

The impact of social media on student academic achievement: a cross-sectional study in universities in Vietnam

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Abstract:

The study was conducted with 580 students studying at the University of Hanoi, Vietnam through an online questionnaire. The purpose of this study is to analyze the factors that affect the behavior of using social networks such as Zalo, Facebook, Youtube, Twitter, and Tiktok of students. The authors used the method of discovery factor analysis (EFA) and tested the research hypothesis by regression analysis, showing that there are factors that affect students' behavior of using social networks, including: usefulness, resource sharing, usage attitudes, etc cognitive control behavior, in which the usefulness factor has the strongest impact on students' intention to use social networks.

Keywords: Social networks, students, Zalo, Facebook, Youtube, Twitter, Tiktok, University, Vietnam

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I. Introduction

The emergence of the Internet has brought a tremendous change to the economy, science and technology in the world, today the internet is an indispensable tool in economic, educational and political activities. Over the past year, social media has become popular in the daily lives of most Vietnamese people along with Vietnam's increasing use of smartphones and the internet. Social networks such as Facebook, Twitter, Tiktok... has become a miniature society, not only reflecting every aspect of real life but can cause or have a significant impact on real life. At the beginning of 2023, Vietnam had 77.93 million Internet users, accounting for 79.1% of the total population. According to DataReportal, as of the end of May 2023, Facebook has 2.99 billion users globally and is still the social network with the largest number of users today, Vietnam is also in the top 10 countries with the largest number of Facebook users in the world, with 66.2 million users and ranked 7th. Social networks have changed the habits and behaviors of many people and formed new habits, lifestyles, and cultures in a large part of social media users. In learning and teaching, it is believed that social networks have brought remarkable benefits, being a means to help students share information, documents, learning experiences, connect friends, and create a more positive learning motivation. Thus, social networks bring a lot of convenience to users, because of the fast information speed, rich and diverse content... If you know how to exploit and use it properly, it will bring great effects to the social life of students., On the contrary, it will cause many bad consequences such as negatively affecting students' learning goals, information reliability, user privacy, etc even affecting their mental health. The purpose of this article is to examine the factors influencing the behavior of using social networks such as Facebook, Youtube, Twitter, and Tiktok of university students in Vietnam using a quantitative method. Thereby, based on the research results, the article will suggest some solutions to help students use social networks in a more useful and effective way in learning and social life. (Interpersonal et al., n.d.; Sci & 2016, n.d.) (Al-Harrasi et al., 2015) (Alghizzawi et al., n.d.) (Reports & 2021, n.d.) (Habes et al., 2020; Owusu-Acheaw et al., 2015; A. Y.-I. J. of S. Sciences & 2020, n.d.)

II. Methodology

The paper uses the sociological investigation method with the main method being *the Quantitative Research Method* to test research models and research hypotheses by step regression analysis (Mao et al., n.d.; Sugimoto et al., n.d.)

- Collect data using a google form questionnaire for students currently studying at the University in Hanoi using a convenient sampling method.
 - The data collected is processed by SPSS software to analyze the survey results:
 - ✓ Descriptive statistics are used to summarize data as a percentage.
 - ✓ Scale Reliability Analysis to ensure that the scale and variables measure sufficient reliability. As for scale reliability, assuming that Cronbach's Alpha is from 0.7 to close to 0.8, the scale is usable, Cronbach's Alpha from 0.8 to close 1 is a good scale. For measurement variables,
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reliability is ensured when there is a corrected itemtotal correlation of ≥ 0.3 (Bell et al., n.d.; Brooks et al., 1994) (Noordzij et al., 2010)

- ✓ Exploratory Factors Analysis is used to reduce a set of interdependent observed variables to a set of less variables (called factors) so that they are more meaningful but still contain most of the information content of the original set of variables, thereby eliminating observed variables that do not meet the reliability standard. The regression analysis identifies the factors that influence a student's intention to use Facebook. (Borm et al., n.d.)

