Smart University Training Management Model in Digital Transformation: Evidence from Vietnam Trade Union University

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ABSTRACT:

Implementing higher education activities in a digital environment, encouraging the use of information technology in management, teaching activities, testing, evaluation, quality assurance, and scientific research, and expanding methods and opportunities to access higher education innovations in quality are all goals of digital transformation in higher education. Additionally, the rapid increase in training contributes to the improvement of skilled human resources, labor productivity, and national competitiveness in the context of international integration.Vietnam Trade Union University has therefore created a school development strategy for 2025–2030 and a vision for 2045, which includes a Digital Transformation strategy to innovate the school's training activities and revitalize its management stages, both of which have a positive effect. thoroughly to the Trade Union University's operational procedures, quality, effectiveness, and brand validation. This article examines the advantages and disadvantages of developing a digital transformation model related to Trade Union University's present training management responsibilities.

Keywords: Digitalization, training management, smart university, trade union university, vietnam.

1. Introduction

The world we live in is changing at a rapid pace. How the higher education system can be reshaped to promote learner-centric approaches while keeping pace with the growing demands of the 21st century. In recent years, universities around the world have undergone changes, influenced by technological advancements and social trends towards digitalization. Like all other revolutionary changes, digital transformation involves a drastic adjustment. Changes in the socio-economic system of education due to the globalization of the economy have promoted

changes in higher education such as educational standards, quality, decentralization, virtual learning, etc. These dynamics (trends) in the education sector have promoted transnational higher education. Digitizing the educational activities of universities can be considered as one of the alternative mechanisms to fill the enrollment gap. This is considered a digital business strategy (Rosin et al., 2020). However, the field may still be in its infancy and has a very different scope when looking specifically at the key benefits of digital transformation and its entrepreneurial viability from a university's point of view. (Research & 2018, n.d.) (S. Becker et al., 2017; Sok et al., 2024)

To integrate digital transformation capabilities, universities take advantage of their supply capacity through branches at home and abroad or distance learning with a transnational platform. However, students will undoubtedly rely heavily on the digitalization of education that is primarily driven by technology and media. Globalization education has strongly influenced universities in shaping the learning mechanism and developing, providing, and continuously improving their programs. Universities may no longer rely on traditional forms of learning to cope with the challenges posed by the phenomenon of globalization. The main purpose of this article is to examine the impactful changes in the global education sector, especially in the context of digital transformation. From this fact, it is applied to the training management model at universities. That measure of an effective transformation model is the satisfaction of the school management team, lecturers and learners. This is a fact worth studying at a university with a long history of development like the Vietnam Trade Union University. (Pucciarelli et al., n.d.; Thompson, 2005) (Ary Setyawan et al., n.d.; Cepa et al., n.d.)

2. Methodology and data base

Training management is a central function in university administration, including planning, organizing, testing, evaluating and improving teaching and learning activities. In the new context, training management needs to aim for flexibility, transparency, efficiency and meet the personalized needs of learners. Traditional management models have revealed limitations such as manuality, fragmentation, lack of data linkage, and slow adaptation to changes in learning needs. This poses an urgent requirement to build an intelligent training management model, integrating technology and data to optimize performance and learner experience. Digital transformation in education is not only the application of technology to teaching and management, but also the process of comprehensively restructuring the operating model of training institutions, towards building a "smart university". According to the Ministry of Education and Training of Vietnam (2021), digital transformation in higher education includes 3 main pillars: (Anthonysamy et al., 2020; generation & 2014, 2014)

- Digital transformation in teaching and learning
- Digital transformation in university administration
- Infrastructure development and digital capacity

International studies (UNESCO, OECD, World Bank) have emphasized the role of smart training management systems in improving governance efficiency and improving training quality. Thus, the theoretical basis of this study includes the following basic theories: (Learning et al., 2021)

- **Systems Theory:** A university is a complex system, in which training management is a subsystem with inputs, processes, outputs, and feedback. The application of digital technology can optimize this entire management cycle.
- **Technology Acceptance Model (TAM):** Used to explain the level of acceptance and use of technology systems in management and learning, based on (1) Perceived Usefulness and (2) Perceived Ease of Use (Gabriel et al., 2022)

In order to build a smart higher education management model in the context of digital

transformation at the University of Trade Union, the formula for selecting samples and describing variables needs to be clearly defined for scientific and measurable research. The sample selection formula can be applied according to the single random sample method or stratified (depending on the nature of the study), if the number of students, lecturers, and administrators is large enough. A common recipe is: (Kholiavko et al., 2021)

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{e^2}$$

$$n = \frac{(1.96)^2 \cdot 0.5 \cdot (1-0.5)}{(0.05)^2} = 384.16$$

In which:

- Z = 1.96 corresponds to 95% reliability,
- p= 0.5 (assuming the probability of occurrence of the feature is 50%),
- e= 0.05 (permissible error is 5%).

