

Social Media Usage Intensity and Academic Performance among Undergraduate Students in Saudi Arabia

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Abstract

As the statistics show, use of social media networks (SMNs) are very common among college students worldwide. According to a report by Hootsuite, Saudi Arabia was ranked as the number-one country in the growth of social media users. With the advancement of technology and internet speed, investigating how SMNs affect students has become an absolute necessity. Therefore, the purpose of this study was to examine the influence of social media networks (SMNs) on the academic performance of undergraduate students across the Kingdom of Saudi Arabia, taking gender differences into account. An invitation email to participate in the online survey was sent to all undergraduate students at five public universities in Saudi Arabia. In total, 453 students from five public universities participated in this study. The results suggested that female students tend to spend more time on SMNs for general purposes and academic purposes than male students. In regard to multitasking with SMNs during schoolwork and social media usage intensity, the results showed no significant differences between male and female students. Finally, the regression analysis showed a positive relationship between students' academic performance and SMNs usage intensity after gender and high school GPA were controlled for.

Keywords: social media, learning performance, gender studies, mobile learning

INTRODUCTION

People are eager to try new technologies, and social media networks (SMNs) are among the popular internet-based technologies that attract many people (Manca & Ranieri, 2016). Ellison (2007) defines SMNs as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system" (p. 211). SMNs have attracted hundreds of millions of people, who make them a part of their daily lives and use them to connect with others based on their interests (Clarkson, 2012). Initially, SMNs were intended to be tools for socializing (Madge et al., 2009). However, people have expanded the uses of SMNs to areas such as business (Li et al., 2014), tourism (Gao et al., 2012), and education (Sánchez et al., 2014). SMNs are platforms that people join to be part of the networks, investigate their contents, build social and educational relationships, and share their experiences (Jiao et al., 2015).

According to a report by Hootsuite ("DIGITAL in 2020"), there are 3.8 billion social media users around the world. Since January 2019, the number of social media users has increased by 9.2%, with 321 million new users. As the statistics show, use of SMNs are very common among college students worldwide. For example, Fodah and Alajlan (2015) found that 99% of undergraduate students in Saudi Arabia are active SMNs users.

The same Hootsuite report ranked Saudi Arabia as the number-one country in the growth of social media users. Saudi Arabia is experiencing rapid growth in information and communications technology (ICT) infrastructure. With this growth and expansion in ICT, SMNs usage is increasing. Saudi Arabia is one of the developing countries that allocates a significant portion of its budget to education. However, with the advancement of technology and internet speed, investigating how SMNs affect students has become an absolute necessity. In particular, the impact of SMNs use on academic performance needs to be studied. The purpose of this study is to determine how SMNs usage affects academic performance.

LITERATURE REVIEW

This growing phenomenon, SMNs usage among students, has inspired many educators in the past two decades to conduct research to investigate the potential influence that this new technology may have on educational outcomes (Glogocheski, 2015; Haddad, 2012; Junco, 2015; Karpinski et al., 2013; Kashif, 2013; Michikyan et al., 2015; Paul et al., 2012). As do any technologies that emerge, SMNs have advantages and disadvantages. One of the advantages that various studies have emphasized is that SMNs provide an additional space for students to collaborate and interact outside the classroom (Junco et al., 2012). However, one of the most obvious disadvantages that researchers have identified is that SMNs can waste a lot of students' time (Haddad, 2012).

Much research has been done worldwide to investigate the relationship between academic performance and the use of SMNs as whole or of one network in particular, such as Facebook. Most of these studies found a negative relationship between SMNs use and academic performance (Alam & Aktar, 2021; Alexander, 2012; Ddungu et al., 2021; Ellis et al., 2010; Glass et al., 2013; Glogocheski, 2015; Haddad, 2012; Hyatt, 2011; Junco, 2015; Karpinski et al., 2013; Kashif, 2013; Michikyan et al., 2015; Paul et al., 2012; Raza et al., 2020; Skiera et al., 2015). For example, Karpinski et al. (2013) conducted a study to compare two samples from two different continents, one from the United States ($n = 451$) and the other from Europe ($n = 406$). They found a significant negative relationship between time spent on SMNs and students' GPAs in both samples, with the American sample being more significant. Moreover, Paul et al. (2012) surveyed 340 undergraduate students enrolled in business school courses in the United States. They concluded that students' academic performance was negatively influenced by time spent on SMNs. At a university in Finland, Kashif (2013) conducted a study on undergraduate students, and he also found a negative relationship between the use of Facebook and academic performance.

