

A Dummy Variable Regression Analysis of the impact of social media on university students' academic performance. A Case Study at the College of Arts and Sciences, the University of Alabama at Birmingham, USA.

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Abstract- This study focused on the impact of social media on university students' academic achievement at the University of Alabama at Birmingham's College of Art and Sciences. The demographic data and educational information were analyzed using descriptive statistics, and a dummy variable regression model was generated to assess the impact of social media on students' academic performance. Many respondents had less study time as a result of their strong participation in social media activities, resulting in low academic performance, according to the survey. Gender is not a factor in predicting a student's academic performance (GPA), according to the study. Furthermore, the investigation indicated that, in this current day, restricting the use of social media to students is inappropriate. As a result, students should be informed about how social media affects their academic performance.

Index Terms- social media, academic performance (GPA), dummy variable regression, Study time

I. INTRODUCTION

The internet's use has had a remarkable influence on the social connection among persons in today's global network of huge transmission. Because of the internet's invention, social media has grown in popularity and is now the most extensively utilized communication medium among students, particularly at the university level. Social media is a type of electronic communication in which people use the internet to share information, ideas, personal messages, and a variety of other things. Instructors are using technology to improve their delivery to increase learning among students, and this is shown in the widespread usage of social media in higher education. Social media also facilitates internet education learning by promoting

communication among stakeholders in the educational environment (Choney, 2010). Furthermore, social media is a useful tool for performing research and discussing personal academic interests and may also be utilized to form academic groups and improve e-textbook functionality by connecting students with collective ideas to collaborate (Chanche et al., 2012). On the academic front, studies have been conducted to determine the impact of social media use on student academic performance. The usage of social media in the educational arena encourages students to participate in extensive and in-depth studies through conversation. Performance, according to Tuckman (1975), is a person's outward demonstration of understanding, concepts, skills, ideas, and knowledge. He claimed that grades are used to describe a student's performance. As a result, students' academic performance must be carefully monitored and managed, considering all of the factors that can influence their academic performance positively or negatively. Academic performance is defined by Kobal and Musek (2001) as a student's knowledge, which is expressed in numbers and represents the degree of his or her adaptation to schoolwork and the educational system. Students' usage of social media has reached epidemic proportions, affecting their study time, grammar, and spellings when interacting on social media, and diverting their attention away from their studies (Ndaku, 2013). Even though social media has a lot of advantages, it also has a lot of drawbacks. As a result, there is a pressing need to investigate the impact of social media on students' academic performance.

1.1 Statement of the problem

It is impossible to overstate the importance of social media use among today's youth. Because of its growing popularity, economists and professors are debating if the amount of time spent on these sites will have an impact on students' grades. Choney

(2010), MehMood & Taswir (2013), Kist (2008), and Jacobsen & Forste (2011) believe that the use of technology such as the internet is one of the most important elements that might affect students' educational performance positively or negatively. Many parents and guardians are concerned that their children are wasting too much time on social media platforms and not studying enough. Even though many parents are concerned about their children's continual use of social media sites, many students continue to do so daily. Considering this, the purpose of this study is to determine the impact of students' use of social media sites on their academic performance.

1.2 Objectives of the study

The study's general objective was to determine the impact of social media on student academic achievement. The following were the study's specific objectives:

- i. To examine the impact of the average study time on students' academic performance.
- ii. To identify if gender has any impact on students' academic performance.

1.3 Research questions

- i. What is the impact of social media (Facebook, WhatsApp, Twitter, Instagram, Tiktok, LinkedIn, and others) on the students' academic performance?
- ii. What is the relationship between gender and academic performance?
- iii. What is the relationship between study time and academic performance?

1.4 Literature review

Junco et al (2010) define social media as "a set of online websites, services, and activities that promote collaboration, community building, involvement, and sharing." It is impossible to overstate the importance of social media use among today's youth. Many researchers, including Choney (2010), San Miguel (2009), and Enriquez (2010), looked into students' use of social media sites and found that it had a negative impact on their academic performance. According to a Nielsen Media Research study done in June 2010, about 25% of students' internet time is spent on social networking sites (Jacobsen & Forste 2011). According to data presented at the American Educational Research Association's annual conference in San Diego, California (2009), social media users study less and generate lower grades (Abaleta et al, 2014). Students primarily use social media sites for sociability rather than academic goals (Oye, Adam & Zairah 2012). Despite this, numerous research point to the benefits of using social media for learning. Furthermore, according to Oye, Adam, and Zairah (2012), the majority of students believe that social networking platforms help them progress academically. Junco, Heibergert, and Loken (2011), for example, found that using Twitter for academic and co-curricular discussions has a beneficial influence on college students' grades. This is due to

