

Determinant the Impact of Social Media on Academic Performance Using Multiple Linear Regression

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Abstract

Nowadays, social media is an essential part of life, providing vast information resources, but addiction and excessive time can lead to distractions and decreased motivation. Therefore, this study aims to investigate whether a time spends, exposure, and usage of social media contribute significantly on academic performance by using Cumulative Grade Point Average (CGPA). A survey was carried out among students of UiTM Kota Bharu. A questionnaire was distributed to 288 of respondents through Google Form and sent via WhatsApp. An Independent T-Test was conducted to test the mean difference between male and female on CGPA. The result shows there was a mean difference on CGPA between male and female students. Then, based on the Multiple Linear Regression Analysis, the result showed that the time spends, exposure, and usage of social media were significantly associated with CGPA. Hopefully, this research will benefit students, lectures, and management as it will give an insight on the impacts of social media on academic performance so that they can make necessary changes to study outcomes.

Keywords: Academic Performance, Time Spend on Social Media, Exposure of Social Media, Usage of Social Media, Multiple Linear Regression, Social Media, Cgpa.

Introduction

Social media is recognized as a modern innovation that has been introduced to improve collaboration and communication on a large scale. Since the introduction of social media sites in the 1990s, some believe that students' academic performance has been neglected and

challenged. The educational system in Nigeria is confronted with numerous challenges, which have undoubtedly resulted in a rapid decline in educational quality. There is a deviation, distraction and divided attention between social networking activities and their academic work. It has been observed that students devote more time to social media than to their studies (Peter, 2015).

Based on research Othman et al (2015), social media's recent explosion has had a significant impact on societal lifestyles and culture. It has both positive and negative effects on society. It transformed the way people communicate, socialize, learn, and conduct business. People enjoy using social media because it is a friendly, simple, and effective medium. In Malaysia, social media is gaining popularity and is being widely used by students as a means of communication and group cohesion. They are more dependent on using social media as part of their daily routines, as a result of the availability of smartphones and other gadgets. However, as a result of this excessive use, social media has started to significantly affect students' lives.

According to Othman and Alias (2017), 41% of university students in Malaysia agreed that their preferred educational experience is an always-on learning environment that enables them to access learning resources anywhere, at any time, and on any device. Additionally, social media has developed into a medium that enables less formal and two-way contact between students, potential students, educators, and institutions, according to a global study. In order to share interesting materials connected to the subjects that the students are studying in class, educators are using these tools as professional and learning communities. Significantly, by using these technologies it will encourage flexible learning virtually everywhere across places such as in the classroom, off campus, and within the workplace.

The use of social media among the young people of the world is expanding quickly. Social media's global rise will have an impact on students' academic and personal success. Concern over social media's effects on university students' lifestyles and education has grown over the past several decades (Larson, 2015). As a result, numerous studies were done to determine what motivates people to use social media. According to Jagannathan et al (2022), social media has a good effect by encouraging people to seek out and share knowledge. Social media can be used effectively to connect with subject matter experts, seek conceptual clarification from various sources, educate students and encourage them to participate in extracurricular activities, and connect those who are already involved in related activities with large audiences.

Based on Isa et al (2022), the research conducted among university students in Malaysia. The results show that there is an association between students' CGPA scores and the average amount of time they spend on social media. Hence, there is a reciprocal relationship because students with higher CGPA scores use social media less frequently.

Besides that, Al-Rahmi and Othman (2013), stated Facebook users commonly have poor academic performance. Similarly, it is claimed that social media is negatively related to students' academic performance and that it's more significant than its benefits. Furthermore, Lamia et al (2018), pointed out in their study that more than half of the students were ranked

at a moderate level of internet addiction. It shows that students mostly like to stay online 24 hours, which defines students' addictiveness.

In addition, research has shown that excessive time on social media can lead to distractions, decreased motivation, critical thinking skills, and sleep deprivation, all of which have a negative impact on academic performance. All the consequences lead to a lack of educated and visionary people as the country's future leaders. Hence, due to all relevant issues, it is necessary to conduct the study in order to provide an effective strategy to help students strike a balance network social media engagement and academic responsibilities. By exploring the relationship between social media and academic performance (CGPA), we can gain valuable insights into the potential's solutions to the problem.

Related Work

Academic performance or achievement is the outcome of education, the extent to which a student, teacher, or institution has met their educational objectives. Academic performance is commonly measured through examinations or continuous assessment, but there is no general agreement on how it should be tested or which aspects are most important, procedural knowledge such as skills or declarative knowledge such as facts (Peter, 2015).

A study was conducted by Mustaq (2018), about the effects of social media on the undergraduate students' academic performance of nine faculties in Alberoni University. The main goal of this study is to assess the positive and negative effects of social media on the students' academic performances. The data was analyzed using the Statistical Package for Social Science (SPSS) software. According to the findings of this survey, the results of the ANOVA revealed that there are no statistically significant differences regarding the beneficial impact of social media on students' academic performances. This could be because the majority of participants rated their academic achievements as excellent. There were also no respondents with poor academic performance. Because of this, the majority of them thought social media had a positive impact on their academic performance. This study also discovered that the negative effects of social media on students' academic performance are not as significant as their positive effects.

