# EFFECTS OF FACEBOOK USE ON THE AVERAGE OF STUDENTS WHO HAVE NOT COMPLETED THE CLASS AT PUBLIC UNIVERSITY IN HANOI CAPITAL, VIETNAM

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## ABSTRACT

Vietnam is a country with many students using Facebook around the world. There have been many qualitative studies on student Facebook addiction in Vietnam. To supplement the evidence of previous studies and enrich the references cause of the study explores the impact of Facebook use on the GPA of students who did not pass the course and had to repeat the course next period. This study was conducted through a cross-sectional survey using an intentional sampling technique (n=200). The multivariate linear regression analysis technique was applied to prove the hypotheses. R Programming language is used for data analysis. Research results show that Facebook affects the GPA of students who do not pass the course in both positive and negative ways. This study confirms that using Facebook affects students' learning outcomes, as found by previous studies.

**Key Words**: Salience, Tolerance, Mood modification, Relapse, Withdrawal, Conflict, BFAS, Grade Point Average (GPA),Vietnamese Students.

## 1. INTRODUCTION

Most universities worldwide have realized the potential of using Facebook to approach their marketing and recruitment campaigns and can act as a catalyst for change strategy in education. However, the use of Facebook Facebook to improve student learning outcomes is currently controversial. According to (Kuzma & Wright, 2013), Facebook brought many innovations, which challenged higher education administrators in applying it to improve the quality of education. Facebook's new features are widely used in setting languages; it can be used at different levels, settings and tasks (Jones, 2015).

Studies have found conflicting results for the use of Facebook in education (Jones, 2015). There are some identified barriers, and there is consensus among faculty that if these barriers are overcome, Facebook can develop as an innovative and effective tool for teaching and learning (Sobaih, Mustafa), Ghandforoush, & Khan, 2016). Besides Facebook's benefits, its abuse has greatly affected users in terms of time, health, and work. Facebook "addiction" syndrome causes many students to waste time and health, leading to academic neglect and poor academic results.

Facebook "addiction" syndrome is becoming an alarming reality among young people today (Madge, Meek, Wellens, & Hooley, 2009).

Vietnam is ranked as one of the most Facebook users globally (McCauley et al., 2016). Recently, in Vietnam, there was a stir that a female student had to be hospitalized because of nervous tension when she was not allowed to use Facebook. Currently, more than 70% of Internet users in Vietnam use Facebook, the number of people using Facebook is increasing day by day, most of which are students (Nguyen Lan Nguyen, 2020). In the context that Facebook plays an increasingly important role in modern life, studying its influence on young people, including students, is an urgent task. However, the studies on students using Facebook in Vietnam are few, mainly using qualitative methods. Stemming from that reason, the research team conducted this study to clarify some of the significant impacts of Facebook on Vietnamese students today on learning. Specifically, explore the impact of Facebook addiction on students' academic performance who do not pass the subject, thereby discovering the unique nature of Vietnamese students' Facebook use behaviour to fill the theoretical gap theories of previous studies and provide evidence of students' uniqueness Facebook use in Vietnam.

## 2. LITERATURE REVIEWS

Many studies have also discovered the relationship between Facebook and student academic achievement at different positive and negative levels. Wang et al. (2013) stated that using Facebook in teaching methods supports students to get higher grades, higher engagement and more satisfaction with the university learning experience. Experimental evidence shows that Facebook can be used as an educational interaction and communication tool to enable instructors to take on a more active and participative role (Wang, Chun-Fu, Wei- Chieh, Wu, Emily, & Chang, 2013). In contrast, Kirschner & Karpinski (2010) found that students who use Facebook have lower average scores and spend fewer hours per week on research than those who do not. Similarly, Facebook is often done concurrently with other learning activities and its relationship with learning outcomes (Kirschner & Karpinski, 2010). Students who use Facebook report having lower GPAs and spending fewer hours per week researching than those who do not (Kirschner & Karpinski, 2010).