However, a few studies have found no relationship between the use of SMNs and academic performance (Ahmed & Qazi, 2011; Alwagait et al., 2015; Hargittai & Hsieh, 2010; Kabre & Brown, 2011; Lubis et al., 2012). Alwagait et al. (2015) carried out an investigation to assess the relationship between time spent on SMNs and students' GPAs. They surveyed 104 students and found no linear relationship between them. Similarly, Kabre and Brown (2011) could not find a relationship between the number of hours spent on Facebook and academic performance. We were able to identify only two studies that found a positive relationship between students' academic performance and SMNs use (Ali et al., 2021; Ainin et al., 2015). Ainin et al. (2015) studied the impact of Facebook use on the academic performance of 1,165 Malaysian university students. They concluded that increased Facebook use is likely to have a positive influence on students' academic performance.

Gender has historically been an important factor in the communication and information technology divide (Alnjadat et al., 2019; Bain & Rice, 2006; Cotten et al., 2009; Jackson et al., 2001; Kimbrough et al., 2013). Even though gender no longer plays a significant role in overall technology access and use, gender differences still exist in the use of particular types of modern technology and multitasking with schoolwork (Khan, 2017; Kimbrough et al., 2013; Kircaburun et al., 2020; Sheldon & Bryant, 2016). For example, Kimbrough et al. (2013) conducted a study to investigate gender differences in the use of SMNs. They found that female undergraduate students use SMNs for educational purposes more than males. Alnjadat et al. (2019) found that male students were more addicted to SMNs than female students. Junco and Cotten (2012) found that males used mobile phones for recreational uses such as gaming, photos, and video more than females.

Much of the previous research that considers SMN multitasking during schoolwork among undergraduate students has not focused on gender differences (Bowman et al., 2010; Junco & Cotten, 2012; Karpinski et al., 2013; Lau, 2017). Research among middle school students has shown that gender influences multitasking behavior (Foehr, 2006; Rideout et al., 2010). Rideout et al. (2010) reported that female middle school students are more likely to report multitasking than males. The same finding was obtained by Foehr (2006) in a sample of 14- to 16-year-olds. This study makes a primary contribution by investigating the gender differences in multitasking with SMNs during schoolwork among undergraduate students.

Higher education in Saudi Arabia is unique, as K-12 and higher education are segregated by gender. According to the Ministry of Education, there are 27 public universities and 10 private universities for both genders and one university for females only. While many researchers have investigated the effect of SMNs on academic performance worldwide, only one study on the influence of SMNs in Saudi Arabia has been identified (Alwagait et al., 2015). The study did not provide much information about the participants, such as gender or level of education. A detailed study that pays attention to student characteristics known to influence the use of SMNs in Saudi Arabia is missing, and this study aims to bridge this gap in the extant literature. The scope of this paper is the influence of SMNs on academic performance among undergraduate students across the Kingdom of Saudi Arabia, taking gender differences and high school GPA into account.

Social Capital

In 1988, Coleman (1988) introduced the theory of social capital as he explored the influence of family, friends, and community on the individual. According to Coleman (1988), social capital describes the diverse resources that individuals gain from their interactions and relationships with others. These resources can be in the form of, for example, information, motivations, financial support, or norm. The term social capital often refers to the healthy resources that assist individuals in achieving desirable goals. The theory indicates that “just as physical capital and human capital facilitate productive activity, social capital does as well. For example, a group within which there is extensive trustworthiness and extensive trust is able to accomplish much more than a comparable group without that trustworthiness and trust” (Coleman, 1988, p. 101).

