Faijun Nahar Mim
Assistant Professor, Department
of Statistics, Mawlana Bhashani
Science and Technology
University, Tangail

Mohammad Ashraful Islam
M.Sc. (Thesis) Student,
Department of Statistics,
Mawlana Bhashani Science and
Technology University, Tangail

Gowranga Kumar Paul
Assistant Professor, Department
of Statistics, Mawlana Bhashani
Science and Technology
University, Tangail

Impact of the use of social media on students' academic performance and behavior change

Faijun Nahar Mim, Mohammad Ashraful Islam and Gowranga Kumar Paul

Abstract
The purpose of this research study is to examine the impact of social media on students' academic performance. A structural questionnaire was constructed to elicit information from 345 randomly selected students of Mawlana Bhashani Science and Technology University (MBSTU), Tangail, Bangladesh. Both univariate and multivariate analysis were used to meet he objective. The descriptive statistics were used to analyze the demographic data and educational information while a multiple regression model was applied to show the influence of social media on students' academic performance. Research findings showed that a large number of respondents experienced negative effects such as late submission of assignment, less study time and poor academic performance due to the heavy participation on social media networks. A portion of the students provided positive feedback about the involvement with the terrorist and militant activities and the tendency to the predisposition with the political issues due to social media. To this end, the study suggested that social media should be used for educational purposes as well; social networking sites should be expanded and new pages should be created to enhance academic activities, avoid setbacks in the students' academic performance; and students should be monitored by teachers and parents on how they use social networking sites.

Keywords: Social media, Study Time, Academic performance, Behavior change

Introduction
Social media is defined as forms of electronic communication (such as websites) through which people creates online communication to share information, ideas, personal messages etc. Social media has become very popular and important to all ages of people. It contains several channels like audios/videos callings, blogging, communicating, texting, sharing contents all over the world and so many characteristics. At present social media is becoming a prominent part of life for many youth today. The uses of social media are increasing rapidly all over the world. In recent years, people are shifting from watching television and listening to radios to use social media. Thus the social media is impacting on human being living styles and on society especially on the students. In spite of having many positive aspects, there are many risks that come with the use of sites such as less study time, poor academic performance due to the heavy participation on social media networks and decadence of social behavior etc. In order to make the right choices about social media we must explore the current scenario by doing the research on the topic thoroughly.
Now a day's people are introduced with various types of social media such as Facebook, Twitter, Whats App, Linked In and so on. These are helping one to communicate with another instead of long distance. Thus technology is not only making people advanced, but also making them social. People from different stages are getting the benefits from the social media. Specially, students from schools, colleges and universities are being interested to get connected with various social media through Smartphone, computer and other technologically improved electronic devices.

Rationale of study
Lin et al. (2011) focusing on a study conducted primarily on the Facebook outcomes, which are used by international students in the USA shown that social media is one of the most

Correspondence
Gowranga Kumar Paul
Assistant Professor, Department
of Statistics, Mawlana Bhashani
Science and Technology
University, Tangail

important factors that affect students' academic performance. The researchers found that Facebook usage contributed to student ability to participate socially and culturally in their new environment. Choney, (2010) [2], Meh Mood & Taswir, (2013) [10], Kist (2008) [7], Jacobsen & Forste, (2011) [5], believe that the use of technology such as internet is one of the most important factors that can influence educational performance of students positively or adversely.

Junco, Heibergert, and Loken et al (2011) [6] a study is conducted on 132 students in order to examine the relationship of social media and engagement of students with it and social media and grades of students. To examine this relationship the students were divided into two groups, one group use twitter and the other group did not use twitter account. It was used to make discussions about study material, organize the study groups in a manner, also post the announcements of class, and remain in touch with class fellows. Junco and his coworkers (2011) [6] surprised that the students of Twitter group achieve greater GPAs and higher scores than the other group.

Martin, (2008) and Lusk, (2010) [8] also found that most of the people used social media like Facebook, Blogs, Twitter, My Space and LinkedIn for the purpose of communication, sharing photos as well as videos. However for the purpose of this study social media is captured within the use of internet through Facebook, WhatsApp, Twitter, Skype, Myspace as well as Yahoo Messenger for communication sharing of ideas, sharing of photos and videos by users. The increased use of Social Networking Websites has become an international phenomenon in the past several years.

