DIGITAL TRANSFORMATION IN STUDENT'S LEARNING AND ASSESSMENT: EVIDENCE IN THE UNIVERSITY OF LABOR AND SOCIAL AFFAIRS, HANOI, VIETNAM

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Abstract

The article aims to evaluate factors affecting the implementation of digital transformation in learning and examine students' assessments, a case study with 300 students of the University of Labor and Social Affairs, Hanoi, Vietnam. The expected model is based on the Technology Acceptance Model (TAM) including 3 factors "Perceived usefulness", "Perceived ease of use", and "Environmental influence" results of factor analysis. The remaining two groups of findings are "Perceived usefulness" (combined from Perceived usefulness and Perceived ease of use) and "Environmental influence". The results of regression analysis show that both groups of factors above have a positive impact on the implementation of digital transformation in students' learning and assessment with coefficients of 0.630 and 0.207, respectively. The model explains 59.1% of the impact of factors on students' implementation of digital transformation. The research results complement related applied research on factors affecting the implementation of digital transformation in student learning and assessment. In terms of practice, the research provides a reliable basis for promoting digital transformation in learning and student assessment, thereby improving the training quality of the University of Labor and Social Affairs.

Keywords: *Digital transformation, Learning, Testing, and assessment.*

1. INTRODUCTION

The strong outbreak of the COVID-19 pandemic has accelerated social activities towards digital transformation, including the education sector. Digital transformation in education is the application of digital technology and internet information systems to the field of education, helping to narrow geographical gaps to create learning experiences and increase the interaction of everyone. Typical examples of digital transformation in education are online learning (E-learning), Electronic textbooks, Learning management software, Online collaboration tools (Google Classroom), Learning support applications (Delgado et al., 2015; Lawrence & Tar, 2018).

Digital transformation in learning, testing, and assessment means developing a platform to support remote teaching and learning, thoroughly applying digital technology in management, teaching, learning testing, and assessment; digitizing documents and textbooks; exam question bank; Building a platform to share teaching, learning and assessment resources in both face-to-face and online forms and developing technology to serve education, towards individualized training (Tamim et al., 2015).

Digital transformation brings great benefits such as cutting operating costs and changing the model and management style of an apparatus. For society, digital transformation also contributes to taking advantage of resources. idle time, moreover, for education, an industry considered the foundation of a country's future development, digital transformation brings enormous benefits, contributing to improving the quality of education, reducing learning costs, saving learning time, shortening the distance between learners and learning materials, creating more initiative in learning. Along with those great benefits come tasks, difficulties, and challenges. Tasks that need to be completed to move forward with digital transformation include: changing teaching and learning models and changing awareness about the necessity and urgency of digital transformation (Chauhan, 2017).

Digital transformation is one of the top concerns of technology businesses in Vietnam. The Vietnamese Government also pays special attention to the issue of digital transformation in the 4.0 industrial revolution and assigned the Ministry of Information and Communications to develop a National Digital Transformation Project and submit the Project to the Prime Minister in 2019. "National Digital Transformation Program to 2025, orientation to 2030" was

approved in Decision No. 749/QD-TTg dated June 3, 2020, by the Prime Minister determining the development of a support platform. supporting remote teaching and learning, thoroughly applying digital technology in management, teaching and learning; digitizing documents and textbooks; and building a platform to share teaching and learning resources in both face-to-face and online forms. Digital transformation in education in general and higher education in particular has become an inevitable trend that plays a key role in the country's development. The process of implementing digital transformation in Vietnamese higher education is taking place at a fast pace, receiving close attention, direction, and investment from the Government and the Ministry of Education and Training of Vietnam.

Vietnamese universities have made efforts to apply technology in teaching, learning, and assessment. National Economics University has quickly approached and applied information technology in education, training, scientific management, and services to promptly bring optimal benefits to teachers and students. learn. The school has introduced a series of new learning methods such as E-learning online classes, learning through projects, and virtual reality applications. This helps personalize learning for each student, improving learning and teaching efficiency. In addition, classrooms are equipped with smart electronic equipment systems to become smart classrooms, with management software that will help lecturers understand students' learning progress.