According to factor analysis, the number of observations is at least 4 or 5 times the number of observed variables. This study used factor analysis and there were 34 observed variables in the study model, so a minimum sample of $n = 5 \times 34 = 170$ was needed. In this study, the author chose the number of official research samples of 580, the number of samples is considered large enough to carry out the study. Due to the lack of accurate knowledge of the overall sample size, the authors based on the calculation formula as follows: (Statistics & 2003, n.d.; Viechtbauer et al., 2015)

$$n = Z^2 \times \frac{p \times (1 - p)}{e^2}$$

In which:

- *n*: the sample size to be determined.
- *Z*: the value of the Z distribution table is based on the selection reliability. Typically, the reliability used is 95% which corresponds to $Z = 1.96$.
- *P*: N sample size estimation success rate. Usually we choose $p = 0.5$ to be the largest product of $p(1-p)$, which ensures the safety of the estimated n sample.
- *E*: Allowable error. The three most commonly used error rates are: ± 01 (1%), ± 0.05 (5%), ± 0.1 (10%), of which the most common is ± 0.05 .

The questionnaire uses a 5-level Likert scale with the convention *1-Strongly disagree to 5-Completely agree* to measure the level of students' assessment of 4 main variables including: usefulness, encouragement, influence of the social environment, etc resource sharing and 34 observation variables. The scales were evaluated for reliability using Cronbach's Alpha confidence coefficient on the principle of eliminating observed variables with a small sum variable correlation coefficient (< 0.03); if Cronbach's Alpha ≥ 0.6 is an acceptable scale in terms of reliability (Graff et al., 2012)

After testing the Cronbach's Alpha coefficient for each independent and dependent variable, the results of the scale quality testing of the survey sample showed that there were 34 observed variables that warranted the test because the correlation coefficient of the sum variable and the Cronbach's Alpha coefficient met the theoretical requirements (≥ 0.6). Therefore, all 34 observed variables are accepted and will be used in the next factor analysis. From 34 observational variables, the discovery factor analysis (EFA) and regression analysis were conducted to determine the role of groups of factors influencing students' intention to use social media, thereby proposing a priority order in implementing solutions to help students use social networks in a useful way. more effective in learning and social life.

Figure 1. Summary of the results of the reliability and validity test of the scale

Factor	Boys		Girls		Total	
	Mean	SD	Mean	SD	Mean	SD
Social media usage hampers studies	1.74	.443	2.97	1.143	2.36	1.064
Spending appropriate time on social networking sites	1.50	.503	2.55	.790	3.29	1.459
Social media have positive impacts on students' academic performance	1.51	.503	3.12	.909	2.32	1.088
I have never faced any problem due to social media usage	1.29	.457	2.53	.824	1.91	.909
Social media settings keep up to date	1.80	5.17	3.32	.657	2.56	.961
Social networking sites provide enough educational guidance	1.96	.445	3.09	.334	2.53	.690
Social media usage provide help regarding educational matters	1.95	.459	3.16	.402	2.55	.744
Social media usage never become a reason for handing in an assignment late	2.01	.841	4.64	.509	3.33	1.491
Social media usage has not interfered my ability to study properly	1.50	.503	2.55	.790	2.03	.845
Social media usage helps to get better academic grades	1.55	.501	3.12	.711	2.34	.996

According to Habes (Habes: 2019, pp. 32-39), Kasahara et al. (Kasahara et al.: 2019, p. 32)

According to intention, behavior will be influenced by attitudes towards behavior and behavioral subjective standards. Similarly, rational action theory asserts that an individual's intention to use social media is related to their perception and purpose. inherited and developed the theory of rational action to give birth to the Theory of Planned Behavior (TPB), the author argues that people can perform a certain type of behavior if they believe that this behavior will bring about certain valuable results. and they see that it is necessary to do it. Three basic factors will determine an individual's behavior, including: (1) The personal factor is the individual's attitude towards the behavior in terms of the positive or negative nature of the performance of the act; (2) Regarding the intention to perceive social pressure of the person, since it deals with the perception of normative pressure or compulsion, it should be called the subjective standard; (3) The determinant of self-efficacy or the ability to perform behavior, is called cognitive-behavioral control. The theory shows that the importance of attitude to behavior, subjective norms, and cognitive control of behavior leads to the formation of a behavioral intention. (Graff et al., 2012) (Bhandarkar et al., n.d.) (Ahmed et al., n.d.; Camilia et al., n.d.) (Mehmood et al., n.d.; Sharov et al., 2021)

