

FACTORS AFFECTING STUDENTS' SATISFACTION WITH THE QUALITY OF GENETIC AND DISTANCE LEARNING SERVICES OF THE UNIVERSITY OF TRANSPORT TECHNOLOGY

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ABSTRACT

This study aims to identify the factors affecting student satisfaction with the quality of distance learning services at the University of Transport Technology. Surveys were distributed to 250 students currently enrolled in the university's distance learning program. Through statistical steps including Cronbach's Alpha reliability assessment, EFA factor analysis, and linear regression, the results show that lecturer quality, course design, and student expectations have a positive correlation, while timely feedback has a negative correlation with student satisfaction regarding the quality of distance learning services. Among these variables, lecturer quality accounts for 25.1%, course design for 29.2%, timely feedback for 14.3%, and student expectations for 27.9%.

KEYWORDS: student satisfaction, instructor, course design, prompt feedback, student expectation, distance learning

INTRODUCTION

In Vietnam, strict social distancing measures forced universities to suspend face-to-face classes and shift to distance learning. This transition allowed students to study anytime and anywhere using internet-connected devices, making distance education an important component of the national education system. The University of Transport Technology, a public institution under the Ministry of Transport, serves nearly 22,000 students and currently offers distance learning in 12 majors. To improve service quality, the university has developed flexible, interactive, and accessible courses that can be accessed via computers or mobile devices, enabling learners nationwide to participate and choose suitable study schedules.

However, the university has recently experienced declining enrollment, affecting financial resources, staffing, and infrastructure utilization. In a competitive environment, improving service quality and enhancing student satisfaction are essential. Although previous studies have examined distance learning satisfaction, no comprehensive research has focused specifically on students at the University of Transport Technology, highlighting the need for this study.

LITERATURE REVIEW

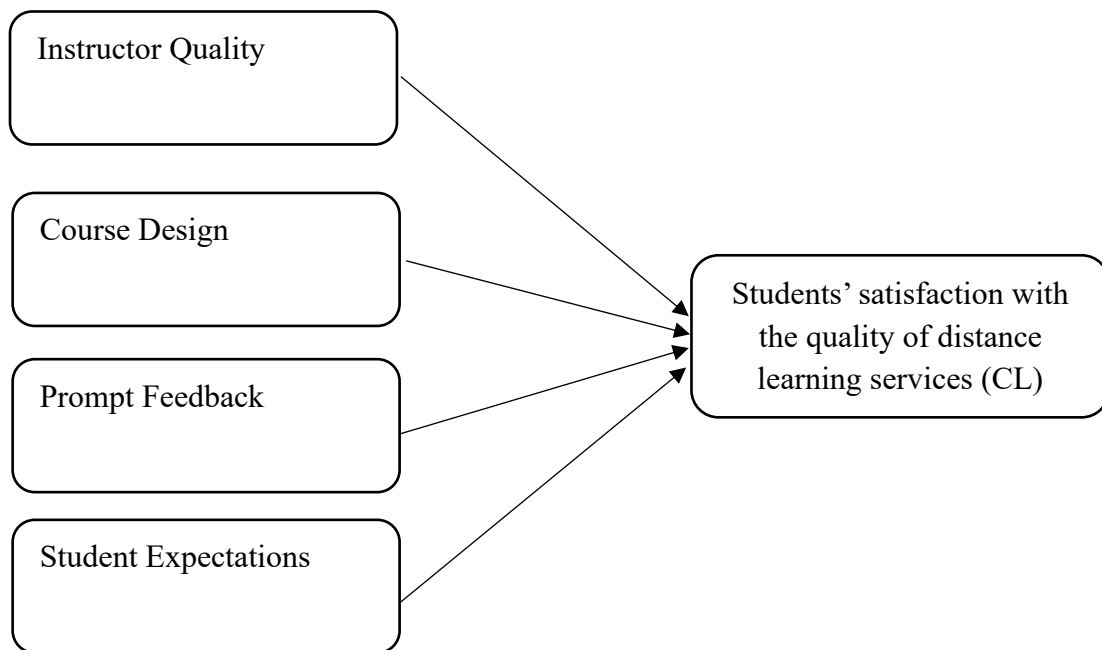
According to Lee (2014) [3], instructor readiness plays a crucial role in helping students learn effectively in online mathematics courses. Lee (2014) [3] found that student satisfaction depends on two main dimensions: human factors, such as instructors' knowledge, and design factors, including course structure and technical aspects. Similarly, Li et al. (2016) [4] reported that learning design positively affects satisfaction in both blended and online courses, with satisfaction linked to teaching materials, assessment methods, and workload. Gopal et al. (2021) [1] found that instructors' ability to deliver content significantly influences student satisfaction in online classes, highlighting the central role of instructors in early online education. This study defines feedback as the information provided by instructors and teaching assistants regarding students' academic performance. These instruments classify questions under three themes: overall module, teaching-learning and assessment, and feedback, in order to explore the structure of student satisfaction (Li et al., 2016) [4]. Expectations are defined as the attributes or characteristics a person

