Factors Affecting the Adoption of Online Database Systems for Learning among Students at Economics Universities in Vietnam

Thi Minh Phuong Nguyen *

Posted Date: 19 April 2023

doi: 10.20944/preprints202304.0546.v1

Keywords: Economics universities; Learning; Online database systems, Students

Article

Factors Affecting the Adoption of Online Database Systems for Learning among Students at Economics Universities in Vietnam

Thi Minh Phuong Nguyen

National Economics University, 207 Giai Phong street, Hanoi, Vietnam; phuongntm@neu.edu.vn,

Abstract: This study aims to evaluate the determinants that influence the adoption of online databases in the learning process of students at economics universities in Vietnam. A quantitative study with a meta-analysis was conducted by utilizing structural equation modeling (SEM). The sample consisted of 492 students from economics universities located in Vietnam who were surveyed using stratified random sampling. The results indicate that the adoption of online databases in student learning is influenced by six determinants, namely: (i) perceived effectiveness, (ii) perceived ease of use, (iii) technical barriers, (iv) personal usefulness, (v) usage attitudes, and (vi) convenience. Our study has revealed that students' intention to use the online database system is positively influenced by their perceived ease of use and perceived usefulness. These findings could be valuable in shaping policies for enhancing the online database system at economics universities, taking into account the students' characteristics and the institution's needs.

Keywords: economics universities; learning; online database systems; students

JEL Classification: I23; I25; O32

1. Introduction

Technology has greatly impacted human life, particularly in the field of education. As a result, the development of online database systems at universities is rapidly increasing both globally (Azzi-Huck and Shmis, 2020; Shahzad and Lodhi, 2020) and in Vietnam. The United States, a leader in education, has over 80% of its universities developing their online database systems, according to Cyber Universities 2018 statistics. Similarly, Vietnamese universities have been developing online database systems, such as the Learning Management System (LMS) and online libraries, to support student learning.

Policymakers and service system developers from universities should identify the factors that affect student usage to effectively develop online databases. While studies evaluating the factors influencing the use of online database systems are common worldwide, some notable studies have identified key factors affecting the success of the learning management system (Jafari and Salem, 2015) and the use of academic online databases in higher education (Piotrowski et al., 2005). These studies highlight the importance of understanding the needs of both students and faculty members to effectively develop online database systems that meet their requirements.However, in the context of Vietnam, research on the use of online databases is still limited, as most Vietnamese universities have only recently begun developing these systems. At economics universities, the online database system has only been promoted since 2019 due to the Covid pandemic, and there has not been a study on the factors affecting the effectiveness of student use. Therefore, conducting systematic research is essential to improve the online database system in universities.

The remainder of this study is organized as follows: Section 2 reviews the previous studies on online database systems, including LMS, e-library, and e-learning. Section 3 describes the methodology used to collect the data sample. Section 4 presents the results of the analysis and discusses potential solutions. Finally, Section 5 provides some key conclusions for practical applications and recommendations.

 doi:10.20944/preprints202304.0546.v1

2. Literature Review

The purpose of identifying the most significant difficulties of high school students in using online databases and CDROMs, thereby proposing design elements and instructional strategies to make these tools more valuable as learning resources and identify the most important issues related to the use of electronic information resources in schools, used the Delphi (Neuman, 1995) research method with a panel of 25 librarians from 22 high schools across the United States to produce findings that the main issues associated with schools' use of online databases and CD-ROMs were the creation of search keywords, effective search methods, and overcoming mismatches between individual ideas of how to organize information and how the information is organized in the contents of the databases.

Groote and Dorsch (2003) conducted an outreach survey of 188 UIC Peoria faculty, residents, and students to assess the use of online journals, use of print journals, use of databases, level of computer literacy, and other characteristics of library users. The conclusion is that users prefer online resources for printing, and many choose to access these online resources remotely. The result of the study also shows that the usability of electronic libraries is a factor promoting the use of users for this system, the convenience and availability of the entire text seem to play a role in the selection of online resources for users.

