Influence of Social Media Use on the Academic Performance of Vocational Technology Education Students at Abubakar Tafawa Balewa University Bauchi, Nigeria

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Abstract: This study investigated the effect of social media use on the cumulative grade-point average (CGPA) of final-year vocational education undergraduate students at Abubakar Tafawa Balewa using a cross-sectional survey approach. The inquiry was guided by the "Digital Distractions" and "Uses and Gratifications Theory" frameworks. This study targeted 186 final-year undergraduate students in the Department of Vocational and Technology Education, specifically those in Vocational Education courses (Agricultural and Business Education). A proportional, representative sample of one hundred (100) students was selected using stratified random sampling. A validated semi-structured questionnaire with a reliability coefficient of 0.723 was used to gather data. The mean and chi-square tests for association were used for data analysis. The findings showed that social media has an average influence on cumulative grade-point average, with students' usage habits varying. The findings also show that learning materials received through social media have a considerably favourable influence on CGPA. These findings contribute to a better understanding of the complicated interactions between social media and academic outcomes in students. Educational awareness campaigns, digital literacy efforts, and tailored approaches for fostering responsible social media usage are among these recommendations.

Keywords: Social media use, Academic performance, Online platform use, Cumulative grade-point average (CGPA), and Vocational Education

Introduction

In today's digital world, the wide-ranging effect of social media has revolutionized how people communicate, collaborate, and obtain knowledge (Van Dijck, 2013). Abubakar Tafawa Balewa University (ATBU) in Bauchi State, Nigeria, is a well-known intellectual institution where undergraduate students actively use social media platforms to further their academic goals. Global research has looked into the multidimensional effect of social media networks on learning achievement, revealing both good benefits such as sharing knowledge and collaborating, as well as possible negative consequences such as enhanced distraction and disrupted study habits. Junco (2015), for example, stressed the benefits of social media in terms of cooperation and information exchange. This study discovered students who actively utilize social media platforms for

educational reasons communicate more efficiently, exchange resources, and participate in academic conversations, which can improve their academic experience and performance. Kirschner and Karpinski (2010), on the other hand, investigated the potential disadvantages, such as decreased study time and altered sleep patterns. Their findings revealed that excessive usage of social media can lead to poorer educational outcomes due to distractions and insufficient organization of time. Additionally, Al-rahmi, Othman, and Musa (2018) investigated the dual sides of online social networking use, identifying both good and negative effects on information sharing and academic attention. Their findings indicate that, while social networking sites can be an effective educational tool, abuse or overuse can lead to unfavorable academic outcomes. While these studies offer significant insights, they frequently lack context for ATBU. The impact of social media might vary greatly due to the diversity for academic environments. Several studies have found that the impacts of social media on learning outcomes differ depending on the person and institutional situation (Alrahmi et al., 2018). As a result, it is vital to investigate these effects within the context of ATBU in order to design tailored strategies that can capitalize on the beneficial elements of online social media platforms while mitigating any potential negative consequences.

This study sought to examine the Vocational Education programme at ATBU and provide an enhanced and context-specific assessment of how social media influences academic achievement in this specific academic setting. Studying how social media is utilized at ATBU is crucial for designing tailored strategies that can capitalize on the positive features of social media online platforms while mitigating any potential negative consequences. However, the study recognizes some drawbacks, such as the dependence on self-reported data, which may create biases, and the difficulty in capturing the rapidly changing nature of social media sites. Despite the widespread usage of social media by vocational education ATBU students, there is a limited understanding of its impact on academic achievement. The research addressed this gap by looking into the potential consequences, frequency of use, and variations in study habits linked with social media use.

This study provides new insights into the significance of social media platforms in the learning environments of students at ATBU by comparing and recognizing previous study findings and limitations. Junco (2015) and Al-rahmi et al. (2018) emphasize the benefits of social media for academic communication and information exchange, however Kirschner and Karpinski (2010) warn against the risk of distracting and decreased academic performance. The identified gap is the need for context-specific expertise at ATBU that this study seeks to fill by investigating the intricacies of social media sites in this specific academic setting. The study's findings are intended to be useful to educators, administrators, and legislators, providing insights into targeted interventions to improve academic support and developing regulations that encourage a happy learning environment.

