

Digital Transformation in Higher Education in Vietnam Today

PhD. Doan Thi Quynh Anh

University of Labour and Social Affairs, HaNoi, VietNam

Date of Submission: 15-12-2023

Date of Acceptance: 25-12-2023

ABSTRACT

In the current period, digital transformation in education is identified as a breakthrough, a highly important task to meet new requirements. Especially in the context of the strong outbreak of COVID-19 worldwide, impacting all aspects of economic and social life, including education and training in general, and higher education in particular. Therefore, digital transformation in this field has become more urgent than ever. It is both a challenge and a great opportunity to further improve the quality of higher education at our institutions. In this article, the author discusses the content: of digital transformation in higher education; pointing out the basic content of digital transformation in higher education. Based on the assessment of the advantages and difficulties in the process of digital transformation at higher education institutions in the past, solutions are proposed to enhance the quality of higher education in the current digital transformation context.

Keywords: Quality assurance, digital transformation, higher education.

I. PROBLEM STATEMENT

Against the backdrop of global integration and the disruption of learning caused by the COVID-19 pandemic, digital transformation is a requirement to meet the development needs of learners, helping them equip themselves with the knowledge and skills necessary to prepare for a rapidly changing job market. That's why digital transformation is being recognized as an important factor in improving the quality of education in Vietnamese and global universities. Enter the phrase "Digital transformation in education" into Google's search bar, and after 0.62 seconds, we can get 195 million results. Since 2019, many seminars and scientific conferences on digital transformation or the application of information technology in education and training have been organized both domestically and internationally, despite the many difficulties caused by the COVID-19 pandemic.

Many theoretical and practical issues related to digital transformation in education and training have been clarified. All stakeholders affirm that digital transformation is not just the concern of an organization, an individual, or a school, but has become a global issue. Therefore, education and training cannot be left out of the transformation process to timely grasp the achievements of science and technology, the achievements of the Fourth Industrial Revolution to improve the quality of teaching and learning. Minister of Education and Training Nguyen Kim Son affirmed the urgency and relevance of digital transformation in education and human resource development at the Consultation Conference on the Draft Project "Strengthening the Application of Information Technology and Digital Transformation in Education and Training in the Period 2021 - 2025" on November 23, 2021. The minister emphasized: "The Education sector identifies the application of information technology and digital transformation as one of the breakthrough stages, aiming to create significant changes in education. If done well, this will be a "boost" to change the educational mindset, educational administration, change the profession of teachers and the activities of learners, aiming to solve sustainable and long-term issues in the Education sector." Recently, digital transformation has been implemented by the Ministry of Education and Training as well as universities and educational institutions, especially under the impact of COVID-19, the application of information technology in teaching and learning has had significant changes. The Ministry of Education and Training has also issued many documents and guidelines for applying the achievements of science and technology in teaching and learning. Universities and educational institutions have accelerated the digital transformation process, applying information technology in teaching and training management. Many universities not only teach online but also enroll and admit students online; online semester exams and entrance exams; online internship thesis

defense, master's thesis, and doctoral thesis defense; and online quality assurance of training programs.

Besides the opportunities for innovation in content, teaching methods, and training management, digital transformation in education, and especially in universities, is facing many challenges in management thinking, teaching methods, infrastructure, policy mechanisms, learning resources, digital learning environments, student learning skills, teaching capabilities, and the application of information technology by faculty. Data security is also a major concern, as well as ensuring the quality of education and training. Many believe that digital transformation in education and training needs to be accelerated because it strongly impacts the quality of education and training outcomes, which are the resources for businesses and the main resources for national digital transformation. In response to the new context, the Ministry of Education and Training has directed universities to fundamentally and comprehensively innovate education and training to move towards a modern, internationally integrated education system, with innovative teaching, testing, and assessment methods, as well as the development of faculty and management staff, and the establishment of each school's brand to attract students, especially to meet the increasing demands of the labor market. Therefore, ensuring the quality of education is seen as a crucial condition and basis for granting autonomy to universities while demonstrating a commitment to quality and accountability to stakeholders.

