Khulna University Studies Special Issue ICSSI: 206-215: 2023

ORIGINAL ARTICLE

SOCIAL SCIENCE

FACEBOOK USE AND ACADEMIC PERFORMANCE: A STUDY ON THE STUDENTS OF KHULNA UNIVERSITY

Syeda Maria* and Mohammed Ziaul Haider

Economics Discipline, Khulna University, Khulna-9208, Bangladesh

KUS: ICSSI 90

Manuscript submitted: April 13, 2023 Accepted: September 21, 2023

Abstract

Facebook is the well-liked and most-used social networking site among students nowadays. This paper aims to observe the impact of Facebook use on students' academic performance. The data were collected from undergraduate and master's level students of Khulna University by applying a random sampling procedure. Facebook use was measured in hours and academic performance in CGPA. The average time of Facebook use was almost double of the average study hours of the students per day. Two separate econometric models were run in this study to attain the study goals. An OLS regression model tried to identify the determinants of Facebook use, and a Tobit regression model attempted to determine the factors that affect students' academic performance. This study identified current residence, hometown, participation in co-curricular activities, relationship status, study hours, parent's Facebook use, and use of other social networking sites as the significant determinants of Facebook use. On the other hand, hours of study, class participation, time of Facebook use, Facebook use in the class, and following course materials were statistically significant factors that affected students' academic performance. This study identified a significant negative impact of Facebook use on students' academic performance. Participation in co-curricular activities and increased study hours are some suggestions derived from this study for controlling Facebook use. Allowing more time for study, following course materials, reducing Facebook use time and class participation are recommended by this study to improve academic performance.

Keywords: Academic performance, Class participation, Facebook use, Study hour, Khulna University

Introduction

The number of Social Networking Site (SNS) users is growing rapidly (Sivakumar, 2020; Kaya & Bicen, 2015). There are several SNS including Facebook, WhatsApp, YouTube, and Instagram. Among these, Facebook is the most popular one (Talaue, 2018). People are using these networking sites for communication and different purposes as they are living in the era of networking. Facebook was initiated in 2004 by Mark Zuckerberg with his friends which was initially used by the Harvard students only. However, over time, Facebook has been developed as a social networking site (Altaany & Jassim, 2013). Generally, the number of users indicates the popularity of a SNS. Facebook is the first SNS whose number of users exceeds 1 billion. According to the statistics of January 2023, Facebook is ranked first with 43.25 million monthly active users (Statista, 2023).

The number of Facebook users has been proliferating in Bangladesh (Ghosh, 2023). Digitalization leads to an increase in the number of Internet users in the country. This increase in Internet usage mostly indicates Facebook usage in Bangladesh. Statistics reveal that about 30 million people use social media in Bangladesh and more than 90 percent of them are Facebook users (The Financial Express, 2019). Mostly young generation uses Facebook in Bangladesh (Ghosh, 2023). Like other SNS, Facebook also provides a well-structured web page where users can enter personal information including date of birth, gender, current city, hometown, political and religious views, e-mail address, mobile number, relationship status, activities, educational background, favorite music and movies and a profile picture (Caers et al., 2013). Facebook enables its users to share information and connect with friends. The user of Facebook can have a large number of friends. They can see the pictures, updates, and information of their

*Corresponding author: <syeda.maria1997@gmail.com>

DOI: https://doi.org/10.53808/KUS.SI.2023.ICSSI90-ss

friends which he/she shared. Friend on Facebook doesn't mean that they are also off line friend (West et al., 2009; Donath, 2007).