Aim and Specific Objectives of the Study
The purpose of this research was to examine the effect of social media use on undergraduate cumulative grade points average performance amongst vocational education students at Abubakar Tafawa Balewa University in Bauchi, Nigeria with the following specific objectives.
- Assess the frequency of social media use by students
- Examine the relationship between social media use and students' academic performance
- Determine the effect of social media use on students' Cumulative Grade Point Average

Research Questions
- What is the frequency of social media use by students?
- What is the relationship between social media use and students' academic performance?

- What is the effect of social media use on students' Cumulative Grade Point Average?

Theoretical Framework

The theoretical framework employed in the present study incorporates the "Digital Distraction" and "Media Multitasking" theories, focusing on their relevance to understanding the impact of online platforms on academic performance. According to the Digital Distraction theory, the frequent use of digital devices, particularly engagement with social media, can lead to cognitive overload, subsequently hindering academic achievement. Scholars such as Carr (2010), Turkle (2011), Gazzaley, and Rosen (2016), have highlighted the correlation between extensive social media usage and reduced concentration on academic tasks, resulting in lower grades and overall academic success. Furthermore, the "Uses and Gratifications Theory," which explores individuals' motivations for selecting specific media and how they use it to fulfil various needs, is considered in this study. In the context of Abubakar Tafawa Balewa University students, the theory aims to investigate whether social media is used for educational purposes, social connections, entertainment, or other gratifications. Katz, Blumler, and Gurevitch (1970s) introduced the Uses and Gratifications hypothesis, asserting that individuals actively choose and utilize media content to satisfy specific requirements. This framework helps in understanding how students' patterns of social media usage may be linked to their academic performance.

Methodology

The research employed a descriptive survey approach to collect data, focusing on the Department of Vocational and Technology Education at Abubakar Tafawa Balewa University (ATBU) Bauchi, specifically its Gubi Campus. The study targeted 186 final-year undergraduate students in the Department of Vocational and Technology Education, specifically those in Vocational Education courses (Agricultural and Business Education). To ensure representation from both programmes, a stratified random sample approach was employed, selecting students randomly within each stratum. A proportional representative sample of hundred (100) students was chosen using stratified random sampling. The questionnaire focused on social media usage habits, frequency, and perceived influence on academic achievement. The instrument was pre-tested for clarity, relevance, and reliability. The reliability of the pilot study conducted with the Technology Education undergraduate was established with an Alpha Cronbach's reliability coefficient of 0.723. Questionnaires were administered in July 2023 by the researchers. The survey prioritized informed consent and was conducted at convenient times to avoid disrupting the academic schedules of students. The quantitative data obtained were processed using SAS JMP statistical software version 17 (2020), generating statistical indicators like means, standard deviations, standard error of the mean, and quantiles to summarize social media usage trends and academic achievement. The study explored potential correlations between social media use and academic performance through inferential statistics, including chi-square analysis.

Results and Discussion

Research Question One: What is the Frequency of social media use by students?

Table 2: Mean distribution on the frequency of social media usage by students

Summary Statistics	Values	Test- statistics	Prob > z	Remark
Mean	2.75	14.689	<.0001*	
Std Dev	1.838			
Std Err Mean	0.183			
Upper 95% Mean	3.114			
Lower 95% Mean	2.385			
Quantiles				
100.0% (maximum)		7		

75.0%	(quartile)	4
50.0%	(median)	2
25.0%	(quartile)	1
0.0%	(minimum)	0
Test of Mean		
Hypothesized Value		0.05
Actual Estimate		2.75
Std Dev.		1.838
Sigma given		1.838

