

Improving the Quality of Training at Universities in Vietnam According to the Requirements of Digital Transformation in Education

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Abstract Digital transformation in higher education is the comprehensive transformation of all institutions and activities of higher education based on digital technology. However, it is a difficult and complex process and still focuses mainly on the field of teaching and learning with the main manifestations of online education and open education. Due to different challenges and barriers on a global scale, digital transformation in higher education takes place in different ways, at different rates and paces from one region to another, country to country, even school to school in the same country. *The objective of the research:* to improve university governance capacity, take the digital transformation in higher education in Vietnam into practice, thereby improving the quality of training in universities in Vietnam. *Research Methodology:* SWOT analysis is used as a strategic technique to identify strengths, weaknesses, opportunities and challenges in university governance in the context of digital transformation. *Research results:* the research team assumes that at present there are still some limitations and challenges for the digital transformation in education. However, with the solutions being implemented by the government, the Ministry of Education and Training and related organizations the quality of higher education in Vietnam will be improved.

Keywords: Digital transformation; higher education; university governance; online education; open education

1. Introduction

There are many interpretations of digital transformation in higher education according to the approach [1], [2]. For example, from a technology perspective, digital transformation is the modernization of the higher education system with the support of ICT technology to capture and model interrelated activities for integrating digital technology in teaching, learning and organization. From an organizational perspective, digital transformation is essentially the change related to the people, processes, strategies, structures, and competitive dynamics of higher education institutions [31], [32], [33], [34]. From a social perspective, digital transformation is a revolution that requires new models of governance, teaching, learning and scientific research in universities due to the fundamental and profound effects of ICT on people and infrastructure [2], [3], [4], [5], [10].

According to Mr. Nguyen Son Hai - Director of the Information Technology Department (Ministry of Education and Training), digital transformation in education is the transformation of teaching, learning, administration and management based on digital technology aims to have a good education system with good quality, low cost and easy access to all people. Therefore, digital transformation is a process that affects every element of higher education institutions, forces these elements to adapt to the transition. The research of (Benavides, 2020) shows that these components are as follows, ranked in descending order of impact level: Teaching, infrastructure, curriculum, administration, research, governance, human resources, information, and marketing.

In fact, digital transformation in higher education though has been talked about since the turn of the 21st century with the explosion of the internet and is especially appreciated when the world enters the fourth industrial revolution (Industry 4.0), digital transformation was slow until before the covid-19 pandemic. It is covid-19 that has created a push to accelerate digital transformation in higher education [6], [7], [8], [9]. However, the main impact of digital transformation so far has focused on teaching and learning, with the main manifestations of online education, open education, and open science. As an OECD (2019) report on digital transformation states: “The emergence of MOOCs, open education and open science, new digital teaching methods, along with the development of the new technology layer is all developments that have changed the practices and processes in which higher education institutions fulfill their primary mission” [10], [11], [12].

In this study, we see digital transformation as transforming the teaching and learning process through promoting the power of digital technology to create conditions for learners to adapt to the new requirements of Industry 4.0. With this understanding, research refers to the necessary innovations in governance to achieve effective digital transformation in higher education.

2. Research Methods

Objectives of the study

From the perception and perspective of digital transformation in higher education, of transformation in higher education institutions, State policy and school governance, the research objective is to improve university governance capacity, take digital transformation in higher education in Vietnam into practice, thereby improving the quality of training in universities in Vietnam.

Research methods

The research team has made a survey with 200 people, including educational experts, lecturers teaching at many universities and colleges, some of the students are participating in 20 universities in Vietnam. We used phone, email, software to support interaction Zalo.

In this study, the authors have found that the SWOT analysis model is a useful tool used to analyze strengths, weaknesses, opportunities and challenges in developing the quality of higher education in Vietnam.

The SWOT model is specified as follows: SWOT stands for the first letters of the English words such as Strengths, Weakness, Opportunities and Threats.

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- + Strengths: Factors that are internal, within the organization and as an advantage, can be adjusted by the organization.
- + Weaknesses: The internal factors of the organization that the organization has not done well or have not done yet
- + Opportunities: External environmental factors that promote organizational development.
- + Threats: External environmental factors which hinder and cause difficulties to the development of the organization.

Because of the advantages of the SWOT analysis model, the research team uses it for analyzing issues related to the quality of university training in Vietnam, however, the scope of the study will focus on online education and open education of Vietnam's higher education today according to the digital transformation in education.

