

RESEARCH ARTICLE

Gender Variations in Social Media Usage and Its Perceived Impact on The Academic Performance of Nigerian Science Undergraduates

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ABSTRACT

University students frequently use social media, which has an impact on their everyday life, but the impact may differ by gender and other circumstances. The purpose of this study was to examine how social media usage differs by gender and how this is believed to affect the academic performance of undergraduate science students in Nigeria. This descriptive survey comprises a sample of randomly selected 464 undergraduate science students of Tai Solarin University of Education, Nigeria. The students' social media usage was assessed with an adapted and validated questionnaire rated on a 4-point Likert scale (Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1)). Data were analyzed using Statistical Package for Social Sciences, Version 21. Our results show that there are no gender differences in total time spent on social media daily ($P=0.275$) and usage of social media during class ($P=0.487$). Male versus female usage of Twitter (60.2% versus 30.6%, $P=0.000$) and Youtube (62.2% versus 48.6%, $P=0.017$) were significantly different but not in usage of Whatsapp, Facebook and Instagram. Both males and females felt that social media had a high impact on their academic performance, but the impact was significantly higher in males than females ($P=0.049$). Males use more social media applications than females and opined that social media highly impacted their academic performance. These findings could be explored for better academic performance.

Keywords: Academic performance, Gender, Variation, Social Media, Undergraduates

1. INTRODUCTION

Over the years, the issue of gender in academic pursuits has been a significant concern to educational researchers and administrators. Researchers have diverse opinions to explain the issue of gender differences in academic achievement (Nnenna and Adukwu, 2018). Gender, according to Yang (2010), can be seen as social qualities that have a relationship with being

male and female; women and men; girls and boys, as well as the association between men and women. These qualities are wired to be acquired through socialization and social construction.

The term 'social media' refers to applications that enable users to communicate with each other; edit, share, and create information that could either be visual, audio, or textual content; and label, recommend and categorize forms of content that are in existence (The Europa World of Learning, 2012). Asemah and Edegoh (2012) opined that most people commonly employ social network sites to communicate with new and old friends, virtual or physical friends. With the development of internet technology, the world has evolved and technology is now used as the best tool for information research. Social networking sites like Facebook, which people use for ongoing connection and information sharing, have significantly improved as a result of the development of information and communication technology. Social media technology has become an integral part of people's daily lives, which is evident in how many researchers and scholars study the effects of social media technologies and applications on different aspects of people's lives. Many people, especially students in tertiary institutions, spend quality time on social media. Social media applications have experienced a tremendous increase among students for over a decade, and there are variations in their effect on students' academic performance (Kulidtod and Pasagui, 2017).

Globally, many studies have examined the association between social media usage and academic achievement and university undergraduates' performance. In the United States of America, among adults aged 18-29 years, social media increased from 12% in 2005 to 90% with the attendant increase in the use of smartphone technology (Sutherland et al., 2018). Kulidtod and Pasagui (2017) and Sutherland et al. (2018) conducted studies in over 15 countries, and the results showed that students in tertiary institutions were responsible for increased usage of various devices like tablets and smartphones. They further posited that students who effectively used social media had improved academic performance. Conversely, Kulidtod and Pasagui (2017) stated that those who employed social media networks negatively affected their academic performance.

In another survey of 106 undergraduate students, 67% reported that technology enhanced their academic performance (Sutherland et al., 2018). Furthermore, studies carried out in 2016 in China and Iraq also revealed that social media aided learning processes as it served as a medium for discussion of assignments, getting updated information about class timetables and venues; it also served as a medium of information dissemination amongst class members and friends (Alahmar, 2016; Boateng and Amankwaa, 2016). However, other studies reported a negative impact of social media use on academic performance of undergraduates. For example, it was reported that students who spent a considerable amount of time on social media channels solely for chatting had their academic performance suffer a decline (Okyeadie and Nizam, 2016). In addition, students who get deeply immersed in social media during their study time are likely to become distracted (Okyeadie and Nizam, 2016). In their study, Okereke and Onwukwe (2011) also noted in their research on the impact of gender on academic performance that male students performed better than their female counterparts. On the other hand, other studies (Oludipe, 2012; Kola and Taiwo, 2013), reported no significant difference in the academic performance of students based on gender.