At present Facebook is the most well-liked and most-used social networking site among the students. Most of the university students use Facebook and spend a lot of time on this site. University students have to use Facebook for academic purposes like gaining information, connecting with friends, completing coursework, and accessing important educational groups (Moghavvemi et al., 2017; Morallo, 2014; Oskouei, 2010). Sometimes students started to use Facebook for academic purposes but later they diverted from it. Young people spend much time on Facebook looking at unimportant content or just chatting with their friends (Khan & Ahmed, 2018). Excessive use of Facebook is diverting students from their studies (Selvaraj, 2013). Nowadays, most students are engaged heavily in Facebook. It is even more challenging for the parents to know the actual scenario. Occasionally Facebook use becomes an addiction for the young generation. Sometimes students could not reduce Facebook use though they wanted to reduce its use. Many students suffer from sleep problems because they spend long hours at night on their phones and use Facebook; as a result, they become tired in educational institutions and cannot focus on their studies. Some students use Facebook during class, and hence they cannot concentrate on their classes, resulting in a fall in their academic results (Moghavvemi et al., 2017). Some studies found that excessive Facebook users face academic and official difficulties (Chou & Edge, 2012; Junco, 2012). Students differ in their extent and frequency of Facebook use because of some factors. Therefore, conducting this research is necessary for answering two burning questions about the factors that motivate students to use Facebook and its effect on their academic performance.

Prevailing literature shows that several factors affect the frequency and extent of Facebook use (Ulusu, 2010; Suki, 2012; Ross, 2009). Factors like age, income, and gender affect the extent of Facebook use (Khan & Ahmed, 2018; Kaya & Bicen, 2015). People's participation on Facebook varies according to their personalities, culture, and other factors (Hofstede et al., 2005). Generally, Facebook is a platform to see and to be seen, to express own identity to others, and to connect with others (Pempek, 2009; Lee, 2012). Gaining social identity from friends is an important factor behind joining Facebook. People use Facebook for different purposes like communication, socialization, getting information, and passing the time (Moghavvemi et al., 2017). Today most people are affiliated with social media without concern about its effects on life, whether it is positive or negative. Facebook usage's impacts are both positive and negative based on different aspects of life (Ainin et al., 2015). The positive impact of Facebook includes better communication, ease of sharing information, and improved relationships with friends and family through communication (Ainin et al., 2015). People who use Facebook are more updated than non-users (Mehmood & Taswir, 2013). The negative impact of Facebook use includes becoming addicted to Facebook, the effect on academic and official performance, health problems, mental health problems and so on. Many studies show that there is a negative relationship between Facebook use and academic performance (Karpinski & Duberstein, 2009; Alwagait et al., 2015; Moghavvemi et al., 2017; Khan & Ahmed 2018). That means that more time spent on Facebook reduces academic performance and vice versa. Academic performance indicates how students deal with their studies and how they perform on the tasks which are given by their teachers. Some factors reflect students' academic performance. These factors include CGPA, hours of study per day, efforts to complete the task (assignment, presentation, report), class attendance and so on (Khan & Ahmed, 2018; Mehmood & Taswir, 2013; Moghavvemi et al., 2017).

The objective of this study is to find out the relationship between Facebook use and academic performance. The novelty of this study is threefold. Firstly, what is the frequency and extent of Facebook use? To answer this question, the authors collected data from respondents regarding their frequency of Facebook use so that authors could measure the extent of it. Secondly, it tries to find out the factors that drive students to use Facebook. This focuses on different factors, including social, institutional, and other factors, influencing students' Facebook use and its extent. Solving this research question enables us to see the reasons that are crucial or that are playing backstage to motivate students to use Facebook. The researchers have used the OLS Regression Model to find the answer. As the dependent variable, Facebook use is a continuous variable and it is measured in hours. Finally, the study attempts to determine the consequences of Facebook use on students' academic performances. By answering this question, we attempt to compare the academic performance of different levels of Facebook user students at Khulna University. Data on academic performance are collected to measure the consequences of Facebook use. In doing so,

the authors have used a Tobit regression model. With the help of these analytical tools, we have evaluated the impact of Facebook use on students' academic performance.

The relationship between Facebook use and academic performance has been explored by several researchers throughout the world. But most of the work was done in developed countries like the UK and USA. Some of the works are also found in South Asian countries. However, there is a lack of available research work in Bangladesh on this context and few studies have been done on students of Khulna University regarding this issue. This study could be done to see the impact of using other SNSs as a whole on academic performance but due to some constraints, the authors only focus on Facebook. This study also could be done on college students and other university students to see the impact. However, time and other constraints limit the authors to confine this study among Khulna University students. It is less preferable to do for school students because they are comparatively less Facebook users than college and university students. Consequently, the authors have conducted this study on students of Khulna University to find out the impact of Facebook use on academic performance.

