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An Assessment on Impacts of Online Education on Training Quality and Satisfaction of Tourism Undergraduate Students in A Private University and Managerial Implications for Educators

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Abstract

The COVID-19 pandemic has disrupted the learning activities of learners in a myriad of ways. Being severely affected by the fourth wave of infection recently, many universities in the South of Vietnam have also switched their learning method into online learning. This study was conducted to explore the effects of online learning on learning quality by utilizing a survey sample of undergraduate students in the field of tourism. Through quantitative data analysis, the research results show that the majority of respondents have an above-neutral level of satisfaction (above 3) when participating in answering questions about factors affecting online learning such as the quality of online learning, e-learning activities, criteria for assessing learning results, education and training issues, influencing factors and impacts of virtual tourism on tourism students. The research results might give managerial implications to universities adopting online learning about policies and measures to improve the school's educational quality during the pandemic.

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1 Introduction

The COVID-19 pandemic has caused an unprecedented crisis in all areas. In the education sector, due to this emergency, face-to-face activities of educational institutions in more than 190 countries have been suspended to prevent the spread of the virus and minimize its effects on public health (UNESCO, 2020). According to UNICEF's new public report, one-third of the world's children, or about 436 million people worldwide, we're unable to study remotely amidst the pandemic due to the lack of teaching and learning facilities, technological competence, and low perceived effectiveness of remote learning (UNICEF Vietnam for every child, 2020). In Vietnam, students in higher education institutions have to switch to online learning for the new semester of 2021-2022. This has exerted significant pressure on undergraduate students and lecturers, especially those in tourism major, as this is a major with a higher proportion of practical subjects than theoretical. By choosing the right learning tools for online learning and allocating their time wisely (Sefriani et al., 2021; Bahasoan et al., 2020), students can increase their learning autonomy and be more motivated from online learning (Azhiimah et al., 2021), in turn improving learning outcomes. This was highlighted in a recent report which suggested that online education might bring a positive learning experience to learners during the complex developments of COVID-19 infections today (Nugroho et al., 2021).

In addition, there are many challenges that students have to face such as: inadequate facilities, technological unfamiliarity, personal burdens, and psychological impacts (Febrianto et al., 2020; Sharin, 2021). Therefore, as the pandemic continues to persist and the situation in the tourism industry remains in crisis, e-learning could cause a variety of consequences like: lazy students, the student without a learning spirit, the number of students who do not participate in intermediate tests, and not doing homework in the e-course and later did not return to normal learning increasing (Bylieva et al., 2020). To overcome these implications, many studies have shown the importance of digital transformation in education, especially in tourism education (Balula et al., 2019) in fostering a spirit of passion for learning and a love of tourism students in the context of the fact that the tourism industry is in decline because of covid (An, 2013; Schott, 2015).

2 Materials and Methods

This study is a quantitative descriptive study using an online survey instrument. The dataset was collected based on the normative sampling method and the population of undergraduate students in the field of tourism, Nguyen Tat Thanh University, HCMC, Vietnam. The surveyed students mainly come from faculties and majors such as tour guide, tour operator, tourism marketing, restaurant-hotel management, etc. It was expected that 350 respondents took part in the survey and thus an equivalent number of questionnaires were dispatched. The collected data will then be analyzed by descriptive statistics. The questionnaire consists of several questions, categorized into the following topics, namely: (1) how much time do you devote to self-study every day (before COVID-19 and during COVID-19); (2) How much time each day do you devote to e-learning, and how much time instructor instructs you; (3) The impact of online learning on the quality of learning; (4) Your satisfaction with e-learning activities; (5) Your level of satisfaction with the learning outcome assessment criteria; (6) Your opinion on training issues in e-learning; (7) Factors affecting student's learning outcomes in online learning; (8) Benefits of virtual tourism for the learning process of tourism students; (9) Your comments on improving the quality of schooling.

