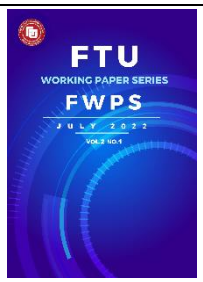

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ẢNH HƯỞNG CỦA VIỆC SỬ DỤNG MẠNG XÃ HỘI TIKTOK ĐẾN KẾT QUẢ HỌC TẬP CỦA SINH VIÊN TRÊN ĐỊA BÀN HÀ NỘI TRONG THỜI KỲ HỌC TẬP TRỰC TUYẾN

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Tóm tắt

Trong bối cảnh dịch bệnh Covid, sinh viên Hà Nội phải học tập trực tuyến và tiếp xúc nhiều hơn với các nền tảng xã hội, trong đó phải kể đến mạng xã hội TikTok. Bài nghiên cứu này nhằm mục đích làm rõ tác động của việc sử dụng nền tảng mạng xã hội TikTok lên kết quả học tập của các sinh viên được chọn trên địa bàn Hà Nội trong thời kì học và thi trực tuyến. Nhóm tác giả tiến hành khảo sát và thu được câu trả lời hợp lệ từ 441 sinh, sau đó sử dụng mô hình hồi quy OLS để điều tra mối quan hệ giữa kết quả học tập với kết quả học tập kỳ trước, thời gian sử dụng, tần suất đăng video, số lượng video sinh viên xem và thời gian tự học. Kết quả nghiên cứu cho thấy kết quả học tập kỳ trước có ảnh hưởng mạnh nhất đến kết quả học tập của sinh viên trong thời gian học trực tuyến và nếu sinh viên dành quá nhiều thời gian vào sử dụng TikTok đến mức nghiện sẽ có ảnh hưởng tiêu cực đến kết quả học tập. Qua bài viết, nhóm tác giả cũng đề xuất những khuyến nghị giải pháp cho các đối tượng trong ngành giáo dục liên quan đến tận dụng mạng xã hội trong công tác sư phạm và học tập.

Từ khóa: TikTok, mạng xã hội, học tập trực tuyến, kết quả học tập.

THE IMPACT OF TIKTOK USAGE ON ACADEMIC PERFORMANCE OF HANOI STUDENTS DURING ONLINE LEARNING PERIOD

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Abstract

In the context of the Covid pandemic, Hanoi students have to study online and thus have more exposure to social platforms, including the application TikTok. This study, therefore, aims to clarify the impact of using the social networking platform TikTok on the learning outcomes of Hanoi students in Hanoi during this period. The authors conducted a survey and obtained valid answers from 441 students, then used the OLS regression model to investigate the relationship between learning outcomes and the previous semester's study results, usage time, video posting frequency, a number of videos watched by students, and self-study time. It is deduced that the previous semester's academic performance has the strongest influence on students' learning outcomes, and if students spend too much time using TikTok to the point of addiction, it will exert a negative effect on academic performance. The authors also propose solutions for subjects in the education industry to take advantage of social networks in pedagogy and learning.

Keywords: TikTok, social network, online learning, academic performance.

1. Introduction

In the context of the Covid-19 outbreak, technology platforms such as Facebook, Youtube, TikTok... have become popular, which not only provide opportunities and challenges in information acquisition, cultural intelligence, and creative development but also help build and maintain relationships among users (Kaplan & Haenlein, 2012; Lin, 2015). In the circumstances of the Covid 19 period, people often resort to social networking sites to relieve their long-lasting isolation and boredom (Brooks *et al*., 2020) of being constantly exposed to electronic devices and limited outdoor activities. In that context, TikTok emerged as a new platform to help young people freely express themselves by creating short videos and uploading them. However, this practice in turn poses several effects on other activities, including the learning process.

Up to the present time, as TikTok has only recently emerged among young people, there have been very few in-depth studies on the influence of this social networking platform on student learning outcomes, especially during the context of the pandemic that forced students to study online. While there is only two research paper on the influence of the social network TikTok on student learning outcomes (Swathi *et al*., 2020; Mekler, 2021), there have been many studies on the relationship between social networks and the academic status or students' academic results (Leyrer-Jackson & Wilson, 2018; Talaue *et al*., 2018; Shen, 2019; Kolhar, 2021 and Tafessa, 2022). Moreover, many authors have also studied the individual impact of each social networking platform such as Facebook on student learning outcomes (Gamble & Wilkins, 2014; Nguyen, 2020).

The purpose of the study is to clarify the impact of using the social networking platform TikTok on students' academic achievement in Hanoi during the online learning period. This study was conducted for an investigated period of 2 years, 2020 and 2021, with the subjects being students from the second year and above at several universities in Hanoi.