Based on the overall size and collection capacity, the study is expected to collect **400 questionnaires**, of which:

- About **300 students** from different faculties,
- About **100 lecturers** in typical disciplines/faculties,
- About **20-25 managers** from training departments, faculties and centers. Survey data will be encoded and analyzed using SPSS 23.5 statistical software

To build a smart higher education management model, the variables need to be clearly defined and can include the following elements:

a) Independent variables (Factors affecting the smart higher education management model):

- Information Technology (IT): Measures the use of technology in teaching and management (e.g., number of online learning platforms, learning management systems).
- Digital Transformation: Assessing the level of digital transformation in training and management processes (from teaching to student management).
- Degree of automation: Automation systems in student management, assessment of academic performance, etc.
- Trainer training and capacity development: Evaluate the development of trainer skills to meet the requirements of smart training management.

b) Dependent variables (Results of the smart higher education management model):

- Training management efficiency: Evaluate the quality and effectiveness of training management in a smart university environment (number of students completing the program on time, student satisfaction rate).
- Quality of Education: Measure the improvement in the quality of teaching, research, and learning through digital platforms.
- Student and faculty satisfaction: Assess satisfaction with new tools and processes (online learning systems, faculty communication tools).

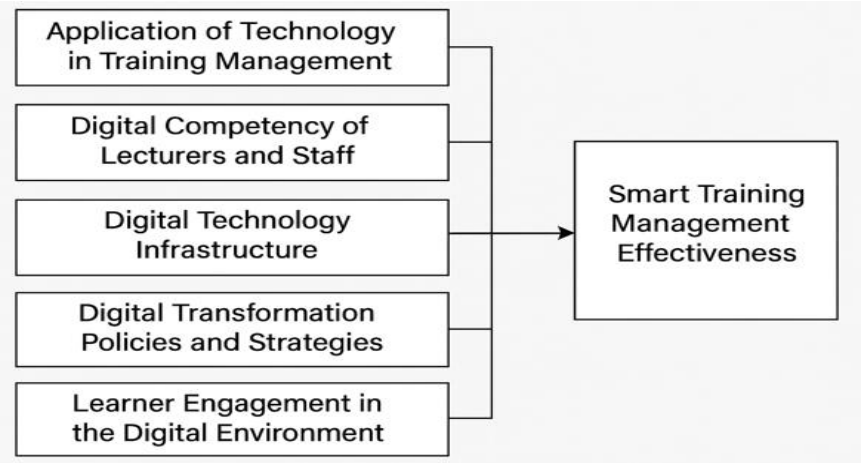
c) Control variables (Other influencing factors):

- Experience and qualifications of lecturers: Evaluate the teaching ability of lecturers in the digital environment.
- The university's technology infrastructure: Evaluate the equipment, software, and services that support the learning and teaching process.

d) Additional factors:

- Online Learning Environment: The level of interaction and support of the online learning system for students.
- The university's policies on digital transformation: Policies to support the implementation of technology in education. (Fig 1)

Fig 1: Analysis framework of the smart university training management model of trade union universities



Established in 1946, currently, the University of Trade Union is training the following qualifications and disciplines:

✓ 01 doctoral degree in Human Resource Management;

✓ 05 master's degree training majors (Human Resource Management, Business Administration, Occupational Health and Safety Management, Sociology and Accounting);

✓ 13 majors of university-level training, 2-degree training and dual-discipline training (Occupational Safety and Health, Business Administration, Labor Relations, Human Resource Management, Accounting, Banking and Finance, Economics, Law, Sociology, Social Work, Tourism, etc Vietnamese Studies and English Language). The total annual learner size of the University is nearly 10,000 people.