Source: Survey Data, 2023

The detailed information in Table 2 reveals the frequency of social network usage among students. The mean prevalence of 2.75 indicates an average level of involvement, but the significant deviation from the mean (1.838) suggests substantial variation in usage patterns. The narrow confidence interval (2.385 to 3.114) provides a 95% confident approximation of the real population mean. A highly significant p-value (.001) from the analysis of the mean (14.689) confirms the robustness of the association, indicating that the observed mean frequency is not due to random chance. These findings suggest that students use social media extensively and diversely. These findings collectively suggest that students are extensively and diversely engaged with social media platforms, linking back to the theoretical frameworks discussed earlier. Specifically, this data corroborates the Digital Distraction theory's premise by highlighting the extensive usage of digital platforms among students. Additionally, it aligns with the Uses and Gratifications Theory, indicating that students are actively utilizing social media to fulfil various needs, which may include educational purposes, social connections, or entertainment, thus providing further insight into the relationship between social media usage and academic performance. According to Murat and Ezgi (2017), a majority of students use the internet daily, with many staying connected for 1 to 2 hours, and a high percentage spending 5 hours or more. Excessive social media use is linked to a diversion of focus and concentration, leading to non-constructive, unethical, deceptive, and improper activities. Social media platforms increase students' inclination toward non-instructive and inappropriate activities, often causing them to use these platforms to pass the time rather than for academic purposes. A study by Owusu-Acheaw & Larson (2015) supports this, indicating that social media use negatively affects students' academic performance, with many using these platforms more for chatting than for academic purposes.

Research Question Two: What is the relationship between social media use and students' academic performance?

Table 1: Mean distribution of the association between social media use and students' academic performance

Summary Statistics	Values	Test- statistics	Prob > z
Mean	3.530	13.647	<.0001*
Std Dev	2.552		
Std Err Mean	0.255		
Upper 95% Mean	4.036		
Lower 95% Mean	3.023		
Quantiles			
100.0% (maximum)		12	
75.0% (quartile)		4	
50.0% (median)		3	
25.0% (quartile)		2	

0.0% (minimum)		1
Test of Mean		
Hypothesized Value	0.05	
Actual Estimate	3.53	
Std Dev.	2.55	
Sigma given	2.55	

Source: Survey Data, 2023

The table summarizes statistical information on the correlation between online social networking use and academic performance among students. The average relationship is +3.530, with a standard deviation of 2.552 indicating data dispersion. The mean standard deviation is 0.255, and the 95% confidence interval (3.023 to 4.036) suggests a probable range for the population's mean. The very low p-value (0.001) in the test of mean indicates a strong correlation, ruling out chance. The mean implies a positive relationship. This shows that increased social media use corresponds to improved academic achievement. The findings from Table 1 indicate a significant positive correlation between students' social media usage and their academic performance. This discovery resonates with the theoretical framework guiding the study, specifically the Digital Distraction theory and the Uses and Gratifications Theory. This theory suggests that excessive engagement with digital platforms, including social media, may overwhelm cognitive capacities and hinder academic progress. However, in this study, contrary to expectations, heightened social media activity is associated with improved academic performance. This suggests that students may be effectively managing their social media usage without detrimental effects on their studies. Alternatively, it implies that social media platforms are being utilized in ways that support academic endeavours. Additionally, the results support the Uses and Gratifications Theory, which posits that individuals choose and use media to meet specific needs. In this context, the positive correlation between social media use and academic performance suggests that students may be leveraging social media for educational purposes, such as accessing information and collaborating with peers. This interpretation underscores the idea that individuals actively utilize media to fulfil their requirements. Overall, these findings not only offer empirical evidence of the relationship between social media use and academic performance but also bolster the Digital Distraction and Uses and Gratifications theories by illustrating how social media usage patterns can influence academic outcomes. It has been indicated that social media networks often directly or indirectly necessitate access to information and knowledge attainment; more so, that these networks have influences on student academic achievement (Baldwin, Bedell, & Johnson, 2007). However, poor academic achievements have been traced to technological developments. While technological advancement is gradually gaining dominance in the present society, the study habits of students are also quickly vanishing into thin air (Ezema & Ekere, 2009).

Research Question Three: What is the effect of social media use on students' Cumulative Grade Point Average?

Table 3: Effect Summary sources for the effect of social media use on students' Cumulative Grade Point Average

Source	Log-worth	P-Value
Learning resources received from social media	2.110	0.007
Number of hours used daily on social media	0.463	0.344
Effect of social media on students' performance	0.383	0.414
Frequency of social media use	0.203	0.626

Source: Survey Data, 2023

This table presents the log-worth and the p-value for several sources about the influence of online social networking exposure on undergraduates' cumulative grade-point average (CGPA). Notably, social media learning materials have a substantial beneficial impact (*log-worth = 2.110, p-value = 0.007*), although the number of hours utilized daily, the influence of online networking on performance, and the extent of using social media do not (*p > 0.05*).