Materials and Method

Study area and sampling framework: Researchers conducted this study on students of Khulna University. A systematic random sampling method was employed in this study. The sample is chosen from both undergraduate and master's level students. So, the students of 1st year, 2nd year, 3rd year, 4th year, and master's level are considered as the population of this study. There are a total of 5,624 students who are considered as the population of this study. Khulna University is the ninth public university in Bangladesh, established in 1987 (Khulna University, 2019). It is the only public university in Bangladesh to be free of student politics. Students in this university get to study in an uninterrupted environment with no session jam in academic activities. It is situated at Gollamari, Khulna, Bangladesh, beside the Moyur River and Khulna-Satkhira highway. To conduct this research work authors considered 29 Disciplines of Khulna University. Both undergraduate and postgraduate students are considered in this study. Each discipline has 5 different batches (1st year, 2nd year, 3rd year, final year, and masters), and from each batch, one student is randomly selected as they can represent the total population. Accordingly, there are 135 respondents. From these 5 batches, researchers randomly choose one student having a random ID (here, it is 09) from each batch. If ID 09 is missing, consideration goes to ID 23. Again, if ID 23 is also missing, the authors consider ID 32. The data were collected during July-September of 2019.

Analytical strategy: Descriptive statistics and cross-tabulations are used in this study to measure the frequency and extent of Facebook use. There are two dependent variables in this study, which are Facebook use and CGPA. Facebook use is measured in hours and academic performance by CGPA. Two separate econometric models are used to attain the study goals. An OLS regression model is used in this study to identify the determinants of Facebook use, and a Tobit regression model is used to determine the factors that affect students' academic performance. Here, the dependent variable of equation (1) is continuous and also satisfies all the assumptions of the OLS regression. As a result, the authors have chosen the OLS regression model.

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \ldots\ldots\ldots\ldots\ldots + \beta_{13} X_{13i} + u \qquad (1)$$

Here i= 1, 2, 3…….135

In equation (1), Y_i indicates the time of Facebook use, which is the dependent variable, and X_i indicates the explanatory variables which are the determinants of time of Facebook use.

$$y^* = \beta_0 + x\beta + u,\ u \mid x \sim \text{Normal}\ (0, \delta^2) \qquad (2)$$

Equation (2) is used for the Tobit model to identify the significant factors that affect academic performance. Here, the Dependent variable y* indicates the CGPA. The maximum value of y* is 4.

Results

Summary statistics: Table 1 shows the summary statistics of this particular research with the variable name, measurement units, observation, mean, standard deviation, minimum and maximum values. There are 135 observations for all the variables. According to the summary statistics, the average age of the students is 21.73 years, which deviates from the average value with a standard deviation of 1.82 years. As this study is conducted on the students, most of the respondents are young adults with a minimum age of 19 and maximum age of 26. The students spend an average of 1.96 hours watching television daily, which deviates from the average value with a standard deviation of 1.11. The average monthly family income of the students is BDT 28,737, while the standard deviation is BDT 14,798. The average education of the father and mother is 12.61 and 9.70 years, respectively.

Table 1. Summary Statistics

Variable	Unit of Measurement	Observation	Mean	Std. Dev.	Min.	Max.
Age	Year	135	21.73	1.82	19	26
Watching Television	Hour	55	1.96	1.11	0.5	6
Family Income	BDT/month	135	28,737	14,798	4,500	70,000
Education of Father	Years of Schooling	135	12.61	3.75	4	17
Education of Mother	Years of Schooling	135	9.70	3.44	2	17
Student's Monthly Expenditure	BDT	135	5,071	2,126	1,700	13,600
CGPA	Scale of 4.00	135	3.41	0.26	2.75	3.92
SSC	Scale of 5.00	135	4.88	0.25	3.5	5
HSC	Scale of 5.00	135	4.85	0.24	3.75	5
Hours of Study	Hour/day	135	1.86	1.81	0.5	14
Class Participation	Percentage	135	89.81	11.44	35	100
Years of Facebook Use	Year	135	4.69	1.89	1	10
Cost of Facebook Use	BDT/month	135	248	175	50	1,000
Time of Facebook use	Hour/day	135	3.63	2.13	0.5	8

