

The impact of social media on university students' academic performance

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Abstract

The purpose of this study was to examine the impact of social media on university students' academic performance. Self-administered questionnaires were distributed to 200 randomly selected students of the University of Cape Coast, Ghana and MINITAB software was used for analysis. The descriptive statistics were used to analyse the demographic data and educational information while a multiple regression model was generated to show the impact of social media on students' academic performance. Research findings using Two-sample t-test showed the following: the average time spent on social media by both males and females was the same and the average time spent studying by both males and females was the same. Pearson's product moment correlation was used to show that age had no influence on the Grade Point Average (GPA) of a student. The study also found that a large number of the respondents had less study time due to the heavy participation in social media activities thus experiencing poor academic performance. The study also found out that age is not a factor in determining the GPA of a student. Also, the analysis emphasized the fact that in this modern era, it is not appropriate to limit the use of social media to the students. Therefore, students should be educated on the influence of social media on their academic performance.

Keywords: Social media, Study Time, Grade Point Average (GPA).

1. Introduction

In recent worldwide network of enormous transmission, the use of the internet has a breath-taking effect on social interaction among individuals. The discovery of internet has enabled social media to acquire broader usability and is also becoming the most widely used communication tool among students, especially at the higher level of education. Social media is described as a form of electronic communication through which people create online communication to share information, ideas, personal messages and many others. The use of social media is prevailing in higher educational systems as instructors use technology to ameliorate their delivery to promote learning among students. Social media also promotes communication among stakeholders within the educational environment and assist internet learning (Choney, 2010). Additionally, social media is an effective tool in conducting research and sharing personal academic interests and can be used to create groups meant for academic purposes and improve e-textbook functions by linking students with collective ideas for the purposes of working together (Chanche et al., 2012). On the academic front, many researches have been carried out to discover the influence of the use of social media on the academic performance of students.

In an educational domain, the use of social media motivates students to take part in detailed and in-depth studies via communication. Tuckman (1975) refers to performance as a person's outward proof of understanding, concepts, skills, ideas, and knowledge. He suggested that grades evidently describe the student's performance. Therefore, students' academic

performance must be carefully taken care of and controlled keeping in mind all the factors that can positively or adversely affect their performance academically. Kobal and Musek (2001) refer to academic performance as a student's knowledge, representing the degree of his or her adaptation to schoolwork and the educational system expressed in numbers.

Even though social media has countless positive aspects, there are many disadvantages that come with it. The use of social media among students has reached high levels and has affected their study time, poor grammar and wrong spellings when socializing on social media as well as diverting their attention from their studies (Ndaku, 2013). Thus, the need to conduct the research on the impact of social media on students' academic performance. The research questions guiding the study are specified as follows:

- What is the impact of social media (Facebook, WhatsApp, Twitter, Instagram, LinkedIn and others) on the students' academic performance?
- What is the relationship between age and academic performance?
- What is the relationship between gender and academic performance?
- Does gender have any relationship with the use of social media?

2. Literature review

Social media platforms are mainly used by students for socialization rather than academic purposes (Oye, Adam & Zairah 2012). In addition, Oye, Adam and Zairah (2012) opined that majority of students feel that social media platforms have positive impact on academic growth. Nevertheless, many studies suggest merits in using social media for the purpose of learning. Quansah, Dwamena, Kwabla, and Kanyir (2016) did a study on students' involvement in the use of social media and its significance on the academic performance of 110 nursing training college students in Ghana. The results specified that WhatsApp usage positively influences academic performance. For example, Junco, Heiberger and Loken (2011) established that the use of Twitter for academic and co-curricular discussions have a positive effect on grades for college students. This is due to the fact that an extended engagement between stakeholders by the use of Twitter outside traditional classroom activities. Lambic (2016) did a study with 139 students in Sombor (Serbia) to determine whether there is a correlation between the rate at which Facebook is used as a learning aid and the academic performance of students. The results established a positive relationship between the rate of Facebook usage for educational purposes and students' academic performance. Gregory, Gregory and Eddy (2014) asserted that creating Facebook group precisely for instruction and discussion outside the classroom for mathematics course content can considerably increase student commitment, fulfilment and performance in a calculus course. In the academic setting, social media can be used to promote students engagement and facilitate better student learning (Kabilan, Ahmad & Abidin, 2010).

With regards to the use of social media, Oye, Adam and Zairah (2012) in their study with Malaysian students using social networking site and its influence on their academic performance showed that social networking sites usage for only social and non-academic needs have an adverse effect on academic performance. A research by Lau (2017) using students in Hong Kong examined the use of social media and social multitasking and their effects on academic performance. He asserted that the use of social media for academic purposes was not a significant predictor of academic performance. Whereas the use of social media for non-academic purposes adversely predicts academic performance. Karpinski

(2009) stated that social media has a negative association with students' academic performance which is much greater than the advantages derived through the use of social media platforms. Around the world, people have been addicted to the internet which has given rise to more students using social media more often than before. Nalwa and Anand (2003) advised and recommended that those who are addicted users love to use the internet to set back their personal and professional responsibilities in which the final outcome is poor academic performance. It was highlighted in the finding of Karpinski (2009) that social media platforms (Facebook, WhatsApp etc.) users usually devote lesser time to their studies as compared to nonusers and subsequently have lower GPAs. It was also mentioned by Karpinski and Duberstein (2009), that among the numerous distractions of the current generation, social media platform (such Facebook, WhatsApp etc.) remains a major distraction.