To adequately explain this action, the new popular theory holds that an individual decides to use a new technology when he or she is governed by five factors: Relative advantage, compatibility, moderate complexity, testable and observable. (Akakandelwa & Walubita, 2018; Kolan et al., 2018)

Hypothesis H₁: The usefulness of Zalo, Facebook, Youtube, Twitter, Tiktok networks increases students' intention to use (positive impact)

Usefulness is the expected value, which is recognized by the customer when they perform the completion of a system-based task. When users find applications useful, they will tend to use applications more. For students, usefulness is an important factor that has a positive impact on the intention to use Zalo, Facebook, Youtube, Twitter, Tiktok, thereby helping them maintain the use of Facebook to satisfy their needs in life. (Mastrodicasa et al., 2013) (Namaziandost et al., 2019)

Hypothesis H₂: Resource sharing increases students' intention to use Zalo, Facebook, Youtube, Twitter, Tiktok (positive impact).

Social media sites are one of the popular tools used by students to share learning materials, projects, other useful resources, and links to external resources. Recent research shows that students and faculty in universities often use social media to share learning materials, research as well as exchange of professional opinions. This is seen as one of the effective support channels for traditional teaching methods, leading to more convenient and effective student learning (Wang et al., 2011) (Abbas et al., 2019; Al-Bahrani et al., n.d.)

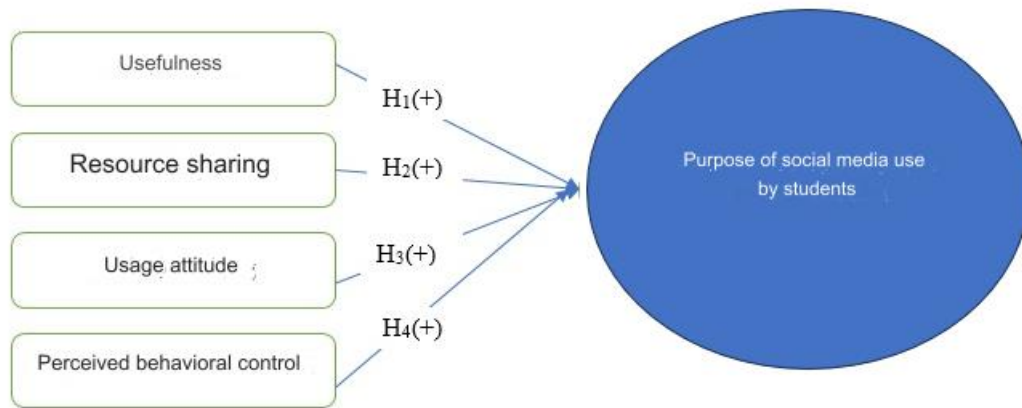
Hypothesis H₃: The attitude of use determines the behavior of using the facebook social network (positive impact).

Attitude is the level of behavior that is rated positively or negatively for the use of Facebook. Attitude is a positive or negative feeling about performing the target behavior, which is an important factor influencing the successful execution of the intended behavior. (Hasnain et al., n.d.; Stollak et al., 2011)

Hypothesis H₄: Behavioral control cognition impacts students' intention to use Facebook (positive effect).