Many studies have found social capital to be a success factor for humans in various sectors. The theory suggests that families and communities who have healthy and supportive environments that enrich their members’ social capital are more likely to produce successful individuals. In education, many researchers have examined the influence of social capital on educational outcomes (Bauer et al., 2007; Coleman, 1988; Dufur et al., 2013; Ellison et al., 2007; Lindfors et al., 2017; Sun, 1999; Unlusoy et al., 2013). Coleman (1988) studied the influence of family-student relationships and community-student relationships on academic performance. He concluded that students with strong social capital with their families and/or communities were less likely to drop out of school than those who had weak social capital.

In the past, obstacles such as time, location, and language have restricted interactions between people. The revolution of technology in the past few decades has enabled humans to tackle these obstacles and make more interactions possible. The internet, for example, facilitates new types of relationships among browsers and enables them to interact with others regardless of location. SMNs help to maintain and expand these interactions and relationships. Thus, these innovative technologies are useful tools for maintaining and increasing social capital. As Ellison et al. (2007) argued, some features of Facebook enable users to strengthen their weak ties with others, which in turn increases their social capital. On the other hand, the accessibility and usability of SMNs have led the current generation of students to spend a great deal of their time using SMNs, which in turn might affect the time they spend preparing for class and their academic performance in the long run. The MSNs is a *real double-edged sword* as claimed by Smith (2016). Thus, the purpose of this study was to examine the influence of SMNs on the academic performance of undergraduate students.

As discussed in the previous section, previous studies have found that some demographic variables are important to consider when examining SMNs use and academic performance. The objectives of this study are to (1) investigate gender differences in the use of SMNs and (2) examine the relationship between SMNs usage intensity and academic performance, taking gender differences and high school GPA (HSGPA) into account. The following research questions guided this study:

1. Is there a gender difference in the time spent on SMNs for general purposes (TSMNG)?
2. Is there a gender difference in the time spent on SMNs for academic purposes (TSMNA)?
3. Is there a gender difference in multitasking (using SMNs during schoolwork) (MDS) and SMNs usage intensity (SMNUI)?
4. Is there a relationship between SMNs usage intensity and academic performance?

SAMPLE DATA COLLECTION

An invitation email to participate in the online survey was sent to all undergraduate students through the Deanship of Information Technology at five public universities in Saudi Arabia. One month later, a second reminder was sent. Data were collected in fall 2019. The sample consisted of 453 students.

Instrumentation

The independent variables were SMNs Usage Intensity (SMNUI), Multitasking During Schoolwork (MDS), Time spent on SMNs for General purposes (TSMNG), and Time spent on SMNs for Academic purposes (TSMNA). The dependent variable was academic performance. A pull-down menu on the survey was used to allow students to select the hours and minutes spent on SMNs for general purposes and the time spent on SMNs preparing for class. Academic performance was evaluated with a single item: The participants were required to provide their current GPAs. Because the first language of the participants was Arabic, the survey was translated into Arabic. The translation process involved bilingual reviewers and back-translation to make sure that both versions were equivalent.

SMNs Usage Intensity

The researcher adopted an existing instrument that has been used to measure SMSs usage intensity by many studies (Ainin et al., 2015; Ellison et al., 2007; Ross et al., 2009) and reflects high internal consistency (.87). For example, Ainin et al. (2015) used this instrument to measure Facebook usage intensity. The instrument consists of five items: "Social media networks are part of my everyday activity," "I feel I am part of the social media community," "I am proud to tell people I am using social media networks," "Social media networks have become part of my daily life," and "I would be upset if social media networks shut down." The participants were required to answer all the items using a 5-point Likert scale ranging from 1 strongly disagree to 5 strongly agree. Cronbach's alpha was used to assess the internal consistency of the SMNs intensity scale. the Cronbach's alpha for usage intensity in this study was .76.

