

Higher Education Institutions Management in a Pandemic

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Abstract

The article studies higher education institutions' management systems during the pandemic. The research field was determined by two modern higher educational institutions - Kyiv University named after Taras Shevchenko and Lviv Polytechnic National University. Their activities were evaluated on the basis of developed strategies, development plans and internal quality management documentation. The conducted research revealed a complex of interrelated problems. Technical problems are associated with the involvement and maintenance of relevant software complexes. Educational and methodological problems consist in the improvement and adaptation of methodological complexes and the system of evaluating the results of student learning in the aspect of control. Management problems focused on solving operational control over the educational process and its quality content. The research proved that the management of higher education institutions solves the identified problems independently through the formation of auxiliary departments of academic mobility, internal control and audit, targeted training, and international cooperation. However, it was noted that the problem related to communication - "student-teacher" remains unsolved, despite personal-oriented training in combination with traditional ones based on many years of pedagogical experience. In general, the necessity of applying flexible teaching methods to higher educational institutions to adapt to the long-term pandemic was noted.

Keywords: hybrid learning, distance learning, health camps, health courses, higher education, medical services, mental health

1 Introduction

The pandemic restrictions of 2019-2020 have become a real challenge for educational institutions in any country, and Ukraine is no exception. At first, higher education institutions were forced to work remotely. Later, educational institutions switched to hybrid learning models as the disease rate decreased. These two learning models require using innovative digital technologies (Kaur, 2013; Garrison & Kanuka, 2004).

Innovative technologies cause a radical transformation in educational processes, which are driven by the need to digitize learning processes in a short time, actively responding to the constantly changing environment. Rapid reactions require fast learning of digital and computer technologies, which is available for the younger generation but hardly accessible to teachers. Most of them do not have enough competencies to feel free in the online environment and organize the learning process.

In the context of the rapid transformation of higher education, it is essential to master digital learning management models, which are a vital information resource for almost all higher education institutions and a driving force for online learning (Arshad et al., 2020).

During the pandemic and the organization of distance or hybrid learning, several weaknesses have been identified that need to be further resolved:

- insufficient level of digital infrastructure;
- problems with technological support for distance learning (Arora & Srinivasan, 2020);
- insufficient level of digital competence of teachers;
- lack of clear methodologies for conducting distance learning;
- complexity of the educational process for all participants;
- decreased motivation to learn;
- rapid development of digital technologies and the constant emergence of new educational environments (Ramírez-Hurtado et al., 2021; Cicha et al., 2021).

In general, it should be noted that distance learning for many higher education institutions is characterized by a decrease in the motivation of students and teachers. Teachers note that distance classes have become ineffective. They are worse attended than full-time lessons or lectures. Another problem of distance learning is the problem of communication and interaction between teacher and student.

Progressive educational institutions try to constantly monitor new technologies to introduce learning environments, applications, programs, and platforms into distance learning methodologies. It allows for practical work within a large audience and creates new approaches to the productive interaction between teacher and student. However, such effective transformations are possible only if there is sufficient funding to improve higher education institutions' competencies and techno-technological support (Mishra et al., 2020).

The scientific literature notes that the Covid-19 pandemic has forced almost all universities worldwide to switch to online learning. The transition process was not chaotic. It was planned, consistent and, in general, according to the results of two years, implemented by many countries. The methodologies for individual course teaching have also improved, becoming more adapted to distance work (Ramírez-Hurtado et al., 2021).

The article aims to assess the effectiveness of changes in the management systems of higher education institutions during the pandemic.

2. Literature Review

The higher education institution management theory provides three main quality management levels: process, organizational, and total quality management (TQM) (Manatos et al., 2017). The practice of quality management is implemented based on a systematic approach based on the strategic development plans of the higher education institution (Manatos et al., 2017). The quality criteria of higher education are different. They are defined according to the goals that the organizations set for themselves. These criteria can be classified in several areas:

- teaching and learning;
- educational services;
- scientific research;
- effectiveness of learning approaches at the institutional level (Stensaker et al., 2011).