Shambare et al. (2012) [11] conduct a study on Social networking habits among students and shows that Facebook is most widely used by a large number of students and have multiple effects on student's life. The high speed and quickly approach to internet and the development of smart phone technology are most important drivers behind the adoption and connectivity with social networking websites and conclude that SNS enhance their knowledge level. In a study Ahmad (2011) [1] showed that social networking sites have number of advantages for their users, it enable the community to keep in touch with their peers and relink with old ones and help to find new friends according to your interest from all around the and a large number of persons are linking with these networks. Hence the network of social media is growing globally.

Davis et al (2012) [3] refer to social media technology (SMT) as "web-based and mobile applications that allow individuals and organizations to create, engage, and share new user-generated or existing content in digital environments through multi-way communication". Popular social network platforms on mobile and web applications include Facebook, Twitter, YouTube, Whats App, Instagram, snap chat, Google Plus etc. These platforms have specific roles, functions and modes of communication although their functions are mostly related.

Modern technology has many positive aspects but in the same time, it may become hazardous for the users. It is therefore, the study is conducted, for the university students, how they feel and think the effects of social media on their academic performance and their behavior change. The main objective of this study is to explore the effects of social media participation on the student's academic performance.

Data and methodology

The study used a structured questionnaire to collect information on 345 students from Mawlana Bhashani science and Technology University by simple random sampling. Univariate analysis was used to explore the student characteristics and multiple regression analysis was used to show the influence of social media on students' academic performance. The important variables considered in this study are Average Study Time (Hours per day), Time spent on Facebook, Time spent on YouTube and Time spent on WhatsApp. SPSS and Microsoft office was used as software.

Result and Discussion
Profile of the respondent

The basic information of the respondent such as Age, Gender, Education etc. are showed in Table 1. The table shows that majority (55.8%) of the respondents was male. The table also reveals that 44.2 percent, 41.3 percent and 14.5 percent respondents' belonging to the age groups 18-20, 21-23 and 24-26 respectively. The table also shows that higher percentage of children obtained CGPA more than 3.50 followed by CGPA 3.25 to 3.50. It is very important to note that a very small percent (3.0 %) student achieved CGPA more than 3.75. One very important determinant of CGPA is study hours per day. The table shows that almost half of the students read on average less than two hours in a day. A very small portion of student reads more than 6 hours in a day on average. For this reasons higher CGPA obtained student are less compared to others student.

Table 1: Profile of the respondents

Characteristics	Categories	Frequency	Percent (%)
Age	18-20	150	44.2
	21-23	140	41.3
	24-26	49	14.5
Gender	Female	152	44.2
	Male	192	55.8
Study Time	<2	157	47.4
	2-4	98	29.6
	4-6	47	14.2
	>6	29	8.8
CGPA	<3.00	56	16.8
	3.00-3.25	51	15.3
	3.25-3.50	108	32.3
	3.50-3.75	109	32.6
	>3.75	10	3.0

Students' favorite social media

The respondents were asked about their most favorite social media. The findings of this analysis are described in *Figure 1* below. The majority respondents preferred Facebook (72.4%) and YouTube (19.6%) followed by Instagram, LinkedIn and Twitter. *Figure 2* shows that, the highest percentage of (67%) respondents' most favorite social media was messenger for talking over social media and lowest proportion of students (3%) liked Viber to talk.
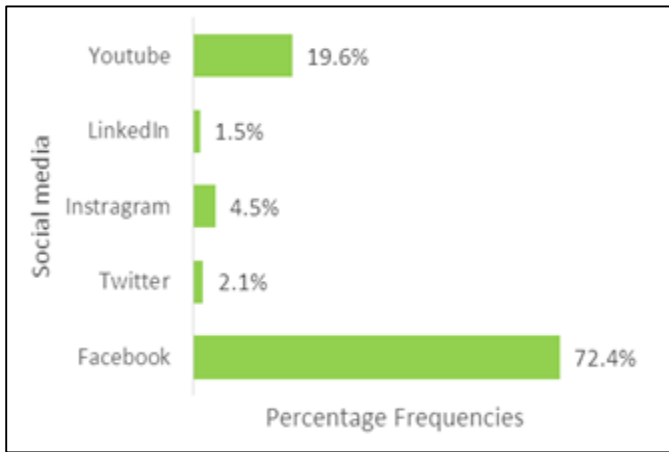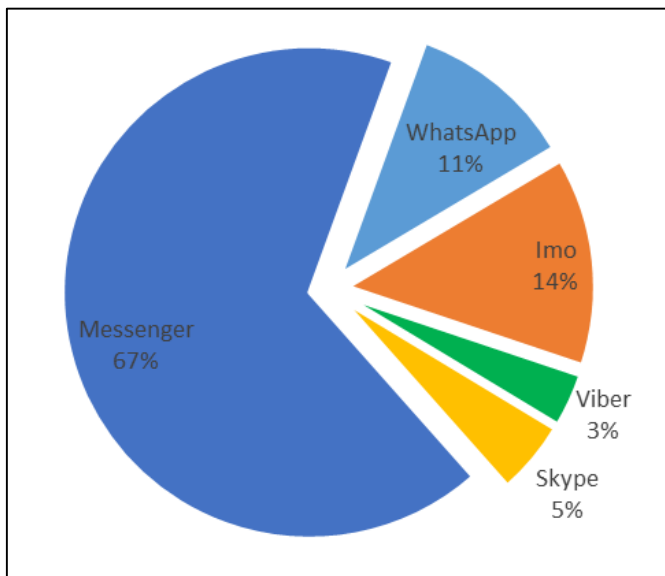
Fig 1: Respondent's favorite social media

