Addressing studying barriers to students' online learning majoring in social sciences in the context of the COVID-19 pandemic

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ABSTRACT: *The transition from traditional (face-to-face) to online learning mode presents challenges and barriers to students globally. Reports on this issue during the pandemic show the various effects of barriers to online learning on their academic achievement. Some researchers have been interested in this issue. However, specific research on the group of students majoring in social sciences is still limited. To fill this research gap, this paper aims to build a theoretical framework on barriers to students' learning in the online environment through a review of research papers, thereby examining the relationship between barriers and students' academic achievement. The barriers identified in this study are Social Interaction, Academic Skills, Technical Skills, Learner Motivation, Time and Support for Studies. The Snowball sampling method was used, and the Google Forms application designed the questionnaire for data collection. The analytical data set included 482 records collected over 32 days from April 5th to May 6th, 2021. The results show the difference in demographic conditions in terms of the academic year, learning conditions, gender and region with the identified barriers. The study results show that most female students are guaranteed to fully meet the requirements of online learning in the context of COVID-19. However, the results of online learning are still affected, and the main reason is the time and support for learning activities. Through the findings, the research has contributed to strengthening the knowledge about the relationship between barriers and academic performance among students majoring in social sciences in the online learning environment. The research results can be a reference source so that educational administrators, teachers and related stakeholders such as parents, enterprises and the community will propose solutions to issues affecting the students' learning effectiveness and outcomes.*

KEYWORDS: **Online learning, students' barrier, social sciences, academic achievement.**

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1. Introduction

The outbreak of the COVID-19 pandemic has forced universities worldwide to rapidly transition teaching and learning from face-to-face to online mode (Mustafa et al., 2020). In Vietnam, the situation of COVID-19 epidemic continues to have stressful developments. Faced with the above situation, education in general and higher education, in particular, have had to transform teaching and learning from traditional methods to learning methods with online aspects (Dinh & Nguyen, 2020; Maheshwari, 2021; Nguyen et al., 2021).

Such a learning environment is of interest to many scholars and educational researchers world wide and Vietnam. As many studies have shown, this transition is a major cause of student mental health problems (Downs et al., 2018; Acharya et al., 2018; Othman et al., 2019), especially in the context of the COVID-19 pandemic (Bolatov et al., 2021; Son et al., 2020). In addition, the change of learning environment also directly affects students' learning activities and learning outcomes (Fawaz & Samaha, 2021)

due to students' satisfaction with online learning methods being significantly reduced (Barbera et al., 2013; Swan et al., 2014). Many studies have reported student's and barriers during online learning (Bacow et al., 2012). Mailizar et al. (2020) pointed out four levels of barriers, which are teachers, schools, curriculum and students; assessed the relationship between barrier levels and differences in teachers' perspectives according to their background; pointed out that the student's level has the highest impact on the use of e-learning. In addition, barriers of students' level show a strong correlation with barriers of school and curriculum (Mailizar et al., 2020). Truong Thi Diem and Le Van Toan (2020) mentioned the difficulties and challenges of online training.

Meanwhile, Bui Kien Trung and Pham Long (2015) analysed the quality of online training services based on four components: tangibles, reliability, responsiveness, empathy. These factors directly affected student satisfaction and indirectly affected student loyalty in the online learning environment. In addition, during the COVID-19 pandemic in 2020, there are many studies on online learning, aspects of online learning by grade level, by different fields (Nguyen, V. N., 2020; Do, V. T. et al., 2020; Pham, T. N. T. et al., 2020; Ly, 2020; Pham, T. N., 2020; Luong, D. H. et al., 2020). These papers all confirm the importance of online learning in education and training. Online learning is a backup plan to deal with the pandemic and is an inevitable trend in the current 4.0 technology revolution.

However, studying barriers to students' online learning majoring in social sciences in the context of the COVID-19 pandemic has been limited. Thereby assessing the difference in gender, region, learning conditions with barriers in online learning have not been implemented yet. This paper will build a theoretical framework by reviewing research papers on online learning, barriers in learning modes having online aspects. The study's findings are expected to provide knowledge about barriers and their impacts on the learning activities and outcomes of students majoring in social sciences for researchers in the field. From these insights, education administrators, teachers, and related stakeholders such as parents, enterprises and the community will propose solutions to issues affecting the students' learning effectiveness and outcomes.