To be more specific, this paper aims to answer 2 questions:

- What are the impacts of using TikTok on the online academic results of students in Hanoi?

- How positively/negatively does TikTok affect Hanoi students' learning outcomes during the online learning process?

The rest of the study paper is structured as follows: First of all, the group presents the theoretical basis of social networks and the effects of TikTok on students' learning outcomes during online learning, next is the research method, then the research results. Second, the research team proposed some solutions to help enhance the results of Hanoi students. Third, the paper ends with a summary of the research contributions of the study and directions for future research.

2. Theoretical backgrounds and literature review

2.1. An overview of social network

A social network can be referred to as a service that connects members with similar interests on the Internet, regardless of space and time. The social network will be spread in a community through the interaction among its members. Basically, a social network is a special tool that makes it easier for people to meet and maintain relationships without having to travel from place to place like traditional connections. In addition, we can entertain on the web with a multitude of functions such as listening to music, playing games, sharing photos, etc. However, one negative of social networks that attract the attention of many people, including educators, is the phenomenon of "social network addiction". Psychological studies show that if users use social networks too much and cannot manage their activities on social networks, they are believed to have manifestations of social network addiction (Kimberly, 2009; Tang *et al*., 2016). Several studies have shown that university students are more likely to become addicted to social media if the intensity of using these online communication platforms increases (Blachnio *et al*., 2016; Brailovskaia *et al*., 2018). This also means that the intensity or frequency that students use social networks has a close relationship with the social network addiction among students. Social networking has been shown to be associated with reduced academic performance (Azizi *et al*., 2019; Tafesse, 2022).

2.2. An overview of TikTok

TikTok is regarded as one of the most popular social networks in China. While it took Facebook nearly a decade to gain about 100 million people (from 2004 to 2014, there were about 1.35 billion regular users per month), it only took TikTok less than 4 years to reach this impressive number. TikTok is an app that allows someone to make dancing or lifestyle videos, and it has become increasingly popular over the past couple of years, especially with college students (Mekler, 2021). According to the e-Conomy SEA 2021 report issued by Google, Temasek, and Bain and Company in 2021, TikTok users are highly concentrated in the age group of 18 - under 30 years old. TikTok is popular mainly due to the interesting experience of being able to integrate many functions of other social applications such as Instagram, Facebook, YouTube... It also attracts people to use TikTok with the app's unique content discovery feed. With its "For You page", where much of the content viewed is randomly selected rather than coming from a circle of friends, TikTok has created a larger and more diverse user base than traditional social media-based platforms (Ostrovsky & Chen, 2020).

2.3. Literature review

Swathi *et al*. (2020) study the influence of the TikTok platform on students' learning. The authors come to the conclusion that spending less time using TikTok will positively affect students' academic performance. Besides, there is a positive relationship between the frequency of updates on TikTok and the degree of absenteeism, and the positive relationship between the number of friends on TikTok and the time using TikTok. Furthermore, in a quantitative research regarding the impacts of TikTok use on college students' academic performance, Mekler (2021) concludes that there is a positive correlation between the TikTok using time and the distraction level of students. To be more specific, the more time students indulge in TikTok, the more likely that they will lose track of time. This practice furthermore deprives students of their time for completing schoolwork, thus worsening their grades.

Some authors conclude that social media exerts negative impacts on students. According to Kohlar *et al*. (2021), over-indulgence in social media can distract students from learning activities. Such a phenomenon also delays students' sleeping period, reduces direct interaction, and leads to some mental issues, such as depression, anxiety, or mood swings. When examining the relationship between social network addiction and learning outcomes of medical students in Iran, Azizi *et al*. (2019) propose that excessive use of social platforms will result in addiction in users, thus deteriorating students' academic performance, and that male students seem to be more addicted to such platforms than their female counterparts. In a research paper on the influence of social networks on the learning situation of students from Samuel Adegboyega University, Arekete *et al*. (2017) deduce that the time for using social media has a negative effect on the learning activities of students, but if students use social networks for learning purposes, it will have a positive influence on the learning outcomes. When studying the relationship between social networks and the academic performance of Lagos university students, Osharive (2015) also comes to the conclusion that social media poses some adverse effects on young people such as lack of personal identity, distraction from learning, etc. His research results also illustrate that the level of addiction to social networks will negatively affect academic performance. According to the survey results of Talaue *et al*. (2018), the majority of the people investigated believe that social networks have a detrimental influence on academic performance because these students lack the time to do homework and study due to over-indulgence in social media. Therefore, Owusu-Acheaw and Larson (2015) believe that it is necessary to encourage students to gradually reduce their time of using social networks and increase their time spent on reading books as well as academic activities to widen their knowledge.