II. RESEARCH CONTENT

2.1. Digital transformation and the content of digital transformation in higher education

Digital transformation is a concept closely linked, even a driving force, to the Fourth Industrial Revolution, in which digital technology shapes society and global economic activities in the future. In general, digital transformation involves using digital techniques, in addition to improvements and support from traditional methods (text, direct interaction), to encourage and promote innovative changes [1]. Specifically, digital transformation is a process of improving an object by activating significant changes in its attributes, based on combining information, electronic devices, communication technology, and online connectivity [2]. This process requires an organized, well-planned approach, with the participation of all relevant parties, both within and outside the organization, often referred to as a

digital transformation strategy, to maximize the potential and impact of new technology quickly and creatively [3].

For universities, digital transformation involves developing new infrastructure (technology), applying digital media and technology in teaching and learning activities (materials, programs, and methods), research, and support services, administration, communication, and admissions... [1]. Rapid technological development is changing the education system in general and higher education in particular, opening a new era, and creating favorable conditions for students to achieve high learning outcomes through the application of science and technology in the teaching and learning process. Teachers are gradually adapting to using digital platforms, enabling communication and activities with students, organizing study materials, conducting assessments, and even managing classrooms. Under the impact of digital transformation, students, faculty, and support staff need to equip and develop the necessary digital skills to support teaching, learning, and research in a digital environment.

In the Fourth Industrial Revolution, digital transformation is recognized as the key to improving operational efficiency and enhancing competitive capacity for businesses, and organizations through its outstanding advantages such as optimizing operating costs, improving productivity, and quality, and diversifying products and services. For education in general, and higher education in particular, digital transformation is applied in many different activities, most importantly in teaching and innovating pedagogical methods to meet modern education standards and techniques [4]. Digital education in the field of education has gone beyond technical changes, deeply impacting teaching programs organizational issues, and the structure of education in universities. Digital education tools are shaping new roles for teachers and students, creating more interactive, simulated, and engaging methods in higher education [5].

In the digital age, the trend of replacing traditional documents, books, and prints with online digital resources is strong; at the same time, methods of organizing and exchanging documents, knowledge, and practices are gradually shifting to digital resources and online interactions. Traditional direct interaction between teachers and students is decreasing, while online teaching and learning methods are increasingly dominant due to the advantages of time and convenience.

Reviewing, testing, and online exams are also being digitized but at a slower pace, depending on the ongoing process of digitizing teaching and learning materials [6].

Communication, especially interaction between teachers, students, and others involved, is also being heavily digitized. Online platforms are increasingly refined to save time and provide easier, friendlier, and more flexible online interaction, but they also require motivation and sufficient skills and rights to access and use [6].

Digital transformation is also taking place in the administrative activities and support services of higher education. Digital transformation in administrative activities will form a more flexible and adaptable educational administration structure, allowing universities to quickly adapt to new technology and digital infrastructure. Administrative processes such as course registration, exam registration, honors recognition, class schedules, document downloads, and student data management... are increasingly digitized in the trend of online administration and meeting the practical needs of students [7].

The technology infrastructure for digital transformation in education needs to be invested in (high-speed Internet connection; server system to manage data throughout the school system; software system to operate uniformly throughout the entire management structure; electronic portal to connect with the world in the digital space, digital library for students to access study materials remotely, etc.)

Cybersecurity is one of the important components of the digital transformation process at universities. To carry out digital transformation safely, and securely, and protect the intellectual property rights of the university, the university must establish network security regulations, secure account systems within the university; establish firewalls, and install antivirus software to ensure information security for all information technology devices at the university.

The university culture is also one of the components that help the digital transformation process of the university achieve high efficiency. For the university to operate effectively in digital transformation, the university must establish a remote working culture to replace the traditional direct working culture; establish standard behavior rules for faculty, and students when working in the online space; build a lifelong learning culture in the faculty, lecturers, specialists and promote academic integrity when data is easily accessed via the Internet.

The most important issue, which is crucial to the digital transformation process in higher education, is the training of personnel to meet digital transformation requirements. The first group that needs to be trained is the lecturers because they determine the quality of the university's education and are the key factor in operating the training system, and daily interacting with students in the digital environment. Lecturers need to be trained to use digital tools for online teaching, assess students online, and support online learning. They also need to be proficient in accessing online resources for scientific research and guiding students in scientific research. The second group that needs to be trained to adapt to digital transformation is the management and specialist staff of the functional units responsible for managing the university using digital tools. This group needs to be trained to proficiently use digital platforms for various tasks such as training management, student management, human resource management, financial management, facility management, and digital resource management. Lastly, the technical management and maintenance team needs systematic training to operate and maintain all hardware and software of the digital platform in the university.