In light of the existing research, there is cause to believe that social media usage and academic achievement may be related.

3. Methodology

Well-structured questionnaires were used to elicit information from 200 students from University of Cape Coast using simple random sampling technique. Descriptive statistics were used to analyse the demographic data and educational information and multiple regression analysis was used to show the impact of social media on students' academic performance. Two Sample T-test was used to determine which group (males or females) spent more time using social media platforms and which group spent more time studying. The Important variables considered were Average Study Time (Hours per day), Social media platform mostly used, Average time spent on the social media platforms (Facebook, WhatsApp, Twitter etc.) in a day. MINITAB software was used for the analysis.

4. Results

4.1 Descriptive Statistics

In order to assess the impact of social media on students' academic performance, descriptive statistics were used. A sample of 200 respondents comprising 92 males and 108 females was taken. From Table 1, the median age of the students is 22 years. This means that half of the students have their ages below 22 years and half of them have their ages above 22 years. This value is not far from the mean age of 21.975 years. The difference between the mean age and the median age may be as a result of extreme values. Hence it is expected that the age of every university student will be around 22 years. Similarly, it is expected of every university student to study for 5.77 hours a day. On the average, every students spends 6 hours on social media platforms and the expected GPA of every student is 3.26. The mean GPA is very close to the median GPA of 3.23 which shows that 50% of the students have their GPAs below 3.23 and 50% of them have their GPAs above 3.23

Table 1: Descriptive Statistics

		Age	Average study time	Average time spent on social media	GPA
N	Valid	200	200	200	200
	Missing	0	0	0	0
Mean		21.975	5.770	6.070	3.2621
SE Mean		0.130	0.154	0.148	0.0244
Std. Deviation		1.844	2.177	2.092	0.3451
Variance		3.400	4.739	4.376	0.1191
Minimum		18.000	2.000	1.000	2.5200
Median		22.000	6.000	6.000	3.2300
Maximum		26.000	10.000	10.000	3.950
Range		8.000	8.000	9.000	1.4300

From figures 1, 2, 3 and 4, each of the variables is approximately normal. They also show the presence of no outliers. From figures 5, 6 and 7, the scatter plots assess linearity between the predictor variables and the response variables. Thus the assumptions of normality, linearity and absence of outliers are not violated.