Rahman et al (2015), did a survey with 96 undergraduate students from seven academic institutions were used to select respondents from United International University, North-South University, South-east University, Brac University, East-West University, University of Liberal Arts Bangladesh (ULAB), and American International University (AIUB). Microsoft Excel was used to evaluate the data, which was submitted to descriptive analysis, with a focus on percentage and frequency table counts. The primary goals of this research are to determine whether social networking sites have an impact on university students' academic achievement and to ensure that such an impact is positive. According to the results, when respondents were questioned if social networking sites had an impact on their academic achievement or grades, 34.1 percent responded positively while 20.7 percent responded negatively. Then, with a CGPA between 3.00 and 4.00, 73.2% of respondents had a respectably good academic achievement. Surprisingly, the research revealed that the majority of respondents (40.2 percent) agreed that using social networking sites had no impact at all on their academic performance or grades.

Study Design, Sample and Instrumentation

The research design used in this study is cross-sectional studies to analyze the elements that influence academic performance and how social media contribute to academic performance of the students. Data collection involves self-administered questionnaire. By using stratified sampling method, a total of 288 respondents selected according to gender. The questionnaire has a total of 20 items. Gender, age, program, current semester, and CGPA are the five categories in the first part that pertain to the responder's background information. The remaining parts are three sections which are time spends on social media, exposure to social media, and use of social media. The first part use choice answers and the remaining parts use a Likert-scale ranging from (1) strongly disagree to (5) strongly agree. Table 1 summarizes the number of items and sources of instrumentation used in the study.

Table 1

Source of questionnaire

Section	Variable	Source
A	Gender and academic performance	Peter (2015), Alomari (2019)
E	Time spends on social media	Peter (2015), Chukwu (2022)
C	Exposure to social media	Peter (2015), Grazl (2021)
D	Use of social media	Othman et al. (2017)

Method of Analysis

Descriptive statistics were utilized to explain the demographic profile of the respondents. Multiple Linear Regression (MLR) was applied to examine the relationship between social media and academic performance. Furthermore, an independent t test was performed to explore differences in academic performance according to gender.

Findings

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Demographic of Respondents

Results for gender, age, semester, and course among research participants were reported using descriptive analysis. There are 288 data gathered from the study's sample. Table 2 summarized the frequency analysis.

Table 2
Frequency Analysis

Variable	Description	Frequency	Percentage
Gender	Male	74	25.7
	Female	214	74.3
Age	18-20 years old	2	0.7
	21-23 years old	250	86.8
	24-26 years old	35	12.2
	27 years old and above	1	0.3
Semester	2	32	11.1
	3	50	17.4
	4	110	38.2
	5	69	24.0
	6	27	9.4

Model Adequacy Checking

Model adequacy checks include the assumptions of linearity between independent and dependent variable, normality of residuals and homoscedasticity.

Linearity

The scatter plot of dependent and independent variables is displayed in Figure 1. The relationship between the dependent variable (CGPA) and the independent factors (time spent, exposure, and usage of social media) can be shown to be a straight line on the plot. Therefore, there is a positive linear relationship between the dependent variable and the independent factors.

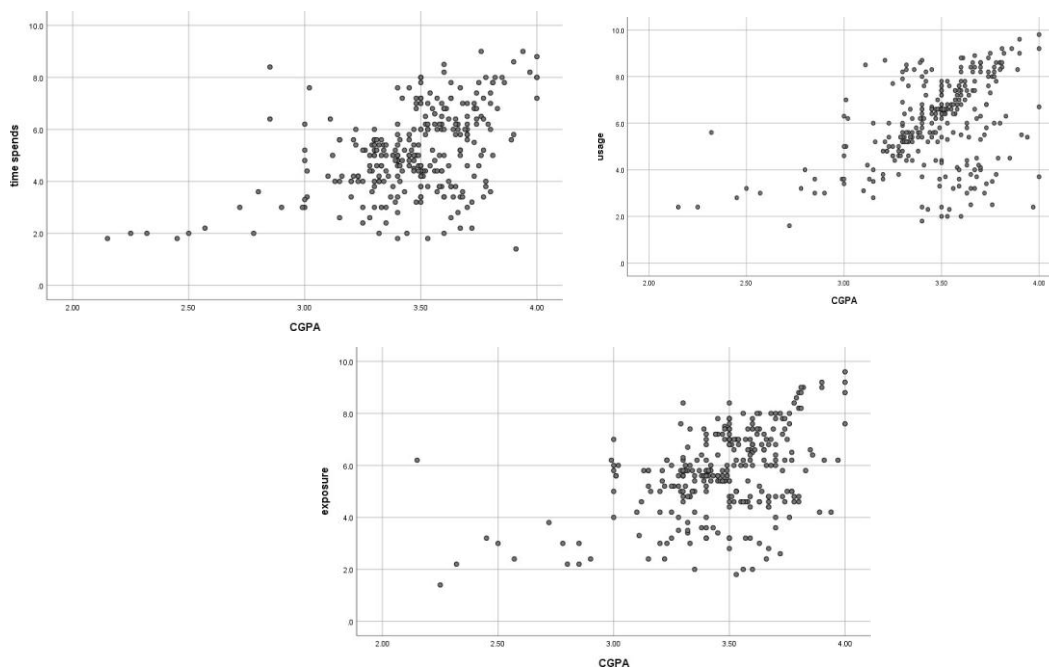


Figure 1: Scatterplot of dependent and independent variables

Normality

Figure 2 displays a normal P-P plot illustrating perception of student performance. It was clear that the perception of students' performance was typically distributed since all the points were roughly close to the straight line.