Foreign Trade University, with more than 10 thousand students, has invested and completed the information technology infrastructure system, Leased Line transmission, wifi. The school also promotes online interaction, promoting innovation—opinions of lecturers and students. The school's library activities have been modernized following the electronic library model and moving towards a digital library. The application of information technology has helped students access convenient learning resources for learning.

Hanoi National University has invested in a digital learning resource warehouse on mobile applications with more than 102,000 digital books and textbooks. The number of learners and researchers accessing digital resources is also constantly increasing. Hanoi National University Library ranked 65th out of 3,942 global digital resource repositories. This is a big step forward in applying digital transformation at school.

In the context of the COVID-19 epidemic, the University of Labor and Social Affairs has assessed and identified the situation, considering digital transformation in education as an inevitable trend to be able to quickly cope with the difficult situation. many difficulties and competition. Thanks to that, the University of Labor and Social Affairs in the general context still ensures training work according to the proposed plan. However, the actual application of digital transformation at the University still has certain shortcomings such as limitations in information technology infrastructure, investment capital for digital transformation, and information technology application capacity. of lecturers, and students...

Therefore, this study aims to evaluate the factors affecting digital transformation in learning and check the evaluation of students at the University of Labor and Social Affairs, Hanoi, Vietnam with expected results, providing useful information to help the School accelerate digital transformation, taking advantage of the benefits of digital transformation to improve the quality of teaching and learning.

2. LITERATURE REVIEW AND HYPOTHESIS

Literature review

Research on digital transformation in education has been of interest to many scholars recently, especially with the strong development of the 4.0 Technology Revolution and the outbreak of the COVID-19 pandemic.

Phung The Vinh (2021) researched the issue of digital transformation in universities showing that digital transformation in general and digital transformation in universities are not only a matter of technological innovation but also a matter of culture and people. People. According to the author, universities are organizations that research and provide educational services and disseminate and develop human knowledge, therefore, if they do not convert digitally and do not convert successfully, they will not be a place to attract, train, and lead knowledge for scientists, students, and businesses. Therefore, promoting digital transformation in university administration will create motivation for innovation, and creativity and improve the training quality of universities in the current context. The author has conducted an overview of the current situation of digital transformation in higher education in the world and Vietnam, thereby finding that, although digital transformation in university administration in Vietnam has been enhanced and promoted, strong due to the effects of the Covid-19 epidemic, however, universities still face many difficulties and challenges coming from both subjective and objective factors, from technological platforms to people.

Dinh Tien Minh and Vo Ha Quang Dinh (2021) talked about the topic of digital transformation in education. Blender Learning at Ho Chi Minh City University of Economics mentioned the problem of distraction among students when studying online at home. Studying at home, despite arranging the space so that learning takes place in the best way, sometimes still causes distractions such as family problems. Not only are they distracted during class, but causing interruptions in studying also makes students lose motivation to learn. Students are strongly influenced by external factors that affect their learning and prevent online learning at home from achieving the same high results as in class. That's why students' self-learning spirit needs to be promoted at this time. Students need to proactively read books to approach the lesson before going to class so that they can form a clear perspective for themselves about the lesson from there, when studying online, they will not only review knowledge but also This is the time to debate and work with the teacher to find questions that you still don't understand during the self-study process.

Wahid, K. A. et al. (2020) evaluated factors affecting online learning, finding that students who study voluntarily have a more confident attitude and higher interaction with students and lecturers. other pills. To be able to achieve good learning results, it is not only through quality lecture content materials, but the key to achieving effectiveness is the attitude of the learner. Students who study voluntarily, even if they study Online or at school are still effective. However, in the context of online learning, self-learning is emphasized more than ever. Digital transformation can create new and interesting learning environments, but the key to achieving success in education is each individual and their learning attitude.

According to Hošková-Mayerová, Š., & Rosická, Z. (2015), the teaching methods included in the online curriculum are equally important because the teaching methods are directly linked to course outcomes. Without considering teaching methods in online teaching programs, it is difficult to increase the overall effectiveness of education. Kim et. al (2013) found that the instructor's teaching method is the most important success factor in online learning, whereby the instructor increases user satisfaction and encourages students to participate in different learning opportunities. Research by O'Donnell, E., and Sharp, M. (2012) also shows that although technology is important, there should never be any doubt about the instructor. According to the students in their study, none of them agreed that lecturers should be replaced by technology. The teaching method of the online teaching program is significantly different from the traditional method. The teaching methods used by instructors can help increase the level of interaction with learners, thereby increasing learning effectiveness.