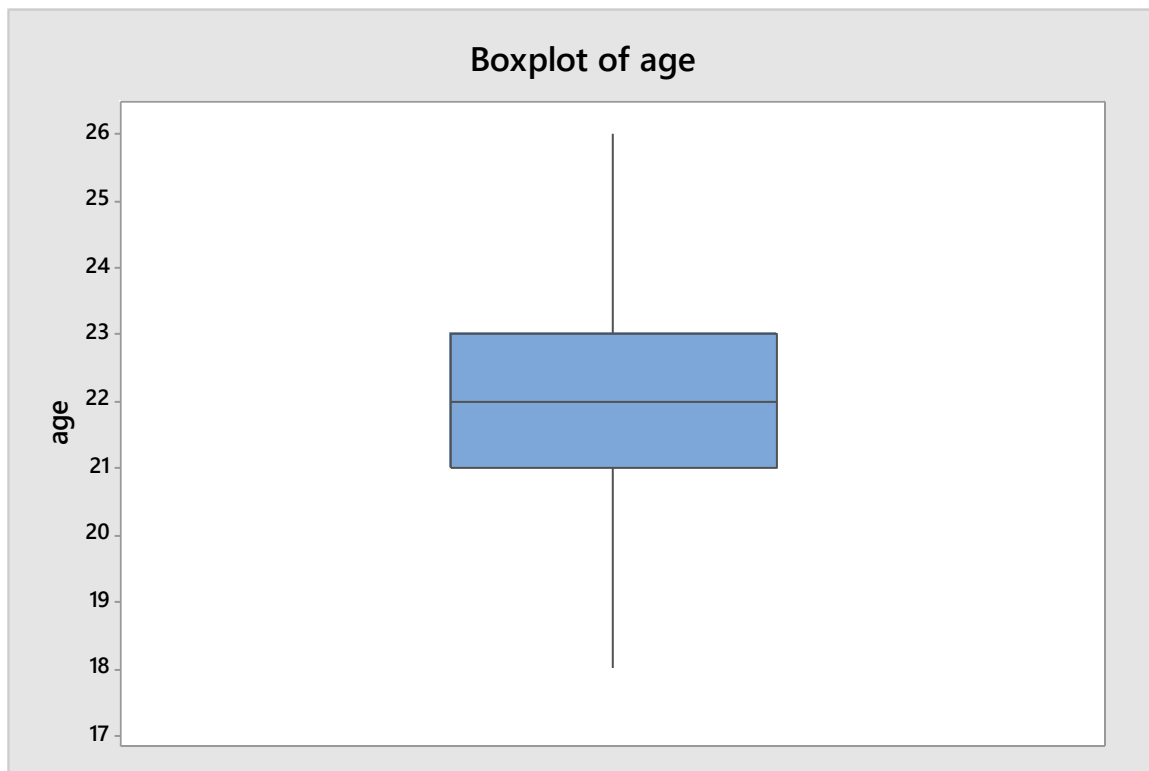


Figure 1

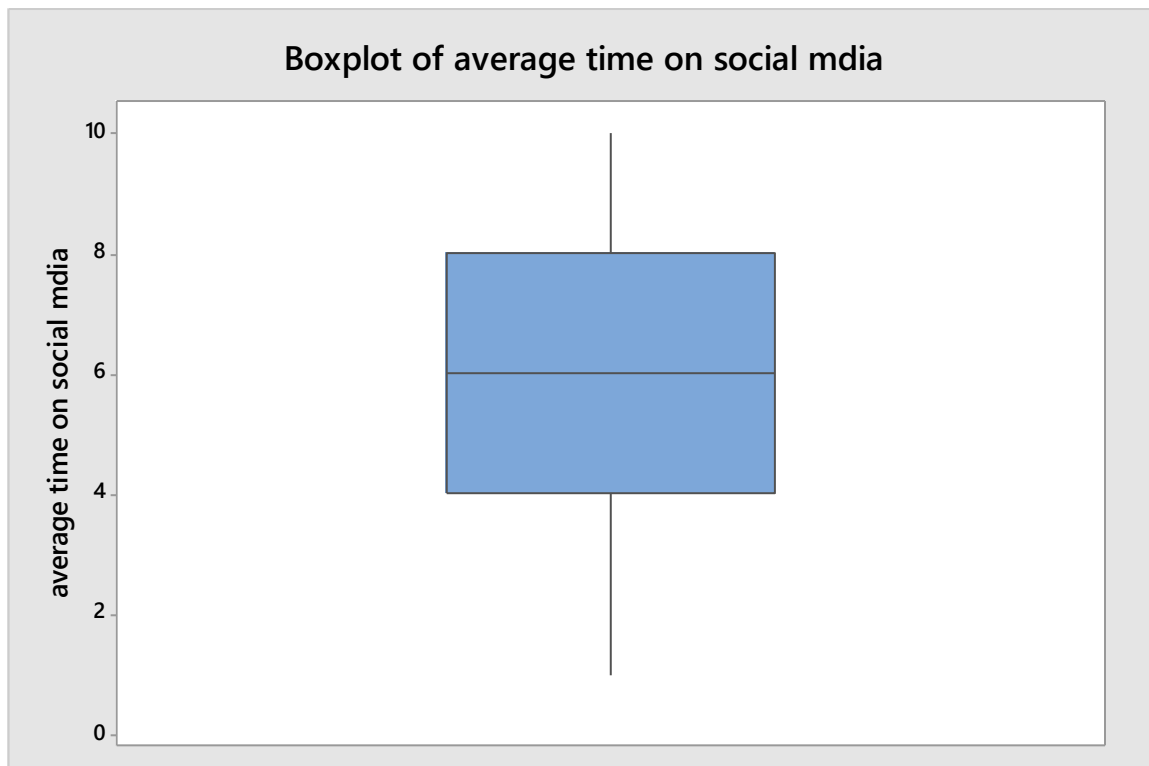


Figure 2

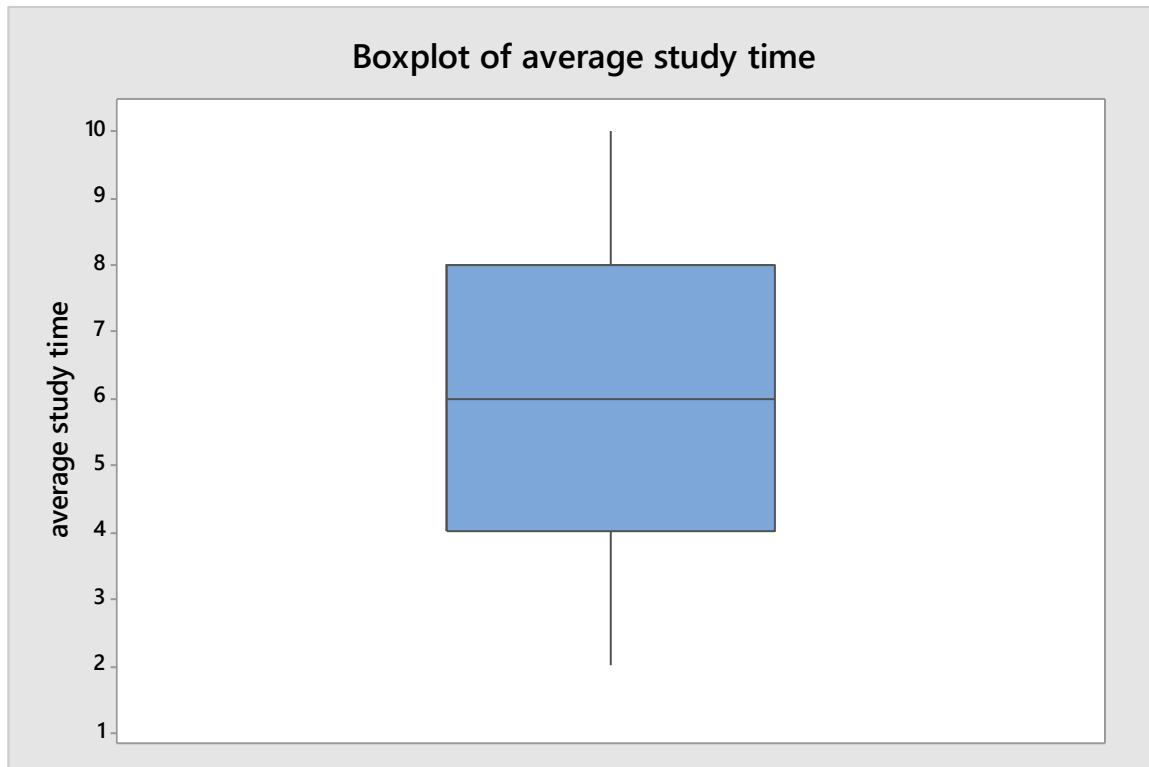


Figure 3

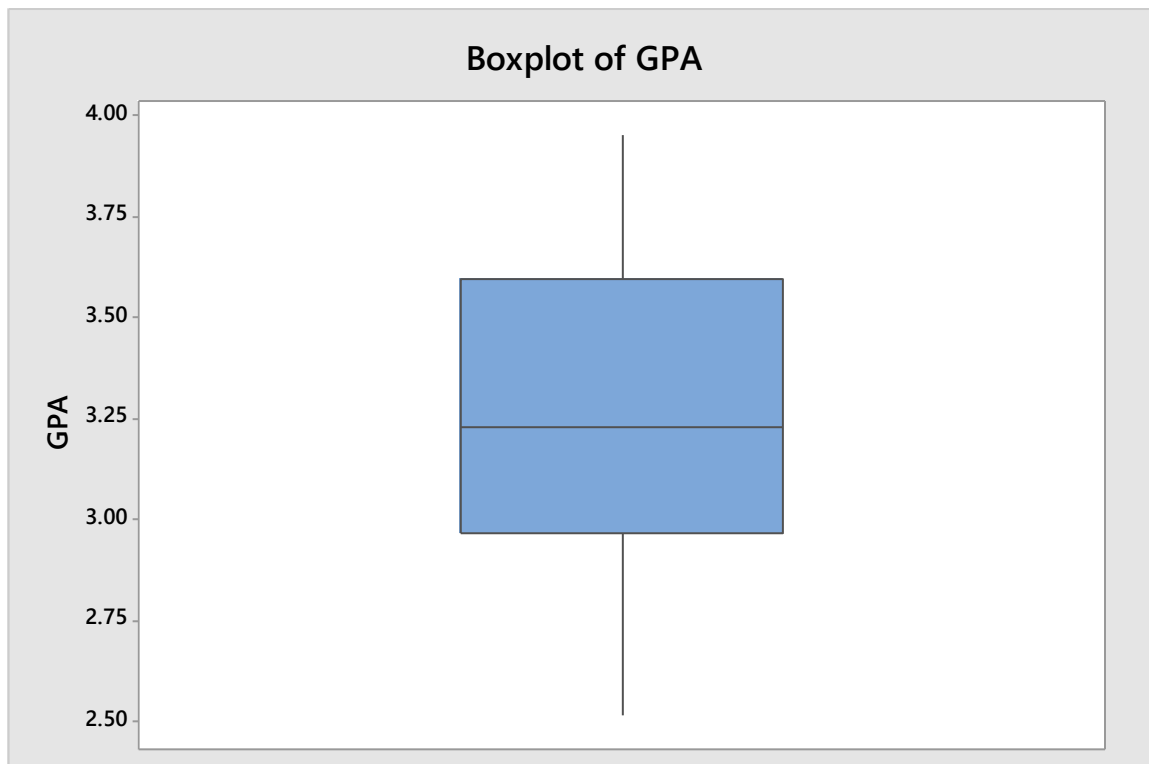


Figure 4

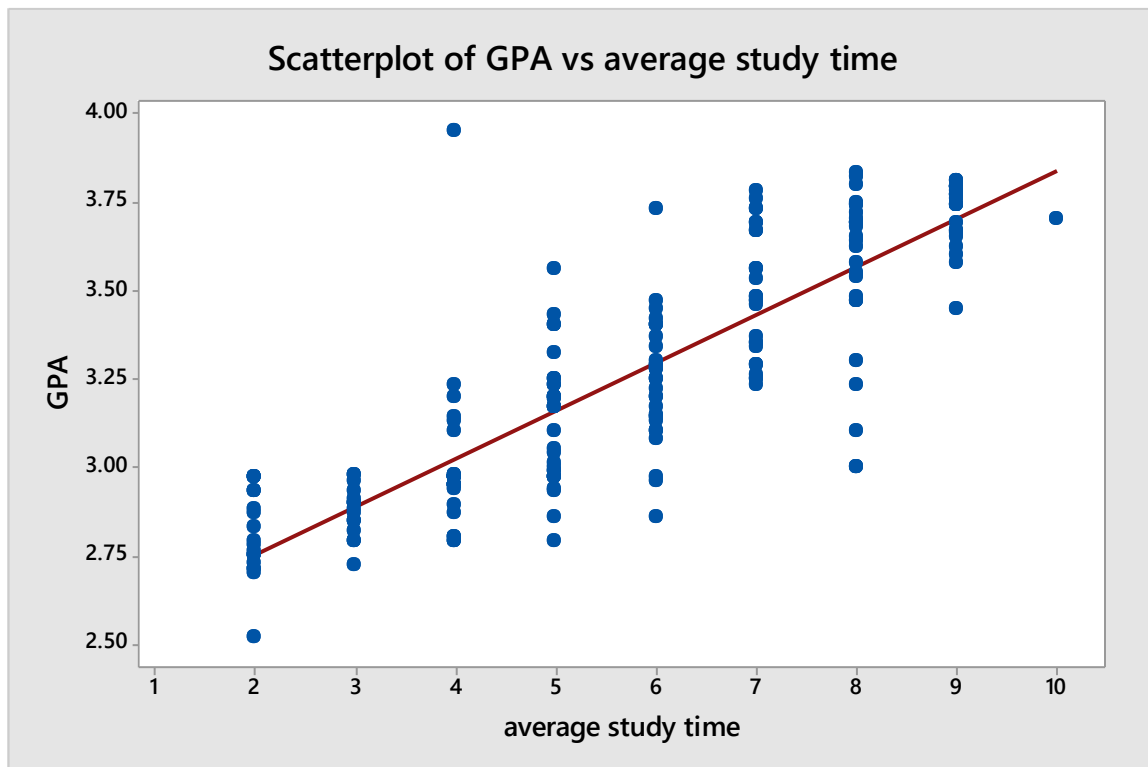


Figure 5

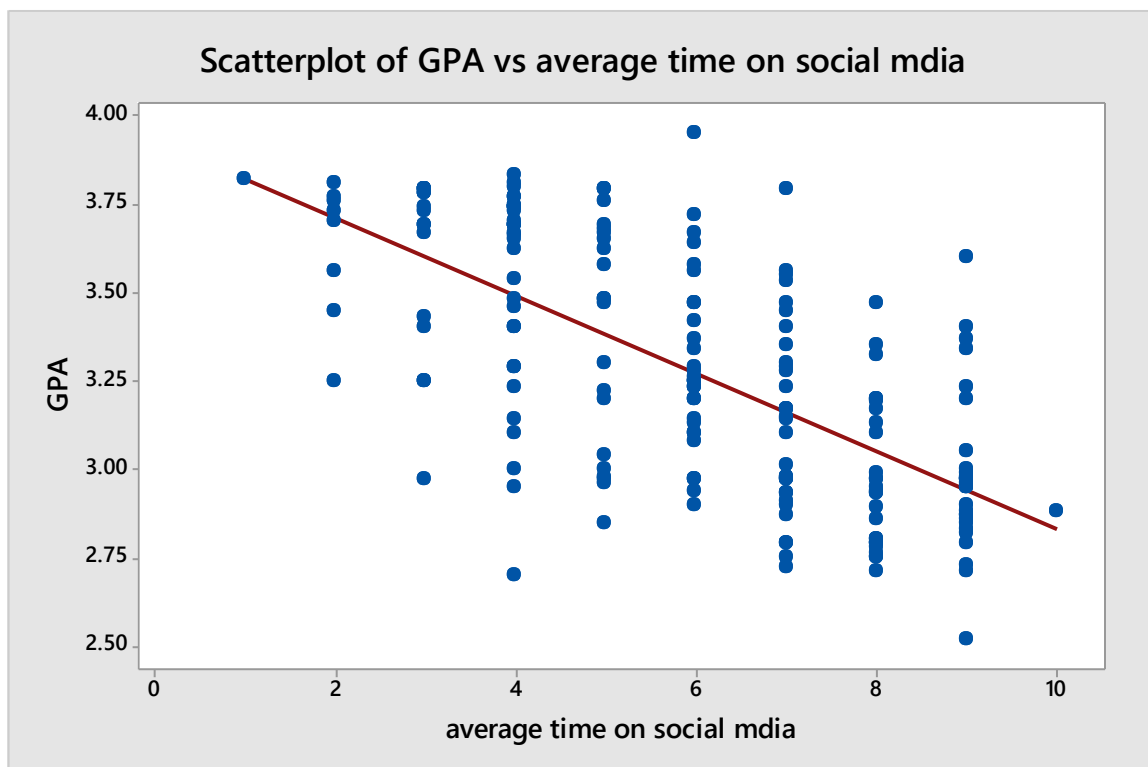


Figure 6

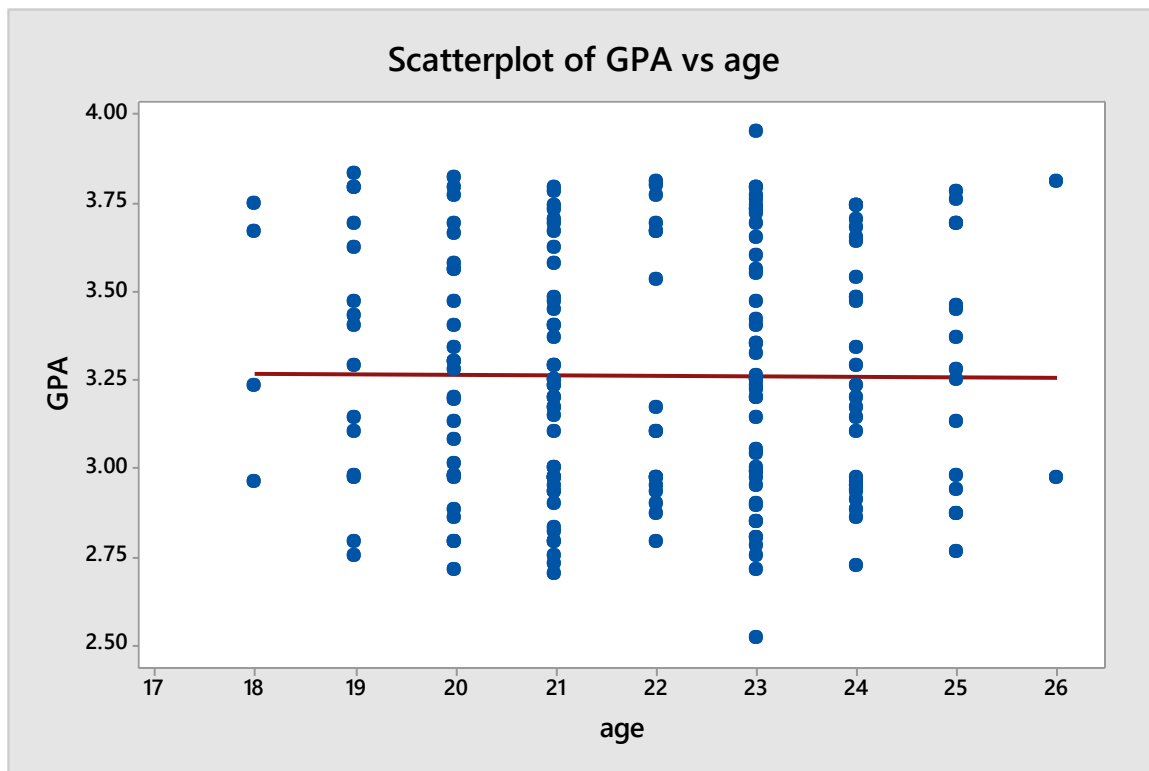


Figure 7

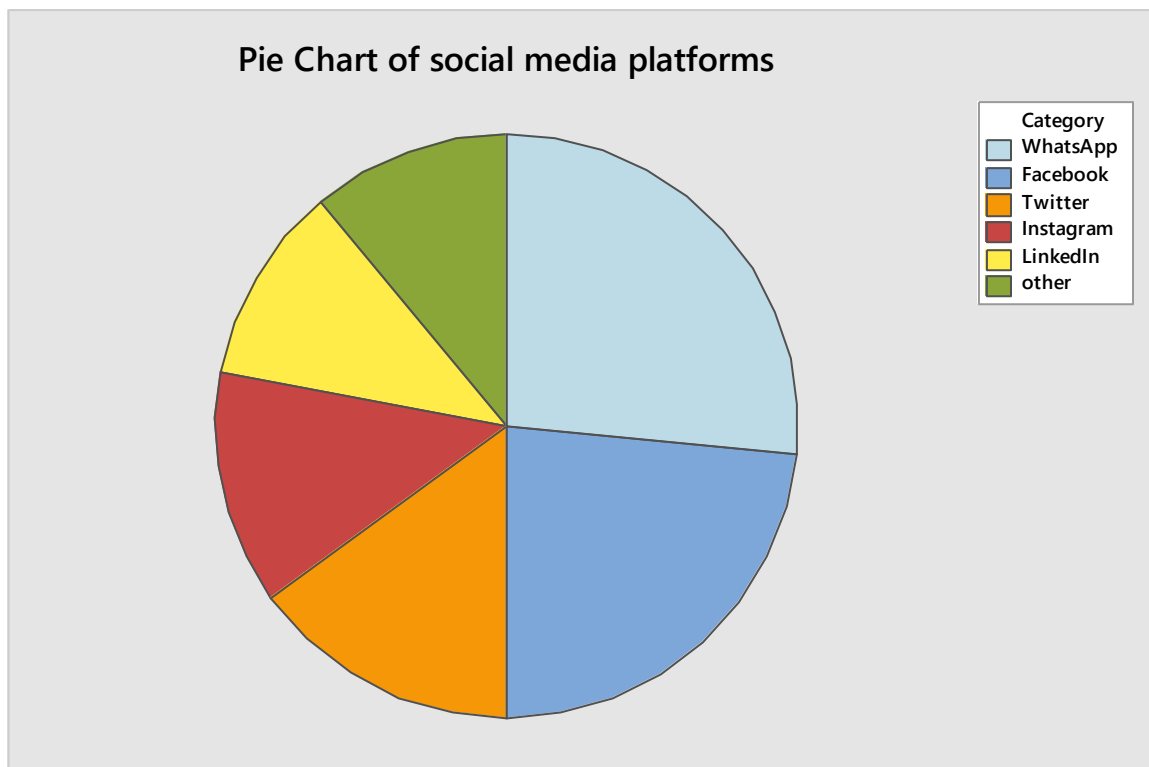


Figure 8: Students' frequently used social media platform

4.2 Students' frequently used social media platform