From the research overview, the authors have built a research model as shown in Chart 1 below:

**Chart 1.** The Research Model
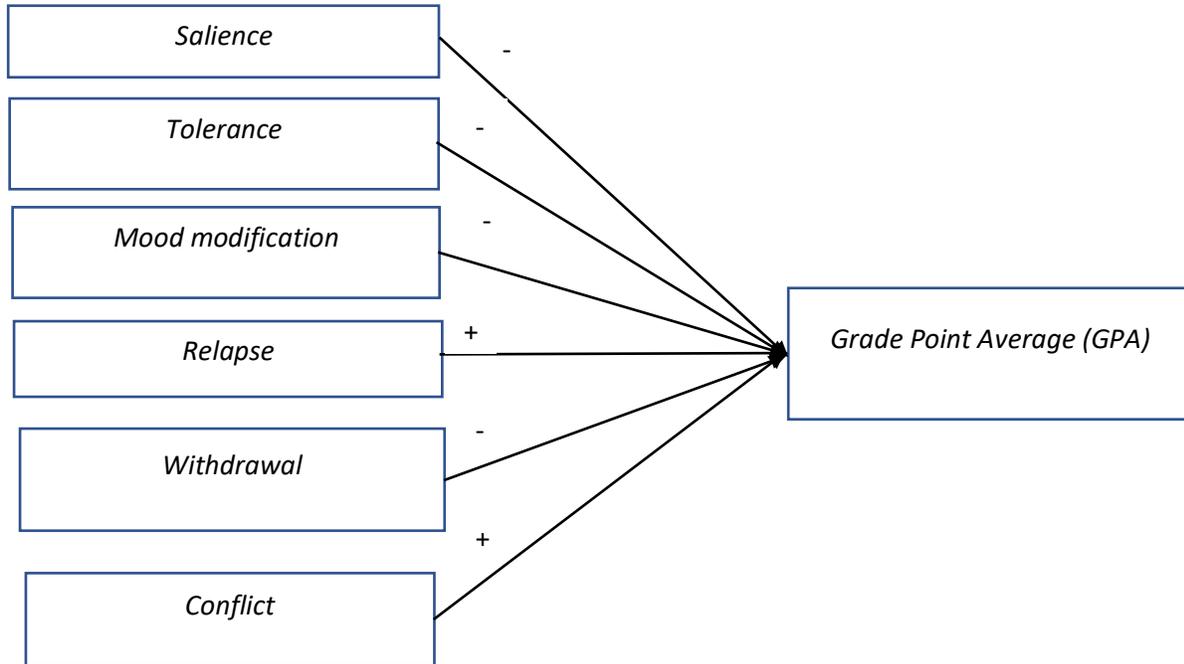


**Hypotheses**

Based on the above documents, the following hypotheses have been formed:

H1. Salience has the opposite and significant effect on GPA

H2. Tolerance has the opposite and significant effect on GPA

H3. Mood modification has a negative and significant effect on GPA

H4. Relapse has a positive and significant impact on GPA

H5. Withdrawal has an opposite and significant effect on GPA

H6. The conflict has a positive and significant impact on GPA.

## 3. RESEARCH METHOD

*Surveyed Area:*

The study was conducted at universities in Hanoi in July 2020. At this point, the student has received the semester's GPA report. Currently, Hanoi City has 43 public universities, 14 private universities, and 30 higher education institutes. Participating in the survey were students whose course GPA did not pass and had to retake the following semester.

*Research Samples and Methods:*

To carry out this study, the authors conducted a survey, collecting opinions of the study participants in two steps: preliminary investigation and formal investigation.

*Preliminary investigation:*

The research team used a qualitative method by in-depth interviews with educational and psychologist researchers to adjust the research scale and improve the questionnaire to suit the

characteristics of the survey area close. The questionnaire was built based on the results of the research overview and experts' opinions, including two parts. Part 1 is used to collect information on the demographics of research participants, such as age, gender, and significance. Part 2 collects research participants' information including students' GPA. GPA scores are calculated according to the provisions of Decision No. 43/2007/QD-BGDĐT and Circular No. 57/2012/TT-BGDĐT of the Ministry of Education and Training of Vietnam. Students with GPAs <5 will be forced to repeat the course. Information collection on Facebook usage using The Bergen Facebook Addiction Scale (BFAS) (Andreassen et al. 2012) is a six-item tool that assesses Facebook addiction via a self-reporting scale, with each item corresponding to one of the six central components of addiction according to the model proposed by Griffiths (2005): salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse. Research studies later developed it, and BFAS has also been shown to have excellent psychometric proprieties in younger samples (Pontes et al., 2016). This scale contains 18 items, three for each of the six core features of addiction: salience, mood modification, tolerance, withdrawal, conflict, and relapse. Each item is scored on a 5-point scale using anchors of 1: Very rarely and 5: Very often.

