

Examining student satisfaction with online learning

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ABSTRACT

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The purpose of the article is to determine the factors affecting the satisfaction of Duy Tan University students for online learning during the acute respiratory infection caused by the new strain of Coronavirus (Covid-19). Based on survey, analysis, processing and evaluation of the obtained results, the article aims to focus the analysis within specific limits with the goal of honestly reflecting and thereby offering solutions for the effective use of online learning in the learning process of students. The results show that there are five factors affecting student satisfaction, in order of influence, as follows: (1) Tuition fees; (2) Teaching staff; (3) Interoperability; (4) Facilities and (5) Training programs. Based on these results, the Board of Directors of Duy Tan University will change several factors in order to improve student satisfaction in online learning in the near future.

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1. Introduction

The online education model, Online Learning or E-Learning, first appeared in the world in the US in 1999, opening a new learning environment where learners can interact via the Internet on various media and electronic communication. The strong spread of E-Learning is due to the advantages that this new industry brings. These are: High interactivity based on multimedia in the network environment, enabling learners to exchange information more easily in any location. The content and learning time are diverse and rich, suitable to the abilities, interests and needs of each person. The development of the current industrial revolution 4.0 is the driving force for E-Learning to continue further in the future. Vietnam is catching up quickly with the world trend because in 2010. When E-Learning started to become a global trend and spread to many countries around the world, there were Domestic enterprises also took the first steps to explore. Recently, not only Vietnam but also the world is facing an acute respiratory infection caused by a new strain of Coronavirus (Covid-19). The Covid-19 pandemic is spreading rapidly and has now spread to more than 215 countries and territories worldwide, as of the morning of May 31, 2020. Globally, it is estimated that there are more than 300 million students and in Vietnam more than 22 million students and preschool children have left schools because of the Covid-19 epidemic. Facing the situation of learning disruption due to the impact of the pandemic, many schools and localities have implemented learning such as remote review, online, and television.

2. Research methodology

2.1 General Background

Realizing the great effects of E-learning, educational researchers around the world have actively invested and researched for learning programs, building open-source codes such as Learning Content Management System. The US and Europe are pioneering countries and have programs and projects to invest in e-learning methods to promote the development of online training in organizations and universities, especially during the current pandemic. Hodges et al. (2020) argue that the threat