The respondents were asked about their frequently used social media platform. The findings of this analysis are described in Figure 8 above. From Figure 8, WhatsApp is the most frequently used social media platform representing 26.5% of the respondents followed by Facebook (23.5%), Twitter (15.0%), Instagram (13.0%), LinkedIn (11.0%) and other platforms (11.0%).

4.3 T-Test

• Two-Sample T-Test and CI: GPA, Gender

Gender	N	Mean	St Dev.	SE Mean
F	108	3.286	0.349	0.034
M	92	3.234	0.341	0.036

Difference = μ (F) - μ (M)

Estimate for difference: 0.0511

95% CI for difference: (-0.0453, 0.1475)

T-Test of difference = 0 (vs \neq): T-Value = 1.05 P-Value = 0.297 DF = 194

Hypothesis

H_0 : There is no significant difference between the mean GPA of male and female students.

H_1 : There is a significant difference between the mean GPA of male and female students.

The mean GPA of the female students is 3.286 with a Standard deviation of 0.349. The males have a lower mean GPA of 3.234 and a standard deviation of 0.341. Thus from the sample data, the female students performed better than the males. Comparing their standard deviations, the males were more consistent with their GPAs around their average GPA than the females. Since the P-value of 0.297 is greater than the significance value of 0.05, we fail to reject H_0 and conclude that there is no significant difference between the mean GPA of male and female students. This is also supported by the confidence interval since it includes zero. Hence, we conclude that the GPAs of the males and females are not significantly different.