2. Theoretical framework

2.1. Online learning

Online learning was known in 1995 when the WebCT system was developed on the web platform and considered the first Learning Management System (LMS), then it became the Blackboard application (Bates, 2001; Singh & Thurman, 2019). Online learning is gradually formed by using LMS or digital documents uploaded to systems or software (T. Bates, 2014). Along with the development of information and communication technology, new technologies have brought more learning methods in the online environment, creating overlapping or mutually exclusive concepts among e-learning, blended learning, online education, online courses, etc. (Singh & Thurman, 2019). Since then, defining a unified and clear concept of online learning has become an important and controversial issue up to now (Singh & Thurman, 2019). Some researchers point out that online learning is sometimes seen as analogous to distance learning and distance education (Martin, F., Sun, T., & Westine, 2020; Moore et al., 2011). Therefore, in the current discussions about the concept of "online learning", scholars worldwide point out the misconceptions and obstacles surrounding the most basic problems of describing this term (Singh & Thurman, 2019). Coming up with a universal and widely accepted definition in the academic world about online learning is still an unresolved debate.

In a systematic review by Singh and Thurman (2019) on online learning definitions, five core factors were analyzed and used when defining this concept; which are: (1) the use of technology; (2) time element: synchronous or asynchronous; (3) synonyms and overlapping concepts; (4) physical distance; and (5) educational context. From here, the two authors propose several definitions that ensure that these definitions will be informative, not indulge in unnecessary details, nor omit any

important details. In this article, the definition of online learning given by Singh and Thurman (2019) was chosen as the instrumental concept.

Online education is defined as education delivered online through the internet for teaching and learning. This includes online learning on the part of the students that are not dependent on their physical or virtual co-location. The teaching content is delivered online, and the instructors develop teaching modules that enhance learning and interactivity in a synchronous or asynchronous environment. (Singh & Thurman, 2019, p.302)

2.2. Barriers to students' online learning

The issue of barriers in online learning has been studied by scientists for many years (Lloyd et al., 2012; Muilenburg & Berge, 2005; O'Doherty et al., 2018). Many studies on barriers for students in online learning have been conducted and explored, such as poor Internet access, network upgrades, updating software courses, lack of ability, and confidence due to lack of training courses (Cheok et al., 2017; Hechter & Vermette, 2013). Several studies on the same issue have shown that feeling wasteful of time, technical issues, and organizational or cultural beliefs (Fish & Gill, 2009; Hartmann et al., 2017) are practical barriers to learners accessing and learning online learning environment. Research by Aljaraideh and Al Bataineh (2019) has confirmed the influence of the school's information technology infrastructure barrier in Jordanian students' online learning (Aljaraideh & Al Bataineh, 2019). Overall, studies have found barriers and challenges for students in online learning such as administrative and social issues (Kebritchi et al., 2017), lack of training (Sun & Chen, 2016), skills such as academic skills, technical skills (Muilenburg & Berge, 2005), issues related to education quality (Kentnor, 2015), not meeting costs of online learning (Deming et al., 2015), and problems related to technical aspects such as the lack of online facilities, the internet (Kaliisa & Picard, 2017). During the period of the COVID-19 pandemic, many researchers have conducted to identify the barriers to students in online learning with overarching themes such as personal barriers, technical barriers, logistical barriers, financial barriers (Aljaraideh & Al Bataineh, 2019; Anwar et al., 2020; Abuhammad, 2020; Baticulon et al., 2021). In Vietnam, in the context of the fourth wave of the COVID-19 pandemic (Hien M., 2021), students face barriers in online-based learning in blended learning methods and fully online learning.

