Digital Transformation of University Education in Uzbekistan

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Abstract

The essay supports the significance of Uzbekistan's higher education system's digital transition during the fourth industrial revolution. It has been established that a digital transformation strategy for higher education is necessary, as is the development of new information and communication skills. According to the authors, modernizing corporate IT architecture management and implementing it on a cloud-based platform are both necessary components of the university education system's digital transformation strategy. The authors examined the primary potential directions for the transformation of educational services and the related business procedures. The foundation for developing a global cloud-based platform for higher education should be the integration of educational content management modules from various Uzbekistan universities.

1. Introduction and Problem formulation

The availability of resources required for the digitalization of the learning environment and the production of top-notch educational content will determine the future of higher education. However, experts warn against becoming complacent about digitalization in the face of rising demand for educational services in developing nations like Uzbekistan. Digital transformation has emerged as one of the major trends in recent years, affecting both the private and public sectors in many nations. The phrase "digital transformation" refers to the shift from traditional products and services to a widespread usage of digital technologies in a number of economic and social areas. Several trillion dollars' worth of innovation potential is offered by digital transformation, which affects a wide range of sectors (such as logistics, healthcare, and the automotive industry) and social trends (e.g., science, government, etc.). In addition to fundamentally changing industrial and economic systems, the digital transformation of society also ushers in new elements in civil, business, state, and interstate turnover.

According to research by the International Data Corporation, there will be 175 zettabytes of digital data worldwide by 2025, up from 40 zettabytes in 2020 [5].

By 2060, the amount of knowledge available to humanity will have increased by a factor of 19; as of right now, we only have 5% of the knowledge that will be produced and made available to us in that time. By 2030, the development of artificial intelligence alone will bring in $13 trillion to the global economy, accounting for 14% ($15.7 trillion) of the rise in the GDP. Currently, there are 99 robots for every 10,000 workers worldwide. There will be between 20 million and 50 million new jobs in the field of information technology over the next ten years, with 60% of all professions being automated [4].

These predictions and trends create a significant demand for educational and digital services, whose mutual integration is more important than ever because both sectors and their interaction rank among the vital paths for the growth of any expanding economy, including Uzbekistan's.

Shavkat Miromonovich Mirziyoyev, the president of Uzbekistan, stressed the urgent need for a systematic approach to digitalization at all levels of education along with priority sectors of the economy such as construction, energy, agriculture and water management, transport, geology, healthcare, as well as in such areas of activity as the cadastre and archiving. The President emphasized the significance of creating IT parks, educating future experts in the field of the digital economy, and building the infrastructure of the digital economy, particularly e-government and the system for providing public services online.

The creation of numerous possibilities for young people to set and attain ambitious goals should be our top priority. Only then will our youngsters mature into a powerful force capable of realizing our people's long-held aspirations [5].

The system of higher education is one sector that has a lot of potential for digital revolution. The creation of new information and communication competencies, as well as the formulation of a digital transformation strategy, are requirements of higher education. However, the use of digital technology in Uzbekistan's higher education is frequently restricted to the development of multimedia lectures and the availability of access to online distance learning platforms. According to us, the corporate IT architecture management should be modernized as part of the plan for the digital transformation of the university education system. This might significantly help organize the efforts for educational innovation. The digital revolution of university education in Uzbekistan and the modernisation of existing educational services can both be greatly aided by cloud-based university education platforms. Everything discussed up top demonstrates the topic's relevance and illustrates the variety of problems that demand in-depth scientific investigation.

2. Analysis of recent publications and research. In particular, the theoretical and practical dimensions of society's digital change are explored in the writings of authors like M. WiBotzki, K. Sandkuhl, and Dildor Shadibekova. Eaves, David A. Yushyn, N. Rozanova, S. Veretiuk, G. Karcheva, S. Berman, R. Bell, A. Kuntzman, etc.

The main directions of the impact of digital transformation on the development of social and economic systems are:

- increasing mobility in satisfying consumer needs, allowing to overcome territorial restrictions and dependence on the location of service providers [5];
- being able to collect, store, and process large volumes of information, which results in a reduction of transaction costs in decision-making and concluding transactions;
- a growth in network effects, which alter the profit-generating chains and support new business models;
- a shift in the system of relationships between customers and service providers in favor of involving customers in the process of developing new customer value, as in the case of "open innovation."

The peculiarities of creating and modernizing corporate IT architecture for higher education, as well as the emergence and development of cloud-based university education platforms, which can play a significant role in the process of digital transformation of Uzbekistan education and modernization of the conventional system of educational services for higher education, are not fully taken into account by existing studies.

In the context of the domestic socio-economic system's transition to the creative nature of development, the article's goal is to examine the characteristics and outline the key requirements for the digital transformation of the university education system.