The introduction of education quality management systems is associated with improving educational programs towards the practical knowledge and experience necessary for the real economy. This demand arises in any country with a developing economy.

The principles and elements of the education quality management system necessitate a new approach to building a strategy for developing higher education institutions, which is required by the modern competitive environment. The competitiveness of educational services becomes a vital feature of quality education, and the result of providing quality educational services is a competitive specialist in demand in the labor market. Following these standards, new ratings of higher education institutions are formed, which provide for the rating of only scientific activity and management system of higher education institutions but also ratings based on the specialists' qualifications (Van Vught & Westerheijden, 2010).

Management in higher education institutions is becoming increasingly integrated into global educational processes. However, it leads to the centralization of power in many organizations that make decisions in regulation and

education development (Melo et al., 2010). In turn, it creates several problems related to the formation of standard strategic directions for the development of education quality and the possibility of its integration into the global quality management system (Manatos et al., 2017; Widana et al., 2021). Oliinyk, O., Bilan, Y., Mishchuk, H., Akimov, O., & Vasa, L. (Oliinyk, et al., 2021) studied the issues of highly qualified graduate students and doctors and their competitiveness, and also dealt with them on the Internet, Leshchenko, M. P., Kolomiets A. M., Iatsyshyn, A. V., Kovalenko, V. V., Dakal, A. V., & Radchenko, O. O. (Leshchenko, et al., 2021; Burinska, et al., 2006).

Various competitive learning strategies have been created and implemented globally, which generalize online teaching experience and allow to accumulate of experience that can be transferred to other countries. The main pioneers in this area were Chinese higher education institutions (Bao, 2020). In order to make the education system accessible even under quarantine restrictions, the learning management system in higher education institutions should meet the following principles:

- high consistency of training in the developed online education methodology;
- effective dissemination of detailed instructions and information on the best distance learning practices;
- adequate support for teachers and students of these innovations;
- formation of a clear action plan in case of emergency situations related to technical problems in educational platforms.

In practice, it is clear that a large number of educational institutions face the problem of unpreparedness for unforeseen situations. For these situations, it is necessary to create clear instructions and a step-by-step sequence of actions that provide a solution to the crisis and the possibility of continuing the educational services provided by educational institutions (Mishra et al., 2020).

Numerous works are also devoted to analyzing online teaching methods in the context of the Covid-19 pandemic. These articles reveal the effectiveness of using the available resources of educational institutions in the context of transformation from the traditional to the digital learning model through the use of virtual classrooms and other distance learning methods. During the pandemic, higher education institutions focus not only on traditional lectures and seminars but also on training, online sessions, and teacher professional development programs. In particular, this model is shown by Tokero (2020), who highlights the work of Philippine higher education institutions during the pandemic. Based on the research results, the author recommends the following actions to improve the educational process:

- all curricula in different disciplines should contain materials on environment and health;
- educational institutions should improve environmental policy and develop hygiene practices for students and teachers;
- educational institutions should introduce online services for psychological health care, as well as emergency medical care;
- institutions should strengthen efforts to collect data on changes in the quality of learning to identify effective online programs.

Paudel (2021) built similar studies on the example of educational institutions in Nepal. The author shows the importance of introducing time management skills, technological readiness, and computer literacy as essential components of learning management during a pandemic. The researcher notes that educational institutions should pass integration processes before using digital environments, as well as provide technical conditions for online education. Ali (2020) shows that in a pandemic, education systems should become flexible and based on information and computer technologies. Such technologies should be available not only for students but also for teachers of educational institutions. According to the results of the study by Shahzad et al. (2021), it was determined that quality information is essential in providing online learning and practical work using educational platforms by higher education institutions in Malaysia. Blankenberger & Williams (2020) note that educational institutions must have institutional integrity and accountability in the pandemic era and act with social justice. It is especially important for poor and developing countries. It is due to the fact that a significant part of the population, which does not have sufficient financial support, cannot purchase equipment for distance learning. This population will suffer from the transition to digital learning technologies.