The English part of the questionnaire was translated into Vietnamese by two professional interpreters. The translation process is carried out according to the rules to adapt between Vietnamese cultures. A single Vietnamese version was created after discussion and consensus between the translators and the principal investigator. A professional bilingual expert in education contributed to this version to create a final version. This final version was pre-tested on 40 participants selected to represent age, sex, and training central demographically. During the assessment, participants were asked to complete this final version. Minor corrections followed it to improve the question structure for better understanding, and the final Vietnamese version was completed using the official survey.

*Official investigation:*

A selection of students from universities in Hanoi participated in the study. They are those with an unsatisfactory semester GPA and must retake the following semester. The questionnaire was sent directly to the respondents by the non-random sampling method. As a result, 200 good votes were obtained, achieving a response rate of 100%—demographic information of study participants (Table 1).

**Table 1. Demographic characteristics of survey participants**

| | | The subject the student did not pass | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Business Administration | | History | | Information Technology | | Jurisprudence | | Public Policy | |
| | | Count | Row N % | Count | Row N % | Count | Row N % | Count | Row N % | Count | Row N % |
| Gender | Female | 18 | 19.1% | 19 | 20.2% | 23 | 24.5% | 17 | 18.1% | 17 | 18.1% |
| | Male | 22 | 20.8% | 20 | 18.9% | 22 | 20.8% | 20 | 18.9% | 22 | 20.8% |
| Age | 24 years old | 8 | 28.6% | 3 | 10.7% | 8 | 28.6% | 4 | 14.3% | 5 | 17.9% |
| | 19 years old | 6 | 15.8% | 8 | 21.1% | 9 | 23.7% | 10 | 26.3% | 5 | 13.2% |
| | 20 years old | 8 | 25.8% | 7 | 22.6% | 7 | 22.6% | 4 | 12.9% | 5 | 16.1% |
| | 21 years old | 11 | 28.2% | 6 | 15.4% | 7 | 17.9% | 6 | 15.4% | 9 | 23.1% |
| | 22 years old | 4 | 12.9% | 6 | 19.4% | 9 | 29.0% | 6 | 19.4% | 6 | 19.4% |
| | 23 years old | 3 | 9.1% | 9 | 27.3% | 5 | 15.2% | 7 | 21.2% | 9 | 27.3% |

## 4. RESEARCH RESULTS

The R Programming language is used to analyze the reliability of the scale and the discovery factor. The analysis results suggest removing and merging some observed variables to help the scale evaluate concepts more accurately.

*Analyzing the Reliability of the Scales:*

They are testing the scales through Cronbach's Alpha reliability coefficient to identify and remove junk variables to avoid creating misleading factors when analyzing exploratory factor analysis. The verification criterion is that Cronbach's Alpha coefficient must be greater than 0.6, and the correlation coefficient of the sum variable in each scale must be greater than 0.3 (Hair, Black, Babin, & Anderson, 2010; Cronbach, 1951; Nunnally, 1978; Taber, 2018). Table 2 shows that the scales of the factors are all standard. Therefore, all the scales of the factors are reliable and used for subsequent factor analysis.