According to the study of Muilenburg and Berge (2005), the research team identified five main barriers for Vietnamese students majoring in social sciences to online learning due to the COVID-19 pandemic's impact. The first is Social Interaction (SI). These barriers to online learning are attributed to a lack of interaction with other classmates or lecturers, such as the lack of online collaboration of students with each other, lack of social context markers, or the fear of being isolated in online courses. The second is Academic Skills (AS). This factor relates to respondents' perceived barriers to online learning due to their lack of academic skills in writing, reading, or communication. The third is Technical Skills (TC). This factor is related to students' perceived barriers to online learning due to the lack of technical skills such as fear of new tools for online learning, lack of skills to work with software, or unfamiliarity with online learning technology tools. The fourth is Learner Motivation (LM). This factor refers to certain personal characteristics that will affect their motivation in online courses, such as student procrastination, choosing easier assignments to complete, or feeling that the online learning environment is inherently unmotivated. Finally, Time and Support for Studies (TSS), this factor is related to students' views about whether the lack of time or support from families, friends, and schools generates barriers to their online learning (Muilenburg & Berge, 2005).

3. Methods

3.1. Data collection

The analytical dataset consisted of 482 records collected through an online survey over 32 days from April 5th to May 6th, 2021. The Google Forms application designed the questionnaire.

The information collection form consisted of two parts, information of survey participants (see Table 1 and Table 2), and students' perceptions of barriers to online learning. These scales are referenced from the research results of Muilenburg and Berge (2005), including barriers of Social Interaction (SI), Academic Skills (AS), Technical skills (TC), Learner Motivation (LM), Time and Support for Studies (TSS). Collected data was saved in Microsoft Excel format, then put in SPSS 20 software for data analysis.

3.2. Characteristics of the survey sample

Students' demographic variables presented in this section include characteristics about gender, academic year (the year that students attended), region, and online learning conditions. According to survey data, the percentage of female students was superior to male students (89.83% versus 10.17%). The percentage of the first and second-year students participating was higher than that of the fourth and fifth-year students (45.02%; 44.81% and 6.22%; 3.11%). Students in rural areas (71.99%) participated more than students in urban areas (28.01%). Regarding the conditions for online learning, most students were at level 5 - responsive (46.89%). Thus, most students' online learning conditions are fully satisfied, although students in rural areas accounted for 71.99% in this study.

Table 1: Demographic statistics of students majoring in social sciences

Characteristics	N	%
Gender	482	100.00
Male	49	10.17
Female	433	89.83
Academic year	482	100.00
The 1st	217	45.02
The 2nd	216	44.81
The 3rd	30	6.22
The 4th	15	3.11
The 5th	4	0.83
Region	482	100.00
Rural	347	71.99
Urban	135	28.01
Online learning conditions	482	100.00
Totally unresponsive	16	3.32
Mostly unresponsive	29	6.02
Partly responsive	104	21.58
Mostly responsive	107	22.20
Totally responsive	226	46.89

Regarding the training majors of the survey respondents, students are currently studying in eight majors, including Foreign Languages, History and History Pedagogy, Primary Education, Literature and Philology, Geography, Vietnamese Studies, Preschool Education, and Special Education. In which, the proportion of students majoring in Foreign Languages and Primary Education accounted for a larger number (24.07% and 24.27%); followed by students majoring in Geography (13.49%); other majors respectively are Preschool Education (11.83%), History and History Pedagogy (11.20%), Literature and Philology (10.17%); the number of students majoring in Special Education and Vietnamese Studies was at least (3.94% and 1.04% respectively)

Table 2: Majors in the field of social sciences

Majors	No	%
	482	100.00
Foreign Languages	116	24.07
History and History Pedagogy	54	11.20
Primary Education	117	24.27
Literature and Philology	49	10.17
Geography	65	13.49
Vietnamese Studies	5	1.04
Preschool Education	57	11.83
Special Education	19	3.94

3.3. Data analysis

This study used several data analysis methods. The first was the descriptive statistical analysis,

which was used to describe the characteristics of survey respondents, such as the number and proportion of students by gender (see Table 1). Next was the Spearman correlation analysis to determine the relationship between student characteristics and their barriers, for example, the relationship between students' learning conditions and barriers of technical skills. In addition, the one-way ANOVA analysis was applied to explore the differences in barriers in online learning among the groups of subjects according to their characteristics. The Microsoft Excel software was used to visualize these groups data (see Figure 1-4). Finally, the linear regression analysis was used to determine the relationship of students' characteristics and barriers to their online learning outcomes.

4. Results

4.1. The relationship between barriers and characteristics of Vietnamese students

Table 3 below shows the relationship between barriers in online learning and demographic characteristics of survey subjects through Spearman correlation analysis.