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of Covid-19 has presented several challenges for higher education institutions, demonstrating that effective online learning aims to be a learning community practices and support learners not only with instruction but also extracurricular participation and other social supports. Many conditions are needed to support student success such as library resources, housing, career services, health services, etc. Ultimately, effective online education requires investment in an ecosystem that supports learners, which takes time to define and build. Dahalan et al. (2012) explained that there is a positive and significant correlation between the variables, attitudes of learners and e-counselors, except for teachers being teaching assistants and participation mentors. Many researchers and educators have emphasized the importance of network technology as education extends to helping students learn (Liu & Tsai, 2008). The Internet has created more opportunities for continuous learning like online learning. This situation increases the need to create virtual or electronic advisors (Bierema & Hill, 2005). Future trends have shown that electronic mentoring has become more popular (Kasprisin et al., 2003). Learners can control their learning and use various supported functions in online learning. Lin et al. (2010) believed that students with more positive attitudes on the internet tend to participate more in online forums. Learners who take responsibility for their own learning are more attracted to their mentor. Agarwal et al. (2020) pointed out that the Covid-19 pandemic not only affects human life, but also affects medical education and academic training worldwide. With social distancing guidelines in place, all face-to-face classes have been suspended due to the ongoing Covid-19 pandemic. Basilaia and Kvavadze (2020) examined the ability of countries and learners to continue their education in schools in the form of online distance learning, examining the different available platforms and identifying platforms used by government support, such as online portals, TV School and Microsoft groups for public schools, and alternatives such as Zoom, Slack and Google Meet, the EduPage platform for online education and face-to-face communication and give examples of their usage. Muilenburg and Berge (2005) wanted to better understand what barriers students will encounter when trying to learn online, what those barriers are, and ultimately how we can help individuals learn by understanding and improving their obstacles. To make the research more objective, they surveyed their comfort level with online learning technologies. In particular, the analyzes were performed on 47 hypothesized items to assess the perceived barriers to online learning in the most fair and objective manner. Others confirmed there is a significant relationship between service quality and student satisfaction. Therefore, improving service quality also leads to increased student satisfaction. The essence of student satisfaction lies in the quality of teaching and learning environment of the institution (Malik et al., 2010). In the study on evaluating the relationship between higher education service quality and student satisfaction, the authors found clear evidence that: service quality has a positive relationship with satisfaction. Thus, student satisfaction can be enhanced through service quality improvement (Al-Alak & Alnaser, 2012). Hill (1995) said that students are only satisfied with the learning environment in the school when they receive good services/products: library services, fully equipped computer systems, canteen services, and dormitories. DeShields et al. (2005) pointed out three main factors that affect student satisfaction: faculty, course program, and staff. Lin (2012) made a remarkable point in measuring online learning satisfaction, including: teaching activities of teachers; program compilation; study environment; teaching equipment; learning outcomes. Harvey et al. (1995) said that students only feel satisfied with the quality of the learning environment in the school when the school meets their needs well: library services; computer services; canteen; dormitory; course organization and assessment; teaching staff and teaching style; teaching methods; learning conditions and assessments; movement activities; oriented development; policy/scholarship; school grounds. Aldridge and Rowley (1998) stated that students are satisfied with the learning environment in the school when they are provided good food and reasonable prices; students have the right to participate in mass organizations; students are provided with training/training opportunities. Moreover, Students must be allowed to participate in organizations, facilitated to participate in activities to get feedback on the course and related services. Elliot and Healy (2001) pointed out the factors that affect student satisfaction: effective academic environment, campus/school landscape, campus living environment, support services on campus, the school's interest in students, effectiveness of teaching activities, effective policies/scholarships, effective implementation of commitments, ensuring security and order in the area school, perfect service and student recognition. Raposo et al. (2003) argued that a group of factors in the learning environment in universities that have the ability to affect students' expectations include: academic and professional assessment, reputation and conditions of the school. , the level of readiness and empathy of employees.

Vu Huu Duc (2017) said that universities in Vietnam have been interested in E-learning since quite early, there are two main groups in applying E-learning at universities in Vietnam: (1) degree programs and attracting tens of thousands of students. However, compared to the population of Vietnam as well as the size of online universities in the world, this number is still modest and focuses on certain industries. (2) In formal training, E-learning is used in the form of support or combination for traditional classroom learning. Ha Anh (2020) conducted a quick survey with nearly 4,000 students at a university, showing that most students believe that online learning is less effective than face-to-face learning. Accordingly, most students study online by phone and most do not have WIFI to study. Up to 85% of students think that online learning is less effective than traditional learning (studying in class), 36% of students surveyed said they have encountered objects that disrupt the classroom. 14-18% of students also think that the lecturer has not adjusted the teaching method to suit the online format, only uploading lectures to the system and has not had much interaction with learners. In addition, this survey also has 64% of students saying that teachers assign a lot of homework, every subject has a test and a weekly harvest. The lecturer requires a lot of reading material, the program has not been reduced, so the learning content is quite heavy. Pham Thi Lien (2016) has shown that satisfaction is most affected in descending order as follows: Training program; Infrastructure; Ability to serve; faculty component has a negative coefficient, so it does not show a positive relationship with student satisfaction. This may be because the lecturers at the University of Economics, Vietnam National University, Hanoi have good qualifications and good teaching methods, so students highly appreciate the teaching staff of the University. Le Thu (2020) said that within the