**Table 2. Summary of Reliability and Relative Minimum Variables of Scales**

| Scales | Number of variables observed | Reliability coefficients (Cronbach Alpha) | The correlation coefficient of the smallest total variable |
|---|---|---|---|

| Withdrawal | 3 | 0.841 | 0.467 |
| Salience | 3 | 0.773 | 0.605 |
| Conflict | 3 | 0.741 | 0.542 |
| Relapse | 3 | 0.739 | 0.554 |
| Moodmodification | 3 | 0.700 | 0.488 |
| Tolerance | 3 | 0.714 | 0.537 |

After testing Cronbach's Alpha, the author uses exploratory factor analysis (EFA) to preliminary evaluate the scales' unidirectional, convergent, and discriminant values . EFA was used by extracting the Principal Components Analysis Factor and Varimax rotation to group the factors. With a sample size of 200, the factor loading factors of the observed variables must be greater than 0.5; variables converge on the same factor and are distinguished from other factors (Hair et al., 2009; Hair, 2014; Smith & Miao, 1994). The condition for exploratory factor analysis is to satisfy the following requirements: Factor loading > 0.5. $0.5 \leq KMO \leq 1$: KMO coefficient (Kaiser-Meyer-Olkin) is an index used to consider the suitability of factor analysis (Cerny & Kaiser, 1977; Kaiser, 1974; Snedecor, George, Cochran & William). 1989).

The analysis results in Table 3 show that all factor loading coefficients of the observed variables are greater than 0.5; Bartlett test with Sig meaning. = 0.000 with KMO coefficient = 0.89. All 18 items using EFA were extracted into six factors with Eigenvalues greater than one and Cumulative variance percent = 62.1%. Thus, the research model consisting of 6 independent variables and one dependent variable is used for linear regression analysis and subsequent hypothesis testing.

## Table 3. Exploratory factor analysis

```
Principal Components Analysis
Call: principal(r = data1, nfactors = 6, rotate = "varimax")
Standardized loadings (pattern matrix) based upon correlation matrix
                   item  RC2   RC4   RC3   RC1   RC6   RC5   h2   u2 com
Withdrawal2         14  0.95                                  0.96 0.035 1.1
Withdrawal2.1       15  0.95                                  0.96 0.035 1.1
Withdrawal1         13  0.52                                  0.48 0.523 2.6
Salience1            1        0.83                            0.73 0.275 1.1
Salience3            3        0.78                            0.71 0.294 1.3
Salience2            2        0.75                            0.67 0.332 1.4
Conflict3           18              0.79                      0.68 0.322 1.2
Conflict2           17              0.78                      0.67 0.329 1.2
Conflict1           16              0.76                      0.64 0.365 1.2
Relapse2            11                    0.78                0.70 0.305 1.3
Relapse3            12                    0.73                0.63 0.366 1.4
Relapse1            10                    0.71                0.65 0.348 1.6
Moodmodification1    7                          0.81          0.73 0.267 1.2
Moodmodification3    9                          0.71          0.61 0.386 1.4
Moodmodification2    8                          0.66          0.55 0.453 1.5
Tolerance2           5                                0.77 0.66 0.344 1.2
Tolerance3           6                                0.76 0.65 0.354 1.2
Tolerance1           4                                0.72 0.68 0.322 1.6
```

```
                        RC2   RC4   RC3   RC1   RC6   RC5
SS loadings             2.30  2.10  2.07  2.03  1.92  1.92
Proportion Var          0.13  0.12  0.12  0.11  0.11  0.11
Cumulative Var          0.13  0.24  0.36  0.47  0.58  0.69
Proportion Explained    0.19  0.17  0.17  0.16  0.16  0.16
Cumulative Proportion   0.19  0.36  0.52  0.69  0.84  1.00
```

**Mean item complexity =  1.4**

**Test of the hypothesis that 6 components are sufficient.**

**The root mean square of the residuals (RMSR) is  0.06  with the empirical chi square  220.68  with prob <  3.2e-20**

**Fit based upon off diagonal values = 0.96**

*Pearson correlation analysis*

The author uses Pearson correlation analysis to analyze the correlation between quantitative variables. Chart 2 shows that, at the 5% level of significance, the correlation coefficient shows that the relationship between the dependent and independent variables is statistically significant (Sig. < 0.05). The magnitude of the correlation coefficients ensures that multicollinearity does not occur. Therefore, other statistics can be used to verify the relationship between variables.