The state of biology teaching and learning in Nigeria is fast becoming worse as there are no adequate facilities like instructional videos and cartoon concepts to enhance learning, coupled with factors such as reduced motivation and efficiency in classroom participation, and this over the years, has led to poor performance of students in biology in terminal external examinations, e.g. West Africa Senior School Certificate Examinations (WASSCE) (Awofodu et al., 2022). This, however, can be credited to the fact that students who are addicted to social media platforms such as Facebook, Tiktok, Twitter, Instagram, MySpace, Whatsapp, Mebo, LinkedIn, Email, Youtube, Blogs, Zoom, etc. have been reportedly affected negatively,

although sometimes indirectly by poor performance (Malak et al., 2022). Students spend valuable time chatting on issues that have no link with their studies. A report by Adebayo (2015) observed that some of the social media activities which Nigerian students spend time on include chatting and pinging and that these have a serious negative impact on their academic performance. Students tend to lose focus as lectures are going on due to heavy distraction from social media usage.

During teaching-learning hours, students struggle to focus on their lectures (Okpara, 2017). Students spend more time conversing online at the expense of their assignments and lectures. Having examined how the academic performance of students is influenced by social media, it is therefore, the concern of this study to answer these questions: (i) what social media application is prevalent among male and female science undergraduates?; (ii) what are the gender variations in science undergraduates' exposure and addiction to social media?; (iii) what are the gender variations in social media usage in relation to social media addiction?

2. MATERIALS AND METHODS

2.1. Design and Participants

This descriptive survey was conducted at the Tai Solarin University of Education. The sample comprised 464 undergraduate students of the Department of Biological Sciences studying in the 2021/2022 academic year. Participants were recruited using a simple random sampling technique. The participants were given questionnaires in their lecture halls which they filled and retrieved immediately.

2.2. Survey Instrument

A questionnaire adapted from Alnjadat et al. (2019) was used to collect data on the usage of social media and academic performance of science undergraduates. The questionnaire consisted of three main sections. Section one dealt with the socio-demographic characteristics of respondents. Section two elicited students' responses on time spent on social media, frequency of social media usage during class, and prevalent social networking sites among the students. Section three dealt with the addictiveness of students, students' exposure to social networks and their academic performance, social media usage, and students' academic performance and gender usage of social media. The questionnaire comprised 25 items, out of which 7 were closed-ended questions (section two) while 18 were in a Likert scale format with four possible responses - Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1) (section three). In addition, two experts from the field of science helped to validate the questionnaire. In this study, the stipulated time to complete the questionnaire was 5 minutes. The reliability coefficient of the questionnaire was 0.7 as calculated from Cronbach Alpha.

2.3. Statistical Analysis

Data coding and analysis were performed using the Statistical Package for the Social Sciences (SPSS), version 21. This study deployed descriptive statistics such as mean, frequency, counts, and percentage and used Chi-square to answer the research questions.

3. RESULTS AND DISCUSSION

Out of the total five hundred (500) questionnaires given out, only four hundred and sixty-four (464) were successfully retrieved, having a complete dataset and this represents a 92.8%

response rate. Table 1 shows that 366 respondents were female (78.9%), and the remaining 98 were male (21.1%). A large proportion of the respondents were between 21 and 25 years old (64.2%). Most of the students (32.1%) were currently in their third year of study. In this study, we investigated how social media usage varied by gender and how it was perceived to affect undergraduate science students' academic performance in Nigeria. The main goal of this study was to determine whether there were any gender-based differences in social media usage and perceived effects on academic performance of science undergraduates

Table 1. Socio-Demographic Characteristics of Respondents

Variable	Frequency	Percent (%)
Sex		
Male	98	21.1
Female	366	78.9
Age		
16-20 years	132	28.4
21-25 years	298	64.2
26 years and above	34	7.3
Level		
1st year	99	21.3
2nd year	97	20.9
3rd year	149	32.1
Final year	119	25.6

The results in Table 2 show that more than 90% of the students spent at least 1 hour on social media daily, with no statistically significant gender difference ($P= 0.275$) Regarding the usage of social media during class, about 23% of the students never used it, while the majority (68.5%) rarely or sometimes use it. There was no significant difference between the male and female students with respect to social media usage during class.