increased stakeholder engagement outside of regular classroom activities through the usage of Twitter. Lambic (2016) conducted a study with 139 students in Sombor (Serbia) to see if there is a link between the rate at which students utilize Facebook as a learning tool and their academic success. The findings revealed a link between the frequency with which students use Facebook for educational purposes and their academic achievement. According to Gregory, Gregory, and Eddy (2014), forming a Facebook group dedicated to mathematics course topic training and discussion outside of the classroom can significantly boost student commitment, fulfillment, and performance in a calculus course. Social media can be utilized in the classroom to increase student engagement and encourage greater learning (Kabilan, Ahmad & Abidin, 2010). In their study of Malaysian students using social networking sites and their impact on academic performance, Oye, Adam, and Zairah (2012) discovered that social networking sites utilized for only social and non-academic purposes have a negative impact on academic performance. Lau (2017) used students in Hong Kong to investigate the effects of social media and social multitasking on academic performance. He asserted that using social media for academic reasons did not have a substantial impact on academic performance. Using social media for non-academic purposes, on the other hand, has been shown to have a negative impact on academic achievement. According to Karpinski (2009), social media has a negative impact on students' academic performance that is far bigger than the benefits of using social media platforms. People all over the world have become addicted to the internet, which has resulted in more students utilizing social media than ever before. Those who are hooked users love to use the internet to put off their personal and professional duties, according to Nalwa and Anand (2003), with the result being poor academic performance. According to Karpinski (2009), users of social media platforms (Facebook, WhatsApp, etc.) dedicate less time to their academics than nonusers, resulting in poorer GPAs. According to Karpinski and Duberstein (2009), among the many distractions faced by today's generation, social media platforms (such as Facebook, WhatsApp, and others) remain a key source of distraction. Based on the available evidence, there is reason to suspect that social media use and academic performance are related.

1.5 Methodology

The research was conducted at the University of Alabama at Birmingham's faculty of arts and sciences. Stratified sampling technique was used to obtain information from 600 students using well-structured questionnaires. The demographic data and educational information were analyzed using descriptive statistics, while the impact of social media on students' academic achievement was assessed using dummy variable regression analysis. The analysis was carried out using MINITAB software.

1.6 Results

Descriptive statistics

Table 1: Descriptive Statistics

Variable	social media plat	Total Count	N	N*	Percent	Mean	SE Mean	StDev
GPA	Facebook	140	140	0	23.3333	3.3463	0.0353	0.4179

	Instagram	69	69	0	11.5000	3.6319	0.0542	0.4503
	LinkedIn	57	57	0	9.5000	3.3572	0.0694	0.5237
	Other	59	59	0	9.8333	2.9953	0.0277	0.2125
	Tiktok	194	194	0	32.3333	3.1191	0.0293	0.4084
	Twitter	65	65	0	10.8333	3.7166	0.0468	0.3770
	WhatsApp	16	16	0	2.6667	3.416	0.102	0.406
Average Study Time	Facebook	140	140	0	23.3333	4.094	0.109	1.287
	Instagram	69	69	0	11.5000	4.607	0.152	1.261
	LinkedIn	57	57	0	9.5000	4.149	0.196	1.479
	Other	59	59	0	9.8333	3.141	0.152	1.167
	Tiktok	194	194	0	32.3333	3.7985	0.0909	1.2664
	Twitter	65	65	0	10.8333	5.826	0.135	1.092
Average time on social media	WhatsApp	16	16	0	2.6667	4.094	0.276	1.103
	Facebook	140	140	0	23.3333	4.500	0.150	1.780
	Instagram	69	69	0	11.5000	3.471	0.155	1.289
	LinkedIn	57	57	0	9.5000	4.123	0.194	1.468
	Other	59	59	0	9.8333	3.8559	0.0514	0.3945
	Tiktok	194	194	0	32.3333	4.592	0.102	1.425
	Twitter	65	65	0	10.8333	2.585	0.126	1.014
	WhatsApp	16	16	0	2.6667	4.063	0.322	1.289

Variable	social media plat	Minimum	Median	Maximum
GPA	Facebook	2.5800	3.3700	3.9300
	Instagram	2.6600	3.9300	3.9300
	LinkedIn	2.4500	3.2500	3.9300
	Other	2.8200	2.8200	3.4800
	Tiktok	2.5300	2.9500	3.9300
	Twitter	2.8000	3.9300	3.9300
	WhatsApp	2.770	3.530	3.920
Average Study Time	Facebook	2.000	4.300	6.000
	Instagram	2.400	5.500	5.500
	LinkedIn	2.200	3.900	6.000
	Other	1.500	3.500	4.500
	Tiktok	1.6000	3.5000	6.5000
	Twitter	2.500	6.500	6.500
	WhatsApp	2.400	4.050	5.900
Average time on social media	Facebook	2.000	4.500	7.000
	Instagram	2.500	3.000	6.500
	LinkedIn	2.000	3.500	6.500
	Other	3.5000	4.0000	5.5000
	Tiktok	2.500	4.500	7.500
	Twitter	2.000	2.000	5.500
	WhatsApp	2.000	3.500	6.000