N.B.: *Std. Dev.= Standard Deviation, Min.= Minimum, Max.= Maximum*

According to summary statistics, the average monthly expenditure of the respondents is BDT 5,071. The average CGPA attained by the respondents is 3.41, while the standard deviation is 0.26. The minimum CGPA of the respondents is 2.75 and the maximum CGPA is 3.92. The average GPA of the SSC and HSC exam results of the respondents are 4.88 and 4.85, respectively. The average hours of study of the respondents are 1.86 hours daily while the standard deviation is 1.81. The minimum study hour is 0.5 hours daily and the maximum is 14 hours daily. The average class participation of the respondents is 89.81 percent while the standard deviation is 11.44. Respondents' average years of Facebook use is 4.69, with a standard deviation is 1.89.

According to summary statistics, the average per month cost of Facebook users of the respondents is BDT 248, which deviates from the average value with a standard deviation of 175. The respondent's average time per day Facebook use is 3.63 hours, which deviates from the average value with a standard deviation of 2.13. The minimum time for Facebook is 0.5 hours per day, and the maximum time for Facebook is 8 hours per day. The average time of Facebook use is almost double the average study hours of the students per day.

Cross tabulation: Cross-tabulation helps to consider more than one variable at a time irrespective of dependent or explanatory variables. From Table 2, it is observed that 5-row variables are considered with 1 column variable. Here the row variables are gender, hometown, relationship status, monthly family income, and CGPA. The column variable is the duration of Facebook use which has four categories.

Table 2. Cross-tabulation

Name of Row of Variables	Duration of Facebook Use (in hours/day)				Total
	0.1-2.0	2.1-4.0	4.1-6.0	6.1-8.0	
Gender					
Male	32	27	9	3	71
Female	11	27	19	7	64
Hometown					
Rural	38	31	7	0	76
Urban	5	23	21	10	59
Relationship Status					
Single	40	26	0	0	66
Having Relationship	3	28	28	10	69
Monthly Family Income (in BDT)					
0-20,000	28	23	3	4	58
20,001-40,000	13	17	22	4	56
40,001-60,000	2	12	3	2	17
60,001-80,000	0	2	0	0	2
CGPA					
2.74-2.99	0	0	2	3	5
3.00-3.24	0	12	12	6	30
3.25-3.49	10	10	12	0	42
3.50-3.74	21	20	2	1	44
3.75-4.00	12	1	0	1	14

Table 2 shows that male respondents dominate the data set. The duration of Facebook use is different in both male and female groups. Among all the male respondents, 32 use Facebook for 0.1-2.0 hours. Most females use Facebook in the range of 2.1-4.0 hours. The majority of the respondents are from rural areas. The majority of the respondents in rural are used Facebook for a range of 0.1-2.0 hours. On the other hand, most of the respondents from urban areas use Facebook for 2.1-4.0 hours. The respondents having relationships use Facebook more compared to the single respondents. The monthly family income of the respondents is divided into four categories. The majority of the respondent's monthly family incomes were less than 20,000 BDT. The duration of Facebook is different across different levels of family income groups. The CGPA of the respondents is divided into five categories. The duration of Facebook use differs across the different ranges of CGPA. In the higher range of CGPA, the duration of Facebook use is less. Therefore, the cross-tabulation gives a clear hint of the duration of Facebook use among the students of Khulna University.

Factors affecting facebook use: In this OLS regression model, the dependent variable is the hours of Facebook users per day.