**Chart 2.** Pearson correlation analysis results
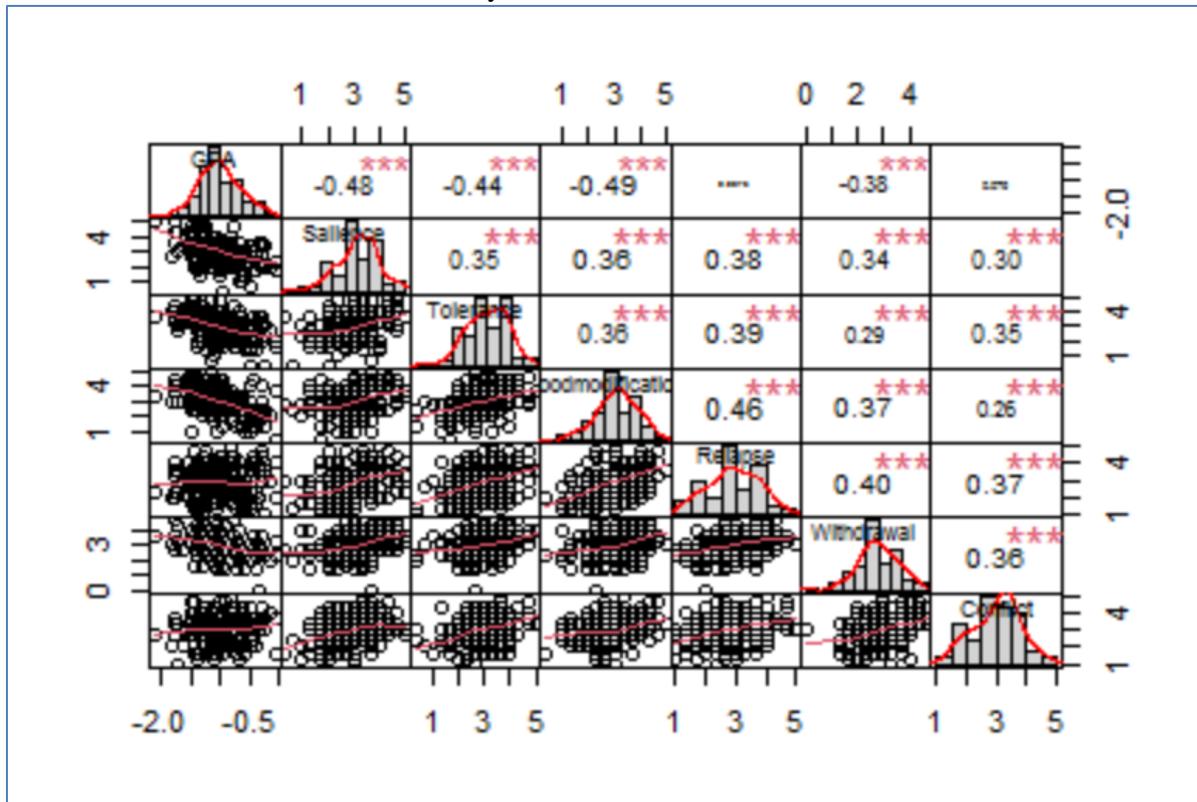
*Regression Analysis:*

Next, the author conducts multivariable linear regression analysis on the relationship between 6 independent variables Withdrawal, Salience, Conflict, Relapse, Mood_modification, Tolerance, and one dependent variable, GPA. Table 4 shows that with R2 = 0.707, the linear regression model is built to fit the data set 0.707%. Thus, six independent variables have a positive and significant impact on the dependent variable. The sig value of the F-test is 0.000 < 0.05. Thus, the constructed linear regression model is suitable for the population. Because the VIF index < 1.5, the model does not have multicollinearity. Durbin Watson test shows that d = 1.861856 and p-value = 0.33. With this result, the model does not have autocorrelation.