Arshad et al. (2020), in their research, show the importance of planning the actions of teachers and students in case of problems with the technical and technological support of the educational process. In particular, a plan of action is

developed in case of stopping the learning environment, and backup channels are created to ensure distance education.

Antonopoulou et al. (2021) show the importance of leadership qualities among teachers who should take over the organization of the learning process in the context of using different educational environments.

Every university program should strive to address the challenges of distance learning and the negative impact of the Covid-19 spread on the educational sphere. It ensures the provision of competitive educational services in digital transformation (Garcia-Morales et al., 2021). Numerous scientific works highlight online learning experiences in higher education institutions in different countries, using different learning platforms, methodologies, and tools.

3. Materials and Methods

The study is based on the case-analysis method, which allows systematizing information about the transformation of the management system of a higher education institution during a pandemic. Such transformations are carried out in the following areas:

- innovative solutions and tools for their implementation;
- problems of educational process management,
- solving the issue of organizing communication processes between teacher and student;
- advantage of transformational changes in the management of distance education;
- the study of the management system at different levels of educational services, including organizational, process, and TQM levels.

The research field is formed by Ukrainian educational institutions and their management systems. In particular, the sample consists of the management systems of Taras Shevchenko National University in Kyiv and Lviv Polytechnic National University. Internal documentation of higher education institutions, strategies, and development plans are used to analyze the quality management system of education, which allow the identification of the main problems of higher education institution management.

4. Results and Discussion

4.1 Results

Since 2020, the Covid-19 pandemic has become a major global challenge for all spheres of human activity, including education. The introduction of the distance learning model is not unambiguously perceived by the population, as many students and pupils do not have the opportunity to receive educational services. According to UNESCO estimates, in 2021, one and a half billion students in 165 countries did not receive an education (UNESCO, 2021). To understand the size of the problem, this represents about 90% of the total number of pupils and students worldwide. Only students and learners in developed countries could afford the transition to distance learning, as they have enough financial, material, and technical support to implement this idea.

In practice, the pandemic has forced the world community to consider the new work conditions in educational institutions. It means developing new teaching methods in total distance and working in a hybrid environment when students partially attend educational institutions and partially study at home.

The pandemic has had a negative impact not only on educational institutions but also on the general economic system, including the welfare of households. Teaching a student at home requires additional resources that are unaffordable for many people on the planet. In addition, due to the introduction of distance learning, the quality of education has significantly deteriorated, which has reduced the possibility of employment for modern graduates of educational institutions. The demand for educational services has also changed due to the solvency of the population. The digital technology market has also reacted to these changes, adapting to distance and hybrid learning environments and offering new educational platforms and information environments that allow organizing lectures, seminars, and individual assignments within a particular platform. However, in general, it should be noted that all these measures allowed us to overcome the problems of the pandemic as the infection rate around the world have significantly decreased (Lytvyn et al., 2021).

At the same time, quarantine restrictions have revealed weaknesses in education systems and posed new challenges to education authorities at the local and national levels. In remote work and the economic downturn, many higher education institutions were forced to close due to the inability to finance the educational process. Problems also arose

for educators and administrations that provided the organizational process of distance learning. These problems are primarily associated with adapting educational practice to the modern population expectations and the problems of financial support for the renewal of material and technical base (Moore et al., 2011). The UNESCO report shows that the interruption of the educational process significantly reduces its overall quality, and therefore the level of education of the current generation may suffer (UNESCO, 2021). The UN called this problem a generational disaster due to the lack of a standard traditional educational process (United Nations).