Along with formal training and postgraduate training, the University continues to train the work-study system, interdisciplinary training. The source of the survey data on the whole university scale is based on the results of the annual task report of the quality management department and the training management department of the trade union university

3. Results and Findings

Training Program Goal Management

Goal-based management (expertise, personality, mission implementation) is to use goals to run the organization and evaluate results, take goals to unify program management elements and also to link program management activities. This is work-based management and efficiency (quantitative and qualitative). The survey results at the trade union university show that the overall goal, general goal and training sector goal have been paid attention to. The overall goal is decided by the State, containing political requirements. Most of the training programs are announced goals.

Figure 2: Opinions of stakeholders on digitization content in training activities

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63,876	5	12,775	73,016	0,000[b]
	Residual	50,564	289	0,175		
	Total	114,440	294			

a. Dependent Variable: HL

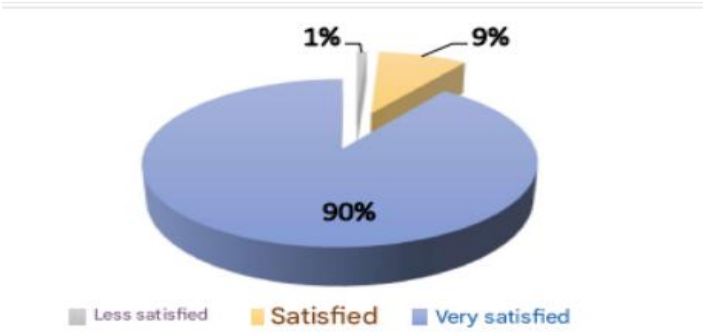
b. Predictors: (Constant), HP, CSVC, GV, CTDT

Curriculum Management

The list of training programs is a list of names of disciplines and groups of disciplines according to certain codes, which can be considered as "copyright" with a commercial meaning. The list is managed in the form of regulations on system encryption and control of training programs. Portfolio management can be done in a centralized or decentralized form; related to the classification of training disciplines, avoiding duplication. The survey results show that the access to training programs according to the opinions of stakeholders is quite clear and convenient (fig 3)

Figure 3: Stakeholders' opinions on access to training programs

(n=400; p=0.5)



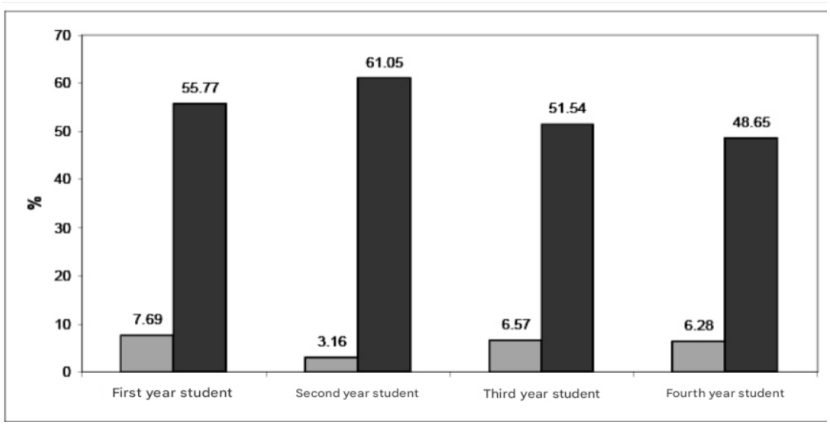
Source: analysis of the author's team

Framework Program Management

The framework program is a structure of knowledge content (core, compulsory), which is stereotyped and closely related to the structure of the national education program system, in order to orient the objectives, regulate the training time as well as ensure the connection and transition between levels, interdisciplinary training, there is a distinction for specific course programs. Courses are training programs for a specific audience with a defined goal. On the basis of a training program, one can take different courses. Some countries such as France, Australia or Japan, only pay attention to the aspects of time frame, "level" of qualifications and training levels; type of diploma, etc. Based on that, the training institution develops a specific training program including hardware according to regulations and "soft" content in accordance with the actual situation of the locality, the situation of human resources and facilities of the university. (S. A. Becker et al., n.d.; Marks et al., 2022)

Figure 4: Students' opinions on approaching the digitized framework program

(n=400; p=0.5)