Table 3: Results of testing the correlation between demographic characteristics and barriers in online learning of students specialized in social sciences

	School year	Condition	Gender	Living area
SI	.205**	-.312**	-0.063	.175**
AS	.182**	-.341**	-0.079	.137**
TC	.184**	-.375**	-.123**	.098*
LM	.160**	-.368**	-.100*	.138**
TSS	.194**	-.424**	-.134**	.113*
All	.204**	-.397**	-.114*	.143**

** p < .05, ** p < .01*

According to the data from Table 3, for the student's year of study, its association with barriers (rho = .204, p < .01) is the direct ratio, and the association is small. This can be understood that students encountering barriers in online learning does not depend much on the school year factor.

In general, regarding students' learning conditions, the relationship between barriers and students' learning conditions (rho = -.397, p < .01) is the inverse ratio and at the average level. It means that the more students' learning conditions are met, the lower barriers for students will be, and conversely, the fewer students' learning conditions are met, the more barriers to students will be.

For the gender of the students, its association, and the SI, AS barriers were not statistically significant. Meanwhile, the results of the relationship between students' gender and TC barriers (rho = -.123, p < .01); LM (rho = -.100, p < .05); TSS (rho = -.134, p < .01) is inverse ratio and associated. It is understood that, with different gender, the relationship with TC, LM, TSS barriers is different.

For the living area, its overall relationship with barriers (rho = .143, p < .01) is the direct ratio and at a small degree of association. This result is understood that students encountering barriers in online learning does not depend much on the factor of students in rural or urban areas.

Thus, verifying the correlation between demographic characteristics and barriers in online learning of students specialized in social sciences shows that the relationship of learning conditions with barriers is at average level but at the highest level in the connection of other characteristics with barriers. The association of the gender of students was at the lowest level compared to the relationship of other characteristics with barriers.

4.2. Differences in barriers according to student characteristics

4.2.1. Differences in barriers by gender

ANOVA analysis was performed to compare the association of barriers in online learning between female students and male students. Overall, there was a statistically significant difference between the two groups (F = 5.338, df = 1, p = .021). The results show that there is no statistically significant difference between the two groups for SI (F = 1.157, df = 1, p = .283) and AS (F = 2.989, df = 1, p = .084). In the three remaining factors, the difference between the male and female students is statistically significant, namely the TC factor (F = 8.287, df = 1, p = .004), LM (F = 8.287, df = 1, p = .004). F = 4.838, df = 1, p = .028) and TSS factor (F = 7.422, df = 1, p = .007). Furthermore,

in all factors, the influence level of female students tends to be higher than that of male students (see Figure 1).

Table 4: Results of ANOVA test between the barrier scale in online learning of students specialized in social sciences and the demographic variable of gender

Factor	Sum of Squares	df	Mean Square	F	Sig.
SI	0.699	1	0.699	1.157	0.283
AS	1.885	1	1.885	2.989	0.084
TC	5.107	1	5.107	8.287	0.004
LM	2.935	1	2.935	4.838	0.028
TSS	4.627	1	4.627	7.422	0.007
All	2.778	1	2.778	5.338	0.021