3. Result Analysis Methods

The analysis and synthesis of scientific, technical, and pedagogical literature regarding the digital transformation of society and its impact on the system of higher education, as well as the blending of theories and findings from other fields of research, form the foundation of this study. The argumentative, deductive, inductive, and systematic techniques are used in the paper.

4. Results Of Research

Since the transition to an innovative economy demands highly skilled workers, boosting the coverage of the population at all levels of education is given a lot of focus in the Development Strategy for 2022–2026. The primary actions envisioned by the Strategy include actions aimed at increasing the enrollment of young people in higher education up to 50% by 2030 and improving the quality of education, primarily on the basis of: 1) increasing the

total number of universities to 200, including non-state universities to at least 50 units; 2) creation of at least one non-state university in each region based on the region's needs in terms of personnel with higher education; and 3) inclusion of measures to increase the number of young people in higher education up to 50% by 2030. 4) giving state universities additional academic and financial autonomy, etc. [10]

Special focus is placed on raising the standard of education in our nation, which, according to the World Bank's assessment of general secondary education, is currently ranked 57th out of 174 nations, earning 474 points. At the same time, system evaluation and assessment management are currently being used to their full potential at the level of international standards. Increases in state higher education quotas, the number of higher education institutions—including branches of foreign and private universities—and the allocation of separate quotas for girls, low-income families, and graduates of secondary education with disabilities—all have a positive effect on the proportion of young people who enroll in higher education. There are currently more than 180 higher education institutions, more than 25 of which are foreign institutions.

Maintaining the standard of education, which is a fundamental aspect of human potential.

The goal of the policy for improving the educational system is to drastically reduce the dangers of losing human capital, which would lower future generations' productivity and wages.

Education level has a big impact on human potential. The likelihood that the next generation will have lower incomes will be significantly reduced by increasing the proportion of people with high intellectual potential in society. This will also open up opportunities to boost the economy's competitiveness, increase labor productivity, and escape "poverty traps."

Uzbekistan's accumulated human capital is a reflection of its potential and current ability. The average number of years spent in school is 11.9 according to the Human Development Index study.

However, according to the World Bank's Human Capital Index for Uzbekistan, a kid born in the country today will only be 62% as productive as they could be when they reach the age of majority. This is guaranteed under the premise that they receive a full education and have good health.

As a result, tackling the difficulties of increasing the educational bar has a significant potential to promote human development.

At the same time, the domestic socio-economic landscape is changing due to the digital revolution of the school system.

The utilization of digital information and communication technology is the foundation of a system of economic, social, and cultural relationships, according to the World Bank. The idea of "digital transformation" reflects the broad adoption of digital technologies and how deeply they have permeated virtually every aspect of society and human life. The fourth industrial revolution added access to cutting-edge technologies as the most crucial component to traditional advantages like inclusive institutions and powerful leaders. The explosion of technology brings about qualitative shifts in business and management[11].

Products and services are typically provided in various businesses through physical infrastructure (such as stores, banking offices, service centers, and universities) or by humans (for example, dealers, brokers, academics, lecturers). Products or services are frequently displayed physically as well, and operating procedures depend on physical support. Digital transformation, in this sense, refers to the move from the traditional creation and selling of services to customers, along with accompanying operational processes, to the use of digital technologies to improve or supplant traditional services with digital ones.

The so-called third platform's technologies—cloud computing, mobile services, "brainfacturing," or intellectual creation, big data, the idea of IoT (Internet of Things), social networks—will serve as the foundation for contemporary digital businesses.

For a deeper understanding of the digital transformation's future directions. This strategy targets two components of digital transformation: the transformation of business processes used to provide the products and services that enterprises offer, which are each defined by three stages. The following stages are defined in the area of product and service transformation: improvement (adding extra services), expansion (adding new features of current products or services through digital components), and redefinition (creating new products or services that replace the previous ones). There are three steps in the area of business processes: creation (the development of new business processes based on IT), leverage (the emergence of new chances to increase business process efficiency), and integration (the combination of new and traditional business processes into a single infrastructure).

Assuming that the transformation of educational services and the related business processes is the main goal of digital changes in the system of university education, there are three major alternative routes that need to be examined:

     - the reform and reinterpretation of educational services to reflect changes in the university education/professional schools' system of business processes:

The first and second directions can be combined to integrate the simultaneous transformation in both directions. The first direction entails the transformation of business processes with the goal of developing new and improving the current IT-based business processes as the foundation for further analysis and transformation of professional services.