However, some other authors give research results that social networks have positive effects on students. According to research by Alvarez (2013), social networking platforms, although not a learning environment, can help improve the learning outcomes of students at the university level. This is because such sites can act as an intermediary platform to help exchange knowledge, experiences, and ideas of users. At the same time, teachers in the social network environment have the role of finding and developing methods to promote cooperation among students, thereby adjusting the student learning process as well as evaluation criteria. Besides, students also prefer the application of technology and new forms of learning rather than simply using educational games or utilizing laptops as a learning tool (Brooks & Pomerantz, 2017). Furthermore, 68.2% of people surveyed think that social media helps improve their grades and only 32.7% agree that social media negatively affects their learning situation (Chikweru, 2018).

In a research on the correlation between the use of social networking sites and the academic performance of college students, Tafesse (2022) proposes an inverted U-shaped relationship between these two variables. To be more specific, if such platforms are used on a moderate basis, they are less likely to exert negative effects on students' learning process as users do not need to reallocate their time for academic tasks. Such usage may furthermore enhance academic engagement by promoting collaborative learning and access to variable information sources. Nevertheless, if used intensively, social networking sites will pose an adverse impact on students' academic performance by making them sacrifice the time needed for completing academic tasks.

When conducting research on a specific social networking platform, Facebook, to assess students' perceptions of using a Facebook page as university learning materials, Irwin *et al*. (2012) propose that Facebook pages associated with the course will contribute to ameliorating interaction between students, instructors, and learning resources. Research results indicate that half of the students surveyed think Facebook has a positive impact on their results. In addition, in the study on students' attitudes and perceptions about the application of Facebook in language learning, Gamble and Wilkins (2014) pointed out that Facebook has potential in the field of education because it allows freedom and does not restrict users in terms of time and place. Although the Facebook platform still has some limitations as it is easy to miss some activities when there are too many announcements on this website, it can still help students organize what they should do to prepare better for their learning process. Nguyen (2020) also points out the positive effects of the social network Facebook related to aspects such as searching, sharing learning materials; exchanging academic information; scientific research; etc., and some negative effects of Facebook on students, including distracting students from their learning process; causing students to stay up late at night; wasting time and study space of students.

After reviewing previous studies, the team deduced that there has been a lot of research on the effect of social media in general on academic performance both before and during the pandemic. However, the amount of research that only analyzes the influence of a specific platform like TikTok is insignificant. Especially when placed in the context of the Covid pandemic, it can be affirmed that there is no research regarding such a topic during this period. Moreover, the results from the new studies only stop at linear effects, so the authors want to approach the topic with a new research method by dividing the determinants into levels to further assess the impact of each variable, such as dividing the time of use into different intervals to see what time period students use TikTok considered as social network addiction.

2.4. Theoretical framework

2.4.1. The time displacement theory

The Time displacement theory proposes that people have a restricted amount of time to do each certain thing (Mutz *et al*., 1993). Increasing time spent on one activity will take up time for other activities. According to Neuman and Neuman (1991), when users increase the time they spend on social networks or the time for recreational activities, they will have to sacrifice time for other activities such as studying, reading, doing homework, etc. This practice is deemed to worsen the academic outcomes of students (Koshal *et al*., 1996; Anderson *et al*., 2001; Shin, 2004 and Shejwal & Purayidathil, 2006). The research team chose to apply this theory because

it would help explain whether using the TikTok platform causes a displacement effect on students' learning, which in turn negatively impacts their learning outcomes.

2.4.2. Uses and Gratification theory

Uses and Gratification theory (U&G theory) is a socio-psychological theory that focuses on the study of how individuals use social networks. It is built on the concept of the benefits that users envision for each social networking platform. U&G theory shows that people have a clear awareness of the needs and goals of using social networks, along with the ability to evaluate the value of content on communication channels, and may take actions to connect needs, and satisfaction towards choosing social networking platforms (West & Turner, 2007). Usage and satisfaction theory raises the following questions: why do individuals use social networks, and what do they use them for? This theory can explain that TikTok users use this platform because it satisfies their needs and brings interesting things to them, thereby helping them to have a more comfortable spirit in learning and life.