Analysis and discussion

- Exploiting databases of more than 18.500 higher education institutions in 196 countries, combined with an analysis of 1.039 fully answered questionnaires from administrators, lecturers and researchers from 127 countries, The International Association of Universities IAU has provided a fairly comprehensive picture of the current state of digital transformation in world higher education (Jensen, 2020) [5], [7] [10].

- From the SWOT analysis results, the research team discussed and analyzed the strengths, weaknesses, barriers and opportunities for digital transformation in higher education in Vietnam. (We consider online education and open higher education).

From there, the research team proposes the contents that need to be implemented for the digital transformation in higher education.

3. Research results

3.1. Awareness of digital transformation in higher education

- Most respondents (94%) strongly agree or agree that digital transformation is necessary and essential to prepare students for active participation in social life. The benefits of digital transformation are unanimously agreed by almost every three aspects: expanding the scale of higher education; improve the quality of higher education; lower costs of higher education. However, the majority of respondents (69%) also noted that digital transformation will increase socio-economic disparities between and within countries [7], [10].

- Opinions are also quite divergent in some ways. Specifically, as follows: 1) If 49% of respondents think that they overestimate the impact of digital transformation on higher education, 51% of them disagree; 2) If 33% think that schools are prepared to welcome new opportunities and new technology, 39% are more reserved, while 25% admit that they are not ready and will try; 3) If 48% think that State policies are supporting digital transformation, 52% say the opposite.

- Challenges are also considered in a somewhat different degree between regions and countries. However, some of the common challenges are as follows: 1) A majority of respondents (67%) believe that at present the national financial framework does not support digital transformation and it is the

biggest barrier to digital transformation; 2) Weakness in internet infrastructure is the second challenge, but at varying degrees: If in Europe only 31% of the respondents consider it a barrier, this number is 46% in the Middle East, 58% in Latin America, 57% in Asia-Pacific, 70% in Africa. 3) To overcome infrastructure weakness, currently countries have policies to support the development of network-NREN (National Research Education Network) as a non-commercial infrastructure dedicated to education and research, helping data transmission and communication at high speed; However, from the perspective of using NREN at the school level, 20% of respondents said that the school did not use it, 33% of respondents did not know. Not knowing or not fully playing NREN's role in higher education institutions is a weakness that needs to be overcome; 4) In addition, there are the following challenges: the slow change of school culture to adapt to change and new technology; the inadequacy of the current quality assurance and accreditation system for higher education in digital transformation; lack of team motivation; lack of capacity in implementation [11], [12], [13].

3.2 The reality of digital transformation in higher education institutions

Because of the challenges and differences mentioned above, although digital transformation currently focuses mainly on teaching and learning innovation with the general trend of combining online with direct, the pace, level and form is different. Specifically as follows: 1) If 80% of the respondents think that the pedagogical method has been changed, 15% of the respondents think that the pedagogical method is still the same, unchanged; 2) The change in learning style from passive to active was slow: 23% of respondents said that learning was still entirely lecture-based; 49% said that it is mainly based on lecture but with combination with problem-based learning; 19% mainly study based on problems with lectures; 3) If 69% of respondents said that digital competency is currently defined as a general competency in training, 31% said that it is not yet or under consideration; 4) If 71% of respondents say higher education institutions use and create OER, 29% say no or are considering; 5) If 54% of the respondents said that higher education institutions have been turning to open science, the rest are either not yet or unknown; 6) If 53% of respondents have scaling strategies for older learners in lifelong learning, the rest are either not yet or unknown [35], [37].

3.3 State policy and school governance

There are policy differences in terms of the level of support for digital transformation. 1) If 48% of the respondents think that there is a state policy to support digital transformation, 52% of the respondents think that the state policy is less supportive or even an obstacle; 2) In terms of specific areas, there is a considerable proportion of respondents saying that there is no national policy to support OER (31%), open content library establishment (22%), priority gear shifters (30%), open science support (31%), lifelong learning support (29%).

Regarding the national financial framework for digital transformation, the general opinion was negative on every continent: 67% of respondents said the national financial framework currently has little or no support for digital transformation, especially in Europe (72%), Africa (70%) and Latin America (64%).

In terms of school governance, a majority of respondents (72%) show a common trend in which school leaders consider digital transformation an important priority and have a strong commitment from school leaders to perform digital transformation. Accordingly, digital transformation is included in the

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school strategy, at the same time the school assigns a leading staff or a specialized unit for digital transformation. However, the implementation is a combination of top-down and bottom-up, with 41% of respondents admit the role of a national strategy or school strategy with a clearly defined vision for the school; 56% said that it should be the initiative of faculties and departments.