Items measuring student satisfaction with the impact of COVID-19 on online learning (from item 3-8) are designed on a Likert scale with 5 levels from strongly disagree to strongly agree. The purpose of these measurements is to allow students to reflect on their feelings and indicate how much they agree if they are satisfied or dissatisfied with the impact of COVID-19 on e-learning (Lau & Tsui, 2009; Korucu & Alkan, 2011). In this study, the measured predictive constructs are: compare the mean of student satisfaction with a given neutral level 3 for items 3,5,6,7,8. If the average value obtained is 3 or higher, students would tend to be satisfied with the reasons given by the research. Conversely, if the mean is less than 3, this indicates that students are not satisfied with the reasons given by the study. Learning quality (5 items), criteria for assessing learning outcomes (4 items), issues and education (5 items), factors affecting e-learning (5 items), virtual tourism, and international students in e-learning (4 elements). Especially for item 4 (learning activities), the study will examine the average difference between respondents of different genders for 5 items. This test will tell us what learning activities differ between men and women (Nakada & Urban, 2020; Millett et al., 2020).

3 Results and Discussions

3.1 Respondent's profile description

The respondents in this study were students in the field of tourism, Nguyen Tat Thanh University, HCMC, Vietnam who are learning online under the influence of the COVD-19 pandemic. The number of students who replied was 350, from 1st to 4th-year students. The data is described in Table 1 below:

Table 1
Description of respondents

		Frequency	Percent
Gender	Male	150	42.9
	Female	200	57.1
	Total	350	100.0
Student	Freshman	44	12.6
	Sophomore	103	29.4
	Junior	133	38.0
	Senior	70	20.0
	Total	350	100

Source: Primary Data

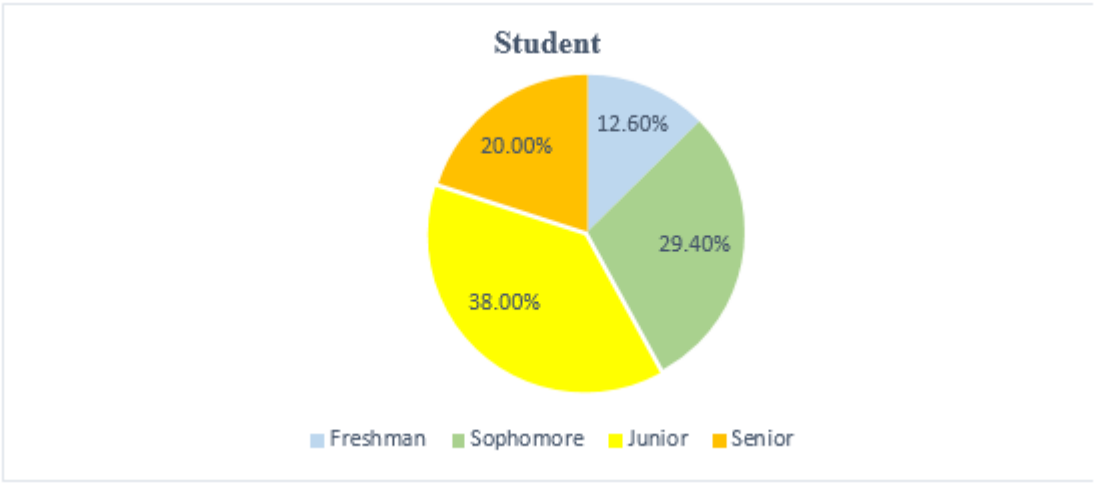

Figure 1. Student classification

3.2 Student's learning time

The social distancing schemes due to the COVID-19 outbreak have drastically changed people's livelihood and educational activities of students. One of the common consequences is that there will be a difference in the time that students devoted to daily study before and after the occurrence of the pandemic.

To be specific, Asanov et al. (2021), showed that Ecuadorian students aged 14 to 18, despite their similar time devoted to distance learning, might exhibit different patterns in the time used for educational routine depending on gender, wealth status, and time spent for household chores. This study part aimed to analyze the relationship between student study time allocation before and after the occurrence of the COVID-19 pandemic (Muhammad et al., 2020). If they have a relationship, it will prove that COVID-19 has changed students' learning behavior based on the time factor. Before going into the analysis, the study hypothesis (H0) is as follows: There is not a relationship between students' learning time before and after the occurrence of the COVID-19 pandemic. In this investigation, through the chi-square

test, the relationship between the learning time in the two periods mentioned above was elaborated. The summary of the data can be seen in Table 2 below.

Table 2
Chi-Square tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	152.180[a]	9	.000
Likelihood Ratio	137.595	9	.000
Linear-by-Linear Association	96.403	1	.000
N of Valid Cases	350		

a. 1 cells (6.3%) have expected count less than 5. The minimum expected count is 3.90.