3. Methodology

3.1. Models and hypothesis studies

From previous studies, the team proposes to build a general regression model as follows:

gpaterm2 = β0 + β1 × gpaterm1 + β2 × timeonl + β3 × postfreq + β4 ×novid + β5 × selflearn + ui

in there,

β0: free regression coefficient

βi: variable regression coefficient (i=1,2,3,4,5)

ui: random error

Table 1. Hypotheses

Variables	Description	Expectation	Reference
gpaterm1	Students' academic results in the first semester of the academic year 2020 - 2021	+	Staffolani and Bratti (2002); Frischenschlager et al. (2005); Geiser and Santelices (2007)
timeonl	Average time of TikTok usage in a day during the online learning period.	-	Swathi et al. (2020); Celestine and Nonyelum (2018), Asemah et al. (2013); Leyrer-Jackson and Wilson (2018); Azizi et al. (2019)
postfreq	The number of TikTok posts a week during the online learning period.	-	Swathi et al. (2020)

Variables	Description	Expectation	Reference
novid	The number of TikTok videos that students watch in a day during the online learning period.	+	The authors' survey
selflearn	The average time of self-study in a day during the online learning period.	+	Cheng and Ickes (2009)

Source: Compiled by the author team

3.2. Questionnaire design

Based on previous studies, the questionnaire was divided into two main parts. The first part is about individual information related to the students surveyed, including questions about academic performance in offline and online semesters. The second part deals with the specific usage of TikTok by students such as the point of time that students use the most, the average time of usage in a day, the average number of days used in a week, the number of followers, number of average videos viewed in a day, video posting frequency in a week.

3.3. Data collection method

The primary data sources were collected mainly through online surveys using a Google Form and face-to-face interviews by having the students scan the QR code of the survey link. To build a quality-assured questionnaire, the author relies on references to theoretical studies and empirical research to form a draft scale. Then, the research team conducted a trial survey on 30 respondents who are students from some universities in Hanoi to complete the survey questions. The official questionnaire was completed and used for the follow-up interview process. According to Hair *et al*. (2006) the minimum sample size for quantitative studies is 100. After the official survey, the group obtained a total of 441 valid answers. Thus, the sample of the study is reliable for analysis.

3.4. Data Analysis Methods

The authors analyzed the collected data through the following steps: descriptive statistics of the survey sample, analysis of Pearson's correlation coefficient, and regression analysis to test the research model and hypothesis. The tool used for data analysis in this study is Stata software version 14.

4. Result and discussion

4.1. Statistics of data

When conducting the survey, the group received 515 survey votes, but due to the research topic on the learning outcomes of students during the Covid period in 2020-2021, the surveyed subjects were only second-year students. or higher, so the responses from high school students, freshmen, and graduated students are considered invalid. After filtering the data, there are only 441 valid questionnaires. Out of 441 valid questionnaires, 369 students claimed to use the TikTok

platform, accounting for 83.67%, of which 71.88% are second-year students. In addition, 82.23% of second-year students surveyed said that they used the TikTok platform, accounting for 72.36% out of those investigated using this platform. The number of male students using TikTok is 66, accounting for 17.89% and the number of female students is 303, accounting for 82.11%. The reason for this large discrepancy may be that the answers are mainly gathered from Foreign Trade University students, and the proportion of female students in Foreign Trade is much more considerable than the number of male students, leading to this gap.

GPA, when the research team investigated, was in the form of continuous variables, but for the convenience of descriptive statistics, we divided the GPA periods from 0-4 into intervals smaller than 2.2; 2.2 - 2.49; 2.5 - 3.19; 3.2 - 3.59 and 3.6 - 4.0.

When setting up the questionnaire, with questions about "Average time using TikTok per 1 school day during online learning", the research team gave several options, however, there are too few responses regarding the average usage time per day from 2h-3h, 3h-4h, 4h-5h, higher than 5h. Therefore, the group has combined the above 4 options into higher than 2h when running the regression results. Similarly, in the question "average hours of self-study per day when studying online", the authors also combine the options 3h - 4h, 4h - 5h, higher than 5h into higher than 3h of self-studying.

Table 2. Descriptive statistics of GPA of 2 semesters

Variables		Number mark	Letter mark	Frequency	Percentage	Mean	Std. Dev	Min	Max
gpaterm1	**GPA in the first semester (offline learning)**	Smaller than 2.2	F	7	1.9	3.27	0.42	1	4
		2.2 - 2.49	D	5	1.4				
		2.5 - 3.19	C	124	33.6				
		3.2 - 3.59	B	146	39.6				
		3.6 - 4.0	A	87	23.6				
gpaterm2	**GPA in the second semester (online learning)**	Smaller than 2.2	F	2	0.54	3.41	0.39	0	4
		2.2 - 2.49	D	2	0.54				
		2.5 - 3.19	C	81	21.96				
		3.2 - 3.59	B	142	38.48				
		3.6 - 4.0	A	142	38.48				

Source: Compiled by the author team

From the table, it is apparent that with 369 observations, the variable ***gpaterm1*** has an expected value of 3.27, showing that the average value of the first term GPA when learning directly is 3.27. GPA term 1 has a dispersion level of 0.42, it also reaches the smallest value and the largest value of 1 and 4, respectively. In addition, there are 146 students who achieve a B grade in Semester 1, accounting for the largest percentage of 39.6% out of the total number of students using TikTok, and this number decreased slightly to 142 students with B grade in Semester 2. With a GPA smaller than 2.2, students will reach level F. It can be seen that in term 1, there are 7 students with F level, accounting for 1.9%, while in term 2, the number of students achieving this level of academic ability decreased to only 2 students, accounting for an extremely small percentage of only 0.54%.