framework of a special action program to respond to the Covid-19 pandemic. The pandemic is also a great opportunity for Vietnamese universities to research and promote the application of information technology in teaching. Hong Phuc (2020) believes that the limited internet connection conditions in many mountainous and highland localities have affected the online learning of many ethnic minority students during the Covid-19 epidemic season. To catch up with the program, many children have set up shacks on the hills, even in the craggiest places to "catch waves" of online learning. Tran Huu Ai (2016) conducted a survey of 289 students of the Faculty of Economics to determine the quality of education, thereby improving student satisfaction. According to the results of testing the hypotheses, there are only four factors that directly and positively affect students' perceptions, which are the factor scales: facilities, lecturers, training programs and educational environment. . Factor of School Reliability was eliminated. Ha Nam Khanh Giao & Tran Thi My Van (2020) have provided a model of student satisfaction in basic science subjects consisting of 4 factors, arranged in the following order: Self-strength descending: Course cost; Teaching staff; Education program; Infrastructure. Vo Van Viet (2017) indicates that the factors: Training program, Lecturers, Extracurricular activities, Ancillary services affect student satisfaction to the quality of training services. Le Duc Quang & Nguyen Thi Hong Yen (2016) evaluate the role of lecturers in building the vision, mission and goals of teaching and learning, by analyzing documents and related studies of the authors in the study. and abroad. The results show that the elements of the field of building vision, mission and goals of teaching - learning include Together building a way to develop teaching - learning; Top priority for teaching - learning; Develop professional standards.

3. Methodology

The paper uses mixed methods: quantitative research methods and qualitative research methods.

Qualitative research: Through learning about the guidelines and policies of the State, legal documents, published administrative procedures, qualitative research using group discussion techniques, experts to adjust and supplement Additional questionnaires for quantitative research.

Quantitative research:

- + Preliminary quantitative research: Before conducting formal quantitative research, surveys were conducted with about 10 students to detect shortcomings in the questionnaire and test the reliability of the scale. measure.
- + Formal quantitative research: Data is collected through survey surveys based on questionnaires designed and sent directly to students. Non-probability sampling and the main quantitative method used is the SPSS method.

3.1 Research models

The factors analyzed in the study on factors affecting the satisfaction of Duy Tan University students with online learning are summarized in the following diagram: (See Fig. 1)

Facilities (used during the epidemic season): is one of the most important factors that is put on top when assessing student satisfaction, although this issue is receiving attention from many sides whether the facilities are of good quality, meet the needs of learners or not. Elements related to facilities such as Hardware with equipment, cameras, sound, internet; Software includes Zoom, Sakai, etc. The school's electronic resources, digital library, and elliptical DTU that students can learn and search for diverse and extensive knowledge sources for more effective learning. Besides, a stable and high-speed network connection is also one of the essential factors.

Education program: is always a necessary element for all countries and ethnic groups, for students of Duy Tan University. This factor is related to the form and quality of online teaching and exams, including learning curricula, theoretical and practical exercises, learning references provided by teachers, through lessons, exams done online in class or tests done at home. For the best results, before starting to change the form of learning in accordance with the social distancing situation at the time of the Covid-19 epidemic, it is necessary to instruct the use of software.

Lecturers: With online learning programs, lecturers play a key role in improving teaching quality, directly affecting student satisfaction. Therefore, it is indispensable for a teacher to have a high level of expertise, which is reflected in teaching methods and communication skills to students. At the same time, in the process of teaching online, teachers need to support and customize learning plans to suit the abilities and desires of students, as well as be a guide for students throughout the process. study. With such an online learning situation, in addition to the above factors, teachers also need to have adaptive skills for maximum and effective online teaching. Also, it is necessary to have methods of assessing students in the most objective and correct way.

Interactivity: includes interaction between teachers and learners, interaction between learners and learners, interaction between learners and online learning software.

+ Interaction between teachers and learners: between teachers and students discussing with each other on Zoom software online in class, or in groups on social networks. There, teachers can also ask or answer questions for students, comment, respond to individual assignments, group exercises on the system, etc.