2.2. The process of digital transformation in higher education

The process of digital transformation in higher education institutions is unified into 05 basic stages as follows [8]:

Stage 1: Digitization of documents and libraries. Documents are where knowledge is stored, serving teaching and research work. Therefore, digitizing documents becomes an essential, fundamental requirement in the digital transformation of universities. This process leads to fundamental changes in the operational processes of libraries at universities, despite the unchanged purpose and target audience. Managing and performing tasks related to accessing, preserving, and copyrighting digital documents require not only technological platforms but also specific digital skills of library staff in the library's daily operations. At an advanced level of development, automating access services and library support can be implemented through interactive artificial intelligence applications.

Stage 2: Building and deploying digital operation platforms. This is the most important stage of the digital transformation process in universities, as the digital operation platform needs to solve technology issues and meet the general and specific

operational processes of the university, integrating data into a unified and synchronized operational platform. The digital platform not only increases transparency but also rationalizes processes, making the university more flexible and efficient in its teaching, support, and management activities.

Stage 3: Technology teaching. In this stage, traditional face-to-face teaching activities will gradually decrease, replaced by online teaching. This doesn't mean that face-to-face teaching will be eliminated, but it will be implemented in parallel with online teaching. The core of this stage is the application of technology in teaching, from digitizing lectures to designing interactive automated scenario-based lectures, especially using artificial intelligence in experiments and simulations.

Stage 4: Online student management. Students are the customers of universities, so it is important to monitor their learning process to ensure that the university understands its students better and can adjust educational services to meet their needs and desires. The content aims to manage the academic lifecycle of students, from enrollment to the learning process, community activities, etc. By digitizing their processes, universities can interact and support students quickly and effectively through online means.

Stage 5: Implementation of online support services and certification. This is the final stage of online operation for almost all services and activities of the university. Today's students have grown up with the internet and mobile devices, so they expect online payment methods for tuition and related fees. This not only increases the safety of financial transactions but also provides more convenience for students. Additionally, digitizing certifications, diplomas, and online signatures should also be applied, reducing the amount of paper records to be managed and used by universities. Thanks to digitized and automated workflows, productivity increases as it reduces the workload for faculty and staff on non-essential tasks.

In theory, the above stages occur sequentially from the first stage. However, in reality, the process can be flexible in any sequence, or even stages can be simultaneously implemented depending on the characteristics, resources, and different times for different universities.

2.3. The current situation of digital transformation in higher education in Vietnam

2.3.1. Advantages of digital transformation in higher education

To implement the national digital transformation task, the Prime Minister issued Decision No. 749/QĐ-TTg on June 3, 2020, approving the "National Digital Transformation Program by 2025, vision to 2030" with full contents, and education and training are one of the prioritized areas for digital transformation. Implementing Decision No. 131/QĐ-TTg dated January 25, 2022, of the Prime Minister: Approving the Project "Enhancing the application of information technology and digital transformation in education and training in the period 2022 - 2025, with a vision to 2030", the Ministry of Education and Training has issued many guiding documents, directing educational institutions to implement the task of applying information technology, digital transformation. Many higher education institutions have actively digitized their management, training, scientific research, and technology transfer activities and have achieved very positive results. The development of the digital university platform has also been concretized in practice based on the evaluation of models that have been and are being implemented worldwide. The process of digital transformation in higher education in Vietnam is taking place in line with the trend of digital transformation in the economy and receiving attention and support from management levels and the State. In terms of policy, the Ministry of Education and Training has developed and issued regulations on enrollment, and training at all levels of higher education, allowing higher education institutions that meet the conditions for ensuring the quality of online training to conduct online or combined online-offline training for up to 30% of the training program volume through this method. From 2018 to the present, the national education database has been put into use; for universities and colleges, nearly 400 institutions with 2.5 million students and over 120,000 lecturers have digitized their information.