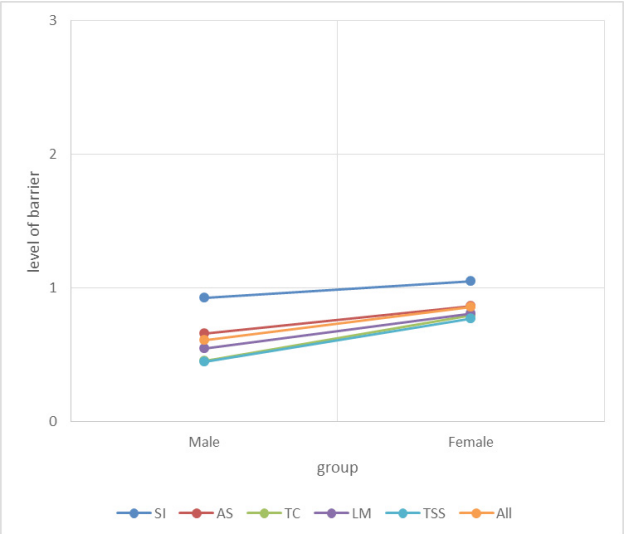

Figure 1: Comparison of differences in barriers between male and female students

4.2.2. Differences in barriers by living area

ANOVA analysis was performed to compare the association of barriers in online learning between rural and urban areas. Overall, there was a statistically significant difference between two groups (F = 8,786, df = 1, p = .0003). The results show no statistically significant difference between the two groups for TC (F = 3.315, df = 1, p = .069). In the remaining factors, the difference between rural and urban areas is statistically significant. In these factors, the influence level of the urban student group tends to be higher than that of rural students (see Figure 2).

Table 5: Results of ANOVA test between the barrier scale in online learning of students specialized in social sciences and demographic variables about the living area

Factor	Sum of Squares	df	Mean Square	F	Sig.
SI	7.585	1	7.585	12.858	0.000
AS	4.179	1	4.179	6.676	0.010
TC	2.064	1	2.064	3.315	0.069
LM	6.276	1	6.276	10.464	0.001
TSS	3.662	1	3.662	5.856	0.016
All	4.54	1	4.54	8.786	0.003

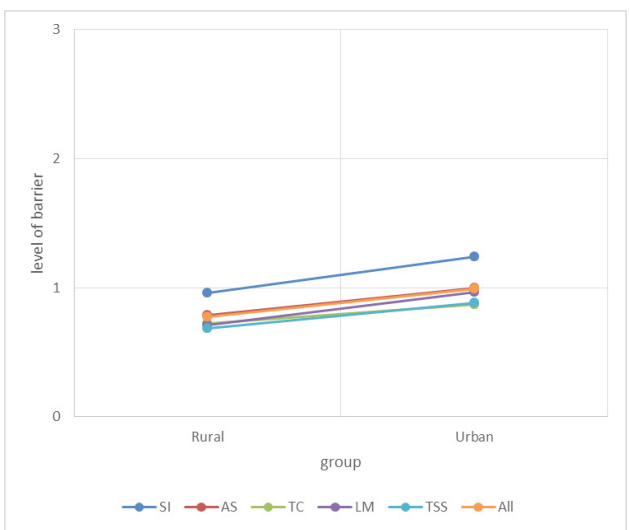

Figure 2: Comparison of differences in barriers between urban student groups and rural student groups

4.2.3. Differences in barriers according to learning conditions

Analyzing ANOVA is to compare the difference in barriers between groups of students according to groups of online learning conditions. In general, there is a statistically significant difference between groups of students according to the groups of online learning conditions (F =

18,308, df = 1, p = .001). The results show that all factors are statistically significant. According to groups of online learning conditions, comparing the differences in barriers between groups of students tends to be SI, AS, TC, LM, TSS, respectively (See Figure 3).

Table 6: Results of ANOVA test between the barrier scale in online learning of students specialized in social sciences and the demographic variable on learning conditions

Learning conditions	Sum of Squares	df	Mean Square	F	Sig.
SI	26.8	4	6.7	12.107	0.000
AS	26.177	4	6.544	11.21	0.000
TC	37.062	4	9.265	16.752	0.000
LM	34.476	4	8.619	15.833	0.000
TSS	46.621	4	11.655	21.611	0.000
All	33.616	4	8.404	18.308	0.000

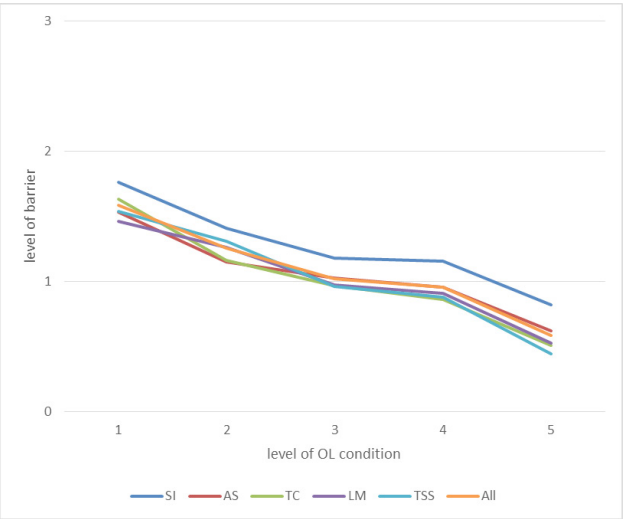

Figure 3: Comparison of differences in barriers between groups of students according to online learning conditions

4.2.4. Differences in barriers by school year

After analyzing ANOVA to compare the difference in barriers between students by school year, the overall results show that the difference is statistically significant between the group of students by school year groups (F = 7.449, df = 4, p = .001). When considering each barrier, the results show that all factors are statistically significant. Comparing the differences in barriers between student groups by year tends to be as shown in Figure 4.