Behavioral control cognition is added to adjust the behavior control cognition model that plays an important role as an individual's self-assessment of how difficult or easy it is to perform a behavior. According to the cognitive factor, this control comes from the confidence of the individual who intends to perform the act and the easy and favorable conditions for performing the act. Given that the fact that the person who intends to perform the act has all the necessary information for his or her decision and the individual decisiveness of the person who intends to perform the act is the awareness and control of the customer's behavior. According to this theory, the most important factor that defines human behavior is intention, which is determined by the attitude towards the determination of individual behavior. In this study, it measures students' subjective perception of whether social media use is easy or difficult and whether that action is controlled. (Samad et al., n.d.) (Amedie, 2015) (and & 2016, 2016; S. K.-A. J. of S. Sciences & 2012, n.d.)

Figure 2: Framework for analyzing students' forms of social media use



III. Results and findings

Currently, social networks are not a strange phrase for each of us, especially for students, social networks have become an inevitable part of life. Social networks are like a new breeze full of innovations and interesting surprises, it contributes to changing not only in the daily lifestyle of this part of the public. With diverse features and rich information sources, social networks allow users to receive, share and select information effectively, overcome the obstacles of space and time, and overcome the gap between generations. Social networks, helping to enhance the role of each citizen in creating relationships and organizing themselves around common interests in communities that promote the linkage of social organizations. Due to its diverse functions and the rapid increase in the number of members, social networks have had an impact on changing many old habits and forming new expressions of thinking, lifestyle, culture, etc. in students - a large number of users.

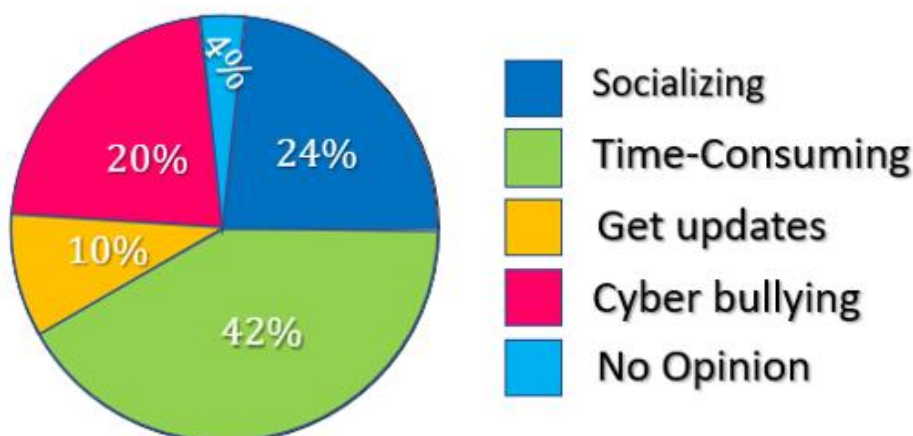
Figure 3: Characteristics of the survey sample

Characteristic		Quantity (N)	Rate (%)
Sex	Male	128	34.6
	Female	242	65.4
Year of study	First year	117	31.6
	Year two	90	24.3
	Third year	126	34.1
	Fourth year	37	10.0
Hometown	Urban	265	71.6
	Countryside	105	28.4
Academic ability	Excellent	38	10.3
	Good	62	16.8
	Rather	156	42.2
	Medium	101	27.3
	Weak	13	3.5

Source: compilation of the author

The results of the 1st factor analysis for 4 independent variables (34 observed variables) including: usefulness, resource sharing, attitude of use, cognitive control of behavior showed that the KMO and Barlett's tests for the KMO index reached 0.896 and the value of the Sig. = 0.000 < 0.05; there are 5 observed variables that are excluded from the analysis model due to the Eigenvalues value < 1. Conducting the 2nd factor analysis showed that the KMO was 0.844 and the significance test value of Sig. = 0.000 < 0.05; there are 4 observed variables that continue to be excluded from the analysis model due to the Eigenvalues value < 1; Continue the 3rd factor analysis for the following results:

Figure 4: The impact of social media on students' lives



Source: Miao chen, Xin Xiao (2022) The effect of social media on the development of students' affective variables