anticipates or predicts will be associated with an entity, such as a product, service, or technology. Therefore, understanding what students expect from a course is crucial to identifying how it influences their learning experience (Rajabalee & Santally, 2020) [6].

THEORETICAL FRAMEWORK

Satisfaction, as defined by Kotler and Keller (2006) [2], is the feeling arising from comparing perceived performance with expectations. In general, customer satisfaction represents the degree to which a service meets expectations. Regarding the relationship between service quality and satisfaction, Zeithaml and Bitner (2000) [7] argued that perceived service quality leads to customer satisfaction. While satisfaction reflects overall evaluation, service quality focuses on specific service components and is considered a key determinant of satisfaction (Parasuraman, 1988) [5]. The proposed research model is as follows:

Figure 1 Research Model



Based on an overview and development of relevant research, this study constructs a model including four factors affecting student satisfaction with distance learning service quality (4 observed variables): Instructor Quality (4 items), Course Design (3 items), Prompt Feedback (3 items), and Student Expectations (3 items). Specifically:

Research Questions

This study aims to identify the factors affecting student satisfaction with the quality of distance learning services at the University of Transport Technology. Specifically, it seeks to answer the following research questions:

1. How does instructor quality affect student satisfaction with the quality of distance learning services?
2. How does course design affect student satisfaction with the quality of distance learning services?
3. How does prompt feedback affect student satisfaction with the quality of distance learning services?
4. How do student expectations affect student satisfaction with the quality of distance learning services?

METHODOLOGY

Research Design: This study used a survey design to quantitatively examine trends and opinions of students participating in distance learning at the University of Transport Technology.

Sampling: The questionnaire was distributed to 250 distance learning students, including 77 first-year (30.8%), 81 second-year (32.4%), 56 third-year (22.4%), and 36 fourth-year students (14.4%).

Data Collection and Instruments: Stratified random sampling combined with simple random selection was applied. The questionnaire was emailed to participants and conducted over three weeks. The survey used a 5-point Likert scale. A pilot test was conducted to refine the instrument, and reliability was assessed using Cronbach's Alpha, with low-reliability items removed.

Data Analysis: Data from 250 respondents were analyzed using Cronbach's Alpha, Exploratory Factor Analysis (EFA), and linear regression to examine factors affecting student satisfaction with distance learning services.

RESULTS AND DISCUSSION

Scale Reliability Testing

The results of the reliability test are presented in Table 1. The reliability coefficients (Cronbach's Alpha) for the scales GV, KH, FB, and SV were all greater than 0.6, and the item-total correlations of the observed variables within these scales exceeded 0.3. Therefore, all scales met the reliability criteria and were suitable for further analysis.

Table 1 Cronbach's Alpha Reliability Coefficients for the Scales

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted | Alpha |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|-------|
| GV1 | 10.0520 | 3.359 | 0.575 | 0.741 | 0.785 |
| GV2 | 10.0240 | 3.236 | 0.580 | 0.738 | |
| GV3 | 9.9920 | 3.245 | 0.576 | 0.740 | |
| GV4 | 10.0960 | 2.995 | 0.636 | 0.709 | |
| KH1 | 6.6680 | 1.660 | 0.621 | 0.723 | 0.789 |
| KH2 | 6.1800 | 1.482 | 0.660 | 0.679 | |
| KH3 | 6.0800 | 1.584 | 0.608 | 0.735 | |
| FB1 | 5.3200 | 1.375 | 0.625 | 0.700 | 0.782 |
| FB2 | 5.7560 | 1.390 | 0.610 | 0.717 | |
| FB 3 | 5.8680 | 1.464 | 0.627 | 0.700 | |
| SV1 | 6.7840 | 1.768 | 0.612 | 0.759 | 0.798 |
| SV2 | 6.8160 | 1.910 | 0.649 | 0.719 | |
| SV3 | 6.8240 | 1.792 | 0.668 | 0.696 | |

Exploratory Factor Analysis (EFA)

After verifying the reliability of the 13 observed variables, Exploratory Factor Analysis was conducted.