+ Interaction between learners and learners: right in the online learning session on the system, students can exchange lessons with each other, assign group assignments, etc.

+ Interaction between learners and online software: students can view lecture slides, study documents and learning resources on the Sakai system, or do exercises and tests in the Tests & Quizzes section, track learning progress, etc.

Tuition fees: for online teaching fees, it must be appropriate, corresponding to the quality of teaching. In addition, with the difficulty of the economic situation due to the strong impact of the Covid-19 epidemic, so the impact on life and monthly income was greatly reduced, many parents could not go to work. , quit a job, etc., appropriate tuition fees are essential. Therefore, tuition fees are also a factor affecting student satisfaction with online learning during the epidemic period.

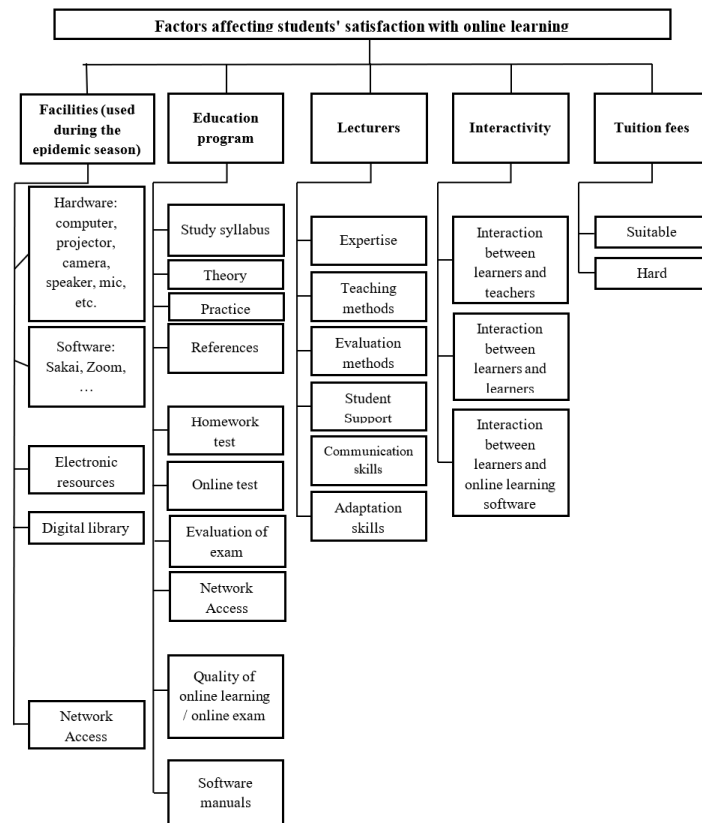


Fig. 1. The proposed method

Based on the above-mentioned theoretical bases, the research of the topic will test several hypotheses as follows: 5 hypotheses

H₁: Factors of facilities (used during the epidemic season) have an influence on student satisfaction of Duy Tan University.

H₂: The factors of the training program affect the satisfaction of students at Duy Tan University.

H₃: The school's teaching staff is one of the factors that affect the satisfaction of students at Duy Tan University.

H₄: Interactivity has an effect on student satisfaction at Duy Tan University.

H₅: Tuition fees have an impact on student satisfaction at Duy Tan University.

4. Research Result

Before conducting the quantitative survey, the author conducted a qualitative survey through group discussion of about 10 education-related experts, lecturers, and students according to pre-prepared content.

The number of ballots distributed was 300 (including 50 preliminary survey forms), and 300 votes were collected. So the final sample size is 300 including 114 males and 186 females.