From the data, it is shown that all the factors to be evaluated of the independent variable have the values that meet the requirements. The KMO value = 0.841 satisfies the condition of $0.5 \leq KMO \leq 1$, so the EFA discovery factor analysis is appropriate for the actual data. Testing the correlation between Bartlett's observational variables has a statistical significance of $Sig = 0.000 < 0.05$, so we conclude that the observed variables are linearly correlated with each other in each group of factors. The result has 25 factors with Eigenvalues > 1 , the smallest being $1,022 > 1$, which will be retained in the model. In addition, the cumulative variance value is 60.943%, which means that 60.943% of the change in factors is explained by the observed variables. Thus, the Cumulative Variance of 60,943% $> 50\%$ is significant, so the EFA model is suitable and ready to test the multivariate regression model.

Figure 5: Analysis of the impact of social media via multivariate regression equations

Model	R	Coefficient of determination R2	R2 correction	Standard error of measurement	Dubin-Watson coefficient
1	0.745	0.555	0.541	0.60277	1.892

ANOVA ^a						
Model	Sum of squares	Enable df freedom	Mean square	F statistic value	Significance level (Sig.)	
1	Regression	71,504	5	14,301	39,360	0.000
	Remaining	57,406	158	0.363		
	Total	128,911	163			

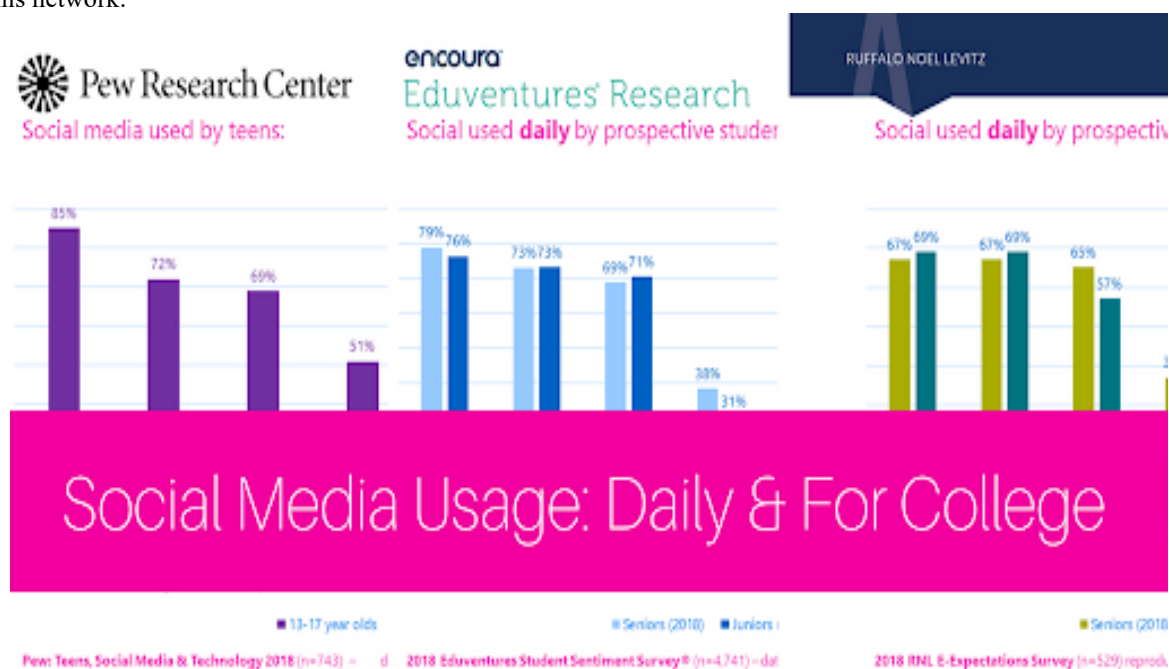
Source: author's research results

The results of hypothesis testing in the research model showed that:

+ Hypothesis H₁: Usefulness has a positive impact on students' intention to use Facebook ($\beta = 0.238$, p-value = 0.000), this result is consistent with the initial expectation. The increase in Facebook's utilities, as well as user values such as ease of use, good interoperability, will make users intend to use this platform for a long time. In addition to entertainment and social connection, Facebook needs to develop as a useful tool for users in other fields such as marketing, online learning environment, Facebook-based learning management,...