**Table 4. The results of multiple linear regression analysis**

```
==============================================
                     Dependent variable:
                 ----------------------------
                            GPA
         -------------------------------------
Salience                 -0.172***
                          (0.020)

Tolerance                -0.169***
                          (0.020)

Moodmodification         -0.188***
                          (0.021)

Relapse                   0.214***
                          (0.021)

Withdrawal               -0.146***
                          (0.021)

Conflict                  0.181***
                          (0.021)

Constant                 -0.165**
                          (0.080)

         -------------------------------------
Observations                200
R2                         0.707
Adjusted R2                0.698
Residual Std. Error    0.210 (df = 193)
F Statistic           77.734*** (df = 6; 193)
==============================================
Note:            *p<0.1; **p<0.05; ***p<0.01
```

Based on the results of multiple linear regression analysis in Table 4, we have two linear regression models of the following form:

$$GPA = -0.165 - 0.172*Salience - 0.169*Tolerance - 0.188*Moodmodification$$

$$+0.214*Relapse - 0.146*Withdrawal + 0.181*Conflict + e$$

Thus, with this result, six proposed research hypotheses are accepted. Several regression coefficients β of the model show that the Relapse variable has a positive effect on the strongest GPA factor with β = 0.214 and then Conflict with β = 0.181. The variables that have the opposite effect with GPA are Moodmodification with β = -0.188, Salience with β = -0.172, Tolerance with β = 10.169 and Withdrawal with β = -0.146.

## 5. DISCUSSION AND CONCLUSION

Research results show that students who do not pass the course are affected by Facebook addiction. In particular, Facebook addiction had a two-way effect on GPA, both positive and negative for students who did not pass the course. Research has shown that Relapse and Conflict are two factors that positively and significantly impact GPA. It means that individual students report having experienced that others have been advised to reduce their use of Facebook but did not listen to them, have unsuccessfully tried to cut down on Facebook use and decide to use it. Facebook less often, but does not manage to do so, and individual students report using Facebook so much that it hurts work/study, giving less priority to hobbies, activities entertain and exercise because of Facebook, ignore their partner, family members or friends because Facebook does not negatively impact GPA. In contrast, individuals reported that they spent much time thinking about Facebook or planning to use Facebook, thinking about how they could spend more time on Facebook and what happened on Facebook. Facebook recently. Individual students reported that they spent more time on Facebook than they originally planned, felt driven to use Facebook more and more, and felt that they needed to use Facebook more and more to get the same pleasure from it. Individual students report that they use Facebook to forget about personal problems, reduce guilt, anxiety, helplessness and depression, and reduce restlessness. Individual students report becoming restless or troubled, complaining if they are banned from using Facebook, feeling bad if, for various reasons, not logging into Facebook for a while negatively impacts GPA. It proves a positive and negative relationship between students using Facebook for education-related activities (Shugufta Abrahim et al., 2019; Junco, 2012).

The results suggest that how students use Facebook to improve academic performance is something educators need to be extremely cautious of, similar to previous studies that have found that social activities on Facebook of students took up a significant amount of students' time, during web surfing and even afterwards, thus seriously affecting their learning process. Furthermore, most Facebook pages examined were opened on the initiative of academic institutions that were mostly inactive, provided no benefit to students, and had no incentive to use them (Gafni & Deri). , 2012; Milosevic & Arsic, 2015). Facebook is the most popular Facebook page among college students. Despite Facebook's popularity and widespread use by students, its use has yet to make significant inroads into classroom use. Social relations are considered the most important factor among all the purposes of using Facebook. Educational use of Facebook is explained directly by its intended use and indirectly by its adoption (Sanchez, Cortijo, & Javed, 2014).

Today, we cannot deny that Facebook has benefited everyone, primarily young people and especially students (Ut et al., 2020). If used appropriately and reasonably, Facebook will be a

handy tool for people's lives in general and students in particular, but there are also some disadvantages that we cannot avoid. Therefore, it is reasonable to use Facebook to improve our knowledge and improve ourselves, and at the same time, it is also necessary to take measures so that we do not become too dependent on social networks negatively (Ut et al., 2020). Facebook has quickly become an indispensable part of many people, especially for the younger generations, having an important role and significant influence. In which, Facebook has been and will be a part of the social life of students. No one can deny the benefits that Facebook brings to students. Facebook with its features, with its rich and diverse information sources, has made a significant impact on their lives, with diverse functions pulling an increasing number of students to install, changing habits, thinking, lifestyle, the culture of a part of students in both positive and negative directions (Junco, 2012).