Multitasking

To measure multitasking during schoolwork, the researcher used a scale developed by Lau (2017). The scale has been used in some studies and reflects high internal consistency. The scale consists of the following items: "I use social media in the classroom," "I open my social media accounts during the lecture," "I remain online with my social media site(s) while doing homework," and "I multitask with my social media account while studying." The items were rated on a 5-point Likert-type scale (5 = *never*, 4 = *rarely*, 3 = *sometimes*, 2 = *often*, 1 = *always*).

RESULTS

Descriptive Statistics

Undergraduate students from five public Saudi universities participated in this study. Sixty percent of those who took the survey were male. The age of the participants ranged from 18 to 25. Thirty-eight percent of students in the sample were freshmen, 25% were sophomores, 30% were juniors, and 7% were seniors. In terms of nationality, the majority (95%) were Saudis. The demographics of the participants, particularly in relation to gender, age, and nationality, are quite representative of the undergraduate student population in

Saudi public universities. The average HSGPA in the sample was 92.55 out of 100 (SD 6.8), and the average college GPA was 3.21 (SD 0.61).

As shown in **Figure 1**, Snapchat was the most popular app used for general purposes (33.1%), followed by Twitter (22.3%), WhatsApp (19.9%), and Instagram (11.3%). In terms of academic purposes, WhatsApp was the most used app among students (60.9%), followed by YouTube (22.1%) (see **Figure 2**). **Table 1** provides the means and standard deviations of the study variables. Students spent an average time of 198 minutes (SD 86.19) per day on SMNs for general purposes and an average time of 74 minutes (SD 72.45) per day on SMNs for academic purposes.