The digital transformation in higher education in Vietnam is happening strongly to keep up with the global education trend. The impact of the COVID-19 pandemic further emphasizes the role of technology in teaching and learning, demanding urgent changes in education. The universities themselves have recognized the opportunities and challenges in digital transformation. Specifically:

(1). National Economics University has quickly adopted and applied information technology in education, training, scientific management, and services. This will be the basic

experience platform for the university to effectively and comprehensively realize the digital transformation model, bringing optimal benefits to teachers and students in the current era of the 4.0 industrial revolution. The university has introduced new learning methods such as E-learning online classes, project-based learning, and virtual reality applications, personalizing learning for each student and significantly enhancing teaching and learning effectiveness. Additionally, smart electronic devices have been installed in classrooms to create smart classrooms, and management software helps lecturers track student learning progress. The university has also digitized school operation processes, including school management, student management, personnel management, and document management. Many operational processes have been significantly improved, such as online course registration, electronic document circulation, and general service management, enhancing educational activities and internal connectivity while improving education quality.

(2). According to Dr. Nguyen Cao Tri, Chairman of the Council of Van Lang University, the university will become a comprehensive education and training ecosystem based on digital transformation, covering training product areas, training thinking, operational management (ERP - LMS - Big Data), teaching resources, team development, and research collaboration. The university aims to lead the change and contribute to building the concept of digital education, helping students define the correct standards for digital proficiency and accumulate appropriate knowledge while making it easier for lecturers to apply teaching methods combined with technology, artificial intelligence (AI), augmented reality (AR), and blockchain technology. Digital skills training must be quickly updated in universities. By 2030, the university has established the Van Lang Innovation Center, known as Viet Lotus Joint Stock Company, as a pioneering unit to provide breakthrough solutions to address national and regional issues, bringing positive changes to the university and the community.

(3). Foreign Trade University. With over 10,000 students, the university has invested in and completed its information technology infrastructure, including Leased Line, wifi... The university also promotes online interaction, leveraging the creativity of lecturers and students. The library activities have been modernized into an electronic library model, moving towards a digital library. The application of information technology

has helped the library staff enhance their management capabilities, service quality, and professional skills.

(4). Hanoi National University: The digital resource repository on the mobile application has over 112,000 books and digital textbooks... The number of learners and researchers accessing digital resources is continuously increasing, indicating the growing number of learners and researchers on the digital platform. Hanoi National University Library ranks 65th out of 3,942 digital resource repositories globally. This is a significant step in the digital transformation at the university.

(5). Hanoi University of Industry is among the early adopters of digital transformation in the Northern region. The digital transformation process consists of 3 stages: Stage 1: Digitization; Stage 2: Application of digital technology to business processes; Stage 3: Digital conversion. The university has established and utilized an electronic university system to comprehensively organize and manage the training process from admissions, program development, planning and monitoring of training plans, and assessment of learning outcomes, to fee collection and graduation.

(6). University of Commerce, the Trans software system for online teaching has been deployed. The university has conducted training on software usage for all lecturers and management staff, providing user accounts and guidance to relevant parties, and ensuring continuous teaching and learning activities in the context of the pandemic. The university has also digitized student data, implemented online student management, and deployed support services such as admission information, exam registration, and exam result announcements. In terms of digital resources, the university is building and improving a smart library, digitizing materials, textbooks, and lectures step by step, moving towards building and synchronizing digital resource repositories to support the teaching, learning, and research activities of lecturers and students.

(7). According to Assoc. Prof. Do Van Dung, Rector of Ho Chi Minh City University of Technology and Education, he believes that digital higher education in Vietnam is very challenging due to cultural, economic, and social differences compared to developed countries. Therefore, based on his experience studying in some countries and working in education in Vietnam, he believes that it is necessary to gradually orient digital education for sustainable development. Firstly, there is a need to change the mindset in teaching, and heavily invest in technology equipment, modern

laboratories, and practical centers to serve the innovation of education and training. Up to this point, the university has been implementing the digital transformation process for over 10 years, establishing a digital learning foundation based on the Blended Learning model and the Virtual Learning Center (UTEx) to organize fully online courses on the Internet. All lectures, lesson plans, and the teaching and learning process of students, lecturers, and researchers must be stored on the Big Data digital platform and various other digital transformation programs such as management software systems, KPIs, e-portfolios, Social Media, and UTE-TV.

(8). Ho Chi Minh City Banking University has been digitizing since 2009 when it started implementing the credit-based training system. In 2016, the university operated an E-Learning system based on a whole-university teaching model. At present, 100% of classes implement online support tools through LMS systems, systems to organize and manage the training process.