To study the use of academic online databases in education at the University of West Florida, a survey involving the use of faculty staff and perspectives towards online databases is conducted (Piotrowski et al., 2005). Most respondents (n = 46) felt fairly consistent with academic databases via the library at the university. However, some faculty members argue that databases such as updated figures and social science citation indicators should be proposed for future inclusion. (Booker et al., 2012) also carry out research for business students on the delivery of information literacy instruction (ILI) to the application of online library resources (OLR) by business students. Research using web-based surveys, including closed-ended and open-ended questions, was conducted for 337 business students. The analysis results based on the TAM theoretical model indicate that the ILI of students is only beneficial in the early stages of using the library's digital resources. This benefit will be reduced or very little in the final results of use. At Limkokwing University of Innovative Technology in Malaysia, a study of the factors influencing the success of LMS was conducted by (Jafari et al., 2015). The research model was developed by examining the relationship between student outcomes (perceived usefulness) and information quality, system quality, and readiness for online learning through the use of systems and user satisfaction, quantitative data obtained through questionnaires. After analysis, the data indicated that all relationships from the independent variable to the dependent variable were significant, including (A) System quality, (B) Information quality, (D) System use, (E) User satisfaction (F) User perceived usefulness, except for the relationship between readiness for e-learning and system use. The most influential variable is the quality of information about user satisfaction and perceived usefulness, and the least influential variable is readiness for online learning, system use, and perceived usefulness. At Bareyo University, a study of the factors affecting the use of electronic databases by academic staff conducted by (Farouk and Muhammad, 2016) with the purpose of the study is to investigate the level of use, the enabling factors, and the factors that impede the use of electronic databases in the university's library. The study uses a descriptive statistical approach to analyze the data collected and offers factors that facilitate the use of the database, some of which include: readiness to adapt to change, availability of computers and ICT skills, internet access, management support and awareness of the user's initial electronic database. However, the cost of accessing and using online databases, infrequent power supplies, a lack of awareness, and too many difficult-to-remember passwords was found to be obstacles to the use of electronic databases. In another study, (Chen et al., 2019) launched a database examination study using structural equation modeling and Rasch modeling to explore the contributing factors of learning and research in higher education from a psychological assessment perspective. The study used ODAS modeling and feedback analysis of 300 graduate students in Shanghai, collected using the stratified random sample technique. The results showed that graduate students' usefulness and ease of use of the database played an intermediate role in establishing a connection between self-efficacy and their intention to use computers and satisfaction with the database for research and

 doi:10.20944/preprints202304.0546.v1

learning. In addition, the results of the analysis show that student satisfaction is indirectly explained by the usefulness of the database through ease of use and intention to use.

Regarding the domestic database system, domestic studies mainly focus on specific types of databases. It is possible to mention the research on factors affecting the intention to use the E-learning system of students: the case of Hanoi University of Technology (Le and Dao, 2016). This research has provided useful suggestions for policymakers and developers of e-learning systems at the economics universities, such as: towards the core interests of learners; building friendly systems, and improving technical barriers. In addition, the factors affecting students' intention to use mobile applications for education in Vietnam (Cao and Nguyen, 2022) have contributed three basic meanings to science and practice: the suitability of the research model based on the TAM model; factors affecting the intention to use mobile applications for education; as a reference source for related studies. At the same time, it offers solutions to enhance applications such as investing in research and design; adding features and experiences; solving technical barriers, and improving application efficiency. It is impossible not to mention the research on the factors affecting the intention to use e-libraries of students at universities in Hanoi (Vu et al., 2020) based on the TAM model to conclude: The electronic library provides information and documents on many different topics, covering a long time; Regular and timely updates will help students' learning, helping to increase the intention to use electronic libraries. At the same time, they also recommend promoting communication about electronic libraries to students; pointing out weaknesses to overcome.

Previous research has primarily focused on specific database subjects such as LMS, e-library, and e-learning, but there is a lack of research related to the online database system in general, especially in the context of economics universities in Vietnam. Therefore, this study aimed to investigate the determinants that impact the use of the online database system in the learning of students at six economics universities. The study provides recommendations to improve the efficiency of the online database system and to better meet the needs of students in the university.

3. Theoretical Framework and Methodology

3.1. Theoretical Framework

The theory of Reasoned Action (TRA) explains consumer behavior and determines their behavioral predisposition based on general feelings of liking or disliking, which lead to behavior, and subjective norms, which refer to the influence of others on their attitudes (Fishbein and Ajzen, 1975).

Technology Acceptance Model (TAM) is a theoretical model used to evaluate the effects on the choice behavior of using technological devices for individual or collective needs (Davis, 1989).

Theory of Planned Behavior (TPB) is a theory developed from the TRA, which assumes that a behavior can be predicted or explained by behavioral tendencies to perform that behavior. Behavioral tendencies include motivational factors that influence behavior and are defined as the degree of effort that people put into the behavior (Ajzen, 1991).

3.2. Research methodology

The sample consisted of 492 students from six economics universities in Vietnam, selected through stratified random sampling. The data was collected through a questionnaire containing 26 observed measurement variables for seven proposed groups of factors, including six independent factors and one dependent factor. The proposed factor groups were developed based on the research of Jalilvand et al. (2012), and the study used exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) for data analysis. The sample size for the study was n=492. The study focused on analyzing and synthesizing six concepts and problems related to the use of database systems. These concepts and problems were selected from various studies, including perceived ease of use and perceived usefulness (Davis, 1993; Venkatesh et al., 2003; Roca and Gagné, 2008; Park, 2009; Cakir and Solak, 2014; Mohammadi, 2015), perceived effectiveness (Park, 2009; Park et al., 2012), convenience (Berry et al., 2002; Gupta and Kim, 2006), attitude to use

(Ajzen, 1991; Chou and Hsu, 2016; Tsang et al., 2004), and technical barriers (Julander and Soderlund, 2003; Le and Dao, 2015).