Field Data, 2022

To assess the impact of social media on students' academic performance, descriptive statistics were used. From the table above, Data was solicited from a sample of 600 respondents. Tiktok is the most widely used social media platform among students at the College of Arts and Sciences at the University of Alabama at Birmingham representing 32.33% and WhatsApp is the least used platform with only 2.67% of the population. The

highest GPA obtained is 3.93 and the least GPA is 2.45. The maximum number of hours spent by a student studying is 6 hours 30 minutes and the least time is 1 hour 30 minutes. The maximum time spent on a social media platform is 7 hours 30 minutes and the least time spent is 2 hours.

Analysis

We want to assess the impact of social media on the academic performance of students using a dummy variable regression analysis. In dummy variable regression, we need a reference group or variable.

Table 2: Regression Equation

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	3.2224	0.0806	39.98	0.000	
Average Study Time	0.1562	0.0102	15.33	0.000	2.13
Average time on social media	-0.13500	0.00974	-13.86	0.000	2.25
Gender					
M	-0.0086	0.0211	-0.41	0.682	1.08

Regression equation analysis

From the table above, Males=1, Non-males=0.

In this analysis, each variable is compared with the reference group. A positive regression coefficient indicates that GPA is higher for males than non-males and a negative regression coefficient means that GPA is lower for males. From the table above, the GPA of males is lower than the GPA of Non-males. Again, the GPA of a student changes (increase/decrease) by 0.1562 for an hour change (increase/decrease) in study time. Thus, the more hours a student spent studying, the better the GPA when all the other factors are held constant. The GPA of a student decreases by 0.135 for an hour increase in the time spent on social media. Thus, spending more time on social media affects the GPA of a student. Essentially, studying for more hours improve GPA and vice versa; spending more hours on social media leads to a lower GPA. This implies students who use social media sites frequently turn to perform poorly academically. This study backs up MehMood and Taswir's (2013) findings that the usage of technology, such as the internet, can have a beneficial or negative impact on students' performance. Choney, (2010) and San Miquel (2009), for example, believe that students' use of social media has a negative impact on their academic performance.

Significance of regression coefficients and multicollinearity

Since the model has more than one predictor variable, we need to determine the variables that contribute to the prediction of GPA. From the table above, average study time and average time on social media are both statistically significant at a 0.05 level. This means that average study time predicts GPA beyond chance level, even after the effect of gender and average time spent on social media are considered. Similarly, average time spent on social media predicts GPA beyond chance level, even after the effect of gender and average study time are considered. On the other hand, gender is not statistically significant at 0.05 level. This means that gender does not contribute to the prediction of GPA. Multicollinearity assesses the relationship between the predictor variables. If multicollinearity is high, significance tests on regression coefficients can be misleading but if multicollinearity is low, then the tests can be informative. We can use the Variance Inflation Factor (VIF) to determine multicollinearity. Since the VIF values are very small, they imply that there is no multicollinearity among the predictor variables.

Coefficient of multiple determination

Table 3: Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.244486	72.82%	72.69%	72.45%

This value is used to determine how much of the variability in GPA is being explained by the dummy variable regression model. From the table above, the R-squared value is 72.82%. This means 72.82% of GPA variation can be explained by gender, average study time, and average time on social media.

1.7 Conclusion

According to the results of the dummy variable regression analysis, average study time and average time spent on social media are significant predictors of a student's GPA, and gender cannot be used to determine a student's GPA. We may deduce that time spent studying has a positive effect on students' academic performance, whereas time spent on social media has a detrimental impact. Again, gender has no impact on the academic performance of students. As a result, students who lack time management skills are vulnerable to the detrimental effects that social media platforms have on their users.

1.8 Limitations

Participants were asked how much time they spent studying or using social media on a typical day to determine the independent variables of average study time and average time spent on social media. Even though this question reliably counts time usage, it is unclear whether users are active when they check in to a particular social networking platform. Future research should consider the context of social media use rather than just the quantity of time spent on them. Finally, looking at the social media usage of just one university student may not be enough to fully explain its impact on the students' academic performance in general.

1.9 Recommendation

The following recommendations were made based on the findings:

Students should be encouraged to utilize their phones to augment their library study rather than constantly conversing with pals. Students should be encouraged to limit the amount of time they spend on social networking sites each day and instead use those hours to read novels and appropriate academic publications to expand their knowledge. It is also suggested that students be warned about the negative effects of social networking site addiction on their academic performance during orientation. They should be directed to websites that will benefit their academic work and research.

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