Table 7: Results of ANOVA test between the barrier scale in online learning of students specialized in social sciences and the demographic variable about the school year

Factor	Sum of Squares	df	Mean Square	F	Sig.
SI	16.581	4	4.145	7.212	0.000
AS	14.814	4	3.704	6.095	0.000
TC	13.292	4	3.323	5.511	0.000
LM	15.306	4	3.827	6.546	0.000
TSS	15.203	4	3.801	6.28	0.000
All	14.849	4	3.712	7.449	0.000

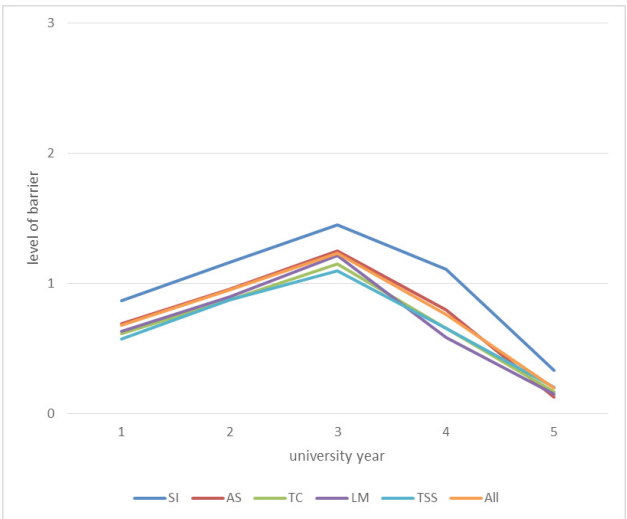

Figure 4: Comparison of differences in barriers between student groups by academic year

Thus, the ANOVA analysis comparing the difference between the barrier scale in the online learning of students specialized in social sciences with demographic characteristics shows that: in terms of gender, the difference between the male and female subject groups are statistically significant in TC, LM, TSS factors and female students tend to be higher than male students in the influence level (see Figure 1); Regarding the living area, the difference between rural and urban areas is statistically significant in the factors SI, AS, LM, TSS and the influence level

of the urban student group tends to be higher than that in rural areas (see Figure 2); in terms of learning conditions and about the school year, all factors are statistically significant and tend to be as shown in Figures 3 and 4.

4.3. How barriers affect learning outcomes

Linear regression analysis was applied, with the dependent variable being online learning results and nine independent variables. They are four variables in the characteristics of Vietnamese students (gender, living area, school year, learning conditions) and five variables in barriers of learning (SI, AS, TC, TSS, LM). The results show that this model is suitable for F = 10,985, df = 9, p < .001. Besides, these nine dependent variables explain 17.3% of the variation in students' online learning results; however, only two variables TSS and learning conditions are statistically significant with p < . 05 (see Table 10). In contrast, seven other independent variables with p > .05 do not impact students' online learning results.

Table 8: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.416a	.173	.157	.714

The results of linear regression analysis, the dependent variable is online learning. The independent variable TSS (β = -.256) shows that the results of online learning are inversely proportional to the TSS. It means that the higher the TSS level is, the little learning outcome will be; on the contrary, when the TSS level decreases, the learning results will increase.

With the dependent variable being the online learning result and the independent variable being the learning conditions (β = .266), the online learning result is directly proportional to the learning conditions. It means that if the learning conditions are good, the results of the online learning will be good; if the learning conditions are not guaranteed, the results of the online learning will be poor.

