

Factors Affecting Students' Satisfaction with Economics Universities' Digital Library Services in Hanoi

Nguy Thuy Trang Nguyen Thuy Ngan* To Thi Thao Ngan Ngo Quang Khai
Le Ngoc Mai Nguyen Thuy Linh

Faculty of Foreign Languages, National Economics University, 207 Giai Phong Street, Hanoi, Vietnam

* E-mail of the corresponding author: dulnguyenthuyngan@gmail.com

* Tel of the corresponding author: +84356537699

Abstract

The study was conducted to evaluate students' satisfaction with the current digital library services offered by economics universities in Hanoi. Based on the findings, the study proposed recommendations to improve the falling points in the digital library services of economics universities. This study applies the SERVQUAL model to identify the relationship between SERVQUAL dimensions and library users' satisfaction, and each dimension has a different effect on satisfaction level. The SERVQUAL scale was edited, and the research model progressed on six factors: Tangibles, Assurance, Empathy, Responsiveness, Reliability, and Perceived Ease of Use. According to the survey results, the research received 462 valid responses from economics university students in Hanoi, which are appropriate for analyzing data. It was concluded that most of the students are fairly satisfied with the digital library services, which can be seen clearly through the six dimensions above. Specifically, Reliability had the highest impact on satisfaction (22.03%), followed by Assurance (18.99%), Empathy (17.22%), Perceived Ease of Use (16.71%), Responsiveness (13.42%), and Tangibles (11.65%). The research model and study might be useful and provide insights and recommendations for other research on digital libraries or other services.

Keywords: digital library services, economics universities, student satisfaction

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1. Introduction

The concept of "Industry 4.0," driven by the Internet of Things (IoT), has catalyzed a digital transformation across various sectors, including education. Universities are adapting by emphasizing online learning and modern technologies to enhance communication, efficiency, and student well-being. Vietnam's education system, notably in Hanoi, has embraced digital transformation, with widespread high-speed internet connection and online management software at schools. This shift extends to university libraries, which are transitioning to digital formats to meet students' needs for accessible information. However, the impact of this transition on student satisfaction in Hanoi, Vietnam remains underexplored. Therefore, the research "Factors affecting students' satisfaction with economics universities' digital library services in Hanoi" aims to fill this gap, offering insights to align library services with student expectations and academic objectives in the digital era.

2. Literature Review

The concept of digital or electronic libraries has been extensively adopted, especially in developed countries. As this shift took place, experts dedicated their efforts to studying and understanding this new form of the library. Consequently, numerous research papers on the world in general and in Vietnam in particular have thoroughly investigated and examined students' satisfaction levels with digital library services. Cherry and Duff (2002) studied user satisfaction with a digital library collection over time. They identified areas for improvement, such as response time, browsing, and search functionalities, to enhance user experience.

Yang (2004) emphasized user satisfaction as the key to perceived quality. Regular service assessments and user surveys are crucial to ensure that libraries meet user expectations. Both print and digital resources, along with overall service perception, significantly impact user satisfaction. Martinez & Chen (2005) investigated user satisfaction with digital library interfaces and functions, considering three variables (cognitive style, gender, and level of expertise). The study's findings helped identify specific areas of improvement within the digital library interface and determine which user groups would benefit the most from these enhancements.

Unlike prior studies on user satisfaction, Ahmed (2013) highlighted that the faculty members were dissatisfied with the university's e-resources, which stemmed from limited content, access issues, and poor infrastructure. However, Dang & Felix (2018) found low user satisfaction with the Federal University Dutsinma's Digital Library due to limited user knowledge of available resources. They recommend ongoing user training to improve navigation and utilization of the library's collections. Soltani-Nejad et al. (2020) investigated user satisfaction with digital libraries in Iran, proposing a new model that considers both common and less-explored factors. Their findings highlight the importance of understanding cultural variations in user experience to improve library services globally.

