in elearning course content creation. The study noted that 83% of the subjects observed that heavy workload was the major challenge that mired the advancement of elearning and thus ranked first among the challenges.

The findings of this investigation are in line with Harvey et al. (2016), who demonstrated that among the aspects that stalled the advancement of elearning platforms in Kazakhstan is the workload related to effectively establishing such systems. It should be noted that elearning, unlike traditional learning, incorporates huge chunks of work for both the students and teachers. Without the desired positive attitude, it is always a challenge to adopt and implement elearning systems in any organization. Additionally, the study also demonstrated the impact the high number of students has on the advancement of elearning platforms. This advancement meets the observations made by Ibrayeva et al. (2018), who demonstrated that the high number of students, as well as the lack of ICT skills, significantly hinders the adoption and advancement of elearning systems in Kazakhstan.

CONCLUSION

The advancement in higher education of elearning in Kazakhstan follows the global trend in education. As such, the country, through its Ministry of Education, has taken several steps to ensure that its education system is in line with global education standards. One of the innovative approaches taken by the ministry is to introduce elearning platforms in the school system. In adopting such systems, the ministry aims to

Table 2. The Standing of Elearning Challenges

Challenge	1,2	3	4	5	6	7	8	Average rank
Fear of copyright	3	2	2	3	3	3	3	2.7
Insufficient internet connectivity	2	4	3	2	2	2	2	2.4
Inadequate time to develop modules due to heavy workloads	1	1	1	1	1	1	1	1
Limited ICT skills	4	3	5	4	4	4	5	4.1
Lack of incentives	6	5	7	5	5	5	4	5.2
Lack of computers/laptops	7	7	4	6	7	6	6	6.1
Inadequate computer lab	5	6	6	7	6	7	7	6.3
Inadequate time to attend to the large number of students on the internet	8	8	8	8	8	8	8	8

propel education and make it accessible to a greater number of citizens who would usually not have the time to take part in the traditional form of education. When adopting such platforms, there are various factors that propel the adoption, including technological, human resources, content, leadership, educational, and cultural readiness. It is also essential to note that the country faces several challenges in advancing elearning, such as the heavy workload related to elearning, that there is insufficient internet connection for many, inadequate time to attend to the large number of students, and limited ICT skills.

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