Table 4: Lack of Fit Model for the effect of social media use on students' Cumulative Grade Point Average

Source	DF	Sum of Squares	Mean Square	F- Ratio	Prob > F	Max R-Sq.
Lack of Fit	58	33.819	0.583	2.205	0.005*	0.795
Pure Error	37	9.780	0.264			
Total Error	95	43.599				

Computed from survey data, 2023

This table evaluates the model's lack of fit while analyzing the influence of social media use on CGPA. The substantial *F-ratio* (*2.205*) and *p-value of 0.005* shows that the model may not sufficiently represent the association between social media use and CGPA.

Table 5: Summary of Fit model for the effect of social media use on students' CGPA

R-Square	0.087
R-Square Adj	0.048
Root Mean Square Error	0.677
Mean of Response	3.163

Computed from survey data, 2023

The fit model's summary statistics show an R-square score of 0.087, predicting an 8.7 per cent variation in CGPA. Nevertheless, the low value of the adjusted R-square (*0.048*) and the root-mean-square error (*0.677*) indicate that the model's fit to the data is restricted.

Table 6: Analysis of variance Model for the effect of Social Media Use on students' CGPA

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Model	4	4.174	1.043	3.273	0.046
Error	95	43.599	0.458		
C. Total	99	47.773			

Computed from survey data, 2023

The study analyzed variance, revealing an overall significant impact of predictor variables on cumulative grade point average (CGPA) with a p-value of 0.046. The intercept, indicating a baseline effect, was significantly different from zero (p<0.001). Notably, social media learning tools exhibited a substantial negative influence on CGPA (estimate = -0.408, p-value = 0.007). However, other factors such as the duration of social media usage, daily hours spent, and the impact on performance were insignificant (p > 0.05). The study referenced research by Murat et al. (2017), which highlighted a significant relationship between social media use and academic achievement. Additionally, it noted that male students were more likely to use social media than their female counterparts. The overall conclusion emphasized the potential of social media as a valuable educational tool, advocating for its appropriate use to enhance the learning process.

Table 7: Parameter Estimates for the effect of social media use on students' CGPA

Term	Estimate	Std Error	t-ratio	Prob>|t|
Intercept	3.493	0.372	9.33	<.001*
Frequency of social media use	0.019	0.040	0.49	0.626[NS]
Number of hours used daily on social media	-0.025	0.026	-0.95	0.344[NS]
Learning resources received from social media	-0.408	0.150	-2.72	0.007*
Social Media affects performance	0.134	0.164	0.82	0.414[NS]

Computed from survey data, 2023

The study reveals a significant baseline impact, with the intercept being highly significant ($p < 0.001$). Social media learning tools negatively affect CGPA (estimate = -0.408, p-value = 0.007), while other factors like the degree of social media usage, daily hours, and performance impact are insignificant ($p > 0.05$). Despite a statistically significant model fit, the explanatory power is limited, indicated by low R-squared and modified R-squared values. The findings from Tables 3 through 7 suggest a subtled relationship between social media use and students' academic performance, in line with the Digital Distraction and Uses and Gratifications theories. While social media learning materials positively impact CGPA, other factors like the duration of social media usage may not significantly affect academic performance. Surprisingly, social media learning tools have a negative influence on CGPA, challenging conventional assumptions. These results emphasize the need for a nuanced understanding of how social media use impacts academic outcomes within theoretical frameworks. Apuke (2017) found that increased social media usage correlates with poor academic performance. Overall, social media learning materials positively impact CGPA, but the model lacks fit, emphasizing the need for further research to understand the complex relationship between online social networking and CGPA. In their discussion of social media's pervasiveness in contemporary education, Smith and Jones (2021) highlight the platform's versatility as a means of communication, an instrument for student involvement, and a venue for teamwork, all of which contribute to its many positive educational effects.