Hang, V. T., & Tuan, N. M (2013) researched on "Integrating factors affecting learner satisfaction into the E-learning system: A case at the University of Economics and Law" has confirmed the factor of lesson quality. Lectures play a role in attracting students and trainees, not only stopping at accessing lessons in the training program but also expanding. By understanding students' interests and desired jobs in the future, we can then provide quality lectures tailored to each individual's needs. However, improving the quality of lectures requires any lecturer to continuously exploit and update the latest knowledge in that field, helping students access the latest sources of knowledge through learning resources. online data. Nowadays, students do not just stop at reading knowledge in textbooks and going to class to listen to guest teachers, but above all, they are eager to discover new knowledge through research by authors around the world continuously updated with the latest related information.

Thus, from several general studies on digital transformation in education in general, and in learning and assessment in particular, the studies all show that the common point is the positive role and inevitable trend. of digital transformation for universities to improve training quality and enhance competitiveness. However, studies also point out the challenges that schools face when implementing digital transformation such as awareness and attitudes of learners, the convenience of digital transformation for learners, or the cultural environment of students. The school impacts digital transformation in student learning and assessment.

Hypothesis

The research model to evaluate factors affecting digital transformation in learning and student assessment is based on the Technology Acceptance Model (TAM). This model was first researched and introduced by Davis (1986), focusing on clarifying the factors affecting users' acceptance of new technology and explaining user behavior through impact assessment. The impact of information on users in terms of trust, attitude, usefulness, and intention. The study chose the TAM model because of its wide applicability in previous studies, streamlining variables but still ensuring to explain people's intention to use information. Factors affecting digital transformation in student learning and assessment include "Perception of usefulness", "Perception of ease of use" and "Environmental influence". to "Perform digital transformation".

The factor research model proposed by the authors is according to Figure 1 with the following hypotheses:

Hypothesis 1 (H1): Recognizing the usefulness of digital transformation will have a positive influence on students' implementation of digital transformation in learning and assessment.

Hypothesis 2 (H2): Recognizing the ease of use of digital transformation will have a positive influence on students' implementation of digital transformation in learning and assessment.

Hypothesis 3 (H3): The influence of an environment that encourages digital transformation will have a positive influence on the implementation of digital transformation in students' learning and assessment.
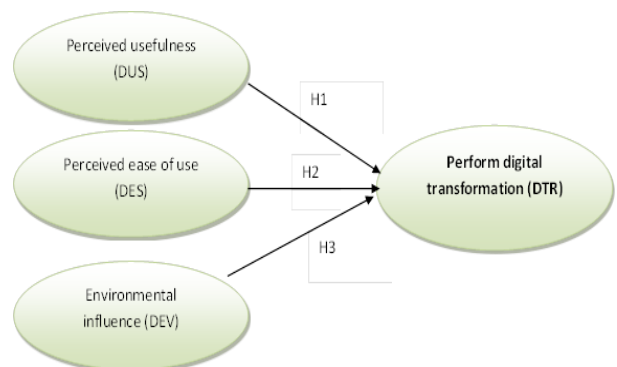
Figure 1. Proposed research model

3. RESEARCH METHOD

The research method used is quantitative analysis to evaluate the current status of digital transformation in learning and check the evaluation of students at the University of Labor and Social Affairs. Next, we conducted an investigation and survey using a live questionnaire for second, third---, and fourth-year students of the School. The questionnaire is divided into 2 main parts: Part 1 is the factors "Perception of usefulness", "Perception of ease of use" and "Influence of the environment", "Implementing digital transformation"; Part 2

is Respondent Information. The questionnaire was built on a 5-level Likert scale, from level 1 - "Strongly disagree" to level 5 - "Strongly agree". Implementation stages:

Step 1: A test survey was sent to 20 students to evaluate the validity and understandability of the questions. Edit according to comments received to complete the survey.