Teachers and students can use Facebook as a tool for setting up online and offline classes. Facebook can be a friendly official site for all stakeholders to keep management connections on and off-campus for school administrators (Phan Thi Kim Thao, 2021). Facebook was born to help people entertain, but now too many people are dependent on it, significantly affecting their lives (Nguyen Lan Nguyen, 2020). For Facebook to be used as a practical learning tool and to align students' prior affordability to these tools, complex efforts are required in designing, staging, and interacting with students members throughout this process (Mao, 2014).

## 6. LIMITATIONS

As with other empirical studies, there are limitations to this study that should be considered when discussing the results. First, our survey method reflects the respondents' subjective perception of the questions being investigated. Subjective data has some inherent disadvantages that are hard to avoid in surveys (Pakpour, Gellert, Asefzadeh, Updegraff, Molloy, & Sniehotta, 2016). Our data was collected over a single period, so there are certain limitations in the analysis and evaluation of the results (Xin & Zhanyou, 2019). Future research should combine cross-sectional and longitudinal studies.

The intentional sampling method has certain limitations, not fully reflecting population characteristics (Lin et al., 2016; Strong et al., 2018). Our survey was conducted within a cultural context of Vietnam and therefore requires more general statements that can be made by applying the development research model and research conclusions to other countries and cultures (Sun et al., 2012).

## REFERENCES

Andreassen CS, Torsheim T, Brunborg GS, Pallesen S.(2012).  Development of a Facebook Addiction Scale. *Psychol Rep, 110*(2), 501-17. doi: 10.2466/02.09.18.PR0.110.2.501-517. PMID: 22662404.

Cerny, C.A., & Kaiser, H.F. (1977). A study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioral Research, 12*(1), 43-47.

Cronbach, L.J. Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297–334. https://doi.org/10.1007/BF02310555

Gafni, Ruti & Deri, Moran. (2012). Costs and Benefits of Facebook for Undergraduate Students. *Interdisciplinary Journal of Information, Knowledge, and Management, 7*. 10.28945/1577.

Griffiths, M. D. (2005). A "components" model of addiction within a biopsychosocial framework. *Journal of Substance Use, 10*(4), 191–197. https://doi.org/10.1080/14659890500114359.

Hair, J. & Black, W. & Babin, Barry & Anderson, Rolph. (2009). *Multivariate data analysis*. Prentice Hall. London.

Hair, J., Black, W., Babin, B., and Anderson, R. (2010). *Multivariate data analysis* (7th ed.): Prentice-Hall, Inc. Upper Saddle River, NJ, USA. https://doi.org/10.1186/s41239-019-0157-y.

Jones, A. (2015). *How twitter saved my literature class: A case study with discussion*. In C. Wankel, M. Marovich, K. Miller, & J.Stanaityte (Eds.), Teaching arts and science with the new social media, (pp. 91–105). Bingley: Emerald Group Publishing.

Joseph F. Hair Jr. William C. Black Barry J. Babin Rolph E. Anderson. (2014). *Multivariate Data Analysi*s. Seventh Edition. Pearson Education Limited

Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. *Computers & Education, 58*(1), 162-171.

Kaiser, H. 1974. An index of factor simplicity. *Psychometrika, 39,* 31–36.

Kirschner, P. A., & Karpinski, A. C. (2010). Facebook® and academic performance. *Computers in Human Behavior, 26*(6), 1237–1245.

Kuzma, J. M., & Wright, W. (2013). Using social networks as a catalyst for change in global higher education marketing and recruiting. *International Journal of Continuing Engineering Education and Life-Long Learning, 23*(1), 53–66.

Lin CY, Updegraff JA, Pakpour AH. (2016). The relationship between the theory of planned behavior and medi- cation adherence in patients with epilepsy. *Epilepsy & Behavior*, 61,231-6.

Madge, C., Meek, J., Wellens, J., & Hooley, T. (2009). Facebook, social integration and informal learning at university: "It is more for socialising and talking to friends about work than for actually doing work". *Learning, Media &Technology, 34*(2), 141–155

Mao, J. (2014). Social media for learning: A mixed methods study on high school students' technology affordances and perspectives. *Computers in Human Behavior, 33,* 213-223.