Fig 2: Respondent's favorite talking social media

Multiple Regression analysis
In order to fit multiple regressions first we check the validity. The instrument is valid if the value of variable is positive and more than 0.3 (r > 0.3). The result of average study time (X_1) is 0.655, time spent on Facebook (X_2) is 0.434, time spent on YouTube (X_3) is 0.370 and time spent on WhatsApp (X_4) is 0.306. It means that all the indicators are valid. After validity check we need to check reliability. According to Brown (2006) a reliability index of a minimum of 0.6 is satisfactory for any research analysis. In this study Cronbach's alpha coefficient was 0.648 which is greater than 0.60 so the measurement instruments used for this research are reliable.

Table 2: Test of Multicollinearity

Variable	Co-Linearity Statistics	
	Tolerance	VIF
Average Study Time (hours/day)	0.544	1.839
Time spend on Facebook	0.491	2.038
Time spend on YouTube	0.725	1.379
Time spend on Whats App	0.490	2.041

Dependent Variable: Academic results

Multicollinearity check is very important to fit multiple regression models. The table 2 shows that the tolerance of average study time is 0.544, Time spent on Facebook is 0.491,

Time spent on YouTube is 0.725 and Time spent on Whats App is 0.490 meaning the tolerance value of each variable is more than 0.2. The VIF value of Time spent on Facebook is 2.038, Time spent on YouTube is 1.379, and Time spent on Whats App is 2.041 meaning the VIF value of each variable is less than 10. Since all the tolerance value is more than 0.2 and VIF value is less than 10 of each independent variable, so this research is free from Multicollinearity.

Regression coefficients
The Regression Coefficients are the constants in the regression equation that tells about the change in the value of dependent variable corresponding to the unit change in the independent variable. The value coefficient of determination $(R^2=0.585)$ implies that 58.5% of the variation in academic results is explained by the variations in the average study time; time spend on Facebook, YouTube and WhatsApp. The observed R^2 suggests that the multiple regression line fit the data reasonably. The other 41.4% variations not explained by the repressors are considered as for other explanatory variables that are not considered in this study.

Table 3: Coefficient of Multiple Regression Analysis

Characteristics	Coefficients	Standard Error	P-value
Constant	2.797	0.036	0.000
Average Study Time	0.645	0.020	0.000
Time Spend on Facebook	-0.314	0.001	0.047
Time Spend on Youtube	-0.043	0.001	0.050
Time Spend on WhatsApp	-0.014	0.002	0.083

The result in the above table, the multiple regressions equation can be defined as,

$$\hat{y} = 2.797 + 0.645x_1 - 0.314x_2 - 0.043x_3 - 0.014x_4$$

According to the fitted model, if the influences of the independent variables are not considered then the average CGPA is 2.797. The equation also shows that, there is positive influence of average study time(X_1); negative influence of time spent on Facebook (X_2), time spent on YouTube (X_3) and time spent on WhatsApp (X_4). That indicates that the average academic results increase for spending more time on study and academic results decrease for spending more time on social media.