There are still shortcomings in governance innovation as follows: 1) If 43% of respondents think that using new technology leads to a different way of working (change in management, teaching, learning), then still 18% of respondents think that using new technology but working is still the same, 38% plan to do differently but are inadequate due to lack of resources; 2) With the advancement of the internet in the past 30 years, the vast majority of higher education institutions in the world have implemented online enrollment and student data management, but 7% still directly manage the process corresponding to 1300 institutions of higher education around the world; 27% have not used or did not know about the LMS learning management system; 15% have not had data management policies (data safety, privacy, ethical regulations in data use); 3) If 63% of respondents said that they have been promoting digital transformation to open opportunities to access higher education for the disadvantaged, 20% is expected; 17% did not intend to; 4) If 73% of respondents said that they have trained the team in digital transformation, the rest say no or do not know; 5) The most worrying thing in school governance is that the school funding for digital transformation has not really paid attention: Only 55% of respondents said that the school has budgeted for digital transformation, the rest said no or unknown.

3.4. SWOT analysis with digital transformation in higher education in Vietnam

There are currently no surveys to assess more or less clearly the current status of digital transformation in Vietnam's higher education in terms of the above international survey. Therefore, in this section, we only try to analyze SWOT of digital transformation in Vietnam's higher education based on the reality of online education and open education of Vietnam's higher education today.

3.4.1 Online education

In higher education, online distance training has flourished in recent years and is more dominant than traditional distance learning. Out of 21 universities licensed by the Ministry of Education and Training, 17 are currently implementing online university-level distance training. The two Open Universities in Hanoi and Ho Chi Minh City are slowly taking on their open role in promoting online distance learning. Some other universities, such as the two National Universities, Regional Universities, National Economics University, Hanoi University of Science & Technology, Foreign Trade University, The School of Education, etc. also actively participate in the provision of online distance learning, creating an open market in higher education with a scale of up to 16,000 students in 2012 and about 70,000 students in 2020 [38].

The FPT Education Division (FPT Education) also launched Funix Online University, which is considered the first online university in Vietnam, providing Bachelor of Information Technology, professional and soft skills certificates.

Many foreign universities also announce cross-border online training programs in Vietnam, creating a new way of studying abroad. Learners who do not have to leave their families, inexpensive travel

expenses and living abroad, still have the opportunity to study university programs at prestigious foreign schools, such as Stanford University, university, Johns Hopkins University, Harvard University, Massachusetts Institute of Technology in America; Seoul National University in Korea; Beijing University, Tsinghua University in China; Tokyo University in Japan; University of Cambridge in England.

Thus, thanks to an open approach that has many advantages over traditional distance training, online distance learning is a method of training that has been strongly developed in recent years in Vietnam, suitable for the development trend of Open and Distance Learning in the world. The scale of online distance learning in higher education reached 161,047 students in 2012. However, it is interesting to note that this scale is decreasing. According to [38], this scale is currently about 70,000 students in 2020. This situation has many causes.

First of all, regarding state governance, the following two issues need to be thoroughly analyzed. One is that public investment in online distance training has not been given adequate attention to build a standard technology system, enabling Open Universities to be truly open and qualified for the masses. The second issue is that the higher education institution network planning has not been respected, leading to the explosion of public, single and small higher education institutions, but sufficient to meet the demand for traditional higher education of all high school graduates [35].

Next, continuing on the capacity of higher education institutions, in order to have quality online distance training, in addition to owning a modern and well-functioning ICT infrastructure, higher education institutions must also be competent in the following two areas. One is the capacity of the faculty to compile materials and guide learners in accordance with the standards of pedagogical science in online distance learning to create excitement, increase interactivity, and improve learning efficiency. The second is the institution's capacity to build a standard evaluation system to advice and support learners, and on the other hand to ensure an honest and reliable assessment of learning results. Viet Nam's higher education institutions are still inadequate in building these capacities.

Finally, regarding the capacity of the learner, online distance training has the advantages of openness, removing many barriers on the path to higher education. However, it also creates a number of other hurdles. These are barriers to ICT competencies, especially barriers to self-study, and psychological barriers when face-to-face learning is still important. It is these barriers that have caused many online learners to drop out of school in the middle [34, [35].