Based on the theoretical models of the theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), and Theory of Planned Behavior (TPB), and the results of the research by Le and Dao (2015), we proposed a theoretical model that identified factors affecting the use of online database systems in the learning of students at economics universities in Vietnam. The influencing factors were measured by six factors: perceived effectiveness, perceived ease of use, technical barriers, perceived usefulness, attitude to use, and convenience.

Perceived effectiveness (PE) was defined as the personal perception of an individual's ability to use the system effectively. Individuals believe that their ability to use the system will impact the expectations and usefulness of the service and promote their intention to use the system. It was affirmed that perceived effectiveness had a significant influence on the perceived usefulness and intention to use the E-learning system of students at Hanoi University of Science and Technology (Le and Dao, 2015).

Hypothesis H1a: The perceived effectiveness of the online database system has a positive impact on students' intention to use it for learning purposes.

Hypothesis H1b: Perceived effectiveness positively impacts the perceived usefulness of the online database system.

Perceived ease of use (PEU): According to research by Le, 2016, perceived ease of use is the perception of the ability to easily use the service when individuals are exposed to the service system. The studies of Taylor and Todd (1995); Venkatesh and Davis (2000); Saroia and Gao (2018) have shown the synergistic effect of perceived ease of use on perceived usefulness on the indirect intention of use. Perceived ease of use helps users have a happy attitude, and enjoy using services and products, thereby improving the intention to use (Pavlou and Fygenson, 2006).

Hypothesis H2a: Perceived ease of use positively influences the perceived usefulness of the online database system.

Hypothesis H2b: Perceived ease of use has a positive impact on the attitude towards using the online database system.

Technical barriers (TB): Based on the research theory of (Julander and Soderlund, 2003), technical barriers are the disadvantages in terms of technology and techniques to access the service system. Technical barriers have a major impact on the system acceptance process. Therefore, to develop the system effectively, technological and technical factors must be focused on reducing technical barriers for users (Le and Dao, 2015).

Hypothesis H3: Technical barriers negatively affect students' intention to use the online database system for learning purposes.

Perceived usefulness (PU): Perceived usefulness is the degree to which users feel that using the system will help them improve their efficiency at work. In addition, the usefulness of the service is shown by helping customers save time, costs, and access to diverse services (Davis 1993, Erk and Evans 2016). Studies by Park and Chen (2007), and Kim et al. (2013) concluded that the greater the perceived usefulness of users, the greater the influence on the intention to use.

Hypothesis H4: Perceived usefulness has a positive influence on students' intention to use the online database system for learning purposes.

Attitude to use (ATU): According to Ajzen (1991), the intention to use something is directly influenced by "attitude", "subjective norm" and "behavioral control perception". Attitude is defined as an individual's positive or negative emotions when performing a behavior with a clear purpose (Hsu, 2016). When the individual has a positive attitude toward an action, the likelihood of performing that action is higher (Tsang, 2004).

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 19 April 2023 doi:10.20944/preprints202304.0546.v1

Hypothesis H5: A positive attitude towards using the online database system has a positive impact on students' intention to use it for learning purposes

Convenience (CE): According to mental computation theory, convenience means consuming less physical and mental energy to reduce time and effort to increase the benefits of activities. For services or technology products, convenience is also the ability to access and use the service system, which the service system provides to users (Berry et al., 2002). In a study by Gupta and Kim (2006), it was shown that the convenience of the service also boosts the user's intention to use the service system.

Hypothesis H6: Convenience has a positive influence on students' intention to use the online database system for learning purposes.

Summarize the theory of previous research works, combine with the analysis and determination of gaps in research in different samples. We proposed a research model to study the factors affecting the use of online database systems in learning among students at economics universities (Figure 1).

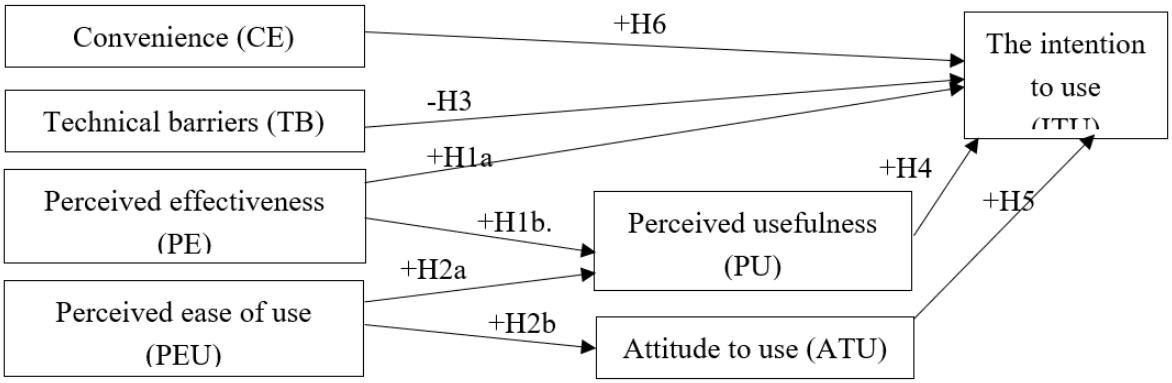

Figure 1. Proposed research model.