With the variable ***gpaterm2***, the expected value is 3.41, which shows that the average value of GPA term 2 when students study directly at school is 3.41. GPA this term has a dispersion level of 0.39 with the smallest and largest values being 0 and 4, respectively. In addition, the number of students achieving grade A with a GPA from 3.6 to 4.0 in semester 1 is 87, accounting for 23.6% of the total number of students using TikTok, whereas in semester 2, the number of students achieving this grade has increased sharply to 142 students, equal to the number of those achieving grade B, accounting for 38.48.

Table 3. Descriptive statistics of the remaining variables

Variables			Variable value	Frequency	Percentage	Mean	Std. Dev.	Min	Max
timeonl	Average time using TikTok/1 school day during online learning	Less than 30’	1	84	22.76	2.54	1.11	1	4
		30 min-1hour	2	97	26.29				
		1-2h	3	91	24.66				
		Higher than 2h	4	97	26.29				
selflearn	Average number of self-study hours/1 day of your online learning	Less than 1h	1	61	16.53	2.69	1.03	1	4
		1h-2h	2	89	24.12				
		2h-3h	3	124	33.6				
		Higher than 3h	4	95	25.75				
frequency	Frequency of posting videos on TikTok in 1 week	0	1	258	69.92	1.36	0.60	1	4
		1 – 5	2	95	25.75				
		6 – 10	3	12	3.25				
		Higher than10	4	4	1.08				
novid	The average number of TikTok videos watched/day on TikTok when learning online is	Less than 10	1	42	11.38	2.47	0.88	1	4
		10 – 50	2	166	44.99				
		51-100	3	107	29				
		Higher than100	4	54	14.63				

Source: Compiled by the author tea

Regarding the variable ***timeonl***, its expected value is 2.54, equivalent to the average value of the time students use TikTok when learning online, at 2.54. The standard deviation is 1.11. The minimum value is 1, corresponding to under 30 minutes of using TikTok, and the maximum value of 4 is equivalent to over 2 hours of usage. With 97 responses, the number of students using TikTok on average from 30 minutes to 1 hour contributes the highest rate of 26.29%, equal to the rate of students using TikTok for more than 2 hours a day.

The variable ***selflearn*** has an expected value of 2.69, the standard deviation is 1.03, the minimum value is still 1 and the maximum value is 4, corresponding to the average self-study time each day. The smallest online learning value is less than 1 hour and the largest self-study time is over 3 hours. 124 students said that they usually study from 2 to 3 hours during online learning, making up for the highest percentage of 33.6% out of those using TikTok. The number of students who study for less than 1-hour accounts for the smallest ratio of 16.53% with 61 friends.

The fourth observed variable is ***postfreq***, with the expected value and standard deviation being 1.36 and 0.60, respectively. The minimum value is 1 and the largest value is 4, respectively corresponding to the frequency of posting videos per week on the TikTok platform of 0 and more than 10 videos. 258 of those surveyed claimed that they used TikTok only to watch and did not post any videos on their personal account, accounting for the largest rate of 69.92%. The number of students posting from 1 to 5 videos on a weekly basis accounted for 25.75% with 95 ones, and the number of those posting over 10 videos per week only accounted for a very low rate of 1.08%.

The last observed variable is ***novid*** with a mean of 2.47 and the standard deviation at 0.88. The minimum value of 1 corresponds to the average number of less than 10 TikTok videos watched daily, and the largest value is 4 shows that the average number of videos that students watch on average is over 100 videos a day. Most of the students watch from 10 to 50 videos a day, accounting for 44.99%. Ranked second with 107 answers, accounting for 29%, are those who watch about 51 -100 videos per day. Such a number is the lowest at 11.38% with 42 people watching less than 10 videos in 1 day.