Table 3 shows that the current living status of the students positively affects the hours of Facebook use. If other things remain the same, then the student living in the hall or student mass uses Facebook 0.65 hours more than those living with their family. It is statistically significant at the 10 percent level. Students in the student hall use Facebook more than those who stay with their families because the guardians and family members do not like their children spending more time on Facebook (Moghavvemi et al., 2017). The hometown of the students also affects the hours of Facebook use. If other things remain the same, then the students who come from urban areas use Facebook 0.51 hours more compared to those students who come from rural areas. It is also statistically significant at the 10 percent level. Because urban people seem to be aware of the SNS compared to rural people (Hofstede et al., 2005). Participation in co-curricular activity is an important factor that negatively affects the hours of Facebook use. The students who participated in co-curricular activity used Facebook 0.94 hours less than those students who did not participate in co-curricular activity. It is statistically significant at a 1 percent level. According to Skiera et al. (2015), people involved in part-time jobs or co-curricular activities have less time for Facebook use.

Table 3. OLS Regression Model on Determinants of Facebook Use

Variable	Unit of Measurement	Co-efficient
Age	Year	0.03
Gender	0=Male and 1= Female	-0.16
Family Income	in BDT	-0.00
Hall	0=With Family and 1= Hall	0.65*
Hometown	0= Rural and 1= Urban	0.51*
Co-curricular Activity	0= No and 1= Yes	-0.94***
Tuition	0= No and 1= Yes	-0.33
Watching TV	0= No and 1= Yes	0.43
Relationship	0= No and 1= Yes	1.19***
Other Social Networking Sites	0= No and 1= Yes	0.74**
Hours of Study	Hours	-0.14**
Parent's Facebook Use	0= No and 1= Yes	0.98***
Number of Friends	Number	0.00
Constant		1.77
Observations		135
R-squared		0.66

*N.B.: *** p<0.01, ** p<0.05, * p<0.1*

Relationship status has a significant positive impact on the hours of Facebook use. According to Table 3, if other things remain the same, then the respondents having a relationship use Facebook 1.19 hours more compared to single people. It is statistically significant at a 1 percent level. Sanchez et al. (2014) also revealed that people who are in a relationship are more frequent Facebook users to connect or communicate with his/her partner. The use of other SNSs also positively affects the hours of Facebook use. The users of other SNSs use Facebook 0.74 hours more than those who do not use other SNSs, which is statistically significant at a 5 percent level. When students use multiple SNSs, consequently they left less available time for Facebook use. According to Table 3, the study hours are negatively related to the hours of Facebook use. Other things remain the same, a 1-hour increase in study hours can result in a 0.14-hour decrease in Facebook use. It is statistically significant at the 5 percent level. These findings align with a previous study that found that students who spend more time on Facebook consequently gives less time for study, for this reason, many educational institutions especially school authorities oppose Facebook use (Karpinski & Duberstein, 2009). On the other hand, the parents' Facebook use positively affects the respondent's hours of Facebook use. The respondents whose parents are using Facebook, use Facebook 0.98 hours more compared to those whose parents do not use Facebook. It is statistically significant at a 1 percent level.

Furthermore, the R^2 value is 0.66, which implies that almost 66 percent variation of the dependent variable 'hours of Facebook use' can be explained by the explanatory variables. VIF test is conducted in this model to check the multicollinearity among the explanatory variables (Annex-A: Table A1). The VIF values for each variable are greater than 1 and less than 10. It indicates that there is no existence of multicollinearity among the explanatory variables.

Factors affecting academic performance: The main objective of this study is to analyze the impact of Facebook use on students' academic performance. Academic performance is not influenced by Facebook use alone. Besides Facebook use, many other factors affect academic performance. Censoring mainly occurs when there is a limit in the data set, and in this study, the maximum value of CGPA is 4. As the data set satisfies the assumptions of the Tobit model, hence Tobit model is used to identify the significant factors that affect academic performance. Thus, the Tobit regression model includes the explanatory variables that influence academic performance. In Table 4, the dependent variable is the CGPA of the students and the significant explanatory variables are hours of study, class participation, time of Facebook use, Facebook use in the class, and following course materials.