4. Results

4.1. Scale Reliability Evaluation

Out of the 492 surveys collected, inappropriate responses such as incomplete responses and responses with the same answer for all observations were excluded. The number of appropriate responses included in the analysis was 492, which is higher than the minimum sample size of 145 required for this study. The reliability of the scale was assessed using Cronbach's Alpha coefficient. The results of the Cronbach's Alpha test for variable groups in the study model show that:

Based on the test results in Tables 1 and 2, all 29 observed variables showed satisfactory results, indicating that the scale used in the implementation of EFA is reliable. Therefore, 29 observations are sufficient to ensure the reliability of the scale.

Table 1. Cronbach's Alpha Scale Reliability Test Results.

Items	PEU	PE	TB	PU	ATU	CE	ITU	
Cronbach's Alpha	0.851	0.763	0.805	0.802	0.785	0.837	0,866	Total
Number of inspection observations	05	03	04	04	03	05	05	29
The number of observations accepted	05	03	04	04	03	05	05	29
Number of observations removed	00	00	00	00	00	00	00	00

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 19 April 2023 doi:10.20944/preprints202304.0546.v1

Table 2. Cronbach's Alpha and Pattern Matrix after extracting unmoderated items.

Items	Factor							Cronbach's Alpha
	1	2	3	4	5	6	7	
Perceived ease of use (PEU)								**0.851**
PEU4	0.862							0.813
PEU5	0.767							0.825
PEU2	0.709							0.815
PEU1	0.645							0.822
PEU3	0.625							0.828
Convenience (CE)								**0.837**
CE2		0.786						0.795
CE3		0.723						0.802
CE4		0.720						0.797
CE1		0.676						0.809
CE5		0.609						0.816
The intention to use (ITU)								**0.866**
ITU3			0.839					0.833
ITU2			0.716					0.842
ITU5			0.709					0.829
ITU1			0.655					0.838
ITU4			0.533					0.845
Technical barriers (TB)								**0.805**
TB3				0.753				0.761
TB4				0.736				0.744
TB1				0.672				0.753
TB2				0.619				0.764
Perceived usefulness (PU)								**0.802**
PU3					0.748			0.738
PU4					0.713			0.758
PU1					0.695			0.759
PU2					0.678			0.755
Perceived effectiveness (PE)								**0.763**
PE2						0.732		0.664
PE1						0.698		0.688
PE3						0.680		0.695
Attitude to use (ATU)								**0.785**
ATU3							0.736	0.680
ATU1							0.701	0.715
ATU2							0.665	0.731
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy								0.901
Sig. (Bartlett's Test of Sphericity)								0.000
Cumulative (%)								65.100
The Value of Initial Eigenvalue								1.101

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 19 April 2023 doi:10.20944/preprints202304.0546.v1

4.2. Exploratory Factor Analysis (EFA)

By PCA extraction and Promax rotation, EFA test results of independent variables for KMO and Barlett's test results showed that KMO = 0.901 > 0.05 and Sig.=0.000 < 0.05, thereby concluding that the observed variables included in the analysis are correlated with each other and the appropriate EFA discovery factor analysis used in this study in Table 3.

The results of the factor analysis also show that the total variance explained is 65,100% > 50%, and the stopping point when deducting at the 7th factor is 2,722>1 all meet the conditions. Seven factors were drawn from the analysis of 29 included scales.

Table 3. Results of EFA exploratory factor analysis for independent variables.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**901**
Bartlett's Test of Sphericity	Approx. Chi-Square	6253,089
	df	406
	Sig.	0.000

The Rotation Matrix results of the EFA analysis show that 7 new groups of factors with observed variables with factor load coefficients greater than 0.3 are satisfactory.

4.3. Confirmatory Factor Analysis (CFA)

Look at the CFA results for the model in Table 4:

First, because Chi-square/df = 1.852 < 2, TLI = 0.942 > 0.90, CFI = 0.949 > 0.90, and RMSEA = 0.042 < 0.08, it can be said that the model is suitable for the market data.

Table 4. Model fit results.

CMIN/DF	CFI	TLI	RMSEA
1.852	949	0.942	0.042

Second, the (normalized) weights are all greater than 0.5. In which, it ranges from 0.666 to 0.797 and all have P < 0.05, so the scales reach the convergence value.