4.2. Correlation description

Table 4. Correlation description of variables

	gpa	**gpaterm1**	**timeonl**	**Postfreq**	**novid**	**selflearn**
gpa	1					
gpaterm1	0.6062	1				
timeonl	-0.1309	-0.0482	1			
postfreq	-0.1419	-0.042	0.1825	1		
novid	0.0713	0.0622	0.3496	0.2144	1	
selflearn	0.0784	-0.0048	-0.0649	-0.0457	-0.151	1

Source: Result from STATA

Based on the correlation coefficient matrix, if we ignore the impact of other factors, we have the following initial comments.

In general, most of the independent variables have a rather low correlation with the dependent variable, except for the variable ***gpaterm1*** which has the highest correlation is 0.6062. Such numbers in the case of the remaining variables are less than 0.2, in which the variable ***novid*** has a very low correlation of 0.0713. Therefore, it is apparent that the independent variables do not explain much for the changes in the dependent variable. In addition, when considering the correlation among the independent variables, it is noticeable that the highest correlation is 0.3496, representing the correlation between the time using TikTok and the number of videos watched.

Overall, there is no pair of variables in the model with a correlation above 0.8, and there exists a ground to confirm that the model does not have multicollinearity.

4.3. Regression result and Discussion

Table 5. Regression table with continuous variables

VARIABLES	(1) GPA	(2) GPA
Timeonl	-0.0397**	-0.0397**
	(0.0154)	(0.0154)
Postfreq	-0.0752***	-0.0752
	(0.0275)	(0.0671)
Novid	0.0481**	0.0481*
	(0.0197)	(0.0253)
Selflearn	0.0340**	0.0340*
	(0.0156)	(0.0185)
gpaterm1	0.560***	0.560***
	(0.0385)	(0.0424)
Constant	1.571***	1.571***
	(0.146)	(0.171)
Observations	369	369
R-squared	0.404	0.404

***, **, * at 1%, 5%, and 10% significance level, respectively

(1) - Not adjusted for robustness; (2) - Robustness adjusted

Source: Authors' calculator

To be consistent with previous studies, the authors consider all variables in the regression model as continuous variables. The team simulated the way to do it and see if this result has changed compared to the previous result (column 1). When testing the model, the group found that there was a phenomenon of Heteroskedasticity, so after adjusting for robustness with a more suitable model, the group obtained the results in column 2.

From the table of regression results above, it can be seen that:

At a 1% significance level, students' offline learning results have a positive effect of about 0.56 points on learning outcomes. This is in line with the expectations of the author group as well as the previous study of Staffolani & Bratti (2002); Schlager *et al*. (2005); Geiser & Santelices (2007).

At a 5% significance level, students' time using TikTok during online learning has an adverse effect on learning outcomes. If students use this application 1 more time unit, the student's learning results decrease by 0.0397 points, holding other factors constant. This is in line with the expectations of the author group and the previous study of Asemah *et al*. (2013); Celestine *et al*. (2018); Leyrer-Jackson & Wilson (2018); Azizi *et al*. (2019); Swathi *et al*. (2020). However, that online time increases from 30m-1h to 1-2h will be different from 1-2h to higher than 2h, which means that with the same increase but at different levels, the impact of time on the results will be different. This could be explained that it was only when students are addicted to this platform that there was a significant impact on their GPA.

The frequency of posting videos is not statistically significant, that is, the frequency of students posting videos on the social network TikTok does not affect GPA.

The number of videos that students watch has a positive effect on learning outcomes at a 10% significance level. When students increase 1 level of the "number of videos" surveyed, their academic grades rise by about 0.0481 points. This result is in line with the author's expectations and the theory of U&G. It can be seen that students find it interesting and beneficial from watching videos on TikTok.

Self-study time during the online learning period has a favorable effect on GPA at 10% significance level. When students increase by 1 unit of self-study time, their learning results increase by about 0.034 points. This is in line with the expectations of the author group and the previous study of Cheng & Ickes (2009).

Same with the old model, but instead of treating all variables as continuous, the group considers them as categorical variables as statistical descriptors in Table 4 and has the second regression result (Table 6).

Table 6. Table of regression results with categorical variables

VARIABLES		(1) **GPA**	(2) **GPA**
gpaterm1	gpaterm1	0.574*** (0.0387)	0.574*** (0.0478)
Timeonl	30 min-1h	-0.00515 (0.0466)	-0.00515 (0.0407)
	1h-2h	-0.0718 (0.0475)	-0.0718 (0.0439)
	higher than 2h	-0.101** (0.0484)	-0.101** (0.0475)