• Two-Sample T-test and CI: Average study time, Gender

Gender	N	Mean	St Dev.	SE Mean
F	108	5.95	2.21	0.21
M	92	5.55	2.12	0.22

Difference = μ (F) - μ (M)

Estimate for difference: 0.399

95% CI for difference: (-0.207, 1.006)

T-Test of difference = 0 (vs \neq): T-Value = 1.30 P-Value = 0.195 DF = 195

Hypothesis

H_0 : There is no significant difference between the average study time of male and female students.

H_1 : There is a significant difference between the average study time of male and female students.

The average study time of the female students is 5.95 hours with a Standard deviation of 2.21. The males have a lower average study time of 5.55 hours and a standard deviation of 2.12. Thus, from the sample data, the females study more than the males. Comparing their standard deviations, the males were more consistent with their study times around their mean than the females. Since the P-value of 0.195 is greater than the significance value of 0.05, we fail to reject H_0 and conclude that there is no significant difference between the average study time of male and female students. This is also supported by the confidence interval since it includes zero. Hence, we can infer that the study time of the males and females are not significantly different.

• Two-Sample T-Test and CI: Average time on social media, Gender

Gender	N	Mean	St Dev.	SE Mean
F	108	6.29	2.09	0.20
M	92	5.82	2.08	0.22

Difference = μ (F) - μ (M)

Estimate for difference: 0.472

95% CI for difference: (-0.111, 1.055)

T-Test of difference = 0 (vs \neq): T-Value = 1.60 P-Value = 0.112 DF = 193

Hypothesis

H_0 : There is no significant difference between the average time on social media of male and female students.

H_1 : There is a significant difference between the average time on social media of male and female students.

The average time on social media of females is 6.29 hours with a Standard deviation of 2.09. The males have a lower average time on social media of 5.82 hours and a standard deviation of 2.08. Thus, from the sample data, the females spend more time on social media than the males. Comparing their standard deviations, the males were more consistent with their time on social media study times around their mean than the females. Since the P-value of 0.112 is greater than the significant value of 0.05, we fail to reject H_0 and conclude that there is no significant difference between the average study time of both males and females. This is also supported by the confidence interval since it includes zero. Hence, we can infer that the average time on social media of the males and females are not significantly different.

4.4 Correlation

- *Correction: GPA, Age*

Pearson correlation of GPA and Age = -0.007
P-Value = 0.924

Hypothesis

H_0 : There is no correlation between GPA and Age.

H_1 : There is correlation between GPA and Age.

From the correlation output, Correlation coefficient, $r = -0.007$. This means that there is a very weak negative correlation between GPA and Age. In other words, the correlation between GPA and Age is negligible since the correlation coefficient is approximately zero. Since the p-value of 0.924 is greater than 0.05, we fail to reject H_0 and we conclude that there is no correlation between GPA and Age. Thus, age is not a factor in determining the GPA of a student. This result is contrary to the findings of Momanyi, Too and Simiyu (2015), who found that age had a significant effect on students' academic performance.

- *Correlation: GPA, Average study time*

Pearson correlation of GPA and Average study time = 0.858
P-Value = 0.000

Hypothesis

H_0 : There is no correlation between GPA and Average study time.

H_1 : There is correlation between GPA and Average study time.

Correlation coefficient, $r = 0.858$. This means there is a strong positive correlation between GPA and average study time. Thus GPA increases with increasing study time. Since the p-

value of 0.000 is less than the significance value of 0.05, we reject H_0 and we conclude that there is correlation between GPA and Average study time. Thus, students with high GPAs study for long hours.

• *Correlation: GPA, Average time on social media*

Pearson correlation of GPA and Average time on social media = -0.669

P-Value = 0.000

Hypothesis

H_0 : There is no correlation between GPA and Average time on social media.

H_1 : There is correlation between GPA and Average time on social media.

From the correlation output, Correlation coefficient, $r = -0.669$. This means that there is a moderate negative correlation between GPA and average time on social media. In other words, the more time a student spends on social media, the lower his or her GPA. This is supported by Paul, Baker and Cochran (2012). In one of their articles, it was proved that social media platforms affects students' academic performance. The researchers further said that as time spent on social platforms increases, the academic performance of students is seen to deteriorate. Also since the p-value of 0.000 is lesser than the significance value of 0.05, we reject H_0 and we conclude that there is correlation between GPA and average time on social media. Thus, time spent on social media is a key factor in determining the GPA of students.

4.5 Multiple Regression Analysis

Multicollinearity check is very important to fit multiple regression models. In order to fit a multiple linear regression model, there should be no multicollinearity (linear relationship between two independent variables) in the sense that the presence of one independent variable will not affect the other independent variable in the model.

Table 2: Test of Multicollinearity

Variable	Co-Linearity Statistics	
	Tolerance	VIF
Average time on social media	0.68	1.48
Average study time	0.68	1.48
Age	1.00	1.00

Dependent Variable: GPA

Table 2 shows that the tolerance of average time on social media is 0.68, that of average study time is 0.68 and that of age is 1.00. The tolerance value of each variable is greater than 0.2. The VIF values of average time on social media, average study time and age are 1.48, 1.48 and 1.00 respectively. This means that the VIF value of each variable is far less than 10. Since all the tolerance values are greater than 0.2 and VIF values are less than 10, it implies that there is no multicollinearity. Thus, the assumption of no multicollinearity is valid.