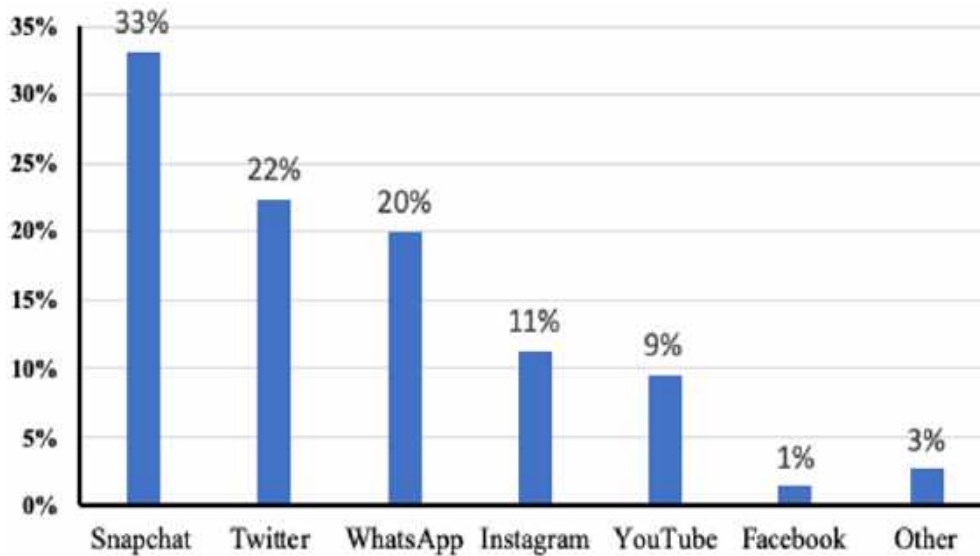


Figure 1. Most popular SMNs among students

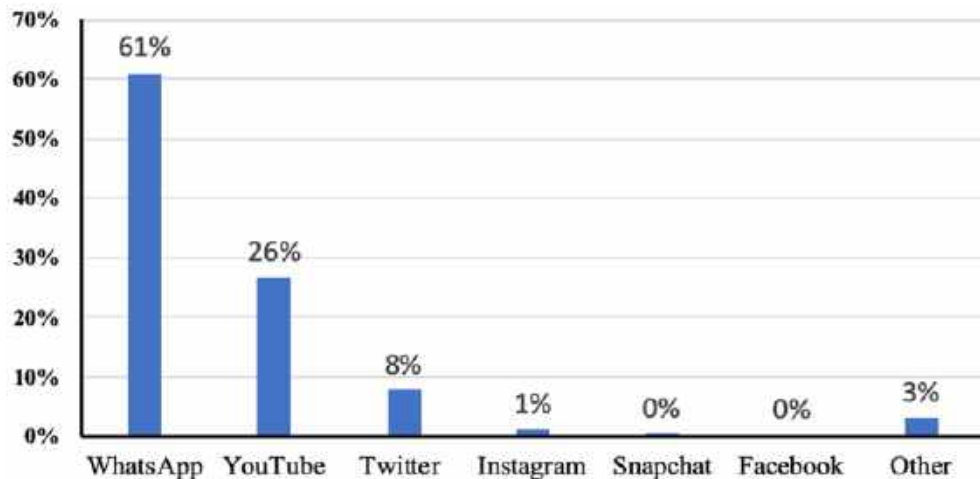


Figure 2. Most popular SMNs for academic purposes

Table 1. Descriptive and reliability statistics

Variable	Reliability Cronbach's alphas	Mean	SD
HSGPA		92.55	6.80
GPA		3.20	0.61
Time spent on SMN for general purposes		197 min	86.19
Time spent on SMN for academic purposes		73 min	72.54
Time spent preparing for class		116 min	112.23
SMNUI	0.78	2.05	0.65
MDS	0.84	3.19	0.91

N = 453

Cronbach's alpha was used to assess the internal consistency of the SMNs intensity scale and multitasking scale. As presented in **Table 1**, the Cronbach's alpha for usage intensity was .76 and .84 for multitasking. The scores for the SMNs usage intensity (SMNUI) scale were determined using a 5-point Likert-type scale (5 = *strongly disagree*, 4 = *disagree*, 3 = *neutral*, 2 = *agree*, 1 = *strongly agree*), with the negative item reverse-coded. The mean was 2.44 (SD = .98), which fell between *neutral* (3) and *agree* (2). For the multitasking scale (MDS), the items were rated on a 5-point Likert-type scale (5-*never*, 4-*rarely*, 3-*sometimes*, 2-*often*, 1-*always*), with the negative item reverse-coded.

The mean fell close to *sometimes* ($m = 3.19$, $SD = 0.9$). **Table 2** presents the correlation matrix for the study's variables.

Time Spent on SMNs for General Purposes

Question 1: Is there a gender difference in the time spent on SMNs for general purposes?

A comparison of time spent on SMNs for general purposes was made based on gender, using a t-test. As presented in **Table 2**, the results revealed that there was a significant difference in time spent on SMNs for general purposes ($t(451) = -2.86$, $P < .001$). Female students ($M = 212.15$, $SD = 81.54$) tend to spend more time on SMNs for general purposes than male students ($M = 188.94$, $SD = 88.2$).

Table 2. Correlation matrix for the study's variables

	HSGPA	GPA	TSMNG	TSMNA	MDS	SMNUI
HSGPA		.348**	.025	.180**	-.089	-.033
GPA			-.043	.122**	-.025	.081
TSMNG				.200**	-.160**	-.285**
TSMNA					-.043	-.054
MDS						.456**
SMNUI						

$N = 453$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Time Spent on SMNs for Academic Purposes

Question 2: Is there a gender difference in the time spent on SMNs for academic purposes?

With respect to the time spent on SMNs for academic purposes, a t-test was used to compare the means of the two groups. The analysis showed a significant difference in time spent on SMNs for academic purposes between male and female students ($t(451) = -5.39$, $P < .001$) (see **Table 3**). Female students ($M = 95.74$, $SD = 80.9$) tend to spend more time on SMNs for academic purposes on a daily basis than male students ($M = 59.19$, $SD = 26.28$).