VARIABLES		(1) GPA	(2) GPA
Postfreq	1-5	-0.0203	-0.0203
		(0.0375)	(0.0312)
	6-10	-0.0886	-0.0886
		(0.0923)	(0.0803)
	higher than 10	-0.739***	-0.739
		(0.157)	(0.734)
Novid	10-50	-0.0155	-0.0155
		(0.0537)	(0.0465)
	51-100	0.0389	0.0389
		(0.0586)	(0.0501)
	Over 100	0.126*	0.126*
		(0.0670)	(0.0728)
Selflearn	1h-2h	0.0565	0.0565
		(0.0507)	(0.0535)
	2h-3h	0.0645	0.0645
		(0.0480)	(0.0509)
Selflearn	higher than 3h	0.0985*	0.0985**
		(0.0506)	(0.0499)
Constant		1.512***	1.512***
		(0.140)	(0.186)
Observations		369	369
R-squared		0.432	0.432

Note: ***, **, * correspond to the 1%, 5%, and 10% significance levels, respectively.

(1) - Not adjusted for robustness; (2) - Robustness adjusted

Source: Authors' calculator

It can be seen that, if the relationship between GPA and dependent variables is not considered as a linear correlation, the research results have many changes.

In particular, the GPA of students in direct learning (***gpaterm1***) has an increasing influence on academic performance. This result is completely consistent because the better the student's learning ability, the higher the academic performance (Mai, 2019). When this ability is increased by 1 unit, the GPA increases by 0.574 units.

Students' time of using TikTok (***timeonl***) if less than 2 hours, does not affect GPA; if students use higher than 2h, their learning results decrease by 0.101. This can be explained that when the time of usage is too short, the effect is not significant, but if TikTok is used for more than 2 hours, such impact is negative, and it can be confirmed that this is an addiction level for TikTok.

The frequency of posting videos by students (***postfreq***) does not affect the results, similar to the results in the regression model with continuous variables. This can be explained by the fact that students posting or sharing videos on TikTok does not affect their learning ability.

The number of videos that students upload on TikTok (***novid***), if less than 100, do not affect their learning results, but if more than this number, the students' learning results will increase by 0.126 points. This result further confirms that students who watch a huge number of videos on TikTok are the ones who find this platform attractive. When students are under psychological pressure, they utilize TikTok as a mental entertainment method that allows them to relieve stress, thus enhancing their learning progress.

The time students spend on self-studying for a day (***selflearn***), if less than 3 hours, does not affect GPA. If students study on their own for more than 3 hours a day, their learning results increase by 0.0985 points. This can be interpreted as if students study on their own too little, their GPA will not change, and when their self-study time increases, their learning results increase relatively.

5. Proposed solutions and conclusions

5.1. Conclusion

The research team carried out a survey for 515 subjects and used the Stata software for descriptive statistics, correlation analysis, and statistical significance of factors such as grades of the 1st and 2nd semesters in 2020 - 2021, time using TikTok, average self-study time of students, frequency of posting on TikTok and an average number of videos watched on this platform. Specifically, the performance of students in the first semester of 2020-2021 has the greatest influence on the academic performance of students in H during the Covid-19 period. Besides, regarding the time using TikTok, if students use more than 2 hours, their GPA tends to go down. The research results also depict that the frequency of video posting in a week has no direct effect on the learning results of Hanoi students, but the average number of videos watched per day positively influences learning outcomes. In addition, if students study on their own for less than 3 hours a day, the learning results do not change significantly, but when this time increases to more than 3 hours, it tends to increase such grades. In general, the research team has achieved the basic goal, which is determining the influencing factors when using TikTok on students' learning outcomes.

In addition, there still exist limitations in this research, such as the sample size is not large enough to best explain the results of the model. Therefore, future studies can add some ability factors such as national high school exam scores, IQ scores, etc. to increase the fitness of the model. In addition, also due to geographical and time constraints, most of the research group's data comes from students of Hanoi Foreign Trade University with quite a significant gender gap, so future research can carry out research on a wider variety of universities with an even

gender distribution to give more objective results on the influence of TikTok social network usage on the learning outcomes of students in Hanoi during the online learning period.

5.2. Proposing solutions to help improve academic performance for students in Hanoi

For universities

The school needs to strengthen support for students to self-study by digitizing lectures, and opening a better quality online digital library so that students can learn more on their own… The school can also use high-tech control (controlling electromagnetic waves in the space around the school), and only allow students to access social networks such as TikTok for a certain period of time so as not to make students rely heavily on them which can lead to "addiction". Besides, universities need to increase listening and receiving students' opinions and questions via email or the feedback system of each department.