• *Regression equation*

Response Variable: GPA

Predictor Variable: Average time on social media, Average study time, Age

Table 3: Coefficient of Multiple Regression Analysis

Characteristics	Coefficients	Standard Error	P value
Constant	2.91700	0.15700	0.000
Average time on social media	-0.04421	0.00666	0.000
Average study time	0.11185	0.00639	0.000
Age	-0.00146	0.00621	0.814

From the results in the above table, the multiple regression equation can be defined as

$$GPA = 2.917 - 0.04421 \text{ Average time on social media} + 0.11185 \text{ Average study time} - 0.00146 \text{ Age}$$

The regression coefficients in the regression equation talk about the change in the value of the dependent variable corresponding to a unit change in an independent variable.

According to the fitted model, if the influence of the independent variables are not considered then the GPA of a student is 2.917. The equation shows that there is positive influence of average study time on GPA. Thus for an extra hour of studies, the GPA of a student increases by 0.11185. There is a negative influence of average time on social media on GPA. This means that the GPA of a student decreases by 0.04421 for an extra hour spent on social media.

From table 3, all the predictor variables except age have p-values less than the significance value of 0.05. This means that each variable contributes significantly to the prediction of GPA. Age does not contribute significantly to the prediction of GPA since its p-value is greater than 0.05. This is supported by the correlation analysis between age and GPA.

• *Model Summary*

Table 4: Model Summary

Model	R	R	Adjusted R	Std. Error of the
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		Square	Square	Estimate
1	0.8860	0.7850	0.7817	0.1613

a. Predictors: (Constant), Average time on social media, Average study time, Age

From the output, $R^2=78.50\%$, R^2 (Adjusted) =78.17%. This means that 78.50% of the variability in GPA is being explained by the model. The observed R^2 suggests that the multiple regression line fit the data reasonably well. The 21.5% of the variation not explained is as a result of extraneous variables or factors. These factors are not considered in this study. The difference in R^2 and Adjusted R^2 (78.50-78.17)% = 0.33% indicates that our model will lose about 0.33% of the 78.50% variation explained in GPA if we are to generalize our model beyond the sample to the population of students.

• Analysis of Variance (ANOVA)

Table 5: ANOVA^a

Model	Sum of Squares	Df	Sum of Squares	Mean Square	F	P
1	Regression	3	18.6076	6.2025	238.52	0.000
	Residual	196	5.0969	0.0260		
	Total	199	23.7045			

a. Dependent Variable: GPA

b. Predictors: (Constant), Average time on social media, Average study time, Age

ANOVA Hypothesis

H_0 : The model is not significant

H_1 : The model is significant

The F statistic which is the ratio of the mean square regression to the residual mean square indicates the improvement due to our model and the difference between our model and our data. In other words, it is the measure of how much the model has improved the prediction of GPA compared to the level of accuracy of the model. The F statistic of 238.52 with its associated significance value of 0.000 tells us that our regression model overall predicts GPA significantly well.

7. Discussion

The intention of this study was to determine the impact of social media on university students' academic performance as measured by self-reported GPA. The results showed that average time spent using social media was a negative predictor of GPA. What this tells us is

that average time spent using social media comes at the cost of activities that could improve a university student's academic performance. In other words, social media use obstructs academic performance in a substantial way. The negative linear relationship indicates that the more time a student spends on social media, the lower his or her GPA. This can take shape in diversity of ways. For instance, because social media can also be accessed on mobile phones, they can be used at anytime, anywhere including the lecture halls and theatres. While this research did not examine the context of mobile media use, several studies have showed that social media use occur in the classrooms and lecture halls far more often than expected (e.g. Sanchez-Martinez & Otero, 2009; Yen et al., 2009; Jacobsen & Forste, 2011; Rosen et al, 2013). It is then not surprising that academic performance is hindered because learning tasks in the classroom are not given full attention.

8. Conclusion

Since university students always take part in numerous social media activities, there are rising worries about its possible adverse effects on their academic performance. These potential negative impacts include the indiscipline nature of students to the distractive functions of social media (Tang, Yau, Wong & Wong, 2015). Social media multitasking while studying also has an effect on academic results, study behaviour, approaches and perceived academic learning (Schuur, Baumgartner, Sumter & Valkenburg, 2015). Despite the several benefits that come with the participation of students on social media networks, its misuse badly affects their academic performance. The findings of this study showed that, there is positive impact of average study time and negative impact of time spent on social media on university students' academic performance. The study indicates that educational performance increases by giving more time to studies and decreases by spending more time on social media platforms. The study establishes that age is not a factor in determining the academic performance of a student. In the era of globalization and technology, a single day can't be thought of without using social media but it should be used in a limited and positive way without getting addicted. The results of this study suggested that lecturers should come up with a template on how their students can maximize the benefits of social media. And lecturers may encourage the students to minimize time wastage on chatting and other irrelevant engagements which are not of major importance by counselling them about the negative influence of social media on their academic performance.

9. Limitations

Students who lack time management can easily fall prey to the negative impact which social media platforms present to its users. The independent variable average time spent on social media was measured by asking participants how much time they spent using social media on a typical day. Even though this question measures time usage accurately, uncertainty remains as to whether users are active all the time they are logged on to a specific social media platform. Future studies need to account for the context of social media use not just the amount of time spent using them. Finally, investigating only one university students' social media usage might not completely explain the impact on university students' academic performance in general.

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