+ Hypothesis H₂: Resource sharing increases students' intention to use Facebook ($\beta = 0.153$, p-value = 0.012), this result is consistent with the initial expectation. When Facebook becomes a tool to provide resources/learning

materials for learning or job opportunities, increasing social relationships will motivate students to continue using this network.



+ Hypothesis H_3 : Attitude of use has a negative impact on students' intention to use social networks ($\beta = -0.102$, p-value > 0.05), testing the hypothesis gives the opposite result compared to the initial expectation, rejecting hypothesis H_3 . This is explained by the fact that it is affected by the factor of ease of use, so many people use the Facebook social network as a trend instead of because it clearly recognizes the benefits of the products and technologies it brings. Personal views in this case are overwhelmed by the views and trends of the majority.

+ Hypothesis H_4 : Behavioral control cognition positively affects students' intention to use Facebook ($\beta = 0.106$, p-value = 0.055), this result is consistent with the initial expectation. The fact that students have the right awareness of the role and the utilities Facebook brings to them.

IV. Discussion

The results of a study on factors affecting the intention to use social networks of university students in Vietnam by quantitative methods show that there are 3 factors that have an impact on students' intention to use social networks, of which the usefulness factor has the strongest influence. With the desire to help students use social networks in a more useful and effective way in learning and social life, we propose some of the following solutions. The University needs to organize training classes on internet resource exploitation skills for students, skills to respond to information on social networks, organize propaganda and education for students about new technologies, how to exploit resources from the internet. The University researches and deploys a learning management system based on social networking platforms such as Zalo, Facebook, Youtube, Twitter, Tiktok, etc. really become a useful learning tool, thereby encouraging students to use social networks effectively.

Students need to actively equip themselves with skills in personal time management, planning, self-study and scientific research; know how to distill positive and useful information, limit bad and harmful information. The development of social networks has had a great impact on the life of the whole society in recent years. In the era known as the "Flat World" in the view of Thomas L. Friedman, author of the book World is flat, no one can deny the benefits of social media. In addition to the many utilities that social networks bring to users such as: fast information, a rich amount of information that is constantly updated, there are many utilities for entertainment... There is also an important aspect that drastically changes the way individuals, groups, and nations communicate with each other: connectivity. Thus, social networks have become a popular medium with diverse features that allow users to connect, share, and receive information quickly and effectively

V. Conclusion

Our research shows that higher education institutions in Vietnam need to create a forum for society in general. Universities must strengthen the awareness and responsibility of each individual. Each individual must ask himself what the use of social networks is for? Plan yourself a reasonable time frame, balancing work, study, and play. Particularly for the faculty, it should propose a specific solution, specific regulations on the information and behaviors that students of the university can and cannot do, may and may not have the right when using social

networks. Universities should create a corridor, to create a focal point for students, and this can create a board that can manage student activities on social media. Therefore, the university can take timely measures to prevent bad and deviant actions on social networks. Social media is basically a part of today's society. It has been and will bring to people's lives more and more interesting and highly interactive utilities as well as the maximization of functions. However, social networks are also a place where negativity arises that make many people worried. And we can't blame social media entirely. Because, it is simply a tool, a means created to unite people all over the world. But the participants and users themselves do not understand that purpose properly, so they have overdone and abused, leading to unwanted incidents. In terms of law, it is necessary to create a legal framework to support and praise good people, good information and vice versa, deter and strictly handle those with bad intentions, report bad and harmful news on social networks; develop more detailed guiding documents for the implementation of the Law on Cyber Security to ensure safety and security on the network and information and communication. In addition to public agencies, education in general and student education in particular always requires the close coordination and combination of many other parties, especially the proper attention of the school, family and society.

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