Source: Primary Data

The result of the analysis showed that the asymptotic significance (two-sided) value of the Pearson Chi-square line is less than 0.05 (0.00 <0.05), implying that the H0 hypothesis has been rejected and that the two variables of self-learning time before COVID-19 and during COVID-19 are related to each other. The Chi-square table shows that the chi-square test has a large enough observational significance. There is 1 cell (6.3%), whereby the expected number is less than 5. The minimum as a number is 3.90.

Table 3
Symmetric measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.659	.000
	Cramer's V	.381	.000
N of Valid Cases		350	

Source: Primary Data

The above results in Table 3 show that the Cramer's V value index has a coefficient of 0.38, equivalent to 38.1% so that these two variables have a high correlation. The results of the analysis show that the student's study times in the two periods mentioned above are related to each other. Specifically, before the pandemic, most students only spent 13 hours a day studying (59.4%). When the Covid19 pandemic arrives, students have tended to increase the number of study hours per day from 3 to 5 hours (26%), the number of students spending 1-3 hours still making up the dynamic figure of 43.4%. In general, due to the impact of the epidemic and social distancing, students tend to change their learning behavior by increasing the number of hours of self-study compared to the previous period.

As a result of switching to online learning platforms, the study time of undergraduate students and the teaching time of lecturers are likely to change depending on learners' ability to focus, curriculum, technological familiarity, and the period for which social distancing takes place. Currently, students and lecturers can only interact with each other through online platforms such as Google Meet, Zoom, LMS, etc. Figure 2 below shows the distribution of students' online learning time and the number of times students receive instruction from the instructor.

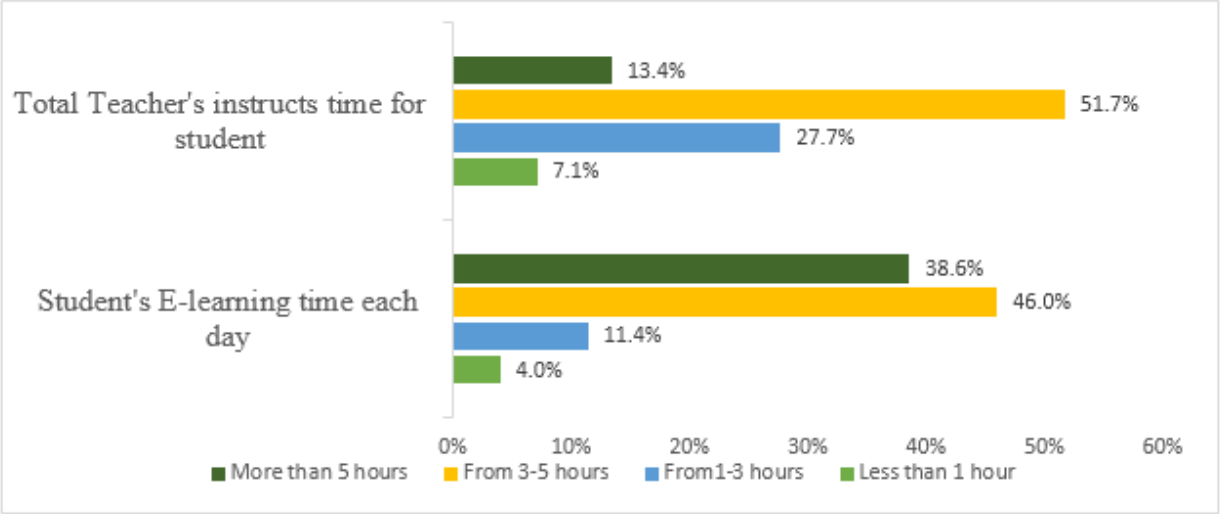

Figure 2. Graph of students' online learning time and the duration of student instruction from instructors

The number of students who study online for more than 3 hours is markedly higher than those who spend less than 3 hours on distance learning. Figure 2 shows that up to 46% of students responded that they would spend 3-5 hours learning online during the day. It is also the option with the highest percentage of responses. In addition, the number of undergraduate students spending more than 5 hours of online learning a day is also quite high (38.6%), suggesting that the time devoted to studying remotely might also be equivalent to that during offline classes despite the pandemic. The period that students are guided by instructors also varies. Figure 2 shows that up to 51.7% of students responded that they received 3-5 hours of instruction per day. Besides that, the research also recorded 27.7% of the students who answered that they received 1-3 hours of instruction from the instructor each day of online learning. This result shows that students have to spend more time studying than before. At the same time, the study recorded positive student ratings of the teacher's teaching time during an online learning day. This shows that COVID-19 causes students to switch to online learning, but the fact that students spend more time on learning (Jamalpur, 2021) and the dedicated support of teachers during lessons, also makes the quality of this form of learning is highly appreciated.