Table 2. Time Spent on Social Media and Usage of Social Media Class

Variable		Total N (%)	Male N (%)	Female N (%)	P value (χ^2)
Time Spent on Social Media	Less than 1 hr	43 (9.3)	6 (6.1)	37 (10.1)	0.275
	1-2 hours	114 (24.6)	19 (19.4)	95 (26.0)	
	3-4 hours	139 (30.0)	30 (30.6)	109 (29.8)	
	5-6 hours	61 (13.1)	14 (14.3)	47 (12.8)	
	Over 6 hours	107 (23.1)	29 (29.6)	78 (21.3)	
Usage of Social Media during Class	Never	107 (23.1)	20 (20.4)	87 (23.8)	0.487
	Rarely	181 (39.0)	34 (34.7)	147 (40.2)	
	Sometimes	137 (29.5)	34 (34.7)	103 (28.1)	
	Often	24 (5.2)	5 (5.1)	19 (5.2)	
	Always	15 (3.2)	5 (5.1)	10 (2.7)	
	Total		464 (100.0)	98 (21.1)	

Table 3 shows the prevalence of social media applications among students. The social media applications commonly used by students are WhatsApp; 418 (90.9%), followed by Facebook; 351 (75.6%), Instagram; 311 (67.0%), Youtube; 239 (51.5%), Google+; 229 (49.4%) and Twitter; 171 (36.9%). There were observed gender differences in the usage of Twitter and youtube among the students. More males (60.2%) used Twitter than females (30.6%), an observation that was significant ($p=0.000$). Similarly, more males (62.2%) used Youtube than females (48.6%), with the observation also significant ($p=0.017$). The most prevalent social

media used by participants in our study sample was WhatsApp. It had been previously reported by Subair et al. (2019) and Othman et al. (2015) that WhatsApp was one of the predominantly used platforms among students compared to other social media. Our finding also corroborates the study of Coleman and O'Connor (2019), who reported that WhatsApp was the most popular and convenient form of social media used in education. Furthermore, the study of Anasi (2018) reported that WhatsApp was the most frequently used social media application among academic librarians in Nigeria. But, our study's result is not supported by Mbajiorgu et al. (2018); Nagel et al., 2018; and Siddhartha et al. (2020), who posited that Facebook was used chiefly and followed by the Youtube platform. Furthermore, it is also in variance with Knight-McCord et al. (2016), who reported that Instagram was the most used social media platform followed by Snapchat and Facebook.

Table 3. Prevalence of Social Media Applications among Students

Applications	Total		Male		Female		P-value (χ^2)
	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	
Whatsapp	418 (90.9%)	46 (9.1%)	88 (19.0%)	10 (2.2%)	330 (71.1%)	36 (7.8%)	0.914
Facebook	351 (75.6%)	113 (24.4%)	78 (16.8%)	20 (4.3%)	273 (58.8%)	93 (20.0%)	0.306
Instagram	311 (67.0%)	153 (33.0%)	71 (15.3%)	27 (5.8%)	240 (51.7%)	126 (27.2%)	0.199
Twitter	171 (36.9%)	293 (63.1%)	59 (60.2%)	39 (39.8%)	112 (30.6%)	254 (69.4%)	0.000
Google+	229 (49.4%)	235 (50.6%)	56 (12.1%)	42 (9.1%)	173 (37.3%)	193 (41.6%)	0.082
Youtube	239 (51.5%)	225 (48.5%)	61 (62.2%)	37 (37.8%)	178 (48.6%)	188 (51.4%)	0.017

We then tested gender differences in the perceived impact of students' exposure to social media on their academic performance (Table 4). Although both males and females felt that their exposure to social media had a high impact on their academic performance, the reported impact was significantly higher in males than females ($p=0.049$). Exposure to social media had a more significant impact on the academic performance of male students (81.6%) in comparison to that of females (71.8%). Table 4 also shows the level of addiction of students to social media: females were less addicted to social media than males (41.6% vs. 42.9%), although not significant ($P= 0.829$).