5. Discussion

This paper has explored the relationships between barriers and student characteristics. The relationship of learning conditions with barriers is average level but is the highest level; in contrast, the gender relationship of students is the lowest compared to the relationship of other characteristics with barriers. Besides, the research results also show the link of barriers in online learning with the characteristics of students. Regarding gender, the difference between male and female subject groups is statistically significant in TC, LM, TSS factors and confirms that the barrier level for female students is higher effect than that for male students (see Figure 1). Regarding the living area, the difference between rural and urban areas is statistically significant in the SI, AS, LM, TSS factors. The influence degree of barriers in the urban student group tends to be higher than for students in rural areas (see Figure 2). In terms of learning conditions, students with good learning conditions tend to have fewer barriers to learning than students with poor academic conditions. Regarding the academic year, third-year students tend to encounter the most barriers; in contrast, fifth-year students encounter the least barriers.

Regarding factors affecting online learning outcomes, TSS and learning conditions are two identified factors after regression analysis. This is understood that as the level of TSS or/ and learning conditions increases, the learning

Table 9: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	50.448	9	5.605	10.985	.000
	Residual	240.857	472	.510		
	Total	291.305	481			

Table 10: Coefficients

Model B		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Std. Error	Beta			
1	(Constant)	2.777	.167		16.641	.000
	Gender	.176	.110	.068	1.601	.110
	Region	.061	.074	.035	.815	.416
	SI	-.130	.077	-.130	-1.688	.092
	AS	-.003	.093	-.003	-.037	.971
	TC	.007	.092	.007	.074	.941
	LM	.156	.110	.157	1.424	.155
	TSS	-.250	.098	-.256	-2.563	.011
	Academic year	.046	.042	.047	1.103	.271
	Learning conditions	.187	.032	.266	5.843	.000

outcomes tend to decrease; conversely, the level of TSS or/and learning conditions decreases, the learning outcomes tend to increase. Similar to this discovery, many other studies have also shown similar results. According to Polat (2010) and Manion (2019), learning conditions influence students' learning outcomes (Atici & Polat, 2010; Jessica L. Manion, 2019). Lee et al. (2011), Cho and Tobias 2016) show a link between study time, support during online learning, and academic performance (Sang Joon Lee et al., 2011; Moon-Heum Cho & Scott Tobias, 2016). Therefore, it can be seen that the impact on reducing the barriers of these two factors, TSS and learning conditions, will help improve students' learning quality for online learning. This can be done by implementing related policies to increase the level of learner commitment (Gillett-Swan, 2017) or school support (Lewis, 2011).

On the other hand, many studies around the world have identified other associations such as gender. Which is also affects students' academic performance, which was not identified in this study. According to the research results of Hanham et al. (2021), the gender of students has a relationship with learning outcomes in the digital environment (José Hanham et al., 2021). The study of Cheng et al. (2019) shows the difference in learning outcomes of learners in different geographical areas (Ching-Hsue Cheng, 2019). However, research results for Vietnamese students show that these factors have no impact on their academic performance. Thus, further studies are needed to determine where the difference in domestic and international publications is, the perception of Vietnamese students, the change in the learning environment (Pham Hong Chuong et al., 2021), online learning experience (Nguyen Van Tu, 2020) or relation to the online learning support system (Nguyen Mai Huong & Tran Thi Lan Thu, 2020).

Overall, this publication has some research limitations. First, the paper uses the snowball sampling method. Thus, there are differences between groups (Pattison et al., 2013); for example, the proportion of female students is superior to the proportion of male students, the percentage of students in rural areas is higher than the percentage of students in urban areas. Second, in the scope of this study, it is not possible to compare the impact of barriers on learning outcomes by majors.

6. Conclusion

The study identified barriers in the online learning of students who specialized in social sciences during the COVID-19 pandemic. Also, it assessed the difference in barriers for demographic conditions such as school year, learning conditions, online learning outcomes,

gender and living area. The research results contribute to strengthening knowledge about barriers and their impacts on students' activities and learning outcomes specialized in social sciences for researchers and practitioners in this field. This can be seen as a reference source for educational administrators, teachers, and other related subjects such as parents, businesses, and the community to propose solutions to problems affecting students' effectiveness and learning outcomes. In the coming time, further studies are recommended to identify barriers in students' online learning according to different training majors and compare the influence of the identified barriers on the outcomes of students in these disciplines.

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