Table 4
Learning tools

		Responses	
		N	Percent
Learning Tools	Google Meet	347	73.4%
	LMS	81	17.1%
	Google Classroom	22	4.7%
	Zoom	19	4.0%
	Class-in	3	0.6%
	Microsoft Teams	1	0.2%
Total		473	100.0%

Source: Primary Data

Table 4 above shows that most students from the student in the field of tourism took their classes through Google Meet (73.4%) and Learning Management System - LMS (17.1%). This shows that these are the two most popular teaching tools used by NTTU students. According to Fuady et al. (2021), Google Meet and Zoom are perceived to be relatively simple while the LMS is considered more complex than the other three media. Zoom is a platform considered the simplest of the other media. Learning during a pandemic requires us to adapt to the use of different learning technologies. In particular, Google Meet is one of the simple learning tools widely used in universities. It does not depend too much on the user's level of technical understanding, so it is becoming more and more popular in online learning. Regarding LSM software, although it is more difficult to use than google meet, right from the time of

admission, students have been instructed to use this software. In addition, the LMS system has many other utilities accompanying it, such as view timetables, study plans for exams, searching for academic results, programs, student achievements, and even updating school announcements and more. As a result, students have a reliable source of information with just one click without having to go anywhere.

3.3 Impacts of online education on tourism students during COVID-19 pandemic

a) Learning quality

The quality of education always comes first in online learning. The study used the One-Sample T-Test to compare the mean consent of tourism students to the quality of online education with test value = 3 (*If the obtained mean is greater than 3, students would tend to be satisfied with the quality of the e-learning. Conversely, if the mean is less than 3, this indicates that students are not satisfied with the quality of learning that e-learning brings.*). The research identified the following values for online education quality:

LQ1: Ability to communicate with friends/teachers
LQ2: Abundant learning resources
LQ3: Flexible study time
LQ4: Maintain learning progress
LQ5: Motivate to learn and improve self-efficacy

Hypothesis H0: The mean student score for factors influencing online learning is 3.
Hypothesis H1: The mean student score for factors influencing online learning is different from 3.

Table 5
One-Sample test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
LQ1	7.575	349	.000	.397	.29	.50
LQ2	6.221	349	.000	.326	.22	.43
LQ3	10.499	349	.000	.554	.45	.66
LQ4	9.365	349	.000	.474	.37	.57
LQ5	3.826	349	.000	.217	.11	.33

Source: Primary Data

Through Table 5, it can be seen that all sig values are less than 0.05. Thus, hypothesis H0 is rejected and hypothesis H1 is accepted, that is, the mean consent of tourism students to the quality of online education is different from 3. Based on this, Table 6 shows that the mean value of the criteria included in the test ranges from 3.22 to 3.55 with all values being greater than 3. Thus, tourism students are agreeing with the quality of online education above neutral 3 with Std. Deviation ranging from 0.47 to 1.062.

Table 6
One-Sample statistics

	N	Mean	Std. Deviation	Std. Error Mean
LQ1	350	3.40	.981	.052
LQ2	350	3.33	.980	.052
LQ3	350	3.55	.988	.053
LQ4	350	3.47	.947	.051
LQ5	350	3.22	1.062	.057

Source: Primary Data

The analysis results show that most of the students are satisfied with the factors of learning quality. Through this, it can be seen that covid19 does not seem to interfere too much with the learning quality of students compared to before.

b) Learning activities

When it comes to online learning for tourism students, the main obstacle is to seamlessly facilitate the acquisition of hands-on and practical skills in the industry, which often requires real-life interaction with hospitality operations and customers, rather than studying theoretical courses. Cundell & Sheepy (2018), examined the effectiveness of online learning by examining student perception based on the following criteria: relationship with learning outcomes in a course, deep learning, commitment, and value (Armstrong et al., 2011; Harasim, 2000). The research focuses on e-learning activities such as readings, videos, lessons in discussion forums, and other activities using a range of internet technologies (Cheng et al., 2014). The above activities, with the help of the internet, make the lessons in classes highly interactive. Nguyen (2017), also examined the impact of online learning on students' learning outcomes in a blended course. In this paper, the author emphasizes the role of interactivity (teacher-student interaction, student-student interaction, student-content interaction, and student-technology interaction) in implementing and assessing learning outcomes. In the process of online learning, interactivity is one of the most important factors in helping students enjoy learning and increase concentration. Interactivity is often expressed through learning activities such as presentations, speeches, group discussions, practice using technological devices, or simply through small tests. In this section, the research focuses on analyzing students' learning activities from a gender perspective, because between men and women there will be different levels of satisfaction with many different activities.