Table 4. Tobit Regression on CGPA

Variables	Unit of Measurement	Coefficient
Hours of Study	Hour/day	0.04***
Family Income	BDT/month	-0.00
SSC Result	Scale of 5.00	0.12
HSC Result	Scale of 5.00	0.02
Class Participation	Percentage	0.01***
Participation in Co-curricular Activities	0= No and 1= Yes	0.02
Time of Facebook Use	Hours	-0.04***
More Frequently Facebook Use during the Class	0=Less frequently FB used during class (Sometimes, Seldom, Never) 1= More frequently FB used during class (Always, almost always)	-0.14*
Follow Course Materials	0= No and 1= Yes	0.18***
Tuition	0= No and 1= Yes	0.03
Constant		2.24***
Observations		135
R-squared		0.59

*N.B.: *** p<0.01, ** p<0.05, * p<0.1*

From Table 4, it is observed that study hours are positively related to the CGPA of the students. If other things remain the same, then for a one-hour increase in study hours per day, CGPA is also increased by 0.04 units. It is statistically significant at a 1 percent level. Mehmood and Taswir (2013) also found that study hours positively affect CGPA. That means the students with high CGPA study more than those who study relatively few hours (Morallo, 2014; Ahmed & Qazi, 2011). The variable class participation is positively related to CGPA. Because class participation helps the students to better understand the lecture, which ultimately helps for better results. If other things remain the same, then with a 1 percent increase in class participation, CGPA is increased by 0.01 unit. It is statistically significant at a 1 percent level. This finding matches the findings of Eitle and Eitle (2002) because they also found a positive relationship between class participation and academic success.

In contrast, a one-hour increase in Facebook use may decrease CGPA by 0.04 units. Khan & Ahmed (2018) also found that more time spent on Facebook reduces academic performance and vice versa. It is statistically significant at the 1 percent level. More frequently Facebook use during class also negatively affects the CGPA. Because of Facebook use during class, students do not concentrate on teaching-learning, so their academic performance is affected. According to this study, if other things remain the same, then the more frequent Facebook users during the class get 0.14 units less CGPA than those who use Facebook less frequently during class. It is statistically significant at a 10 percent level.

The variable following course materials is a factor that has a positive impact on CGPA. If other things remain constant, then the follower of course material will get 0.18 unit higher CGPA than the non-follower of course materials. This result is also statistically significant at the 1 percent level.

Thus, this study identifies a significant negative impact of Facebook use on students' academic performance. The average time of Facebook use is almost double of the average study hours of the students per day. According to Moghavvemi et al. (2017), using Facebook might be handy for students to save and manage their time, but uncontrolled use of Facebook harms academic performance. Chou and Edge (2012) found that excessive Facebook users face difficulties in their academic and official lives. Most of the students started Facebook use for academic purposes but later they diverted from their purpose. Students pay more attention to Facebook than their studies. As a result, their academic performance is negatively affected (Khan & Ahmed 2018; Alwagait et al., 2015).

Furthermore, the R^2 value is 0.59, which implies that almost 59 percent variation of the dependent variable CGPA can be explained by the considered explanatory variables. VIF test is conducted in this model to check the multicollinearity among the explanatory variables (Annex-A: Table A2). The VIF values for each variable are greater than 1 and less than 10. It indicates that there is no existence of multicollinearity among the explanatory variables.

Conclusion

Social media can be used as a tool for learning through student interaction, but the problem arises when it becomes a curse for academic performance. Most of the students started using Facebook for academic purposes but later they diverted from their purpose. Students who spend more time on Facebook consequently have less time for study. This study identifies a significant negative impact of Facebook use on students' academic performance. The average time of Facebook use is almost double of the average study hours of the students per day. Participation in co-curricular activities and an increase in study hours are some suggestions for controlling Facebook use. Allowing more time for study, following course materials, reducing Facebook use time and class participation are recommended by this study to improve academic performance. With the increasing popularity and use of Facebook, it also becomes a common concern for parents, guardians and administrators that students spend a considerable amount of time on Facebook. Facebook can be beneficial if used for educational objectives, but its use for socializing may have a negative impact on students' performance in the classroom. Using Facebook as a study tool, and especially for sharing study materials, could assist distance learners in developing the skills they need to succeed in their chosen field of study. This study is done only considering Facebook, but there is scope for further study considering the other SNS.