Third, because the model is consistent with market data and the observed variables are not correlated, the scale achieves unidirectionality based on indicators: AVE > 0.5 and CR > 0.7.

Fourth, the AVE coefficients of the above 7 groups are all larger than MSV, so the scale achieves differentiation. Thus, the model is consistent with market data, the concepts of achieving convergent value, achieving unidirectionality, distinguishing value, and measuring scale reliability in Table 5.

Table 5. CR and AVE evaluation table.

	CR	AVE	MSV	MaxR(H)	CE	PEU	TB	ITU	ATU	PU	PE
CE	0.838	0.51	0.366	0.84	0.714						
PEU	0.852	0.535	0.306	0.853	0.343***	0.732					
TB	0.805	0.509	0.356	0.807	0.391***	0.372***	0.713				
ITU	0.866	0.565	0.402	0.868	0.605***	0.553***	0.597***	0.751			
ATU	0.786	0.551	0.362	0.792	0.559***	0.199***	0.537***	0.602***	0.742		
PU	0.802	0.504	0.133	0.804	0.364***	0.269***	0.197***	0.363***	0.169**	0.71	

Preprints (www.preprints.org) | NOT PEER-REVIEWED | Posted: 19 April 2023 doi:10.20944/preprints202304.0546.v1

PE	0.764	0.519	0.402	0.766	0.313***	0.509***	0.499***	0.634***	0.434***	0.229***	0.72

4.4. Structural Equation Modeling Analysis (SEM)

According to the following summary table, in theory for good, the three indicators GFI, TLI, and CFI are all above 0.9. However, it is difficult to achieve all three indicators. According to (Nguyen and Nguyen, 2008), the model with TLI, CFI ≥ 0.9 and CMIN/df ≤ 3, and MRSEA ≤ 0.08 is acceptable. Take this criterion and compare it with the actual acceptable results of the data set by the model.

The SEM model analysis results show that the research model is consistent with market data: Chisquare; CMIN/df = 2.362; GFI = 0.897; TLI = 0.908; CFI = 0.918; RMSEA = 0.053 in Figure 2.

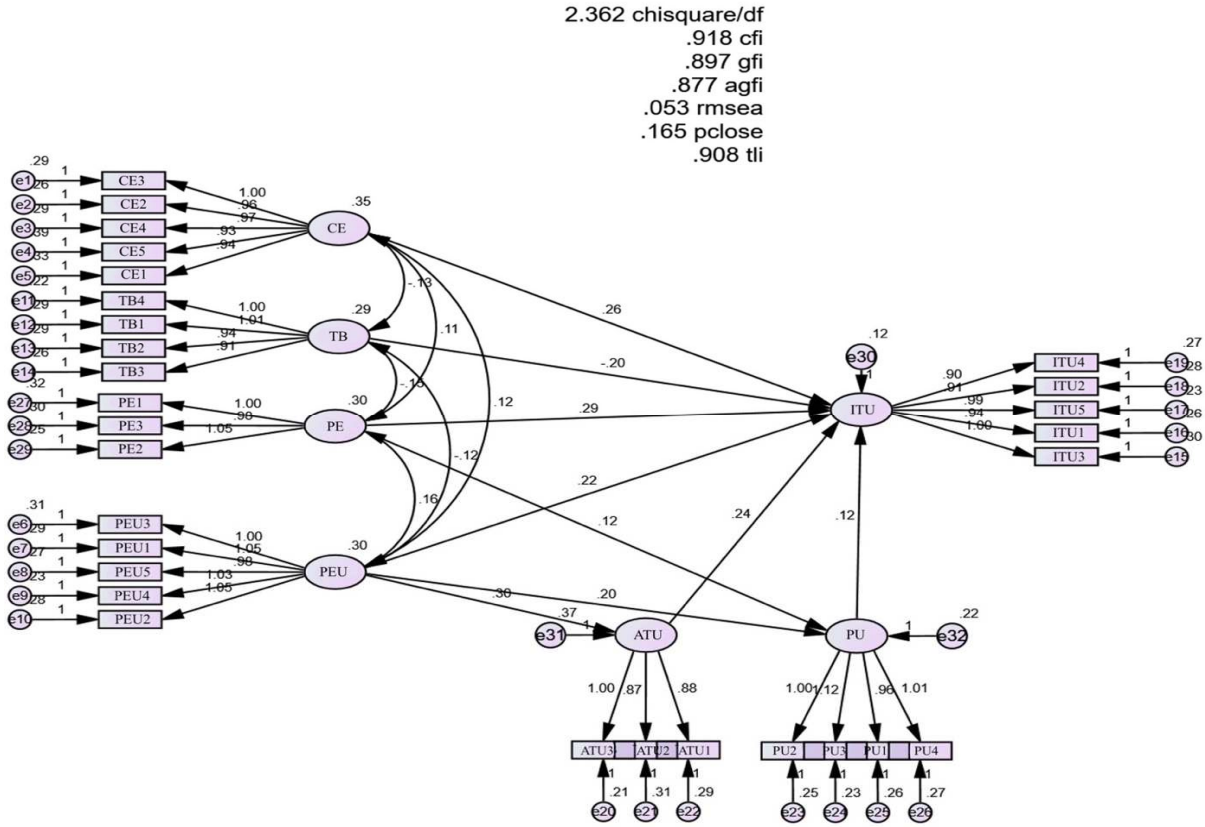

Figure 2. SEM analysis.