Nguyen Thanh Tong (2016) examined student satisfaction with the library services quality at Bac Lieu University, based on the SERVQUAL model. The results showed that the highest level of satisfaction was related to the service aspect. Hua Van Thanh et al. (2016) identified factors that influence students' satisfaction with the quality services of Thua Thien Hue College of Education Library. The research's findings expressed that four factors: reliability, responsiveness, tangibles, and assurance significantly affected user satisfaction. Le Ngoc Liem et al. (2017) investigated the relationship between quality and user satisfaction in the context of college library services. The results revealed three dimensions such as tangibles, assurance, and empathy had positive effects on service quality. The study also highlighted the significant role of service quality as an antecedent to raising user satisfaction. Dao Thi Hanh et al. (2019) emphasized that service capacity had the greatest impact on satisfaction levels, followed by borrowing of documents, response, empathy, and accuracy. Nguyen Van Canh (2020) conducted research to measure student satisfaction with the service quality of Dong Thap University library. The research identified four aspects including facilities, staff capacity, responsiveness, and library reliability, and revealed that student satisfaction with the library services was over 80%. Tran Thi Yen Phuong (2021) studied factors influencing the satisfaction level of students with the service quality of Duy Tan University's Library. The research findings revealed that five factors: tangible assets, reliability, responsiveness, services capability, and empathy positively enhance user pleasure, with tangible assets being the most important one.

3. Research Model & Hypothesis

Based on the literature review and previous research models such as SERVQUAL and TAM, the authors selected six factors affecting students' satisfaction with digital library services, including reliability, responsiveness, empathy, tangibles, and perceived ease of use.

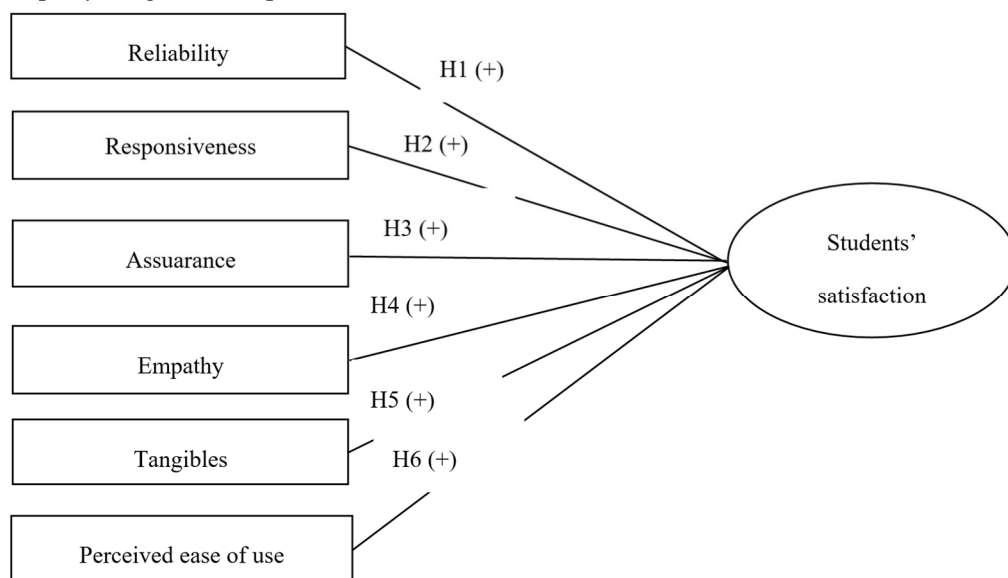


Figure 1. Proposed research model

Based on the student satisfaction research model, the model's hypotheses are formulated as follows:

H1: Reliability has a positive impact on the general satisfaction of students with the digital library services of economics colleges in Hanoi.

H2: Responsiveness has a positive influence on the overall satisfaction of students with the digital library services of economics colleges in Hanoi.

H3: Assurance has a positive impact on the overall satisfaction of students with the digital library services of economics colleges in Hanoi.

H4: Empathy has a positive influence on the overall satisfaction of students with the digital library services of economics colleges in Hanoi.

H5: Tangibles have a positive impact on the overall satisfaction of students with the digital library services of economics colleges in Hanoi.

H6: Perceived Ease of Use has a positive influence on the overall satisfaction of students with the digital library services of economics colleges in Hanoi.

4. Research methodology

4.1. Qualitative research

4.1.1. Preliminary Research

The research began with a comprehensive review of international and domestic literature on student satisfaction

with digital libraries to gain a broad understanding of the topic. Several satisfaction models such as the SERVQUAL model and the American Customer Satisfaction Index are also referenced, which significantly contributed to the research's development. Furthermore, consultations with lecturers from economics universities in Hanoi greatly assist the researchers in confirming the appropriateness of the content, wording, and clarity before the official research.

4.1.2. In-depth Interviews

A group of 30 students from six economics universities in Hanoi were interviewed face-to-face. The interview was conducted to expose their opinions and attitudes towards digital library services, which was an indispensable part of the study to adjust the scales in the research model and implement some new factors.