Higher education institutions in Ukraine were also forced to implement several reforms in training. In a reasonably short time, administrations and teachers had to develop and implement solutions for organizing online learning using digital technologies: web services, Internet platforms, messengers, information resources, and social networks. It is worth noting that not all higher education institutions in Ukraine were ready for such implementation. In the initial stages, most higher education institutions used the Google Classroom service, which was eventually replaced by other programs. Presentation materials were prepared using different platforms, and information was disseminated using Moodle, Zoom, Skype, Viber, Telegram, Messenger, etc. Some educational institutions have chosen learning platforms for themselves; in particular, the Prometheus platform has become popular.

However, not only technical problems became the main ones in the transition to the distance learning model. Teachers and students faced psychological problems. Due to the inability to communicate, students lost the desire to study and stopped attending online lectures. Researchers also note that distance learning is the transfer of responsibility for learning from the teacher to the student. Higher and secondary education in such conditions is carried out through self-education. Therefore, children and students who had organizational skills and were able to use time rationally did not mention any difficulties in the transition to distance learning. At the same time, children who had difficulties in the self-organization of the educational process admitted that this education model is complicated for them. Problems were also noted by students' and pupils' parents, who were mostly forced to take over the process of control knowledge acquisition. The situation is aggravated by the fact that quarantine restrictions affected students and their parents. Because of this, all family members were forced to work at home, which required at least one computer or other gadgets for each family member and different rooms where they could study.

However, it is worth noting that many parents, students, and teachers have identified positive aspects of online education. This information was revealed by the results of a survey conducted among students of higher education institutions. The study's main results showed that the quality of distance learning does not lag behind the quality of full-time education. Students highlighted the development of self-organization, which made learning possible in a comfortable environment with a convenient schedule. It has opened up additional opportunities for students, such as employment opportunities and additional knowledge. Teachers have also changed their role in the educational process. If teachers were the main providers of information before quarantine in the traditional education system, they became advisers, coordinators, and mentors in distance learning. Many private schools cooperated with higher education institutions and commercial structures during the quarantine. They were allowed to expand educational programs with the involvement of specialists from the real sector of the economy who shared their experience with students.

Covid-19 put severe pressure on the academic staff of higher education institutions, as it required rapid transformation in curricula (Diachenko et al., 2021; Mufidah et al., 2021). Of course, every teacher faced the problem of the need to adapt lecture materials to the conditions of distance education. In particular, such materials should be digitized, and practical tasks should be solved through online platforms for organizing two-way communications. As a result of the active distance learning implementation, teachers faced the following problems

- the need for technical support for the distance learning organization;
- the need to use modern software and the possibility of its updating;
- the need to improve the methodological complex and its adaptation to distance learning conditions;
- increasing the control over the educational processes;
- improvement of the system of evaluation by teachers of the educational process results.

Table 1. Main Components of the Management System of Higher Education Institutions