For lecturers

For teachers, it is necessary to assign more exercises, guide students to self-study, take learners as the center object so that students can study for themselves, and do more autonomous learning to enhance teamwork. Lecturers should also guide students to use TikTok for a period of less than 2 hours to ensure learning period and participation in extracurricular activities…

Lecturers should disseminate scientific research on group work to students. Scientific research works are the results of many individuals, providing theoretical foundations, solutions, and highly applicable measures. In addition, to increase teaching effectiveness, teachers can integrate social networking platforms such as TikTok into the teaching process so as to ameliorate the interest, attractiveness, as well as interactive level of the lesson, helping students focus more on the lecture.

For students

For students, in order to improve learning outcomes, it is necessary to increase the frequency of self-studying. TikTok is an indispensable part of the entertainment, so it should still be supported for students to use, but it is recommended that it be used for less than 2 hours and students should study for more than 3 hours. By that, the student's learning results will tend to increase, so students need to be active. Students should also refer to documents on libraries, digital libraries, and reference sources on the Internet, etc., actively learn and equip with knowledge about group learning through books, newspapers, the internet, etc., and using social networking platforms to learn new things applied in learning.

Students also need to read the lesson at home in advance so that the learning process in class becomes easier. Actively participating in study clubs also helps students improve academic knowledge and improve teamwork skills.

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Appendix

Information collection questions

We are a group of students doing scientific research at Foreign Trade University. We need to collect some of the following data:

I. Who are you?

1. What year of study are you in now?

- 1
- 2
- 3
- 4
- > 5
- Graduated

2. Which of the following social networks do you use?

- TikTok
- Facebook
- Instagram
- Youtube
- Twitter
- The others……

3. You are:

- Male
- Female

4. What is your major?

……

5. Average time of using SOCIAL NETWORKS 1 day during the online learning (online) break:

- <2h
- 2-4h
- 4-6h
- 6-8h
- 8-10h
- >10h

6. Registration number for the first semester of the academic year 2020-2021:

- Under 20
- From 20 to 30

- Over 30

7. Number of credits registered for the second semester of the academic year 2020-2021:

- Under 20
- From 20 to 30
- Over 30

8. GPA for the first semester of the academic year 2020-2021 (Previous year) (Please specify GPA of the fourth term):

……

9. GPA for the 2nd semester of the academic year 2020-2021 (Previous year) (Specify 4th GPA):

……

10. Compare your 1st semester GPA (online semester) and your 2nd semester GPA (online semester) then your GPA is bigger?

- GPA 1 > GPA 2
- GPA 1 < GPA 2
- GPA 1 = GPA 2

11. What is the average number of self-study hours in a day when you study offline?

- < 1h
- 1 - 2h
- 2 - 3h
- 3 - 4h
- 4 - 5h
- > 5h

12. What is the average number of self-study hours in a day when you study online?

- < 1h
- 1 - 2h
- 2 - 3h
- 3 - 4h
- 4 - 5h
- > 5h

II. TikTok

1. Do you use TikTok?

- Yes

- No

2. What time of day do you use TikTok the most?

- Morning (5h - 11h)
- Midday (11h - 13h)
- Afternoon (13h - 19h)
- Evening (19h - 23h)
- Night (23h - 5h the next day)

3. Average time using TikTok in 1 school day during online learning:

- < 30 min
- 30 min - 1h
- 1 - 2h
- 2 - 3h
- 3 - 4h
- 4 - 5h
- > 5h

4. How would you rate your "average use of TikTok in a school day during online learning"? (According to the level of increasing from 1 to 5: 1 is used very little, 5 is used a lot):

- 1
- 2
- 3
- 4
- 5

5. What day of the week do you use TikTok the most?

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

6. How many days a week do you use TikTok?

- 1
- 2

- 3
- 4
- 5
- 6
- Use it every day

7. How many people follow you on TikTok?

- < 10
- 10 - 50
- 51 - 100
- 101 - 300
- 301 - 500
- 501 - 1000
- > 1000

8. How many people are you following on TikTok?

- < 10
- 10 - 50
- 51 - 100
- 101 - 300
- 301 - 500
- 501 - 1000
- > 1000

9. What is the average number of videos you watch in a day on TikTok?

- < 10
- 10 - 50
- 51 - 100
- Over 100

10. How often do you post videos on TikTok in 1 week?

- 0
- 1 - 5
- 6 - 10
- Over 10

11. Please indicate your level of agreement with the following statements. You will rate on a scale of 1 to 5. (1. Totally disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Totally agree)

	1	2	3	4	5
I often use TikTok to keep up with trends					
I often use TikTok to watch life tips					
I often use TikTok for learning purposes in class					
I often use TikTok for entertainment purposes					
I want to be a TikTok Idol					

12. Rate how much you love using TikTok (1. Totally disliked; 2. Dislike; 3. Normal; 4. Like; 5. Very very like)

- 1
- 2
- 3
- 4
- 5