Acknowledgements

The authors would like to thank the anonymous reviewers and editors for their valuable time and suggestions to improve this article. They would also like to acknowledge the 1st International Conference on Social Science Issues' chair, co-chairs, and international advisory panel members for supporting this research pleasantly with their valuable remarks. The authors acknowledge the survey respondents for providing valuable information. Authors acknowledge to the Economics Discipline, Khulna University, Bangladesh for granting permission to conduct the study as a partial fulfillment of BSS (Hons) degree. However, the views expressed in this paper are those of the authors and do not necessarily reflect the views of the reviewers, editors, conference authority, discipline, university or the survey respondents.

Conflicts of interest

There is no conflict of interest in publishing this work.

References

Ahmed, I., & Qazi, T. F. (2011). A look out for academic impacts of Social Networking Sites (SNSs): A student based perspective. *African journal of business management*, *5*(12), 5022-5031.

Ainin, S., Naqshbandi, M. M., Moghavvemi, S., & Jaafar, N.I. (2015). Facebook usage, socialization and academic performance. *Computers & Education*, 64-73.

Altaany, F. H., & Jassim, F. A. (2013). Impact of Facebook usage on undergraduate students performance in Irbid National University: Case study. *International Journal of Engineering Research and Applications (IJERA), 3*(4), 255-260. https://arxiv.org/ftp/arxiv/papers/1306/1306.4779.pdf

Alwagait, E., Shahzad, B., & Alim, S. (2015). Impact of social media usage on students academic performance in Saudi Arabia. *Computers in Human Behavior*, *5*(1), 1092-1097. https://www.sciencedirect.com/science/article/pii/S0747563214004804?via%3Dihub.

Caers, R., Feyter, T., De-Couck, M., Stough, T., Vigna, C., & Du-Bois, C. (2013). Facebook: A literature review. *New Media & Society*, *15*(6), 982-1002. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1009.3604&rep=rep 1&type=pdf

Chou, H. T. G., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyber Psychology, Behavior, and Social Networking*, *15*(2), 117-121.

Donath, J. (2007). Signals in social supernets. *Journal of Computer-mediated Communication*, *13*(1), 231-251.

Eitle, T. M., & Eitle, D. J. (2002). Race, cultural capital, and the educational effects of participation in sports. *Sociology of Education*, 123-146. https://pdfs.semanticscholar.org/42fe/8bd7ffe7a1a767b6172fcd3f8c999e457108.pdf

Ghosh, R., Khatun, A., & Khanam, Z. (2023). The relationship between social media based teaching and academic performance during COVID-19. *Quality Assurance in Education*, *31*(1), 181-196.

Hofstede, G., Hofstede, G.J., & Minkov, M. (2005). Cultures and organizations*, Software of the mind.*

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

Karpinski, A.C., & Duberstein, A. (2009). A description of Facebook use and academic performance among undergraduate and graduate students. *American Educational Research Association*, 5-10.

Kaya, T., & Bicen, H. (2016). The effects of social media on students' behaviors; Facebook as a case study. *Computers in Human Behavior*, *59*, 374-379.

Khan, N. T., & Ahmed, S. (2018). Impact of Facebook addiction on students' academic performance. *Research Medical and Engineering Sciences*, *5*(2), 424-426.

Khulna University (2022). Students dataset, Khulna University (KU), Khulna. https://ku.ac.bd/.

Lee, E. B. (2012). Young, black, and connected: Facebook usage among African American college students. *Journal of Black Studies*, *43*(3), pp.336-354.

Mehmood, S., & Taswir, T. (2013). The Effects of Social Networking Sites on the academic performance of students in college of applied sciences, Nizwa, Oman. *International Journal of Arts and Commerce*, *2*(1), 111-125.

Moghavvemi, S., Aziz, A. A., & Phoong, S. W. (2017). 'The Impact of Facebook usage on academic performance', *5th International conference on research and innovation in information systems (ICRIIS*), Research Gate. https://www.researchgate.net/publication/319056122_The_impact_of_Facebook_usage_on_academic_performance.

Morallo, I. M. (2014). The effects of Social Networking Sites on student's academic performance in Lyceum of the Philippines- Laguna. *Graduate School Research Journal*, *7*(2), 16-28.