Level of quality management in higher education	Kyiv National University named after Taras Shevchenko	National University "Lviv Polytechnic"
Organizational		
Study of programs	Higher education institutions develop and implement educational programs within the obtained licenses. They have autonomous rights to determine the educational forms. The development and approval of educational programs are carried out following the International Standard Classification of Higher Education.	The university is presented on the market as an educational and scientific center in Ukraine
Institutional level	The university is presented on the market as a classical university as well as a research and educational center 8 educational institutes, 13 faculties, educational and scientific institute and educational and scientific center, two colleges, preparatory department, Ukrainian physics and mathematics lyceum, information and computing center, Ukrainian studies center, museum of university history, geological and zoological museums, inter-faculty linguistic museum, astronomical observatory, publishing and printing center and scientific library.	10 colleges, 101 departments, 16 educational and research institutes, the International Institute of Education, Culture and Diaspora Relations, the Institute of Distance Learning, the Scientific and Technical Library, the Research Department, the Publishing House, the People's House "Osvita", the Student Design and Technological Polytechnic Association, 4 educational and recreational camps, an innovative environment for the implementation of creative ideas and successful startups Tech StartUp School, SID CITY Science Park.
Procedural		
Teaching and learning	Improvement through educational programs, their updating following the labor market needs, the introduction of innovative teaching methods through cooperation with institutions of other countries	Improvement of teaching and learning is carried out due to the personnel and involvement of professionals from different spheres of activity and business to transfer new knowledge, information, and experience to specialists.
Research and scholarship	Joint activities with international and domestic educational institutions and other legal entities.	International cooperation with universities in Canada, USA, Germany, France, Great Britain, Austria, Poland, Slovakia and other countries.
Third mission	Involvement of employers' organizations in the formation of the content of the educational program. Formation of evaluation systems and participation in the educational process, final certification. Integration with enterprises by creating educational, research, and production complexes.	More than 30 educational and research centers and laboratories have been opened with the support of the private sector, in particular with the support of Lviv IT Cluster, Roshen, GlobalLogic, Eleks, SoftServe, Sigma Software, PLVision LLC, Intellias, Perfectial, Consensia, Vakoms. AMC Mist, Leoni Holding; Siemens Medicine Ltd. and others.
Support processes	There are several support departments: accounting, academic mobility department, internal control and audit department, targeted training department, international cooperation department, and others.	
Principles of HEIs' quality management and activities		
Compliance with TQM principles (+/-)	Continuity of processes, high guaranteed quality of education, building educational programs based on competencies	High professionalism, institutional autonomy, academic freedom, innovation in research, trust, teaching, respect, fairness.

Source: developed by the author according to the Official website of Taras Shevchenko National University of Kyiv (2021b); Official website of Lviv Polytechnic National University (2021a; 2021c; 2021d).

In the face of constant external pressure, it is becoming increasingly difficult for higher education institutions to provide adequate professional training. It requires continuous improvement of quality management in higher education (Wahab & Tyasari, 2020). In particular, the Academic Council on the organization of the educational process was established at Taras Shevchenko National University of Kyiv to address the crisis in 2020-2021. Following the provisions of the Law of Ukraine "On Higher Education," a strategic plan for the university's development until 2025 was approved. This plan ensured the continuous implementation of measures that increase the competitive position of the educational institution through the creation of various subsystems, the elimination and reorganization of inefficient subsystems, and the optimization of various subsystems. The Digital Competence Center was created, the main task of which was to improve the qualification skills of teachers to ensure the possibility of organizing distance learning. The interdisciplinary analytical center for socio-economic well-being and mental health allowed us to solve many problems related to the deterioration of students' and teachers' psychological and mental states.

The Charter of Kyiv Taras Shevchenko National University defines the concept of educational activity. The main purpose of educational activity is to train competitive and highly qualified specialists who can work in the national and international labor market in organizations of various forms of ownership. In addition, this concept provides for the functioning of other higher education quality management levels, which are shown in Table 1.

The content of educational programs depends on the ultimate educational goal of the higher education institution. Therefore, in addition to world-class professional training, higher education institutions should provide students with critical competencies that allow them to get a job in the labor market, improve themselves and strengthen active citizenship.

The principles of higher education institutions functioning in Ukraine differ from the generally accepted international principles of customer-oriented quality management. The Charter of Taras Shevchenko National University of Kyiv defines the following principles of providing educational services

- the inseparability of the educational and production process.
- high guaranteed quality of education and ensuring the competitiveness of a specialist in the labor market;
- building educational programs based on the competencies of specialists in demand in the labor market;
- training of specialists in the educational and scientific sphere.

The Charter of Lviv Polytechnic National University defines the principles of activity, which are characterized by

- autonomy and self-government,
- delimitation of rights and powers following the Ministry of Education and Science of Ukraine, university governing bodies, and its structural units,
- the combination of collegiality and sole authority,
- independence from the political situation, civil and religious organizations.