F-test

Table 4: ANOVA

	Sum of Squares	df	F	P-Value
Regression	2.53	5	6.525	0.000
Residual	11.94	154	0.078	
Total	14.47	159		

1. Dependent Variable: Academic results
2. Predictors: Average Study Time (hours/day), Time spend on Facebook, Time spend on YouTube, Time spend on WhatsApp

The Table 4 shows that the p-value is 0.00(<0.05). Therefore, there is sufficient evident to reject the null hypothesis at 5% level of significant. It means that the average study time, time

spends on Facebook, YouTube and WhatsApp significantly affect the student's academic performance.

t-test
The t-test is used to determine whatever there is any partial effect of each independent variables to the dependent variable.

Table 5: Regression Coefficients

	Test Statistics	P-value
Constant	22.682	0.000
Average Study Time	0.470	0.000
Time spend on Facebook	-0.019	0.047
Time spend on YouTube	1.254	0.050
Time spend on WhatsApp	0.263	0.083

Dependent Variable: Academic results

Table 5 shows that, the average study time; time spend on Facebook and YouTube have partially significant effects on student's academic performance. But the partial effect of time spend on WhatsApp is insignificant.

Conclusion and Recommendation
Conclusion
The primary objective of the research undertaken was to throw light on how effectively the usage of social networking sites has affected the students by evaluating both the positive and negative aspects. Social media serve to students' purpose of connecting them with people all across the globe by not hampering their working hours and schedules. Despite the several benefits that come with the participation of the students on social media networks, its misuse could badly affect the academic performance. The findings of this study showed that, there is positive consequence of average study time and negative impact of time spending on various social networking websites on students' academic performance. It indicates that, the educational performance increases by giving more time on study and decreases for spending more time on social networking websites. Above all, in the era of globalization and technology, a single day can't be thought without using social networking sites, but should be used in a limited and positive way without getting addicted.

Recommendation
Based on the findings and conclusions of this study, the following recommendations are made,
- The teachers may encourage the students to minimize time wastage on chatting and other irrelevant engagements which are not of major importance by counseling about the negative influence of social media.
- Bangladesh Telecommunication Regulatory Commission (BTRC) and parents should monitor activities of the students on social media in order to protect them pornographic and other unwarranted materials.
- The use of LinkedIn should be increased because the site gives the facilities of linking employers with potential employees, provides a place for individuals to post resumes and offers referrals and for employers to post current job openings.

Reference
1. Ahmad A. Rising of Social Network Websites in India Overview. International Journal of Computer Science and Network Security. 2011; 11:155-158.
2. Choney S. Facebook Use Can Lower Grades by 20 Percent, Study Says, 2010. http://www.msnbc.com/id/39038581/ns.technology_and_science-tech_and_gadgets/.Retrieved 14/08/13
3. Davis CHF, Canche MSG, Deil-Amen R, Rios-Aguilar C. Social Media in Higher Education: A Literature Review and Research Directions. Arizona: The Center for the Study of Higher Education at the University of Arizona and Claremont Graduate University, 2012.
4. Heeter LS, Rainie L, Purcell K. Social networking sites and our lives, 2011. http://pewinternet.org/Reports/2011/Technology-and-social-networks.aspx, pp 3-61.
5. Jacobsen WC, Forste R. The Wired Generation: Academic and Social, 2011.
6. Junco, Heibergert, Loken. The Impact Of Social Media And Social Networks On Education And Students Of Pakistan. IJCSI International Journal of Computer Science, 2011; 9:407-410.
7. Kist W. I gave up MySpace for lent: New teachers and social networking sites. Journal of Adolescent & Adult Literacy. 2008; 52(3):245.247
8. Lusk B. Digital Natives and Social Media Behaviors: An Overview. The Prevention Research. 2010; 17:3-6.
9. Martin JL, Yeung K. Persistence of close personal ties over a 12-year period. Social Networks. 2006; 28:331-362.
10. Meh Mood S, Taswir T. the effect of social networking site on the Academic Performance on students in college of applies sciences, Nizwa, Oman. International Journal of Arts and Commence. 2013; 2(1):111-123
11. Shambare R, Rugimbana R, Sithole N. Social networking habits among students. African Journal of Business Management. 2012; 6(2):578-786.