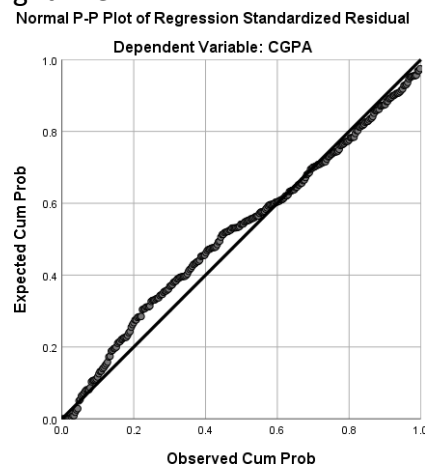


Figure 2: P-Plot of Perception of students' performance

Homoscedasticity

Graph in Figure 3 shows the Residual vs Predicted Value of academic performance by using CGPA. Given that there is no apparent trend in these residuals, it shows that the academic performance of students ranged at a constant rate. Thus, the homoscedasticity assumption of requirement was fulfilled.

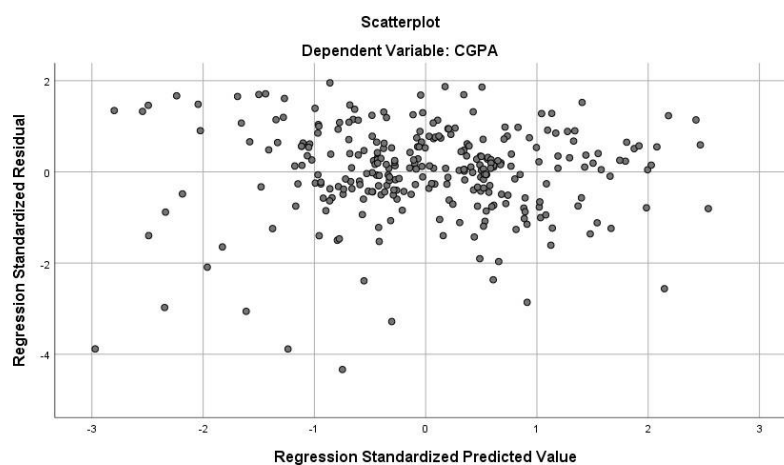


Figure 3: Scatter Plot of Academic performance by CGPA

Significance of Model

In table below, the F statistics give a significant value ($F = 13.410$, $p \text{ value} < 0.05$) means the model have noteworthy regression model. The R squared value of 0.124 suggests that 12.4 percent of the variability in academic performance can be explained by the independent variables—time spent on social media, exposure to social media, and use of social media. However, these factors do not account for a significant portion of the variability in academic performance.

Table 3

Analysis of Variance for MLR test

Model	ANOVA	F	P-value	R Square
1	Regression	13.410	<0.001	0.124

Significant of Independent Variable

Finding of the study presented in Table 4 indicates that time spends on social media, exposure to social media and use of social media were significantly effect's academic performance.

Table 4

Coefficient Variable for MLR test

Variable	β -coefficient	P-value	Conclusion
Time spends on social media	- 0.032	<0.001	Significant
Exposure to social media	0.030	<0.001	Significant
Use of social media	-0.039	0.009	Significant

Independent T- Test

From the table below, it represented the results of the t-test for equality of means between male and female. The P-value obtained was 0.049 which is lower than alpha 0.05. Then, it was supposed that there was a mean difference on academic performance between male and female students.

Table 5

Independent T- test Result

Academic Performance	t- Test for Equality of Means				
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
	1.978	286	0.049	0.07408	0.03745

Conclusion

In conclusion, this study investigated several aspects related to academic performance. It found a mean difference in academic performance between male and female students, although previous research by Peter (2015), suggests no significant gender differences in social media use.

Regarding the impact of social media on academic performance, the study revealed that time spent on social media significantly affects academic outcomes, consistent with Alomari (2019), who found a significant negative correlation between time spent on social media and academic performance. Similarly, exposure to social media was found to significantly impact academic performance, often negatively, which aligns with Peter (2015), who noted that social media distraction can impair academic achievements.

Lastly, while the study indicated that overall social media usage significantly affects academic performance, this contrasts with Othman et al (2017), who found a generally negative relationship. This suggests that while social media can be beneficial for sharing information and discussions, its impact on academic performance depends on how it is used. By examining the impact of various social media on academic achievement, this study contributes to the

existing literature by offering fresh insights and identifying specific patterns of use that correlate with academic success or challenges.

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