These educational institutions develop and implement a national quality assurance system in higher education based on continuous monitoring of trends in education and research (Van Dinther et al., 2011; Graham et al., 2013). To increase the competitiveness of specialists, higher education institutions study the current labor market of Ukraine and respond to its changes. In addition, they constantly monitor their graduates' employment status and career development.

4.2 Discussions

External and internal factors constantly influence the quality management of educational services in higher education institutions. At the same time, their impact can be both positive and negative. During the Covid-19 pandemic, higher education institutions faced an even more significant impact of external and internal factors. Let us consider these factors' positive and negative impacts on the education quality management system.

Today, in many educational institutions, the quality management of services needs to be improved. The quality management system is characterized by the continuity of processes, which guarantees high-quality education, and the construction of educational programs based on competencies. It ensures high professionalism of graduates of higher education institutions and provides institutional autonomy, academic freedom, innovation, etc.

Analyzing the internal and external environment has shown that higher education institutions have some problems. The internal environment is characterized by the irrational use of available financial resources and the inability to

expand the sources of their attraction from the external environment. Higher education institutions are often characterized by the effectiveness of the personnel structure and the motivation system in the educational process. There is ineffective management, as well as the actual inconsistency of specialization with market needs. As a result, this reduces the level of training among graduates of higher education institutions and does not allow them to meet the market's needs and receive adequate wages. Higher education institutions do not have sufficient interaction experience with the commercial sector, particularly employers. They also have a relatively low level of information and technological support that does not meet the modern requirements of distance learning (Ali, 2020; Arora & Srinivasan, 2020; Bao, 2020).

The main negative factors of external influence are the presence of the Covid-19 pandemic and the need to adapt higher education institutions to the new conditions for providing educational services. In addition, competition is increasing in the educational services market. Thus, students choose foreign educational institutions that offer higher quality education standards. The constant change in the economy's structure is accompanied by a reduction in the need for higher education specialists in various fields. The low solvency level of the population does not allow to provide a sufficient level of funding for educational institutions, which affects the material and technical groove. The demographic situation and reduction of the potential number of applicants also negatively affect the trend of higher education development in Ukraine. Insufficient funding of higher education institutions hurts the qualification of personnel, as specialists with a high level of knowledge are not satisfied with their salaries. The problems are exacerbated by the difficulties of providing higher education institutions with energy resources and the increasing cost of electricity and utilities (Cicha et al., 2021; Mishra et al., 2020; Paudel, 2021; Ramírez-Hurtado et al.)

Along with this, there are also opportunities for developing the management system of higher education institutions. They include:

- modernization of the approach to the formation of state policy of Ukraine in the field of education;
- formation of new labor markets in the context of the supply of scientific and pedagogical staff and demand for specialists of certain specialties
- definition of new approaches to licensing and accreditation of educational institutions;
- formation of personnel training and retraining systems.

Thus, the spread of the pandemic has presented the world with several new challenges that have solutions to address. Most of the problems of providing distance education are solved through digital technologies (Meissner et al., 2018; Gjellebæk et al., 2020). These technologies no longer represent innovative value, they are widespread and accessible to any higher education institution, and their development does not require significant resources and time. To successfully solve the problem, higher education institutions must increase the capacity to provide information and technological support for distance learning.

5. Conclusions

In conclusion, the pandemic has caused significant structural changes in the higher education system. In particular, the needs of students and teachers have changed, the educational process has been filled with innovative technologies, and higher education institutions have changed their structure to improve the quality of their services. The pandemic has challenged higher education institutions due to the need for changes in curricula. It forced the use of interactive, person-centered approaches to learning, as well as traditional methods based on many years of experience at universities. Higher education institutions must adapt to the conditions of the pandemic by introducing flexible teaching methods that provide the ability to transform and quickly respond to global external challenges. Covid-19 has led to the intensity of the introduction of new technologies in education. It also allowed conducting of an experiment that shows the effectiveness of innovation in the learning process. The first results show that many innovations applied during the pandemic will be used in the educational process after its completion.

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