Based on Table 7, the study will show a statistically significant difference in the level of satisfaction with learning activities of respondents of a different gender. The research identified the following values for online education activities:

HD1: Presentation
HD2: Learning exchange, group discussion
HD3: Debate learning content
HD4: Experience virtual reality through digital technology
HD5: Online exam

Table 7
Independent Samples test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
HD1	Equal variances assumed	5.411	.021	1.543	348	.124	.140	.091	-.038	.318
	Equal variances not assumed			1.508	290.502	.133	.140	.093	-.043	.323
HD2	Equal variances assumed	2.196	.139	1.791	348	.074	.172	.096	-.017	.360
	Equal variances not assumed			1.761	299.475	.079	.172	.097	-.020	.363
HD3	Equal variances assumed	5.343	.021	1.672	348	.095	.165	.099	-.029	.359
	Equal variances not assumed			1.636	292.192	.103	.165	.101	-.034	.364
HD4	Equal variances assumed	8.661	.003	3.089	348	.002	.323	.105	.117	.529
	Equal variances not assumed			3.029	295.146	.003	.323	.107	.113	.533
HD5	Equal variances assumed	11.824	.001	3.372	348	.001	.367	.109	.153	.581
	Equal variances not assumed			3.295	290.351	.001	.367	.111	.148	.586

Source: Primary Data

Through independent sample T-test analysis, the analysis results show that there is a statistically significant difference in respondents' satisfaction with online learning (HD4, HD5) of other genders. Specifically: HD4 has Levene's Test's sig 0.03 < 0.05, so the test will use the sig result in the equal variances not the assumed line. Here, there is sig = 0.03 < 0.05, so there is a statistically significant difference between the gender variable and HD4. Similarly, HD5 has

Levene's Test's sig 0.01 < 0.05, so the test will use the sig result in the equal variances, not the assumed line. Here, there is sig = 0.01 < 0.05, so there is a statistically significant difference between the gender variable and HD5.

Variables HD1, HD2, and HD3 were excluded because the test results showed that these variables did not have a statistically significant difference between respondents of different genders. Specifically, HD1 and HD3 have Levene's Test sig 0.021 < 0.05, so the test will use the sig result in the Equal variances not the assumed line. Here, sig = 0.13 > 0.05, so there is no statistically significant difference between the gender variable with HD1 and HD3. Similarly, HD2 has a Levene's Test's sig 0.139 > 0.05, so the test will use the sig result in the Equal variances assumed line. Here, there is sig = 0.074 > 0.05, so there is no statistically significant difference between the gender variable and HD2.

Therefore, using an independent T-test, the study shows a statistically significant difference in respondents' satisfaction with online learning (HD4 - Virtual Reality Experience through Technology). digital technology, HD5 - Online exam) of different genders. This also shows that, in online learning activities, there are also differences in the choice of activities that match the gender of respondents. Maybe the activity "Experience virtual reality through digital technology" will be more attractive to male students, or "Online exam" will be suitable for more hardworking female students, or vice versa.

c) Criteria for assessing learning outcomes

The study used the One-Sample T-Test to compare the mean consent of tourism students to the criteria for assessing learning outcomes with test value = 3. The research identified the following values for online education quality:

DP1: Point process
DP2: Plus points
DP3: Mid-term test
DP4: Final test

Hypothesis H0: The average score of students for the evaluation criteria of learning outcomes is 3.
Hypothesis H1: The average score of students on the criteria for assessing learning outcomes is different from 3.