McCauley, B. , Gumbley, S. , Merola, G. , McDonald, M. and Do, T. (2016) Facebook in Vietnam: Uses, Gratifications & Narcissism. *Open Journal of Social Sciences,* 4, 69-79. doi: 10.4236/jss.2016.411006.

Milosevic, I., Zivkovic, D., Arsic, S., & Manasijevic, D. (2015). Facebook as virtual classroomeSocial networking in learning and teaching among Serbian students. *Telematics and Informatics, 32*(4), 576–585.

Nguyen Lan Nguyen. (2020).The *Impacts of Facebook on Students Today: Status-quo and Policy Recommendations. VNU Journal of Science: Policy and Management Studies, 36* (3), 90-99.

Nunnally, J. (1978). *Psychometric Theory*. New York, McGraw-Hill.

Pakpour AH, Gellert P, Asefzadeh S, Updegraff JA, Molloy GJ, Sniehotta FF. (2014). Intention and planning predicting medication adherence following coronary artery bypass graft surgery. *Journal of Psychoso- matic Research, 77*(4), 287–95. https://doi.org/10.1016/j.jpsychores.2014.07.001 PMID: 25280826

Phan Thi Kim Thao. (2021).Vietnamese Undergraduates' Attitudes Towards the Use of Facebook for English Language Teaching and Learning. Advances in Social Science. *Education and Humanities Research,* 533, 181-195

Pontes, H. M., Andreassen, C. S., & Griffiths, M. D. (2016). Portuguese validation of the Bergen Facebook addiction scale: an empirical study. *International Journal of Mental Health and Addiction, 14*(6), 1062–1073. https://doi.org/10.1007/s11469-016-9694-y.

Sanchez, R. A., Cortijo, V., & Javed, U. (2014). Students perceptions of Facebook for academic purposes. *Computers & Education, 70*(1), 138–149.

Shugufta Abrahim, Bilal Ahmed Mir, Hayato Suhara, Fatin Amirah Mohamed and Masahiro Sato. (2019). *Structural equation modeling and confirmatory factor analysis of social media use and education*. Abrahim et al. International Journal of Educational Technology in Higher Education, 16:32.

Smith, R. M and Miao, C. Y. (1994). *Assessing unidimensionality for Rasch measurement*. In M. Wilson (Ed.): Objective Measurement: Theory into Practice. Volume 2. Greenwich: Ablex.

Snedecor, George W. and Cochran, William G. (1989). *Statistical Methods, Eighth Edition*.Iowa State University Press.

Sobaih, A. E. E., Moustafa, M. A., Ghandforoush, P., & Khan, M. (2016). To use or not to use? Social media in higher education in developing countries. *Computers in Human Behavior,* 58, 296–305.

Strong C, Lin CY, Jalilolghadr S, Updegraff JA, Brostro¨ m A, Pakpour AH. (2018). Sleep hygiene behaviours in Iranian adolescents: an application of the Theory of Planned Behavior. *Journal of Sleep Research*,  27(1), 23-31. https://doi.org/10.1111/jsr.12566 PMID: 28593637

Sun Y, Fang Y, Lim KH, Straub D. (2012). User satisfaction with information technology services: A social capi- tal perspective. *Information Systems Research, 23*(4), 1195-211.

Taber, K.S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Res Sci Educ,* 48, 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Ut, Nguyen & Nguyen, Vietnam & Ht, Hoi & Tan,. (2020). *Benefits and Harmful Influences of Facebook to the Life of Vietnamese Students Today*. 10.1145/3439147.3439165.

 Wang, J., Lin, Chun-Fu C., Yu, Wei-Chieh W., Wu, Emily & Gung, Chang (2013). Meaningful  Engagement in Facebook Learning Environments: Merging Social and Academic Lives. *Turkish Online Journal of Distance Education, 14*(1), 302-322.

Xin Z, Liang M, Zhanyou W, Hua X (2019),*Psychosocial factors influencing shared bicycle travel choices among Chinese: An application of theory planned behavior.* PLoS ONE, 14(1): e0210964. https://doi.org/10.1371/journal.pone.0210964.