Step 2: Send official surveys to students of majors using Google Forms.

Step 3: Collect and clean data: The total number of valid ballots collected is 300. This sample number is larger than the minimum sample size, satisfying research conditions. Check data cleaning.

Step 4: Analyze data on SPSS 20 software.

Characteristics of sample

Of the total 300 students surveyed, the proportion of women was 87.3%, and the proportion of men was 12.7%. For

students from 2nd to 4th year, the highest rate is 4th-year students (51.5%), followed by 3rd-year students (38.8%) and finally 2nd-year students (9.7%). In terms of majors, students from the Faculty of Accounting were surveyed the most, at 52.5%, followed by Business Administration (29.8%), and the fewest were Labor Management and Social Work (3.3%).

4. RESEARCH RESULT

Analysis and assessment of reliability

Analyzing reliability to check the consistency of the questions with the research problem. We performed a reliability analysis to check the consistency of the level of digital transformation awareness in learning and check students' evaluations. In this analysis, Cronbach's Alpha coefficient will be used to evaluate reliability. If Cronbach's Alpha coefficient is greater than or equal to 0.70, we can confirm that the observed variables have a sufficiently reliable scale (Hair et al, 2022).

Table 1. Results of Crobach's Alpha analysis

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Cronbach's Alpha Usefulness scale (DUS) = 0,798, Number of variables = 4				
DUS1	11.94	4.970	.639	.738
DUS2	12.02	4.801	.586	.759
DUS3	12.11	4.527	.602	.753
DUS4	11.93	4.557	.623	.741
Cronbach's Alpha scale Ease of use (DES) = 0,711, Number of variables = 4				
DES1	11.68	5.506	.492	.654
DES2	11.67	5.068	.555	.615
DES3	11.46	5.820	.492	.661
DES4	12.16	4.111	.510	.666
Cronbach's Alpha scale Environmental Influence (DEV)= 0,780, Number of variables = 4				
DEV1	11.26	7.125	.618	.721
DEV2	11.47	5.754	.692	.667
DEV3	11.25	7.397	.516	.761
DEV4	11.74	5.630	.569	.751
Cronbach's Alpha scale Implementing digital transformation (DTR) = 0,816, Number of variables = 5				
DTR1	16.36	7.210	.579	.788
DTR2	16.39	7.011	.610	.779
DTR3	16.35	6.778	.664	.763
DTR4	16.47	6.995	.582	.788
DTR5	16.35	6.988	.598	.783

(Source: Prepared by authors, 2023)

The results of Crobach's Alpha analysis for 3 independent variables and 1 dependent variable are shown in Table 1. The results of the survey through the analysis process are all reliable, the research variables are appropriate and You don't have to remove the variable.

Exploratory factor analysis

With the research hypothesis that these factors are considered to have a proportional relationship with the level of awareness of digital transformation in learning and assessment of students, we perform KMO and Barlett tests to evaluate. Evaluate the correlation between observed variables that impact digital transformation in student learning and assessment. We use 12 observed variables to measure 03 factors that affect students' implementation of digital transformation (perception of usefulness, perceived ease of use, influence of the environment, and evaluation of digital transformation). The results of the KMO and Barlett tests show that the KMO coefficient = 0.889>0.05 proves that the study has enough observed variables to constitute a factor. Significance level Sig.=0 <0.05 shows that the Bartlett test is statistically significant and the observed variables are correlated with each other (Hair et al, 2022).

Performing exploratory factor analysis with 3 groups of factors (usefulness, ease of use, and influence from others) initially expected to have differences. The variables from 3 groups changed to only 2 groups (Table 2). Specifically:

Group 1: Environmental influence includes 6 variables, of which, 4 initial variables and 02 variables "Perceived ease of use" DES2, DES4. We still keep the name of this group as "Environmental Influence_DEV".

Group 2: Usefulness and ease of use have combined to form a group of 06 variables, of which, 4 variables of "Perceived usefulness" and 02 variables of "Perceived ease of use" DES1, DES3. We named this group "Perceived Usefulness_DUE".