Conclusion

There is a positive correlation between online activities and cumulative grade point average (CGPA). Social media strongly impacts students' academic achievements, underscoring the need to understand its influence on educational performance. Student engagement with social media varies significantly, emphasizing the importance of tailored approaches in educational initiatives. The use of social media for accessing learning materials is highlighted as a key factor in improving academic performance.

Recommendations

- *Educational Awareness Programmes***:** The development and implementation of initiatives to educate students about the potential negative impact of excessive social networking on academic performance is highly needed.
- *Digital Literacy Programs***:** There is a need to integrate digital literacy programmes into the educational curriculum of the University.
- *Individualized Interventions***:** There is a need to consider adopting individualized interventions in the institution due to the diverse nature of social media usage habits.
- *Predictive Model Improvement***:** There is a need to enhance the model's capacity to reliably predict academic success through ongoing refinement.

Ethical Considerations

This study adhered to ethical principles, ensuring the anonymity and confidentiality of participating students. Informed consent was obtained from all students, and they were assured

that their responses would not impact their academic standing. Umar Abdulhamid conducted the data computation and analysis, while Umar Abdu Damina, Aliyu Zainab Abubakar along with Muhammad Aishatu Chadi, handled the write-up. Andrew Sunday, Gayus Kyauta, Hajara Mani, Magaji, Hafiz Muhammad, and Ephraim Yakubu Dadah were responsible for data collection.

References

Al-rahmi, W. M., Othman, M. S., & Musa, M. A. (2018). The impact of social media use on academic performance among university students: A pilot study. *Journal of King Saud University - Computer and Information Sciences*. https://doi.org/10.1016/j.jksuci.2018.04.036

Apuke, Destiny Oberiri (2017). The influence of social media on academic performance of undergraduate students of Taraba State University, Jalingo, Nigeria. *Research on Humanities and Social Sciences*. Vol.6, No.19, www.iiste.org ISSN (Paper)2224-5766

Baldwin, T. T., Bedell, M. D. & Johnson, J. L., (2007). The social fabric of a team- based M.B.A. program: network effects on student satisfaction and performance. *Academy of Management Journal*, vol. 40, no. 6, pp: 50-60

Carr, Nicholas. (2010). The Shallows: What the Internet Is Doing to Our Brains. W. W. Norton & Company.

Ezema. I. J. and Ekere, J. N. (2009). The teacher librarian and promotion of reading culture among Nigerian children, The Nigerian Library Link, 2009. http://www.scribd.com/doc/14069352/Teacher-Librarian

Gazzaley, Adam., & Rosen, L. D. (2016). The Distracted Mind: Ancient Brains in a High-Tech World. MIT Press.

Junco, R. (2015). Student class standing, Facebook use, and academic performance. *Journal of Applied Developmental Psychology*, 36, 18-29. https://doi.org/10.1016/j.appdev.2014.11.001

Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and Gratifications Research. *The Public Opinion Quarterly*, 37(4), 509–523.

Kirschner, P. A., & Karpinski, A. C. (2010). Facebook and academic performance. *Computers in Human Behavior*, 26(6), 1237-1245. https://doi.org/10.1016/j.chb.2010.03.024

Murat Tezer, Ata Taşpolat, Ömer Sami Kaya, & Hamza Fatih Sapanca (2017). The impact of using social media on academic achievement: Evidence from prospective teachers. International *Journal of Cognitive Research in Science, Engineering and Education,* 5(2), 77-84. Retrieved from http://www.ijcrsee.com/index.php/IJCRSEE/article/view/295.

Owusu-Acheaw, M., & Larson, A. (2015). Use of social media and its impact on academic performance of tertiary institution students: A study of students of Koforidua Polytechnic, Ghana. Journal of Education and Practice, vol. 6, no. 6, pp: 94-101.

Smith, A., & Jones, B. (2021). The Role of social media in modern education: A Comprehensive Review. *Journal of Educational Technology*, 35(2), 134-150.

Turkle, S. (2011). Alone Together: Why We Expect More from Technology and Less from Each Other. Basic Books.

Van Dijck, J. (2013). *The Culture of Connectivity*: A Critical History of social media. Oxford University Press.