In general, all Vietnamese universities have begun to implement digital transformation, depending on the characteristics of each university and the actual context. The initial stages are being implemented simultaneously, specifically the digitization of documents, online teaching, and partial student management. Some universities are gradually modernizing their digital infrastructure, digitizing lectures, and deploying smart libraries as the foundation to complete the university's digital transformation process. Along with this, all universities have LAN networks to connect to the Internet and electronic information portals. Sharing of programs, textbooks, lesson plans, and learning materials through document management, documentation, or Google Drive. Universities also make good use of open-source software programs, such as high-quality cloud computing platforms that are safe and cost-effective for resource sharing and development.

2.3.2. Difficulties in digital transformation for higher education

During the digital transformation process, many higher education institutions are facing challenges in terms of strategy, cost, technology resources, human resources deployment, changes in teaching methods and curriculum, and issues related to data security and legal matters, making the application of digital transformation increasingly difficult in the completion stages. Specifically, according to research results, the fundamental issues that universities are

encountering in the digital transformation process include:

(1). Difficulty in strategy: The digital transformation in Vietnamese universities is being comprehensively recognized, by the Government, Ministry of Education and Training, to the university leadership. However, the universities have not yet built and implemented a long-term digital transformation strategy that brings value to learners from teachers and the training system. This depends on the vision and action perspective of the university leadership, not just seeing digital transformation as short-term digital initiatives, such as implementing application software but defining and communicating this as a long-term strategy of the university.

(2). Difficulty in investment costs: In reality, investing in digital transformation is essentially an investment in technology, with high risks, and this is also a common trend that is developing, so the evaluation criteria are still unclear and very difficult to quantify. Digital transformation has many hidden costs, besides the obvious software costs, the costs of time, training, operation, etc., are also very significant. Therefore, calculating costs, evaluating profit potential, and mobilizing capital to implement digital transformation is a difficult problem for any unit, including universities. While investing in digital transformation, especially in Vietnamese universities, is a huge and long-term investment, it entails many risks, depending on the platform provider, the development of science and technology, as well as the suitability for the specific characteristics of each university.

(3). Difficulty in technological resources: For online education to be possible, all inputs to the educational process must be digitized, the most important of which are learning materials, documents, and textbooks. All learner data also needs to be digitized to implement the learner management process and evaluate the learning process and results. Network infrastructure, information technology equipment (such as computers, cameras, printers, scanners), transmission lines, and Internet services for schools, lecturers, and students - especially in remote and difficult areas difficulties - lacking, outdated, and not synchronized, many places do not meet the requirements for digital transformation (both in terms of educational management and teaching-learning). In addition, because most schools specialize in education and training, they lack resources, especially the information technology department, which is also a major

obstacle for Vietnamese universities in implementing transformation. number. These departments often lack qualified human resources and are less able to participate in and support the digital transformation process in addition to the annual work they are undertaking.

(4). Difficulty in human resources deployment comes from three angles at Vietnamese universities. The first concerns the lack or incapacity of managers and staff in support departments to deploy and use digital platforms. The second is the low digital literacy of the teaching staff, especially the middle-aged staff, who have a lot of experience but limited exposure to technology. This poses major challenges when implementing online teaching, and beyond when new teaching methods learning tools, and processes are used. The third issue is the generation gap between learners who are considered digitally proficient and lecturers and students who must adapt and learn how to use technology. This generation gap creates significant physiological and psychological barriers for parties involved in transmitting and receiving knowledge.

(5). Difficulty in changing teaching methods and curriculum: Digital transformation is not just limited to digital materials and online teaching, but requires the creative participation of lecturers and researchers in building and implementing new teaching and learning models and environments. In other words, it requires a complete transformation of teaching methods, classroom management techniques, and interaction with learners in the digital space, leveraging technology to successfully organize teaching. This requires the application of scientific research and artificial intelligence to design content and teaching tools, utilizing the strengths of technology to personalize educational programs, which is not possible when directly training with a large number of students (50-60 students/class). In addition, all student learning data is also tracked and stored using technology rather than through traditional record-keeping systems. This is considered the main obstacle that Vietnamese universities are facing in adapting to digital transformation when the technological skills and qualifications of the workforce are still limited.