Source: analysis of the author's team

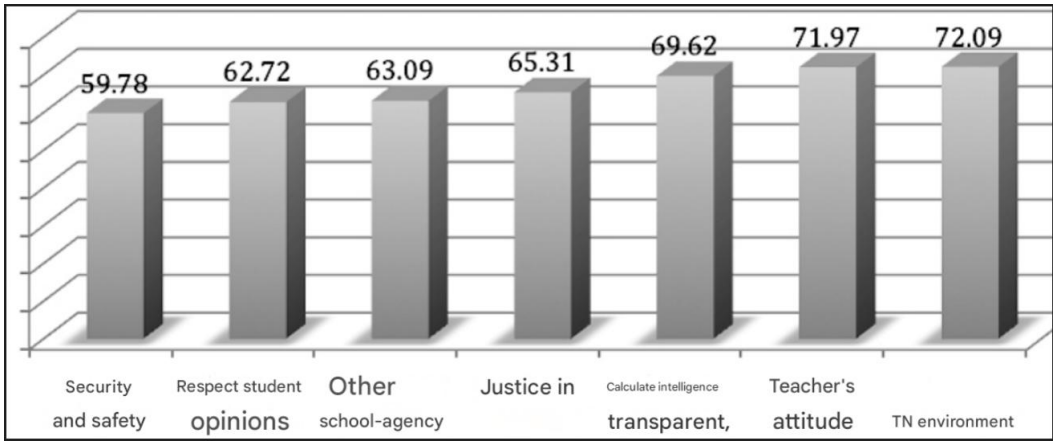
Management of inspection, examination, appraisal, accreditation and development of training programs

All levels of management need to pay attention to inspection, examination, appraisal and accreditation so that the training program is always updated and developed. Inspection not only helps to enhance the effectiveness of state management but also plays a role as a "consultant" on the training program. Although the inspection work has been implemented systematically, the authority, tasks and sanctions have not been concretized, sometimes inadequate. Digitization of organizational and operational inspection of training programs is a requirement in management, which needs to be carried out by functional agencies (departmental level, professional department level), and should be regular, in order to ensure the completion of planned tasks in the university's operation (Bates & Sangra, 2011; Rawat et al., n.d.)

Considering the percentage of satisfied opinions with the component factors also showed relatively high results: in addition to the natural environment factor that had the most satisfied opinions (72.09%), there were also lecturers' attitudes and transparency and publicity also obtained rates of 71.97% and 69.62%, respectively. These are factors that need to be promoted, especially because lecturers play a very important role in helping, encouraging and motivating students to develop. (fig 5)

Figure 5: Opinions of parties in the digitization of inspection and supervision activities

(n=400; p=0.5)



Source: analysis of the author's team

Management of policies and conditions for training programs

The policies and conditions for the training program are closely interrelated; is a premise for quality assurance, which can reverse the process of training program management and is effectively used and exploited by many countries. Digitalization in training program management is a policy and condition that contributes to improving the quality of training programs. In fact, the policies and conditions in the policies of universities in Vietnam have met the necessary requirements; Digitizing program management and development is a big requirement. Therefore, the participation of all classes of society should be encouraged (fig 6)

Figure 6: Testing the hypothesis of the satisfaction of the parties in the implementation of training policy management

Coefficients[a]

Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
B	Std. Error	Beta			Tolerance	VIF
0,132	0,193		0,682	0,004		
0,246	0,061	0,217	4,028	0,000	0,829	1,206
-0,033	0,052	-0,035	-0,635	0,526	0,847	1,180
0,418	0,063	0,391	6,627	0,000	0,782	1,279
0,132	0,056	0,129	2,363	0,019	0,746	1,341
0,203	0,041	0,222	4,891	0,000	0,742	1,348