Table 2. Exploratory factor analysis

Items	Component	
	DEV	DUE
DEV4	.804	
DES4	.800	
DEV2	.755	
DEV1	.605	
DEV3	.583	
DES2	.573	
DUS4		.833
DUS3		.711
DUS2		.643
DUS1		.612
DES1		.587

DES3	.569

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

(Source: Prepared by authors, 2023)

Multivariate regression analysis

In order to evaluate the influence of two groups of factors on the implementation of digital transformation in learning and check students' assessments, namely the usefulness and influence of the environment according to the stated hypotheses, we Perform multivariate regression analysis.

Table 3. Results of multivariate regression analysis – Coefficients

	Coefficients						
	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	.774	.164		4.730	.000		
Usefulness (DUE)	.630	.052	.584	12.158	.000	.596	1.678
Environmental influence (DEV)	.207	.039	.254	5.280	.000	.596	1.678

a. Dependent Variable: Evaluate digital transformation implementation

(Source: Prepared by authors, 2023)

The regression equation is:

DTR = 0.774 + 0.630 * DUE + 0.207 * DEV

Results of multivariate regression analysis Table 3 shows that the whole model is statistically significant (Sig.=0<0.05), with the impact of two groups of factors: usefulness and environmental influence on work. students' implementation of digital transformation, and the Adjusted R Square coefficient is 0.591, corresponding to the level of explaining the impact of the factor on students' implementation of digital transformation is 59.1%.

The regression results supported the following hypotheses: Usefulness (including usefulness and ease of use) and environmental influences all have a positive and statistically significant relationship with students' implementation of

digital transformation in learning and assessment. Usefulness has a coefficient affecting the implementation of digital transformation in students' learning and assessment of 0.630, while the influence of the environment has a lower impact with a coefficient of 0.207. This means that each positive change in usefulness will increase students' implementation of digital transformation in learning and assessment by 0.630 times. Every positive change of those around them in implementing digital transformation will promote the implementation of digital transformation in students' learning and assessment by 0.207 times.

This research result is consistent with Hang, V. T., and Tuan, N. M. (2013) who believes that students who desire to learn and conquer new things will actively apply E-learning learning methods. This study also has explanations consistent with Hošková-Mayerová, Š., & Rosická, Z. (2015) and Wahid, K. A., et al. (2020) said that using technology in teaching will help students feel more interested, lively, and easier to understand. As for the influence of the environment, this result also agrees with Dinh Tien Minh and Vo Ha Quang Dinh (2021) who believes that the surrounding environment is very important to help students study online more effectively. Thus, the results of influencing factor analysis show that two basic groups of factors, usefulness (including usefulness and ease of use) and environmental influence, both have a positive impact on the implementation of digital transformation in changing student's learning and assessment.

5. CONCLUSION

Research to evaluate factors affecting the implementation of digital transformation in learning and assessment of students at the University of Labor and Social Affairs, Hanoi, Vietnam. With the expected model including 3 factors "Perceived usefulness", "Perceived ease of use", "Environmental influence" and 300 valid survey responses, exploratory factor analysis remains. divided into 2 groups: "Perceived usefulness" (combined from Perceived usefulness and Perceived ease of use) and "Environmental influence". The results of regression analysis show that both groups of factors above have a positive and statistically significant impact on the implementation of digital transformation in students' learning and assessment. In particular, perceived usefulness has a coefficient affecting the implementation of digital transformation in students' learning and assessment of 0.630, while the influence of the environment has a lower impact with a coefficient of 0.207. The model's level of explaining the impact of factors on students' implementation of digital transformation is 59.1%. The research results can be seen as a reference model, supplementing research on factors affecting the implementation of digital transformation in learning and examining student assessments for similar studies. Future. In practical terms, this is considered evidence of the impact of "Perception of usefulness" and "Influence of the environment" on the implementation of innovation in the learning and assessment of students at the University of Labor and Social Affairs, Hanoi, Vietnam. To be more effective in improving the quality and effectiveness of digital transformation in learning and assessment activities, schools need to focus on

increasing awareness of the usefulness and ease of use of digital transformation students, actively create a digital technology environment, build a digital culture, and influence lecturers. However, the research only focused on the University of Labor and Social Affairs, so the representativeness was not high. The research results will be more general if the sample range is expanded to other universities.

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