(6). Difficulty in data security and related legal issues: Digital technology connecting everything brings many benefits and opportunities, but also inherent network security risks. Collecting, sharing, and exploiting education management data and digital learning materials require a common legal framework that is in line with regulations on

copyright, intellectual property, information security, e-commerce, and sharing information, specifically such as regulations on the list of information required to be declared and entered - distinguished from personal privacy information under personal rights; regulations on authorship for electronic lectures (when to use, what conditions, use all or part); regulations on database exploitation, digital learning material storage (who has the right to exploit, what to exploit, to what extent, what conditions, who evaluates, who allows); regulations on the legal status of electronic records in general and electronic transcripts, academic records in particular (especially in cases of national-level transfer and school transfer). Although data security and/or related legal issues can be optimized with the development of technology and legal support, in the short term, they are also significant challenges for Vietnamese universities in the process of digital transformation.

2.4. Solutions to improve the quality of digital transformation in higher education in VietNam

To promote digital transformation in higher education, contributing to improving the quality of higher education at universities in Vietnam today, it is necessary to focus on the following 7 groups of solutions:

(1) Continuing to enhance awareness and responsibility for all stakeholders and participants in the university education process about the importance and content of digital transformation in higher education is a crucial solution.

If there is no correct awareness, there will be no direction, correct implementation, and effectiveness. Therefore, it is necessary to further enhance the awareness and responsibility of all stakeholders and participants in university education about the importance and content of digital transformation in higher education. Most importantly, those in charge of managing universities, educators, and students need to understand that effective digital transformation in higher education requires a change in mindset and the understanding that digital transformation brings many values and opportunities for change, and access to knowledge, and must become a personal need for everyone. From there, appropriate, creative measures should be proposed to further enhance their responsibility in management, teaching, and learning activities, contributing to improving the quality of higher education in the current digital transformation context.

(2) Universities need to establish and issue favorable mechanisms and policies for digital

transformation, related to educational materials such as intellectual property ownership, and copyright; related to the quality of online teaching such as network information security; related to the political, ideological, and ethical aspects of educators and learners such as protecting personal information, information security in the online environment; and regulations related to the conditions for organizing online teaching, quality inspection, legal compliance, and recognition of results in online teaching and learning. Teaching and management software systems must be compatible and interconnected within the same ecosystem and comply with information security.

(3) Universities also need to create a flexible educational environment, specifically by opening up a completely new educational landscape. At any time, anywhere, anyone should be able to access knowledge in a multidimensional way. This eliminates limitations on distance, optimizes learning time, and enhances students' awareness and thinking.

(4) Continuing to invest in information technology infrastructure and synchronous facilities for the digital transformation process in higher education is crucial. This is a very important solution that determines whether the digital transformation in higher education will be successful and of high quality or not. Therefore, universities need to pay special attention to investing in information technology infrastructure and facilities to serve the digital transformation at the institution. The first items that need to be invested in are high-speed fiber optic internet connections to serve network connectivity in the digital space, online training; investing in simulation centers so that learners can role-play, interact, and discuss in groups after direct learning; professional video studios for producing online lectures; connecting software, management and teaching software, specialized software for training in each field and sector; building a smart library with digitized data linked to libraries nationwide; ensuring good network security, safety in the network environment through CISCO's firewall system, equipping antivirus software... To implement this solution, each university needs to fully leverage all available resources. In addition to the university's financial resources, it is necessary to mobilize support and collaboration from businesses, corporations, technology companies, and network providers.

(5) It is necessary to cultivate a workforce (managers, lecturers, staff, students) with knowledge and skills to meet the requirements of

digital transformation. First and foremost are the skills in using information technology, information security, and effectively utilizing applications for teaching and learning. To truly carry out digital transformation in education and training in our country, a comprehensive solution system and a change in mindset from education leaders, managers, teachers, lecturers, and learners are needed. They need to be sensitive to grasp and make use of the opportunities of the digital transformation process. Enhancing and equipping digital knowledge and thinking to be able to master technology and understand its limitations is crucial.

(6) Digital skills need to be enhanced along with training for all participants. Students, lecturers, and administrators need to improve their skills in using modern technology tools. Sustainable efficiency is achieved when both learners and educators are well-trained to use digital means to achieve educational goals. In addition, there is a need to enhance the accompanying support of technical staff and technology experts to ensure smooth and effective teaching.