3.4.2 Open higher education

Vietnam came to the open tertiary education movement quite early. In 2005, the Ministry of Education and Training and the Vietnam Education Fund (VEF) cooperated with the VASC Software and Communication Company to implement the project of Vietnam OpenCourseWare (Vietnam OpenCourseWare, VOCW). The VOCW project has been successful in laying the foundation for open learning activities in Vietnam with the formation of a VOCW community of 29 universities, setting up a VOCW website, initially building an open learning material warehouse

Thus, Vietnam was one of the countries in the world early participating in the OCW movement. However, the VOCW project, after being handed over to the Ministry of Education and Training in

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2010, showed unsustainable signs, the website <http://www.vocw.edu.vn> has no longer provided any educational materials. The good news is that with the support and coordination of the Vietnam Foundations (VNF), the website VOER Vietnam Open Education <http://voer.edu.vn> has been established and is currently operating on pure Vietnamese open source software (called Hanoi Spring), facilitating quick, and easy sharing, using and exploiting OERs under Creative Commons Attribution 3.0 license.

It can be said that in comparison with many countries in the region, Vietnam soon joined the movement of open higher education. But in terms of status, Vietnam is lagging and increasingly being left behind by other countries in the region [35].

Regarding the current status of MOOCs in Vietnam, although there has not been any specific survey, it can be judged as follows: Up to now, MOOCs are mainly provided by leading universities in developed countries; Developing countries are more or less aware of the benefits of MOOCs, but in general, they are confused in the policy of receiving and exploiting MOOCs appropriately and effectively. China is a developing country that is a pioneer in exploiting and developing MOOCs. By 2013, China had its first MOOC platform- XuatangX, and to date a few dozen more MOOCs offer hundreds of courses open to millions of students. Within ASEAN countries, Singapore uses foreign MOOCs such as Coursera to provide MOOCs, Malaysia has OpenLearning, the Philippines have MODeL, Indonesia has IndonesiaX, and recently Thailand has ThaiMOOC. It is worth mentioning that in our country, there is no national MOOC platform, and the universities, especially the national and regional universities haven't got any special moves in receiving, using and exploiting MOOCs.

3.4.3 SWOT analysis

Strengths

In terms of scale, online education in general, online higher education in particular has developed quite strongly, including both domestic and foreign suppliers. An online training market has formed for high school students (in improving knowledge and preparing for exams) and adults (in learning foreign languages, updating knowledge, skills, improving qualifications). Several online training websites have also been set up to meet people's learning needs. Regarding Mobile Learning, the major carriers in Vietnam that provide this product include Viettel with products viettelstudy.vn and MobiFone with mStudy.vn product [17] [18], [20], [35], [36].

In terms of quality, many higher education institutions are trying to improve the quality of online education. In order to keep up with the technological advances in the Industrial Revolution 4, Hanoi Open University currently organizes virtual reality classes on the basis of 4.0 technologies, combining virtual classrooms with self-study on e-learning system, with the eBook library includes materials and videos of all the subjects in the program. Students can learn by themselves with no time limit or knowledge limit. Many organizations have started to apply 3D online technology to online training to increase the inspiration for learners. Topica has brought this 3D training environment to Vietnam and launched an online bachelor's degree program [21], [22], [34], [35].

Higher education institutions take the initiative in digital transformation. In addition to the development of online education, many higher education institutions have been promoting the

exploitation and use of OERs. With the support of the Vietnam Association of Universities and Colleges, the training courses and practice "Exploiting OER" have been deployed in higher education institutions in many different provinces and cities in nationwide in order to improve the practical skills of librarians, lecturers, administrators at the department, faculty, and center level. Most recently, the Open Education Club under the Vietnam Association of Universities and Colleges officially launched at Hanoi Open University, which is an active step of higher education institutions in cooperation together to contribute to creating a favorable environment for digital transformation in higher education [24], [34], [35], [36].

Weaknesses

- Although we have a policy of building an open education system and recently a policy on digital transformation, there is still no consensus in awareness about open education and digital transformation. In our country, it is difficult to say that there is a correct perception of open universities, especially a clear awareness of OER and MOOC in particular, open education and digital transformation in general. The important, opportunities and challenges of open education, digital transformation and its elements, such as OER, MOOC are ambiguous, even in the education sector [34], [35], [36].

- The outstanding and persistent weakness is the quality and efficiency of training highly qualified human resources in formal training, especially in regular training, which have not yet met the labor market demand. Higher education institutions have not escaped the way of providing learners with what the school has, not what learners and the labor market need.

- In addition to the above weaknesses, the main weakness in the digital transformation of Vietnamese higher education institutions is the weak financial resources, the inadequacy of the internet infrastructure, the limited capacity of managers, a decrease in faculty motivation, a lack of alignment in higher education institutions' training. Another important weakness is the slow innovation in the governance mechanism of Vietnamese higher education institutions.