The majority of auxiliary educational services as well as all significant ones must be digitalized in order to move in the first direction. In higher education, making a profit is mostly concerned with the educational process and the students (i.e., admission to universities and professional schools, selection of curricula and courses, outcomes of exams, etc.), as well as the creation of curricula and programs and ensuring their quality. Financial administration, training planning, academic training scheduling, and many other tasks are included in supporting educational services. Generally speaking, this calls for the development or deployment of an integrated management system for higher education that supports mobile workers and takes organizational assets into account.

As a provider of educational services, the c universities should put their initial emphasis on developing new services and transforming existing services into digital ones. The opening of implemented curriculum for access beyond the higher education institution at the national and international levels is a crucial step in this process. Typically, this entails the production of digital instructional content as well as the facilitation of digital engagement and cooperation between students, professors, and one another. The internationalization of services necessitates language adaptation as well. Additionally, the majority of conventional educational programs should be transferred to lower-level programs. For instance, smaller, combined modules should be used in place of six ECTS training modules or shorter individual certification programs in place of four-year curricula.

A split of this kind would boost flexibility and enable the marketing of services to a wider clientele.

When two directions are combined, their systematic connectivity is established. For instance, it might be the foundation of a brand-new research team at a university, together with the digital transformation of business procedures pertaining to a new line of inquiry or area of study and the funding of its work.

The following findings might be reached after analyzing how the digital transformation has affected the IT architecture for higher education institutions:

The development of an administrative services directory for the training process, internal research, personnel management, infrastructure management, and other support services is mandated by the university education business process system. Additionally, it's crucial to incorporate all phases of the student life cycle into the system of business processes (from admission to graduation).

     - An integrated student life cycle management system must be developed, and administrative information systems must be integrated with systems for designing and managing curricula and modules, databases of scientific material, and library repositories. Making a cloud-based platform for university education is the ideal technique to develop such a system.

     - The data architecture calls for the development of a publicly accessible data model with potential for inter-university communication (for example, for managing the student life cycle, for administrative purposes, for content of lectures, etc.). Modern instructional materials are already produced as multimedia, digital content, but they frequently lack administrative data integration.

     - Technology architecture in the context of digital transformation necessitates the development of a centralized IT infrastructure for university education built on a cloud platform, along with additional independent platforms for technology parks and research facilities.

The software application architecture needs to be changed the most, and this change should be made as part of the implementation of a new cloud-based platform for the delivery of cutting-edge scientific products and educational services. This can be done through collaborative cloud-based support for student groups that are geographically dispersed and unable to attend classes in university education buildings. The business processes will also have an impact on the digital transformation process. For instance, the formalization of the online test method and the

creation of changed work processes for awarding diplomas, certificates, etc. The majority of the conventional university education management roles should, however, continue to be steady.

The architecture of software applications requires the most change, and this transformation should be executed as a new cloud-based platform for the delivery of cutting-edge scientific products and educational services. This can be done by providing collaborative cloud-based support to the geographically dispersed and divided student groups that are unable to attend classes in traditional university buildings. Business procedures will have an impact on the digital transformation process as well. For instance, formalizing the online test process and creating changed work processes for awarding diplomas, certificates, etc. However, the most of the conventional university education management tasks ought to stay constant.

The more extensive use of digital material and the integration of various forms of data with administrative databases and student registers will be two significant changes to the data architecture.

The digitization of all revenue-generating procedures and supporting business processes that have an impact on the business is the main goal of the digital transformation process from the perspective of university IT architecture. The deployment of digital processes and their optimization is just one of the challenges that must be addressed for a business process system. University education communication skills are equally crucial as adapting organizational structure and education to changes in business processes, creating new organizational units for online educational programs, or running accredited courses.

The transformation of services and business processes is initially carried out for the combined directions of digital transformation on the basis of discrete units or clearly defined particular institutions. A couple of examples include the start of the Master's training system's digital transformation or the alteration of training programs with an international focus. New training formats, such as short curricula (up to one semester) for mixed target groups that combine traditional study and online learning, are another alternative.

5. Conclusions

The analysis's findings lead us to the conclusion that the educational content management system can act as a hub for the execution of the digital transformation strategy. Since the teaching and tuition concepts and materials will differ from the previous ones, new student target groups and educational service delivery formats require tailored support for learning management systems. Our opinion is that the university educational content management system should be flexible enough to adapt to each student's unique demands and include both current and future learning process vital technologies that support various learning phases in order to aid this adaptation.

In our perspective, future study should examine transformational strategies in detail as well as the IT architecture of higher education institutions on all levels, as well as calculate the economic impact of digital transformation at every stage. In order to include them in the creation of an unified meta-university platform, it is also required to look into the digital transformation of both higher education and vocational training. The way we approach education will typically change over the next 20 years as a result of new technologies and digitalization processes, therefore we need to start making preparations now.

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