Table 8
Criteria for assessing learning outcomes

	Test Value = 3					
				Mean	95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
DP1	17.572	349	.000	.774	.69	.86
DP2	18.751	349	.000	.794	.71	.88
DP3	16.868	349	.000	.720	.64	.80
DP4	12.762	349	.000	.600	.51	.69

Source: Primary Data

Through Table 8, it can be seen that all sig values are less than 0.05 (0.00 <0.050). Thus, hypothesis H0 is rejected and accepts hypothesis H1, that is, the mean consent of tourism students to the criteria for assessing learning outcomes is different from 3. Based on this, Table 9 shows that the mean value of the criteria included in the test ranges from 3.60 to 3.79, all values are greater than 3. Thus, tourism students are agreeing with the criteria for assessing learning outcomes of online education above neutral 3 with Std. Deviation range from 0.792 to 0.880.

Table 9
One-Sample statistics

	N	Mean	Std. Deviation	Std. Error Mean
DP1	350	3.77	.824	.044
DP2	350	3.79	.792	.042
DP3	350	3.72	.799	.043
DP4	350	3.60	.880	.047

Source: Primary Data

Thus, it can be seen that the learning assessment criteria all respond to student satisfaction when the student satisfaction level is up to 3.79, very close to the level of completely agree with the research factors highlighted. In addition, it can be concluded that COVID19 does not have a great impact on the assessment of academic performance compared to before the outbreak.

d) Problems of training and education

Education and training issues are always the main concern of school leadership. Some issues related to education and training mentioned in the study include: Time distribution between theory and practice; Virtual reality technology suitable for the learning process; Applying digital technology to teaching; Knowledge that has been trained to meet practical needs and Instructor capacity for online teaching.

The study uses the Likert scale in the questionnaire to assess student satisfaction about education and training problems in e-learning. With a mean value of 3, the expected result after analyzing the data will be greater than 3, which means that students are satisfied with research problems. The problems raised by research are:

PB1: Time distribution between theory and practice
PB2: Virtual reality technology suitable for the learning process
PB3: Applying digital technology to teaching
PB4: Knowledge has been trained to meet practical needs
PB5: Instructor capacity for online teaching

Table 10
Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PB1	350	1	5	3.45	.877
PB2	350	1	5	3.36	.899
PB3	350	1	5	3.44	.833
PB4	350	1	5	3.39	.882
PB5	350	1	5	3.67	.815

Source: Primary Data

Table 10 shows that with a standard deviation ranging from 0.815 - 0.899, all values are less than 1, indicating that the difference between the evaluation scores is not high. At the same time, the average value after the data analysis ranged from 3.36 - 3.67, showing that most students are satisfied with the education and training issues set forth by the research. Efriana (2021), analyzed topics such as teachers' understanding of the material and related problems, the ability of teachers to use technology in online teaching, and control over monitoring student learning. It follows from this that in addition to the application of technological achievements in teaching, the capacity of teachers for online teaching is of enormous importance.

e) Factors affecting student's learning outcomes in online learning

The study mentions factors that affect online learning, such as: learning conditions (FA1); communication competence (FA2); ability to concentrate (FA3); online learning skills (FA4); examination process (FA5). In particular, the study recorded an average rating of 3 or more, which means that the influence factors mentioned do not have much influence on student learning (Table 11).

Table 11
Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
FA1	350	1	5	3.37	1.001
FA2	350	1	5	3.53	.807
FA3	350	1	5	3.39	.904
FA4	350	1	5	3.29	.996

FA5	350	1	5	3.48	.849

Source: Primary Data

In addition, the "learning conditions" factor consisting of availability of devices (smartphones, laptops, computers), connection quality (WiFi, Internet) do not have much influence on online learning. Student satisfaction on factors that affect e-learning is high, ranging from 43.10% to 46.9%, representing nearly half of the total number of respondents (Figure 3).