Table 6 shows the results of the hypothesis testing for the relationships between the factors in the proposed model. The p-values for the relationships are all below the 5% significance level. The relationship between PE and PU has a reliability of 90% at the 5% significance level, indicating that PE does not have a significant impact on PU in the same direction. However, at the 10% significance level, PE has a significant positive impact on PU. The study can also observe that at P < 0.05, PE, PEU, CE, ATU, and PU have a positive impact on ITU, while TB has a negative impact on ITU.

Table 6. Results of SEM model estimation.

Relationship			Unstandardized	Normalizations	Standard error	p-value
ATU	**<---**	PEU	296	259	0.063	***
PU	<---	PEU	0.196	.216	.061	0.001
PEU	<---	PE	116	129	0.063	0.064
ITU	<---	PE	0.293	273	0.063	***
ITU	<---	PEU	223.	206	0.057	***
ITU	<---	TB	196	-0.179	0.056	***

ITU	<---	CE	257	.256	047	***
ITU	<---	ATU	235	249	041:	***
ITU	<---	PU	123	103	0.05	0.013

5. Discussion

The survey data analysis showed that all six factors examined (Convenience, Technical barriers, Perceived effectiveness, Perceived ease of use, Perceived usefulness, and Attitude to use) significantly affected the use of online database systems by students at six economics universities in Vietnam. The factor with the strongest influence was Perceived effectiveness, while Perceived usefulness had a reverse effect.

These findings support the reliability of the Technology Acceptance Model (TAM) in predicting students' intention to use online database systems, specifically the factors of Perceived ease of use and Perceived usefulness. This is consistent with recent studies in online learning systems and e-commerce services (Klopping and Mckinney, 2004; Uroso et al., 2010; Cakir and Solak, 2014; Mohamadi, 2015; Le and Dao, 2016).

Furthermore, our study revealed the significant influence of technical barriers on students' intention to use online database systems. This emphasizes the importance of considering technology-related factors and implementing technological solutions to reduce barriers to users caused by technical issues. To improve the use of online database systems in student learning at economics universities.

Hypothesis H1a: The perceived effectiveness of the online database system has a positive impact on students' intention to use it for learning purposes.

Hypothesis H1b: Perceived effectiveness positively impacts the perceived usefulness of the online database system.

The factor with the strongest influence among the six elements of the model was Perceived effectiveness, accounting for 27.3% of the variance in students' intention to use the online database system. This indicates that students at the university prioritize and expect features that provide value and direct benefits in their use of the system for learning. The desire for efficiency when using technology is likely to continue to grow as technology advances.

Hypothesis H2a: Perceived ease of use positively influences the perceived usefulness of the online database system.

Hypothesis H2b: Perceived ease of use has a positive impact on the attitude towards using the online database system.

The results of the study suggest that perceived ease of use has a relatively strong influence on students' use of online database systems in their learning at 6 economics universities, with a percentage of 20.6%. The analysis indicates that students are more likely to adopt and utilize the database system if it has a user-friendly design. With self-study becoming increasingly popular, the need to find relevant documents is also increasing, making it crucial for the database system to be easily accessible and navigable for students.

Hypothesis H3: Technical barriers negatively affect students' intention to use the online database system for learning purposes.

Through the evaluation according to the intended behavior theory (TPB) of Fishbein and Ajzen (1975), combined with the research results, it was found that the technical barrier strongly influenced, -17.9%, the use of online database system in the learning of students of National Economics University. The barriers are easy to encounter such as incompatibility with equipment, software errors, etc. If this problem is not overcome, students will notice the inconvenience and reduce the use of the online database system in their learning.

Hypothesis H4: Perceived usefulness has a positive influence on students' intention to use the online database system for learning purposes.

From the analysis, it was found that the perceived usefulness has a relative impact on the use of the online database system in the learning of students at 6 economics universities, at 10.3%. Since the popularity of the internet in Vietnam, we have more and more opportunities to access information and data, but not all sources of information are useful to users. Therefore, the more valuable the database system is to students, the more students will use the system in the learning process.

Hypothesis H5: A positive attitude towards using the online database system has a positive impact on students' intention to use it for learning purposes.

The attitude of using impacts on the use of online database systems in the learning of students at economics universities at a high level of 24.9%. Attitude is also affected by perceived ease of use at 25.9%. The perceived usefulness factor does not affect the use attitude factor. The DATA base system with proximity and convenience in use will be well received by students and have a good attitude and attitude to influence in the same direction as their use.