In our sample, exposure to social media had a more significant impact on the academic performance of male students compared to that of females. The results of Shen (2019), who claimed that boys were more significantly impacted by social media exposure than girls, are consistent with the findings we report. But our result contradicts the findings of Su et al. (2019), who claimed that even while males were more addicted to social media networks, females' academic performance was more strongly influenced by social media use than that of males. Contrary to our report about gender differences in social media impact on academic performance, other studies by Ufuophu-Biri (2020) in Nigeria and Baria (2021) in the Philippines suggested that males and females have the same level of social media exposure. Our finding also disagrees with Jaffarkarimi's (2016) findings among Malaysian students, which reported no relationship between gender and social media addiction. In addition, our study contrasts with the findings of Bhandarkar et al. (2021), who revealed the academic performance of female students was better than male students in response to social media exposure. Male students in our study sample were observed to be more addicted to social media

than female students. This finding of ours is not supported by the study of Ogunlade et al. (2015) who reported that female undergraduates of Osun State University in Nigeria were more addicted to social media compared to their male counterparts. Some other studies aligned with our findings, even though they were conducted among different populations. For example, Alnjadat et al. (2019) conducted their study in the United Arab Emirates and noted that males were more addicted to social media than females (49.6% vs. 32%, respectively), in agreement with our study. Moreover, Azizi et al. (2019) worked with Iranian subjects and reported significantly higher social networking addiction in male students than female students, and this finding corroborates ours. Our results also agree with the reports of Ali et al. (2021), who found that male students frequently utilize social media for entertainment more frequently than female students. Additionally, our study supports the findings of Choudhury and Ali (2020), who found that male students are more interested in social media than female students. The results of Simsek et al. (2019), who claimed that women are more addicted to social media than males, do not, however, corroborate the conclusions of this study.

Table 4. Male and Female Students' Exposure and Addiction to Social Media

Variable	Exposure to social media		$\chi^2_{(df)}$	p-value	Addiction to social media		$\chi^2_{(df)}$	p-value
	No impact	High impact			Not addicted	Addicted		
Male	18 (18.4%)	80 (81.6%)	3.884 (1)	0.04 9	56 (57.1%)	42 (42.9%)	0.04 7(1)	0.82 9
Female	103 (28.2%)	262 (71.8%)			213 (58.4%)	152 (41.6%)		

Table 5 reveals that 76.7% of students who are not addicted to social media benefited from it by improving their grades. Moreover, 57.7% of those addicted agreed that gender does not determine students' social media usage. However, this is opposed to 42.3% of those who agreed that gender determines students' social media usage, but these observations were not statistically significant. According to our report, 44% of students who were not social media addicts used it to raise their grades. It is understandable that students who are addicted to social media use may not actually use it to improve their grades. Notably, Azizi et al. (2019) found no relationship between academic achievement and addiction prevalence. However, the findings of our study contradict those of Nandez and Borreg (2013) who found a significant favorable association between social media use and academic achievement. The study by Javaeed et al. (2020), which claimed that internet addiction has a negative impact on academic performance, does not support our findings either.

Table 5. Gender Variation in Social Media Usage and Addiction

Variable	Social media help my grade		$\chi^2_{(df)}$	p-value	Gender determines social media usage		$\chi^2_{(df)}$	p-value
	No (%)	Yes (%)			No (%)	Yes (%)		
Social Media Addiction	63 (23.3)	207 (76.7)	0.123(1)	0.726	161 (59.6)	109 (40.4)	0.168(1)	0.682
No	48	146			112			
Yes	(24.7)	(75.3)			(57.7)			

Our results demonstrated that social media use is not influenced by gender. Hossain and Prodhan's (2020) findings, which stated that gender usage of social media is the same and doesn't affect the frequency of use, confirm this. Similarly, Karatsoli and Nathanail (2020) found that both men and women use social media more frequently. Krasnova et al. (2017)

findings, which showed gender differences in young students' social media usage, do not support our observation. The results of Othman et al. (2015) as well as Efosa et al. (2017) are in agreement with our results and they claimed that the adoption of contemporary technologies is significantly influenced by gender.

4. CONCLUSION

Our study revealed that males are more addicted to social media usage than females, and the academic performance of males is more influenced by social media. Therefore, teachers are encouraged to incorporate social media into teaching and learning so that the academic performance of science students could be improved. In addition, students' use of social media should also be monitored by teachers and parents, so that effective and productive use is ensured. Further studies could use larger samples of students and broader coverage areas to investigate the factors influencing social media usage among tertiary education students. Future studies could also consider other types of social media tools used by students.

Declaration of Interest

The authors declare that there is no conflict of interest.

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