4.2. Quantitative research

4.2.1. Sample and data collection

According to Comrey and Lee's (1992) guidelines on sampling research sample size, the number of samples is as follows: 50 is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good and 1000 is excellent. Hence, to increase the reliability and remove the invalid data, the number of samples proposed is at least 360 votes. In reality, 464 valid responses were collected from economics university students in Hanoi, which were appropriate for analyzing data.

Data was collected through online forms provided by Google. The survey was conducted in three weeks from 30 December 2023 to 27 January 2024. The returned data was frequently checked and observed to eliminate inappropriate responses. Finally, 462 responses in valid were selected, then transformed into Excel form, before being processed by SPSS 2023.

4.2.2. Data analysis procedure

In this study, General Satisfaction is the dependent variable and six independent variables include Reliability, Responsiveness, Empathy, Tangibles, and Perceived ease of use. Data is analyzed using SPSS23. Descriptive statistics are utilized to obtain a general understanding of the sample. Cronbach's Alpha is employed to measure the scale's reliability. Exploratory factor analysis (EFA) is employed to condense and summarize data. Multivariate regression analysis is conducted to calculate the total variance in students' satisfaction that the six factors can explain.

5. Findings

5.1. Preliminary analysis

The survey was conducted in different economics universities in Hanoi, Vietnam, including Thuong Mai University (16,9%), National Economics University (16,7%), Academy of Finance (16,7%), Foreign Trade University (15,6%), Banking Academy (15,4%) and the University of Economics and Business (15,2%). Of 462 respondents, 39,6% of the respondents were male while 56,9% were female. 18,2% of the respondents never used the digital library, while 22,9% usually used it and only 4,1% always used the digital library.

5.2. Evaluate the scale using Cronbach's Alpha reliability coefficient

Overall, the research uses 6 conceptual scales related to the quality of the digital library. The analysis results show that the Cronbach's Alpha of the scales all are greater than 0.6 and the corrected item-total correlation coefficients are greater than 0.3. Therefore, all six originally designed measurement scales are reliable, demonstrating good measurement properties.

Table 1. Summary of the results of the scale reliability analysis

Factors	Number of variables	Cronbach's Alpha coefficient
Reliability	6	0.843
Responsiveness	6	0.850
Assurance	4	0.798
Empathy	5	0.819
Tangibles	6	0.837
Perceived ease of use	5	0.811

5.3. Analysis of the scale validity

The original research model has 6 groups of factors affecting students' satisfaction with the digital library services of economics universities in Hanoi. After removing 4 undesirable variables, 28 variables are included in the factor analysis.

Table 2. KMO and Barlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.898
Bartlett's Test of Sphericity	Approx. Chi-Square	3862.609
	df	406
	Sig.	0.000

Table 2 shows that the KMO coefficient is >0.5 ; Sig. for Bartlett's test is $0.000 < 0.05$ so the EFA method is suitable. The authors continue to perform the EFA technique for the observable variables of the dependent variable - general satisfaction.

Table 3. KMO and Barlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.707
Bartlett's Test of Sphericity	Approx. Chi-Square	329.094
	df	3
	Sig.	0.000

BarleSTM's test results (BarleSTM's Test of Sphericity) in KMO and BarleSTM's test with $\text{sig}=0.000$ and $\text{KMO}=0.707 > 0.5$ both meet the requirements.

5.4. Correlation analysis

Table 4. Correlations

		GS	REL	RES	ASS	EMP	TAN	PEU
GS	Pearson Correlation	1	.603**	.527**	.561**	.556**	.498**	.553**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
REL	Pearson Correlation		1	.374**	.372**	.374**	.340**	.383**
	Sig. (2-tailed)			.000	.000	.000	.000	.000
RES	Pearson Correlation			1	.355**	.375**	.321**	.350**
	Sig. (2-tailed)				.000	.000	.000	.000
ASS	Pearson Correlation				1	.339**	.317**	.352**
	Sig. (2-tailed)					.000	.000	.000
EMP	Pearson Correlation					1	.370**	.342**
	Sig. (2-tailed)						.000	.000
TAN	Pearson Correlation						1	.373**
	Sig. (2-tailed)							.000
PEU	Pearson Correlation							1
	Sig. (2-tailed)							

The results of the correlation coefficient analysis proved that all independent variables exhibit linear relationships with the dependent variable. Among them, the variable REL shows the highest correlation coefficient with the dependent variable ($r = 0.603$), while the variable TAN has the lowest correlation coefficient with the dependent variable ($r = 0.498$). The independent variables are correlated with each other; however, this correlation is not significant. The correlations are statistically significant at a 99% confidence level, indicating that these independent variables can be included in the model to explain student satisfaction. In conclusion, after Pearson testing, the conditions for including these independent variables in regression analysis are met.