Hypothesis H6: Convenience has a positive influence on students' intention to use the online database system for learning purposes.

The research tested the hypothesis and the results showed that the correlation between these two factors is relatively large, with a rate of 25.6%. The convenience of the system will promote the use of students because students always want to access and use the school's system easily.

6. Conclusion and Recommendation

The study suggests implementing the following solutions:

For Economics Universities

Firstly, Vietnamese universities are not real service companies (Nguyen, 2013). Therefore, economics universities need to improve the accessibility of the system to make it more convenient for students to access the system. The school needs to disseminate the general knowledge and benefits of the university's online database system to students by organizing seminars and workshops to guide new students on how to use the system so that students can better understand the system and be able to use all the functions and tools of the system optimally.

Secondly, the perceived effectiveness for students also needs to be improved through the establishment of a system that is compatible with all operating systems in students' devices, especially the need to install more system versions suitable for devices running macOS 11.0 or lower, build tools in the system friendly, regularly add new utilities as well as new features and experiences.

Thirdly, the school needs to improve the usefulness of the system. Students today have a very high demand for finding materials online, so universities should invest in and update a variety of learning materials on the Reader electronic library. In addition, lecturers should also post more soft copies of documents in addition to the main material on the class in the LMS channel so that students can easily receive more sources of information and knowledge.

Fourthly, the online database system needs to be improved through the reduction of technical barriers. The school should invest in and upgrade the hardware of the system to avoid overloading and crashing the system every time there is a large number of students accessing it in a period of time.

Last, the school needs to strictly manage and control the system to promptly prevent hackers from hacking to disrupt the system or hackers posting unhealthy content that affects the school and students.

For the Students

Every student, especially freshmen, needs to actively register and participate in lessons, training seminars, and tutorials using the universities' online database system, thereby equipping themselves with the knowledge and skills necessary to use the channels of the support system for learning most effectively.

In addition, each student should actively update new versions of the application in the online database system on his/her devices to get a better experience during use for his/her learning. Students should take advantage of these utilities, and arrange and use the channels of the system for learning in a reasonable, effective way, avoiding wasting time.

Furthermore, the students can exchange and share the usage and access to their effective system. Students also regularly contribute comments to economics universities about the inadequacies and limitations of the system in the process of using it for learning so that the universities can promptly fix and repair it to bring the best experience to students.

Author Contributions: Conceptualization — T.M.P.N; Methodology — T.M.P.N; Validation — T.M.P.N; Writing, Review & Editing —T.M.P.N; Visualization – T.M.P.N; Supervision – T.M.P.N.

Funding: This research is funded by National Economics University, Hanoi, Vietnam.

References

1. Arfan, S., Rohail, H.; Adejare, Y. A.; Arsalan, H.; Rab, N. L. Effects of COVID-19 in E-learning on higher education institution students: the group comparison between male and female. National Library of Medicine. **2020**, 55, 805-826.
2. Azzi-Huck, K.; Shmis, T. Managing the impact of COVID-19 on education systems around the world: How countries are preparing, coping, and planning for recovery. WorldBank Blogs. 2020.
3. Ajzen, I. The Theory of Planned Behavior. Organizational Behavior and Human Decision Processes. **1991**, 50, 179-211.
4. Berry, L.L.; Seiders, K.; Grewal, D. Understanding service convenience. Journal of Marketing Research. **2002**, 66, 1-17.
5. Booker, L. D.; Detlor, D.; Serenko, A. Factors Affecting the Adoption of Online Library Resources by Business Students. Journal of the American Society for Information Science and Technology. **2012**, 63, 2503-2520.
6. Cao, M. T.; Nguyen, P. N. Factors Affecting Students in Vietnam's Intention on Using Smartphones for Learning on the Mobile Learning Platforms. Journal of Educational and Social Research. **2022**, 12, 113-125.
7. Cakir, R.; Solak, E. Attitude of Turkish EFL learners towards E-Learning through TAM model. Procedia - Social and Behavioral Sciences. **2014**, 176, 596-601.
8. Chen, H.; Islam, A. A. Y. M.; Gu, X., Teo, T.; Peng, Z. Technology-enhanced learning and research using databases in higher education: the application of the ODAS model. Educational Psychology. **2019**, 40, 1056-1075.
9. Chou, S. W.; Hsu, C. S. Understanding Online Repurchase Intention: Social Exchange Theory and Shopping Habit. Information Systems and E-Business Management. **2016**, 14, 19-45.
10. Davis, F. D. Perceived usefulness, perceived ease of use and user acceptance of information technology. MIS Quarterly. **1989**, 13, 319-339.
11. Davis, F. D. User Acceptance of Information Technology: System Characteristics, User Perceptions, and Behavioral Impacts. International Journal of Man-Machine Studies. **1993**, 38, 475-487.
12. Farouk, B. L.; Muhammad, Y. Factors affecting the use of electronic-databases by academic staff: A study of Bayero University, Kano, Library. Techno Science Africana Journal. **2016**, 13.
13. Fishbein, M. A.; Ajzen, I. Belief, attitude, intention and behavior: an introduction to theory and research. Addison-Wesley, Reading, MA. 1975.
14. Groote, D. S. Measuring use patterns of online journals and databases. Journal of the Medical Library Association. **2003**, 91, 231-240.
15. Gupta, S.; Kim, H.W. The moderating effect of transaction experience on value-driven internet shopping. Proceeding of European Conference on Information Systems. **2006**, 807-818.
16. Jafari, S. M.; Salem, S. F.; Moaddab, M. S.; Salem, S. O. Learning Management System (LMS) success: An investigation among the university students, 2015 IEEE Conference on e-Learning, e-Management and e-Services (IC3e), Melaka, Malaysia, **2015**, 64-69.