(7) Furthermore, the education and training sector plays a crucial role in promoting the overall national digital transformation process specifically in universities. Therefore, the Ministry of Education and Training needs to focus on implementing specific solution tasks, including:

(a) It is necessary to improve the regime and policy mechanisms to serve digital transformation in higher education. Review and propose improvements to the system of legal documents related to vocational education to meet the requirements of digital transformation. Research and propose support policies for teachers, learners, and vocational education and training institutions in digital transformation.

(b) The Ministry of Education & Training needs to raise awareness among education leaders, managers, and teachers about the important role and early requirements for implementing digital transformation in vocational education to build and form a digital vocational education ecosystem to meet the needs of learners and everyone in the digital economy and society.

(c) Prioritize funding from the state budget to support investment in improving information technology systems. Mobilize businesses, organizations, individuals, and communities inside and outside the country to invest and sponsor research, application of technology, and implementation of digital transformation in education.

(d) Research and integrate educational content on national digital transformation, especially basic skills, creative thinking, and adaptability to the requirements of the Fourth Industrial Revolution into teaching in a suitable manner.

(e) Implement computer literacy, deploy basic computer education, and familiarize students with computers at all levels of education, starting from when they enter school, and supplement knowledge for the people and society, especially through community education centers and regular education centers.

(f) Enhancing professional IT training for application-oriented, digital transformation requirements at universities. Providing knowledge and digital skills updates for lecturers, management staff, and educational service staff. Utilizing adaptive learning methods, harmoniously combining direct teaching at school with technologies, digital learning materials, real and virtual devices, and virtual classrooms; personalizing the learning process.

III. CONCLUSION

The profound impact of the Fourth Industrial Revolution is deeply affecting all aspects of social life, especially higher education in the context of digital transformation. Faced with the opportunities and challenges in this context, Vietnamese universities need to recognize the importance of digital transformation in the higher education process. This is a great opportunity for Vietnamese universities to further enhance the quality of higher education, create high-quality human resources to serve the industrialization and modernization of the country, and contribute to enhancing the reputation and quality of education at each university, not only domestically but also regionally and internationally.

REFERENCES

- [1]. Kaputa V., Loučanová E., Tejerina-Gaite F.A. (2022). Digital Transformation in Higher Education Institutions as a Driver of Social Oriented Innovations. In: Păunescu, C., Lepik, K.L., Spencer, N. (eds) Social Innovation in Higher Education. Innovation, Technology, and Knowledge Management. Springer, Cham.
- [2]. Vial G. (2019), "Understanding digital transformation: A review and a research agenda", *Journal of Strategic Information Systems*, 28, 118-144.
- [3]. Bones C. (2016), *Leading digital strategy*. London, Kogan
- [4]. Bozhko Y.V., Maksimkin A.I., Baryshev G.K., Voronin A.I., Kondratyeva A.S. (2016), "Digital transformation as the key to synthesis of educational and innovation process in the research university", In Chugunov, A., Bolgov, R., Kabanov, Y., Kamps, G., Wimmer, M. (eds) *Digital Transformation and Global Society*. DTGS 2016. Communications in Computer and Information Science, vol 674. Springer, Cham.
- [5]. Bond M., Marín V.I., Dolch C., Bedenlier S., Zawacki-Richter O. (2018), "Digital transformation in German higher education: Student and teacher perceptions and usage of digital media", *International Journal of Educational Technology in Higher Education*, 15, 48, p1-20.
- [6]. Limani Ylber, Hajrizi Edmond, Stapleton Larry, Retkoceri Murat (2019), "Digital Transformation Readiness in Higher Education Institutions (HEI): The Case of Kosovo", *IFAC-PapersOnLine*, Volume 52, Issue 25, Pages 52-57.
- [7]. Tay H.L., Low S.W.K. (2017), "Digitalization of learning resources in an HEI - A lean management perspective", *International Journal of Productivity and Performance Management*, Vol. 66 No. 5, pp. 680-694
- [8]. Alenezi M. (2021), "Deep Dive into Digital Transformation in Higher Education Institutions", *Education Sciences*, 11, no. 12: 770.
- [9]. Prime Minister (2020). National Digital Transformation Program by 2025, orientation to 2030. Issued according to Decision No. 749/QĐ-TTg dated June 3, 2020.
- [10]. Nhật Hồng (2022), Digital transformation in higher education has many obstacles and challenges, www.daibieunhandan.vn.