Gender, Multitasking, and Social Media Usage Intensity

Question 3: Is there a gender difference in multitasking (using SMNs during schoolwork) and SMNs usage intensity?

Table 3 shows the means of the frequency of multitasking and SMNs usage intensity for male and female students. The results of the t-tests show no significant differences between male and female students in multitasking with SMNs during schoolwork ($t(451) = .969$, $P > .05$) or SMNs usage intensity ($t(451) = 1.94$, $P > .05$).

Table 3. Gender differences in SMN usage

Variable	Female		Male		t(df)	p-value
	M	SD	M	SD		
TSMNG (General)	212.15	81.54	188.94	88.02	-2.86 (451)**	.004
TSMNA (Academic)	95.47	80.9	59.19	26.28	-5.39 (451)***	.000
MDS	3.15	.93	3.23	.90	.969 (451)	.333
SMNUI	1.98	.60	2.10	.69	1.94 (451)	.217

$N = 453$. * $p < .05$, ** $p < .01$, *** $p < .001$

SMN Usage Intensity and Academic Performance

Question 4: Is there a relationship between SMNs usage intensity and academic performance?

Hierarchical regression analysis was used to answer this question. Hierarchical regression is a statistical analysis procedure used to determine if the independent variables explain a statistically significant amount of variance in the dependent variable after other variables are accounted for. Gender and HSGPA were entered as the control variables in the first and second blocks. Gender is a nominal variable that cannot be entered directly in a multiple regression analysis. Dummy-variable coding was used to translate nominal data into quantitative data for use in the regression analysis (Cohen et al., 2003). In this study, gender was coded as 1 for male and 0 for female. The data of this study satisfied all six assumptions of multiple regression analysis and multicollinearity.

The hierarchical linear regression predicting overall GPA ($F = 25.059, p < .001, R^2 = .143$) was significant (see **Table 3**). In block 1, gender was significantly related to GPA ($F = 11.162, p < .01, R^2 = .024$). Male students had lower GPAs than female students. In block 2, HSGPA was added. The results remained the same as in block 1 in terms of gender, and HSGPA was significantly associated with GPA ($F = 34.468, p < .001, R^2 = .024$).

As shown in **Table 4**, SMNs usage intensity was entered in block 3. The results indicated that SMNs usage intensity had a significant effect on students' GPAs ($F = 25.059, p < .001, R^2 = .143$). The results remained the same as in block 2 in terms of gender and HSGPA. Of particular interest was the finding of block 3: SMNs usage intensity was found to be a strong predictor of students' GPAs and explained a significant amount of the variance in the dependent variable.

Table 4. Hierarchical regression model exploring how SMNUI predicts overall GPA (N = 453), after controlling for gender and HSGPA

Independent variables	Block 1 (β)	Block 2 (β)	Block 3 (β)
Gender (male)	-.155**	-.105*	-.118**
HSGPA		.333*	.335***
SMNUI			.103*
Adjusted R^2	.022***	.129***	.138***

β = Beta, the standardized regression coefficient. * $p < .05$, ** $p < .01$, *** $p < .001$.

DISCUSSION

This study concerns how SMNs influence academic performance, taking gender differences into account. The main research questions were as follows: (1) Is there a gender difference in the time spent on SMNs for general purposes? (2) Is there a gender difference in the time spent on SMNs for academic purposes? (3) Is there a gender difference in multitasking (using SMNs during schoolwork) and SMNs usage intensity? (4) Is there a relationship between SMNs usage intensity and academic performance? SMNs seem to have permeated the everyday lives of undergraduate students in Saudi Arabia. Students who participated in our study spent an average of about three and a half hours a day on SMNs for general purposes. Students also reported spending almost two hours a day on SMNs for academic purposes. Thus, the total time that undergraduate students spend on SMNs daily is about six hours. Snapchat and Twitter were the first and second most commonly used social media platforms among students for general purposes, and WhatsApp and YouTube were the most commonly used for academic purposes.