Table 2 KMO and Bartlett's Test

| KMO and Bartlett's Test | | |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | 0.730 | |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1063.972 |
| | df | 78 |
| | Sig. | 0.000 |

The KMO value of 0.730 (greater than 0.5) and Bartlett's Test significance of 0.000 (less than 0.05) indicate that EFA is appropriate for this dataset. Principal Component Analysis with Varimax rotation was applied. The results revealed four factors extracted based on Eigenvalues greater than 1, accounting for 68.192% of the total variance—indicating a good summary of the original 13 observed variables.

Table 3 Total variance result extracted

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 3.460 | 26.619 | 26.619 | 3.460 | 26.619 | 26.619 | 2.447 | 18.820 | 18.820 |
| 2 | 2.173 | 16.717 | 43.336 | 2.173 | 16.717 | 43.336 | 2.156 | 16.585 | 35.405 |
| 3 | 1.672 | 12.861 | 56.197 | 1.672 | 12.861 | 56.197 | 2.144 | 16.495 | 51.900 |

| | | | | | | | | | |
|----|-------|--------|---------|-------|--------|--------|-------|--------|--------|
| 4 | 1.559 | 11.995 | 68.192 | 1.559 | 11.995 | 68.192 | 2.118 | 16.292 | 68.192 |
| 5 | 0.705 | 5.425 | 73.617 | | | | | | |
| 6 | 0.598 | 4.599 | 78.216 | | | | | | |
| 7 | 0.507 | 3.897 | 82.113 | | | | | | |
| 8 | 0.495 | 3.805 | 85.918 | | | | | | |
| 9 | 0.461 | 3.547 | 89.465 | | | | | | |
| 10 | 0.388 | 2.984 | 92.450 | | | | | | |
| 11 | 0.378 | 2.907 | 95.357 | | | | | | |
| 12 | 0.315 | 2.425 | 97.782 | | | | | | |
| 13 | 0.288 | 2.218 | 100.000 | | | | | | |

Table 4 presents the matrix of rotated factors as follows:

Table 4 *Rotated Component Matrix*

| | Component | | | |
|-----|-----------|-------|-------|-------|
| | 1 | 2 | 3 | 4 |
| GV4 | 0.812 | | | |
| GV2 | 0.770 | | | |
| GV1 | 0.754 | | | |
| GV3 | 0.754 | | | |
| KH2 | | 0.847 | | |
| KH1 | | 0.823 | | |
| KH3 | | 0.803 | | |
| SV3 | | | 0.859 | |
| SV2 | | | 0.833 | |
| SV1 | | | 0.794 | |
| FB3 | | | | 0.837 |
| FB2 | | | | 0.818 |
| FB1 | | | | 0.804 |

The results of the group of factors are as follows:

- Group 1: includes the variables GV4 (Lecturers personalize interactions with students as needed), GV2 (Lecturers use appropriate online media (e.g., Google Meet, MS Teams, Zoom, etc.); GV1 (Lecturers with good expertise, enthusiastic about teaching online to create a comfortable learning space); GV3 (Lecturers willing to discuss outside of online classes) (factor load factor from 0.754 to 0.812) is called lecturer quality.
- Group 2: includes KH2 variables (Courses designed to allow assignments to be completed in different learning environments); KH1 (Reasonably organized courses); KH3 (Courses designed so that students can take responsibility for their own learning) (load factor from 0.803 to 0.847) is called course design.
- Group 3: including the variables SV3 (Course assignments with a reasonable level of difficulty), SV2 (Lecturers use well-illustrated examples to explain concepts or theories in the online classroom), SV1 (Lecturers explain problems very well to students) (factor load factor from 0.794 to 0.859) called student expectations.
- Group 4: including FB3 variables (Lecturer motivated me to try my best), FB2 (Lecturer responded promptly to my questions about course assignments); FB1 (Lecturer responds to my questions in a timely manner) (factor load factor from 0.804 to 0.837) is called timely response to students

Linear regression model

The regression analysis aimed to determine how the identified factors influenced student satisfaction with the quality of distance learning services.

The adjusted R² value was 0.363, meaning that 36.3% of the variation in student satisfaction could be explained by the four independent variables (GV, KH, FB, SV). The remaining 63.7% could be attributed to other factors not included in this model. The Durbin-Watson statistic was 2.053, indicating no autocorrelation.