Threats

- There is still a worrying gap from the State's undertakings and policies to the implementation organization. Particularly, the concept of "Renovating the education system in the direction of open, flexible, and interconnected" has only been institutionalized in the most general way in the Education Law 2019; therefore it basically stopped in the literature version, there is no action in policy and implementation [17], [18].

- In the next 10 years, Vietnam will still be in a period of golden population structure. Turning this opportunity into reality depends primarily on the quality of the labor force. However, the current human resources in Vietnam are at low quality, the structure is not balanced, the number of employees working in simple occupations accounts for the highest proportion (37-40%), the proportion of employees working in specialized jobs with high level techniques only fluctuate in the range of 6-7%. Therefore, in terms of human capital, technology and innovation, scale and complexity of production, a study by the World Economic Forum (WEF, 2018) shows that Vietnam has not been ready for future

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production, and Vietnamese human resources are not ready for the demands of Industry 4.0 [32], [34], [35], [36], [38].

- According to the 2019 white paper on information technology, on international charts, Vietnam's ICT rankings have made progress in a number of fields. However, according to the Global Telecommunication Union Report on IT development index, Vietnam ranks near the bottom of the table and continues to drop in ranking in recent years (International Telecommunication Union, 2015. 2016. 2017). In comparison with ASEAN countries, Vietnam's ranking position in 2017 is as follows: Singapore (18); Brunei (53); Malaysia (63); Thailand (78); Philippines (101); Vietnam (108); Indonesia (111); Cambodia (128); Myanmar (135); Laos (139).

- In addition to international cooperation in education with the view that education is a public benefit, international integration in education creates conditions for foreign investors to participate in our country's educational development. A competitive education market has been growing, even in online education. It opens up opportunities for better-quality learning for those in needs, but at the same time it also creates the challenge of increasing social inequality in education and the negative effects of an education market.

Opportunities

- One of the strategic breakthroughs of the next 10-year Socio-Economic Development Strategy is “Accelerating fundamental and comprehensive innovation and improving the quality of education and training, with the focus on modernization and changing the mode of education and training, especially in higher education and vocational education. It should focus on training high-quality human resources, discovering and fostering talents; have outstanding policies to attract and appreciate talents and experts both at home and abroad”. One of the assigned tasks is “Transforming the educational process from studying mainly in the classroom to organizing diverse forms of learning, paying attention to teaching and learning online, via the Internet, television, and social activities, extracurricular, scientific research”. That opens up opportunities for education to promote innovation towards digital transformation, develop online education, and open education [34], [35], [36].

According to Wipo world international property organization (2021). The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation. 42nd Viet Nam ranks 42nd among the 131 economies featured in the GII 2020.

Table 1. Rankings of Viet Nam (2018–2020)

Year	GII	Innovation inputs I	Innovation outputs
2020	42	62	38
2019	42	63	37
2018	45	65	41

- Viet Nam performs better in innovation outputs than innovation inputs in 2020.

- This year Viet Nam ranks 62nd in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, Viet Nam ranks 38th. This position is lower than last year and higher compared to 2018.
- State guidelines on online education, open education, digital transformation in higher education are constantly being updated.
- In terms of technology, in the coming time, Vietnam will become one of the first emerging economies to deploy the 5G ecosystem, the backbone of Industry 4.0. The Information and Communication Industry in a new period will promote digital transformation, digital technologies in all fields, promote innovation, create growth, increase labor productivity, and bring Vietnam out of middle income trap to become a developed country [25] [26], [35].
- The covid-19 pandemic has created a boost to digital transformation in global higher education. If looking at the digital transformation from its basic components, which are online education and open education, many lessons have been drawn in the world; many policy recommendations have been proposed internationally [27], [28], [29], [30] [36], [37].

4. Conclusion

Vietnam is on the rise, education is undergoing major changes according to the general trend of the world. With the above analysis and exchange, this research is an important basis for the future policy development of education in Vietnam.

Refer to the UNESCO draft OER Recommendation (General Conference, 2019), and from the reality of Vietnam, through the above mentioned SWOT analysis, the following policies need to be promulgated soon:

1. Stakeholder awareness raising policy on digital transformation;
2. Policies to improve the capacity and motivation of the school team in developing online education, creating, exploiting and using OER, MOOC;
3. ICT infrastructure development policies in line with the development requirements of digital transformation;
4. Financial policy to ensure the sustainable development of digital transformation.

While waiting for a top-down National Plan and supporting policies to be issued, higher education institutions need to continue to play their active role in implementing digital transformation towards the bottom up direction. Here arose the second most important problem related to university governance.

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