Table 1
Cronbach's Alpha reliability analysis results

No	Factor	Initial observed variable	Observed variables remaining	Cronbach's Alpha
1	Facilities (CS)	5	5	0.689
2	Education program (CT)	7	7	0.625
3	Lecturers (GV)	5	5	0.783
4	Interactivity (TT)	4	4	0.744
5	Tuition fees (HP)	3	3	0.813
6	Satisfaction with online learning (HL)	5	5	0.721

Through the analysis results of Cronbach' Alpha coefficient in Table 1, we can see that the components of the scale for assessing student satisfaction and the dependent factor all have reliability greater than 0.6, so the reliability is ensured to use these variables. The variables with the total correlation coefficient are all greater than 0.3, so no variables are excluded. Therefore, all the variables of the scale are kept and will be used in the next analysis.

4.1 Exploratory factor analysis EFA

After checking the reliability of the scale by Cronbach' Alpha coefficient and removing the variables that do not guarantee reliability, we will continue to analyze the EFA exploratory factor. This is the technique used to shrink and summarize the data. This method is very useful in determining the set of variables needed for the research problem and is used to find the relationship between variables. The scale in the study includes 6 factors with 29 observed variables and after checking the reliability by Cronbach's Alpha method. KMO and Bartlett's Test: KMO index is used to analyze the appropriateness of the factors. KMO is an indicator to consider the appropriateness of EFA. If 0.5 KMO 1 then factor analysis is appropriate

4.2 Factor analysis with groups of independent variables

First, we must conduct Bartlett's test and the KMO coefficient:

Table 2
KMO coefficients and Bartlett's test of independent variables

	KMO coefficient (Kaiser-Meyer-Olkin)	0.770
Bartlett's test of the scale	Approx. Chi-Square	3268.407
	df	276
	Sig.	0.000

Based on Table 2, we see that KMO coefficient and Bartlett test = 0.770 > 0.5, satisfying the condition $0.5 \leq \text{KMO} \leq 1$, so the EFA analysis is significant. From 24 observed variables, 5 factors were extracted with variance 61.767% > 50%, Eigenvalue = 1,084 > 1. Factor loading coefficients are all greater than 0.5. The extraction method in factor analysis requires that the Eigenvalue extracted values be larger to be retained in the analytical model. Therefore, the 5 extracted factors all have Eigenvalue greater than 1 and the breakpoint when extracting factors at the 5th factor has an Eigenvalue of 1,084 > 1. The sum of extracted variances of 5 factors is 61.767% > 50% This shows the possibility of using these 4 components to explain 61.767% of the variation of the observed variables.

4.3 Factor analysis with dependent variable (Satisfaction)

Table 3
KMO coefficient and Bartlett's test of Satisfaction

	Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.802
Bartlett's Test of Sphericity	Approx. Chi-Square	446.256
	df	10
	Sig.	0.000

Table 4
The variance extracted when factor analysis of dependent variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.791	55.826	55.826	2.791	55.826	55.826
2	1.774	15.480	67.107			
3	.919	12.386	79.493			
4	.761	9.216	90.709			
5	.519	7.091	100.000			

4.4 Correlation analysis and regression analysis

Based on the theoretical research model, we have a multiple linear regression equation describing the factors affecting the satisfaction level of Duy Tan University students with online learning during the inflammatory epidemic period. Acute respiratory tract caused by a new strain of Corona Virus (Covid-19) is:

The unnormalized regression would be:

$$HL = 0.024 + 0.046CS + 0.001CT + 0.318GV + 0.084TT + 0.577HP + e.$$

The normalized regression would be:

$$HL^* = 0.033CS^* + 0.001CT^* + 0.320GV^* + 0.083TT^* + 0.530HP^*$$

4.5 Check the fit of the regression model

To determine, measure and evaluate the satisfaction of students, we use multiple linear regression between 5 independent influencing factors obtained from the exploratory factor analysis above including: Facilities (CS), Training Program (CT), Teaching staff (GV), Tuition fee (HP), along with the dependent variable is student satisfaction (HL). According to the summary table, the model shows that R^2 adjusted by 0.676 means 67.7%. The R^2 value indicates that the independent variables in the model can explain 67.7% of the variation of the dependent variable.