Table 5 Model Summary

| Model | R | R square | Adjusted Square | R | Std. Error of the Estimate | Durbin-Watson |
|-------|--------------------|----------|-----------------|---|----------------------------|---------------|
| 1 | 0.611 ^a | 0.374 | 0.363 | | 0.54566 | 2.053 |

The results of the inspection of the significance level shown in Table 6 are as follows:

| ANOVA ^a | | | | | | |
|---|----------------|----------------|-----|-------------|--------|-------------------|
| Bảng 6 ANOVAa Analysis Results | | | | | | |
| Model | | Sum of Squares | df | Mean square | F | Sig. |
| 1 | Between groups | 43.502 | 4 | 10.876 | 36.526 | .000 ^b |
| | Within groups | 72.948 | 245 | 0.298 | | |
| | Total | 116.450 | 249 | | | |
| a. Dependency Variable: CL | | | | | | |
| b. Prediction variables: (Constant), SV, GV, KH, FB | | | | | | |

The value of F = 36.526 with Sig. = 0.000 < 0.05, it can be concluded that the given model is in line with the actual data. In other words, the variables GV, KH, FB, SV have a linear correlation with the CL variable with 95% reliability. The results of the analysis of the regression coefficients of the model are shown in Table 7.

Table 7 Regression of the model

| Model | | Unstandardized Coefficients | | Standardized Coefficient | t | Sig. | Collinearity Statistics | |
|-------|------------|-----------------------------|------------|--------------------------|--------|-------|-------------------------|-------|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 0.787 | 0.399 | | 1.975 | 0.049 | | |
| | GV | 0.298 | 0.062 | 0.251 | 4.812 | 0.000 | 0.936 | 1.068 |
| | KH | 0.334 | 0.061 | 0.292 | 5.520 | 0.000 | 0.916 | 1.091 |
| | FB | -0.174 | 0.065 | -0.143 | -2.683 | 0.008 | 0.899 | 1.112 |
| | SV | 0.296 | 0.057 | 0.279 | 5.173 | 0.000 | 0.881 | 1.135 |

The results show that the variables of GV, KH, FB, and SV have Sig. = 0.000 < 0.05, so these variables are meaningfully correlated with training quality with 95% reliability. According to Table 7, the independent variables all have a < 2 coefficient of variance magnification, no multilinearity.

The variables of teachers, students, and students all have a coefficient of B > 0, so they all have the same impact on students' satisfaction with the quality of distance learning services of the University of Transport Technology, the FB variable has a coefficient of B < 0, so it has the opposite impact on students' satisfaction with the quality of training services from far from the University of Transport Technology. From the analysis results, the regression equation estimates the factors affecting students' satisfaction with the quality of distance learning services of the University of Transport Technology as follows:

$$CL = 0.289*GV + 0.334*KH - 0.174*FB + 0.296*SV + 0.787 + \epsilon$$

The regression equation shows that the variables of teachers, students, and students are positively correlated with students' satisfaction with the quality of distance learning services of the University of Transport Technology (CL). Student satisfaction with the quality of distance learning services of the University of Transport Technology will increase if this factor is satisfied. Therefore, in order to improve student satisfaction with the quality of distance learning services of the University of Transport Technology, these factors need to be improved more. The Beta value indicates the importance of the independent variable to the dependent variable. Table 5 shows the degree of influence

between the 4 independent and dependent variables. Among the variables, the influence of the variable of lecturer quality (GV) is 25.1%, course design (KH) is 29.2%, timely response of students (FB) is 14.3% and student expectations are 27.9%

CONCLUSION

The results of the study show that the variables of lecturer quality, course design, timely feedback of students and expectations of students have an influence on student satisfaction with the quality of distance learning services of the University of Transport Technology. In particular, the quality of lecturers, course design, and expectations of students are positively correlated with students' satisfaction with the quality of distance learning services of the University of Transport Technology. Meanwhile, the timely response of students is inversely correlated with students' satisfaction with the quality of distance learning services of the University of Transport Technology. From the above results, in order to improve students' satisfaction with the quality of distance learning services of the University of Transport Technology, the University needs to implement a number of solutions to improve the quality of lecturers, design appropriate courses and raise student expectations. At the same time, the University needs to review the timely feedback mechanism to better meet the needs of students. The study has achieved certain results. However, the research still has certain limitations such as the survey sample is only limited to 250 students and the variables included in the research model are only limited to 4 basic variables: the quality of lecturers, course design, timely response of students and expectations of students. The next research direction is to expand the survey subjects and add other variables to the research model such as: prestige and brand of the University; learning support system...

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