With regard to gender differences, the results showed a significant association between gender and time spent on SMNs for both academic and general purposes. Female students tend to spend more time on SMNs for general purposes and academic purposes than male students. The difference found in this study can be attributed to the culture and social differences associated with female students in Saudi Arabia, where females generally tend to spend more time at home. Thus, they stay in touch with their relatives, classmates, and friends through SMNs.

This finding is consistent with previous studies, which suggest that women spend more time on SMNs to share, view, comment, and reply than men (Choi et al., 2017; Khan, 2017; Kircaburun et al., 2020; Rideout et

al., 2010; Sheldon & Bryant, 2016; Sorokowski et al., 2016). In terms of academic purposes, Ali et al. (2021), Horzum (2016), and Kimbrough et al. (2013) found that women use SMNs for educational purposes more than men. Contrary to this study's findings, Alnjadat et al. (2019), Bauman et al. (2013), and Kasahara et al. (2019) found that male students tend to spend more time using SMNs than female students.

Multitasking with SMNs during schoolwork did not significantly differ by gender, according to the t-test. There is limited research on multitasking during schoolwork for undergraduate students that considers gender differences. Therefore, it is not possible to compare this result to previous studies. However, it is possible to compare this result with studies that consider gender differences in SMN multitasking with other tasks. For example, this finding is consistent with that of Ophir et al. (2009) but contradicts other multitasking studies, such as Foehr's (2006) and Jeong and Fishbein's (2007). Foehr (2006) found that females tend to multitask with media more than males. Even though the findings of this study showed gender differences in time spent using SMNs, there was no gender difference in multitasking behavior. In general, the findings are consistent with previous findings showing greater use of SMNs by females.

In regard to research question four, the results showed a positive relationship between students' academic performance and SMNs usage intensity (i.e., the higher the usage, the better they performed). This finding is in agreement with the studies by Ali et al. (2021) and Ainin et al. (2015). However, it contradicts most past studies, which have reported that higher usage of SMNs results in lower academic performance (Alam & Aktar, 2021; Ddungu et al., 2021; Ellis et al., 2010; Gabre & Kumar, 2012; Junco, 2015; Junco & Cotten, 2012; Karpinski et al., 2013; McLoughlin & Lee, 2010; Raza et al., 2020; Tess, 2013; Wohn & LaRose, 2014) and other studies that reported no effect on students' performance (Ahmed & Qazi, 2011; Alwagait et al., 2015; Hargittai & Hsieh, 2010; Kabre & Brown, 2011; Lubis et al., 2012).

A plausible explanation for this result can be explained by the social capital theory. For illustration, SMNs are tools that help students maintain and increase social capital, which in turn positively influence their performance as many researchers have found that (Dufur et al., 2013; Ellison et al., 2007; Lindfors et al., 2017; Sun, 1999; Unlusoy et al., 2013). These contradictions in the literature could be due to some other factors (e.g., the inability to understand SMN complexities, the different purposes that students use SMNs for, or cultural differences).

CONCLUSIONS

This study examined the gender differences in SMN use and the relationship between SMN usage intensity and academic performance among undergraduate students in Saudi Arabia. It found that female students tend to spend more time on SMNs for general purposes and academic purposes than male students. It also found that multitasking did not significantly differ by gender. Finally, after gender and HSGPA were controlled for, the regression analysis showed a positive relationship between students' academic performance and SMNs usage intensity. This finding contradicts most of the previous studies, which were conducted in different countries, as indicated in the discussion.

This study has several limitations. First, the results of the analysis in this study represents only the trends observed during that period of time. Second, the sample used in this study was limited to five public universities in Saudi Arabia. Thus, the findings of the study cannot be generalized to other universities. Finally, this study used self-report measures. Future research may consider another approach to examine the influence of SMNs on academic performance. Moreover, future research may consider examining the influence of social media networks usage intensity on academic performance, taking purposes of usage, type of social media networks, and cultural differences into account.

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Data availability: Data generated or analysed during this study are available from the author on request.

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