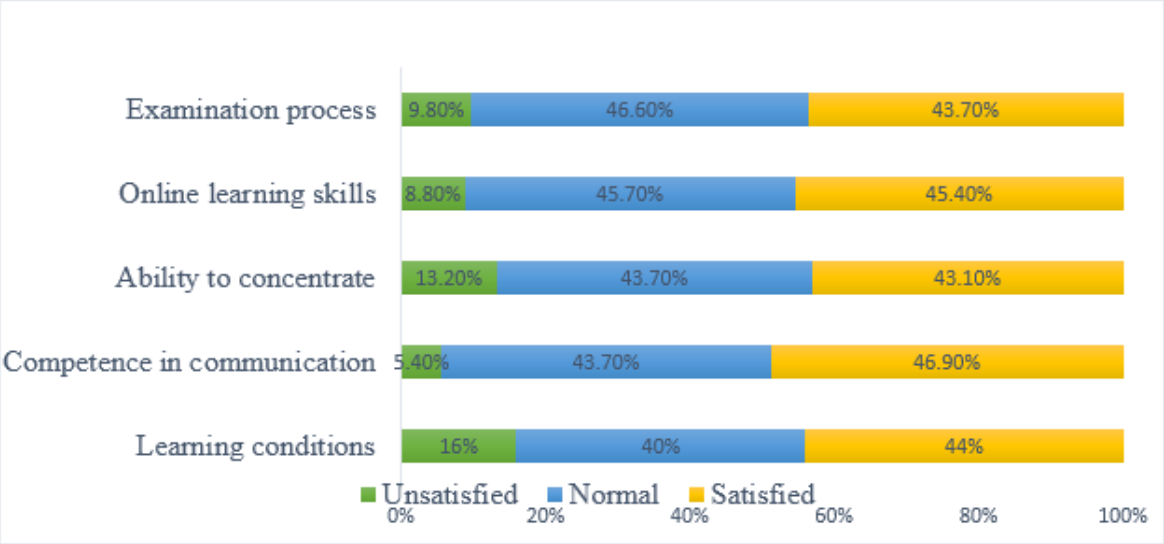

Figure 3. Student satisfaction about factors affecting online learning

Adnan & Anwar (2020), studied distance lessons in Pakistan by notifying the attitude of students in higher education in the context of the COVID-19 pandemic. The findings of the study show that the majority of students have no access to the Internet due to technical and financial problems. The lack of face-to-face interaction with the teacher, the response time, and traditional class communication are other problems that the students notice.

f) Virtual Tourism and tourism student on e-learning

Virtual Tourism is a form of fictional travel that has emerged in recent years, showing the relationship between leisure tourism and tourist at home. Virtual tourism is essentially a hybrid concept that combines the concepts of virtual reality and travel. Virtual tourism facilitates tourists to experience without having to travel anywhere (Chávez & Quijije, 2018). Virtual tourism comes in many different forms and has varying degrees of technological capabilities. Rather, Virtual tourism is more of a term that encompasses the wide range of virtual experiences available in the tourism sector; from watching a promotional video to an interactive visit to the museum and the entire vacation via virtual media. It can be said that "virtual tourism is the use of technology to artificially enhance or create a tourism experience".

In the complicated context of the COVID-19 pandemic, the tourism industry has been severely affected. According to a recent United Nations report, global tourist arrivals from 2021 are down 87% compared to January 20, 2020.[21]. Virtual tourism was born as a way to revive the tourism industry. According to Konstantinow (2019), such digital technologies as AI, Blockchain, IoT, VR, AR (augmented reality). Etc contributed to the development of digital tourism in European countries, the appearance of the tourism industry has changed significantly. Therefore, it also sets urgent requirements for tourism businesses in rebuilding tourism infrastructure, the safety of people and local communities to benefit from tourism in the post-pandemic (Pillai, 2021).

For tourism education, virtual tourism plays an important role in teaching, opening up a new perspective for students, and light a passion for tourism among students during the epidemic season. Sari et al. (2021), studied how virtual tourism affects education through digital applications. It solves the boring problems when students stay at home and tourism in Bali remains closed. This is considered as a means of supporting home-travel education, stimulating

students' learning spirit, and freeing students from boredom during the epidemic season. Figure 4 below shows the satisfaction rate of tourism students on the contribution that virtual tourism brings to their learning process.