5.5. Regression

Table 5. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	Constant	-.704	.173		-4.057	.000		
	REL	.289	.040	.261	7.286	.000	.715	1.399
	RES	.175	.039	.159	4.503	.000	.737	1.356
	ASS	.233	.036	.225	6.431	.000	.751	1.331
	EMP	.221	.039	.204	5.739	.000	.729	1.371
	TAN	.155	.039	.138	3.937	.000	.753	1.328
	PEU	.211	.038	.198	5.564	.000	.729	1.371
R		0.812						
R ²		0.659						
Adjusted R ²		0.653						
Durbin-Watson		1.980						
F		Sig. = 0,000						

The results of the regression analysis indicate coefficient R= 0.812, demonstrating a strong correlation among the variables in the model. The regression output shows R² = 0.659, indicating that the six factors in the model explain 65.9% of the variability in the dependent variable. Table 5 reveals that the multiple linear regression model is suitable for the dataset, as the adjusted R-squared value is 0.653 (or 65.3%), and the F-test = 0.000 (<0.05) signifies the existence of a linear regression relationship between satisfaction and the six influencing factors.

After conducting regression tests compared to the entire population, the model is considered not to violate the test hypotheses and is statistically significant. Examining the significance level of the independent variables in the regression model, all independent variables are found to impact the dependent variable (sig. < 0.05). The relationship between the dependent variable and the six independent variables is expressed in the following equation:

$$GS = 0.261 * reliability + 0.159 * responsiveness + 0.225 * assurance + 0.204 * empathy + 0.138 * tangibles + 0.198 * perceived ease of use$$

6. Recommendations

From the findings, the author recommends some solutions to be applied at economics universities in Hanoi as follows:

Firstly, universities should improve reliability by establishing strong support mechanisms that are ready to answer all questions and provide timely support to users. Periodically maintain and regularly update the system to ensure stable operation. Furthermore, user experience and seamless access to resources should be increased. Implement control mechanisms to strengthen security infrastructure. At the same time, build features that help accessibility and meet diverse user needs.

Secondly, library staff should regularly check content with trusted sources, evaluating content quality for accuracy, comprehensiveness, and timeliness. Furthermore, train staff on new technology and equip them to handle potential risks promptly while ensuring responsible library management. Library staff should regularly survey users to understand their experiences and preferences. At the same time, organize training sessions or provide programs to guide users in using the digital library.

Finally, being a student, to improve the reliability of digital libraries, one should promptly report any broken links, outdated resources, or technical issues encountered while using the digital library to library staff. Besides, students should actively provide feedback on their experiences with the digital library, including suggestions for improvements or features they would like to see. Furthermore, they should also stay informed about data protection regulations and guidelines relevant to digital library usage to ensure compliance and promote assurance in data handling practices.

7. Conclusion

This study attempts to examine the factors affecting students' satisfaction with economics universities' digital

library service in Ha Noi. The study uses Parasuman's SERVQUAL model to evaluate customer satisfaction with 5 influencing factors: Tangibles, Assurance, Empathy, Responsiveness, and Reliability. According to the author, the SERVQUAL model could be suitable to evaluate customers' satisfaction with different products and services. However, to adapt to changes in the practice and perception of service delivery, in particular, preliminary research has been conducted to modify the SERVQUAL model by adding Perceived Ease of Use as a factor and changing the survey questions. Each factor has a distinctive impact on students' satisfaction. In which, Reliability poses the most influencing role, while the least impacting role belongs to Tangibles. It could be concluded that the innovation in Reliability contributes more to General satisfaction, and at the same time, the limitedly meaningful impact is found in Tangibles improvement. Based on the surveys, findings, and credited knowledge, planning implications and solutions are suggested following 6 factors. These suggestions aim to enhance the quality of library services, and then promote students' experience by encouraging students to read in credited sources. Besides, the solutions could contribute to the management of digital libraries, including setting up steps for the transformational process.

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