Oskouei, R. J. (2010). 'Analyzing different aspects of Social Network usages on student's behaviors and academic performance', *International conference on technology for education,* Proceeding of international conference*, IEEE,* Mumbai, India, 1-3 July, pp. 216-221. https://doi.org/10.1109/T4E.2010.5550097.

Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. (2009). College students' Social Networking experiences on Facebook. *Journal of Applied Developmental Psychology*, *30*(3), 227-238.

Ross, C., Orr, E. S., Sisic, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. (2009). Personality and motivations associated with Facebook use. *Computers in Human Behavior*, *25*(2), 578-586. https://doi.org/10.1016/j.chb.2008.12.024.

Sanchez, R. A., Cortijo, V., & Javed, U. (2014). Students' perceptions of Facebook for academic purposes. *Computers & Education*, 138-149. https://www.sciencedirect.com/science/article/pii/S0360131513002340?via%3Dihub.

Selevaraj, S. (2013). Impact of social media on student's academic performance. *International Journal of Logistic & Supply Chain Management Perspective*, *2*(4), 636-640.

Sivakumar, R. (2020). Effects of social media on academic performance of the students. *The Online Journal of Distance Education and e-Learning*, *8*(2), 90-97.

Skiera, B., Hinz, O. and Spann, M. (2015). Social media and academic performance: Does the intensity of Facebook activity relate to good grades? *Schmalenbach Business Review*, *67*(1), 54-72. https://doi.org/10.1007/BF03396923

Statists (2023). Leading countries based on Facebook audience sizes of January 2023. https://www.statista.com/statistics/268136/top-15-countries-based-on-number-of-facebook-users/.

Suki, N. M., Ramayah, T., & Ly, K. K. (2012). Empirical investigation on factors influencing the behavioral intention to use Facebook. *Universal Access in the Information Society*, *11*(2), 223-231.

Talaue, G. M., AlSaad, A., AlRushaidan, N., AlHugail, A., & AlFahhad, S. (2018). The impact of social media on academic performance of selected college students. *International Journal of Advanced Information Technology*, *8*(4/5), 27-35.

The Financial Express (2019). Social media users 30 million in Bangladesh: Report, 10 February. https://www.thefinancialexpress.com.bd/sci-tech/social-media-users-30-million-in-bangladesh-report-1521797895.

Ulusu, Y.D.D.Y. (2010). Determinant factors of time spent on Facebook: Brand community engagement and usage types. *Journal of Yasar University*, *18*(5), 2949-2957. https://journal.yasar.edu.tr/wp-content/uploads/2012/08/02_yesim_ulusu.pdf.

West, A., Lewis, J., & Currie, P. (2009). Students' Facebook Friends': Public and private spheres. *Journal of Youth Studies*, *12*(6), 615-627. https:// doi.org/10.1080/13676260902960752

Annex -A
OLS Regression Model on Determinants of Facebook Use

Table A1. Variance Inflation Factor and Tolerance Test

Variable	**VIF**	**1/VIF**
Watching TV	1.90	0.526024
Social Networking Sites	1.89	0.528724
Relationship Status	1.84	0.544843
Hall	1.82	0.549602
Parents Facebook Use	1.80	0.555142
Hometown	1.80	0.556095
Tuition	1.65	0.606191
Co-curriculum Activity	1.60	0.625056
Family Income	1.49	0.670159
Gender	1.47	0.681310
Age	1.42	0.705049
Number of Facebook Friends	1.33	0.749311
Study Hours	1.22	0.816464
Mean VIF	**1.63**	

Tobit Regression on CGPA

Table A2. Variance Inflation Factor and Tolerance Test

Variable	**VIF**	**1/VIF**
Time of Facebook Use	1.80	0.555373
SSC Result	1.77	0.566262
HSC Result	1.74	0.574819
Co-curriculum Activity	1.57	0.637160
Follow Course Materials	1.31	0.766278
Study Hours	1.27	0.790336
More Frequently FB use in Class	1.23	0.810219
Class Participation	1.21	0.827983
Family Income	1.18	0.847829
Tuition	1.16	0.862907
Mean VIF	**1.42**	