Source: analysis of the author's team

The results of the EFA analysis for the independent variables of the above factor rotation matrix show that the factor loading coefficients of the observed variables are r≥ 0.55 and there are 5 factors extracted from the EFA factor analysis. After analyzing the EFA factor, 5 groups of factors were drawn with 30 observed variables (all variables satisfied the condition, not eliminated). Continuing to implement the quality accreditation scale and EFA accreditation, it can be concluded that the important factors of training quality affecting student satisfaction include 3 factors including (1) the effectiveness of the training program; (2) facilities for digital transformation and (3) satisfaction of stakeholders. The results show that the overall Cronbach's Alpha coefficient of the independent variables is > 0.6, so the scale is standard and statistically significant. The results of the model's suitability assessment showed that the adjusted R2 determination coefficient = 0.551 with a significance of 1%, that is, in this study, the factors explained 55.1% of students' satisfaction with the quality of training of specialized modules at the trade union university. The results of ANOVA analysis show that, with 99% confidence, the F test has Sig.= 0.00 < 0.05, rejecting the H0 hypothesis (H0 : R2 = 0), that is, the theoretical regression model has been built in accordance with the actual data. Or are independent variables linearly correlated with dependent variables in the model.

4. Discussion

The global education landscape is greatly influenced by the growing importance of globalization/knowledge economy By considering the overall impact of digital transformation on higher education, we can create abundant social resources (social capital) that modern digital transformation strategies can exploit/use. Both the developed and developing education system has begun to rethink its contemporary education system, many new measures and reforms have been implemented to enhance the quality of existing education, and its competitiveness is reflected through enhancing the student experience. Emerging economies, in particular, are increasingly focused on building a competitive advantage using digital capabilities and, to a degree of reliability, the process is visually beneficial and profitable. Singapore's transformation of education as a global education hub is a good example of developing and adopting quality training programs based on digital advantages (Bond et al., 2018; Papers & 2020, n.d.) (in & 2020, 2021)

It can be argued that enhancing the competitiveness of global education requires building sustainable competitive advantages including (a) identifying advantages, (b) resources and governance systems, and (c) having a long-term sustainable development strategy. Specific changes aim to streamline the higher education system by design-developing transnational

education models. Notably, the demand for remote learning is increasing, further reinforcing classroom teaching and learning methods that we are not familiar with. This phenomenon is partly influenced by the internet and internet-based online tools. The emergence of online education tools has created a revolutionary change in the context of higher education, so it has become an inevitable driving force, especially in the process of building development strategies of universities (Bakhsh et al., 2022)

Although many pedagogical frameworks existed to inform programs and lecturers about distance learning courses even before the advent of the internet, digital transformation is gaining more and more attention due to its dynamics Specifically, It continues to strengthen three separate factors such as infrastructure system, digital management capacity and quality of human resources that will directly impact the effectiveness of training. As of today, digital transformation is considered the foundation for overcoming the challenges of distance learning, which is also becoming a strong motivation to stimulate remote learning mechanisms. Online training programs are getting bigger and bigger to save trainers' time. Platforms such as zoom, groups, webinars, and more can provide a one-on-one experience for students. The impact of the Covid 19 pandemic has proven the increasing use of such platforms by students and faculty. It also encourages pervasive digital learning, connecting topics, pointing out relationships in digital interaction to reinforce the program quickly and conveniently. (Education & 2018, 2018) (Jamah et al., 2022; Spante et al., 2018)

5. Conclusion

The research results from the activities of the trade union university show that it is necessary to raise awareness of the importance of universities in digital transformation to build a digital culture in higher education. In order to have strong transformations in university governance, teaching and learning, it requires a change in the mindset and perception of each person from school leaders to lecturers, staff and learners. In the training strategy, it is necessary to implement digital transformation through many aspects, including shortening the enrollment process by using digital tools, organizing teaching in a digital environment so that students can study in any location with an internet connection. without having to go to school. Moreover, distance learning needs to be through Microsoft Teams, Zoom, Google Meets, and a few others. Build pre-recorded lecture videos to upload to websites. Connect electronic payment methods and register for online learning. Universities need to implement the EMS (Education Management System) university management platform in the management, administration, and overall management of activities, from facilities, human resources, to students, student unions, classes and training management activities. Interactions between learners, lecturers, and managers are carried out through the digital management platform. In order to effectively implement this teaching, universities must systematically build an online learning material system so that learners have distance learning materials via the Internet, online lectures for self-study, and an online assessment system so that students can self-assess their progress in the training process. The university uses LMS (Learning Management Systems) - Training management system to completely change the method from training, assessment and as a digital platform to provide training services, towards personalized training. Along with LMS, using LCMS (Learning Content Management Systems) has lecture creativity in the teaching staff. It takes a lot of time to change the lesson plan as well as the teaching method.

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