17. Jalilvand, M. R.; Samiei, N.; Dini, B.; Manzari, P. Y. Examining the structural relationships of electronic word of mouth, destination image, tourist attitude toward destination and travel intention: An integrated approach. Journal of Destination Marketing & Management. **2012**, 1, 134-143.
18. Julander, C. R.; Soderlund, M. Effects of switching barriers on satisfaction repurchase intentions and attitudinal loyalty. SSE/EFI Working Paper Series in Business Administration. **2003**, 1-22.
19. Kim, C. M.; Kim, M. K.; Lee, C. J. Teacher beliefs and technology integration. Teaching and Teacher Education. **2013**, 29, 76–85.
20. Klopping, I. M.; McKinney, E. Extending the Technology Acceptance Model and the Task-Technology Fit Model to Consumer e- Commerce. Information Technology, Learning and Performance Journal. **2004**, 22, 35-48.
21. Le, H. H.; Dao, T. K. Factors affecting students' intention to use E-Learning system: A case study of Hanoi University of Science and Technology. Economic and Development Magazine. **2016**, 231, 78-86.
22. Mohammadi, H. Investigating users' perspectives on e-learning: An integration of TAM and IS success model. Computers in Human Behavior. **2015**, 45, 359-374.
23. Neuman, D. High school students' use of databases: Results of a national Delphi study. Journal of the American Society for Information Science. **1995**, 46, 284-298.
24. Uroso, A., Soyelu, S.; Koufie, M. Task technology fit and technology acceptance models applicability to e-tourism. Journal of Economic Development, Management, IT, Finance and Marketing. **2010**, 2, 1 – 32.
25. Park, S.Y. An Analysis of the Technology Acceptance Model in Understanding University Students' Behavioral Intention to Use E-Learning. Educational Technology and Society. **2009**, 12, 150-162.
26. Park, Y.; Chen, J. V. Acceptance and Adoption of the Innovative Use of Smartphone. Industrial Management & Data Systems. **2007**, 107, 1349-1365.
27. Park, S.Y.; Nam, M.W.; Cha, S. B. University students' behavioral intention to use mobile learning: Evaluating the technology acceptance model. British Journal of Educational Technology. **2012**, 43, 592-605.
28. Pavlou, P. A.; Fygenson, M. Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. MIS Quarterly. **2006**, 30, 115–143.
29. Piotrowski, C.; Perdue, B.; Armstrong, T. Scholarly online database use in higher education: a faculty survey. Gale Academic Onefile. **2005**, 125, 443-446.
30. Roca, J.C.; Gagné, M. Understanding E-Learning Continuance Intention in the Workplace: A Self-Determination Theory Perspective. Computers in Human Behavior. **2008**, 24, 1585-1604.
31. Saroia, A. I.; Gao, S. Investigating University Students' Intention to Use Mobile Learning Management Systems in Sweden. Innovations in Education and Teaching International. **2018**, 1–12.
32. Taylor, S.; Todd, P. An integrated model of waste management behavior: A test of household recycling and composting intentions. Environment and Behavior. **1995**. 27, 603-630.
33. Tsang, M. M.; Ho, S. C.; Liang, T. P. Consumer Attitudes toward Mobile Advertising: An Empirical Study. International Journal of Electronic Commerce. **2004**, 8, 65-78.
34. Venkatesh, V.; Davis, F. D. A theoretical extension of the technology acceptance model: Four longitudinal field studies. Management Science. **2000**, 46, 186 – 204.
35. Venkatesh, V.; Morris, M.; Davis, G.; Davis, F. User acceptance of information technology: Toward a unified view. MIS Quarterly. **2003**, 27, 425-478.
36. Vu, K. L.; Van, T. A.; Ta, T. N. Factors affecting the intention to use e-libraries of students at universities in Hanoi. National Economics University, Hanoi, Vietnam. 2020.