Table 5

Model summary

Model	R	R^2	R2 Adjustment	Error of estimation	Durbin-Watson
1	0.825 ^a	0.681	0.676	0.43188	1.991

a. Independent Variable (Constant): HP, GV, TT, CS, CT

b. Dependent variable: HL

Table 6

Analysis of ANOVA on the appropriateness of regression analysis

	Model	Sum of squares	Degrees of freedom (df)	Average squared	F	Sig.
1	Regression	117.284	5	23.457	125.759	0.000 ^b
	Residual	54.837	294	0.187		
	Total	172.122	299			

a. Independent Variable (Constant): HP, GV, TT, CS, CT

b. Dependent variable: HL

4.6 Check for autocorrelation

The group used statistics Durbin - Watson (d) = 1,991 to test. From the results of Figure 4.10, there is $1 < d = 1,991 < 3$, so we can conclude that the residuals are independent of each other, and the independence of the residuals is guaranteed. Therefore, there is no first-order serial correlation between the residuals, assuming the independence of errors is guaranteed (Hoang & Chu - vol. 1, 2008). The Durbin-Watson statistics is 1,991, in the range 1.5 to 2.5, so the model does not have autocorrelation.

5. Discussion

Based on the theoretical overview, the research model was synthesized, the group's research was tested with a sample of 300 student survey questionnaires at Duy Tan University. Through the research results, the components of training quality have a positive relationship with student satisfaction. In which, the factors affecting student satisfaction in descending order are: Tuition fees; Teaching staff; Interoperability; Infrastructure; Education program. From there, the objective management implications are proposed.

Firstly, Research and calculate online tuition payment options, reduce tuition fees for learners when registering for online learning. At the same time, there are appropriate policies and regimes for teachers participating in online teaching to encourage teachers and learners in online training.

Second, Lecturers need to constantly update their skills, from teaching skills, knowledge transfer, to self-improvement, practical understanding for themselves, to bring them to life. produce illustrations that are close to life in teaching, helping students to well absorb classroom lessons and life lessons. Regularly organizing extracurricular sessions and attracting students to participate, lecturers need to actively let students communicate in foreign languages and need to create a comfortable atmosphere when communicating.

Third, in traditional courses, good teachers become the focus of the class simply by “speaking”. But in an online course, the messages and emotions conveyed by body language are limited. Therefore, maintaining student focus is not easy. Teachers should try to learn from YouTubers. Popular YouTubers are good at bridging the gap between themselves and a remote online audience. By suggesting a question every 2-3 minutes or allowing students to chat with each other, teachers can warm up the classroom atmosphere.

Fourth, Increase investment in facilities, modern teaching facilities and improve operational efficiency. All classrooms ensure space and seating to meet the learning needs of students. Increase investment, build a professional online training management system including online learning (e-learning), online learning management system (LMS - Learning Management System), management system Learning Content Management System (LCMS). Select and accelerate the digitization of learning contents while designing and building online curricula for appropriate subjects, modules, and credits in the professional training program. career; organize online teaching of theoretical contents and compulsory general subjects in training programs at intermediate and college levels; sharing teaching and learning resources on digital technology platforms.

Fifth, Training development must go hand in hand with the alignment of students' needs, creating a connection between the University and students so that they can listen to students' wishes and the school's shortcomings, thereby overcoming the bad side and promoting the good side.

6. Conclusion and Implications

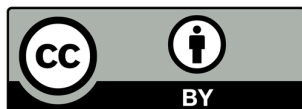
Based on research results combined with practice, the authors have successfully built 5 groups of factors that directly affect online learning during the covid season of Duy University students. By conducting investigative research and using statistical analysis tools, all 5 factors have an impact on the online learning of students at Duy Tan University. In our survey, “Tuition fee” has the strongest impact followed by “Teachers”, “Interactivity”, “Facilities”, and finally the group of factors affecting the least is “Education program”. However, the limitation of this study is associated with the small sample size, which has only been analyzed at Duy Tan University. The factors may not cover all aspects affecting student satisfaction to online learning.

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