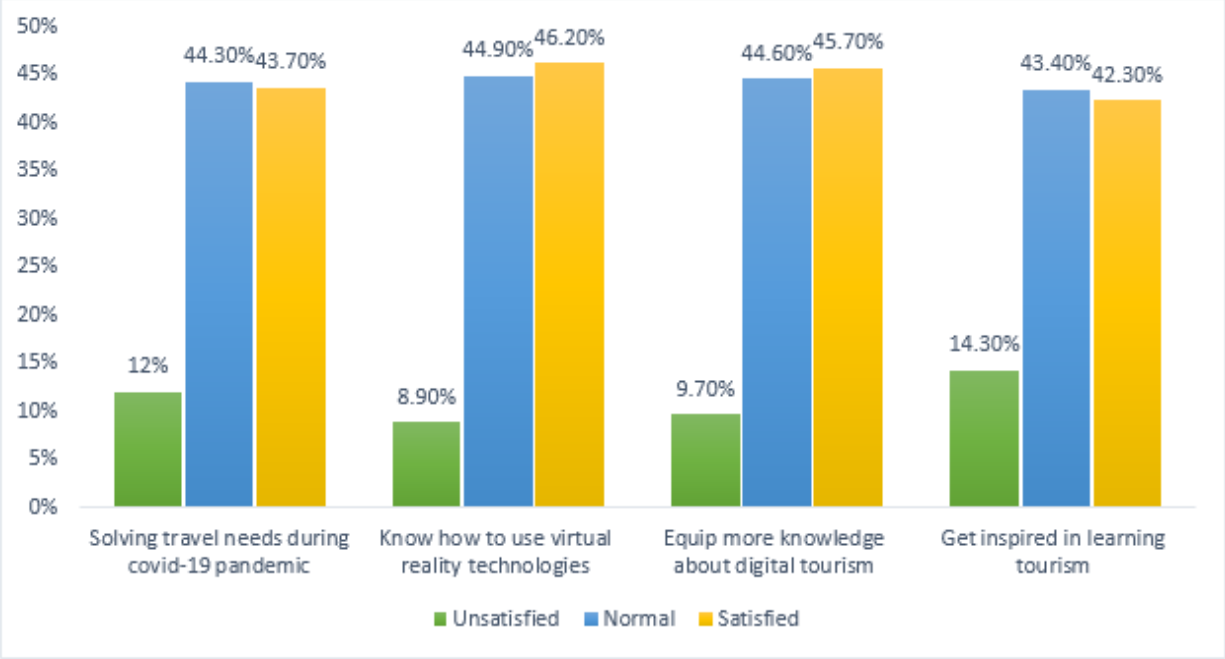

Figure 4. Student satisfaction about the benefit of virtual tourism for e-learning

Figure 4 shows that the rate of dissatisfaction about the benefits that virtual tourism brings is very low, while the majority of students are satisfied with the benefits that virtual tourism brings, all over 40% of the choices.

Table 12
Descriptive Statistics the mean value of respondents' satisfaction

	N	Minimum	Maximum	Mean	Std. Deviation
Solving travel nees during COVID-19 pandemic	350	1	5	3.42	.907
Know how to use virutal reality technologies	350	1	5	3.49	.845
Eqip more knowledge about digital tourism	350	1	5	3.46	.878
Get inspired in learning tourism	350	1	5	3.37	.929

Source: Primary Data

Table 12 shows that the average value of the respondents ranges from 3.37 -3.42 (above the neutral level), which shows that the majority of respondents are satisfied with the benefits that virtual tourism brings during online learning of tourism students. Through the above analysis, this can be demonstrated that tourism students have had access to virtual reality technology during their previous studies. Since then, thanks to online learning during the epidemic season, students still have a certain passion for this industry (Baque et al., 2020). At the same time, students' travel needs are also addressed through themes as well as virtual tours provided by teachers.

4 Conclusion

The level of student satisfaction with the factors affecting e-learning in the context COVID-19 pandemic is recorded above neutral (greater than 3). This proves that, compared to the pre-pandemic period, online learning does not affect the quality of students' learning too much. In addition, factors on learning activities, evaluation criteria, education and

training issues, or factors affecting output results are valued and satisfied by students. In particular, NTTU tourism students had the opportunity to be exposed to digital technology before. Therefore, when the university applied the form of virtual tourism in tourism education on e-learning, students were highly appreciated and satisfied with it. This helps improve students' ability to use technology and stimulates the spirit of learning and passion for travel (Hsu, 2018; Fidgeon, 2010).

From there, the study gives detailed implications in educational management to further improve student satisfaction with learning and educational quality in schools, such as: improving the team's capacity staff and lecturers to meet the requirements of the times; application of achievements of science and technology in specialized education, specifically achievements related to virtual tourism; create teacher-student bonds to quickly address student needs and unleash their potential. In the context of complicated epidemic developments, education administrators need to have a dialogue with students, listen to the difficulties of students and teachers, and organize rewards for students and teachers for outstanding achievements. Finally, the school needs to regularly review and evaluate the quality of education periodically to issue appropriate policies to help improve the quality of education in the university.

Conflict of interest statement

The authors declared that they have no competing interests.

Statement of authorship

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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