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## PREDICTORS OF ECONOMICS STUDENTS' SOCIAL NETWORKING SITES USE FOR ACADEMIC PURPOSES: A HIERARCHICAL LINEAR MODEL APPROACH

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### Abstract

*This study examines the influence of demographic variables and facilitating conditions such as self-rated skills in internet use, cumulative grade point average (CGPA) and attitude to social networking sites (SNSs) on Economics students' use of SNSs for academic purposes. The sample comprised of two hundred ninety-seven second and third-year undergraduate Economics students at Makerere University in Uganda. Data were collected using a questionnaire; and analyzed using a hierarchical linear model (HLM). In the analysis, age and gender were not significant in influencing the use of SNSs for academic purposes. On the other hand, self-rated skills in internet use, CGPA, and attitude to SNSs in learning were significant in explaining students' use of SNSs for academic purposes.*

**Keywords:** *Academic purposes, hierarchical linear model, predictors, social networking sites.*

### 1. Introduction

The use of social networking websites amongst university students has increased tremendously in recent years. Boyd and Ellison (2008) define SNSs "as web-based services which allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those of others within the system" (p. 211). The most popular SNSs being used in Uganda are Instagram, Facebook, Twitter, YouTube and WhatsApp (Kanyoro, 2016). Many Ugandan students are intensively using these sites and this is particularly the case at Makerere University. Yet, the factors affecting the use of these sites among university students in Uganda is subject that has received little scholarly attention. Little is known about students' preferred SNSs and the factors affecting their choice for learning.

Several studies have investigated the use of SNSs for learning among university students worldwide (e.g. Al-Rahmi & Zeki, 2017; Guo et al. 2018; Guraya, 2016; Khan et al. 2016; Lawanson et al 2016; Munshi et al. 2018; Rocoy & Feliz, 2016). Other research has specifically examined the effect of SNSs on students' academic performance (e.g., Badri et al. 2017; Doleck & Lajoie, 2018; Dolecket al. 2017; Ekechukwu, 2017; Jehopio et al. 2017; Kolan & Dzandza, 2018; Nsizwana et al. 2017; Nyabera, 2017; Sukeerthi & Krupalini, 2018). Although an increasing body of literature details the factors affecting the use of SNSs among university students (e.g., Akman et al. 2016; Ali et al. 2016; Balakrishnan et al. 2017; Bonilla & Osman, 2017; Elkaseh et al. 2016; Lubua et al. 2017; Sarwar et al. 2018), there has been little examination of this issue in the Ugandan context. Moreover, most of the analyses in the literature have been descriptive in nature, with very little modeling of the predictors of SNSs use for academic purposes.

The present study attempts to understand the predictors of SNSs for learning among Economics students at Makerere University in Uganda. Specifically, the study analyses the influence of demographic variables (age and gender), and facilitating conditions such as attitude to SNSs for learning, self-rated skills in internet use and cumulative grade point average on students' use of SNSs for academic purposes.

## **2. Literature review**

### **2.1 Use of SNSs for educational purposes among university students**

The literature on the use of SNSs for learning among university students is well represented in publications. For instance, Guraya (2016) reviewed the empirical literature on the use of SNSs for educational purposes among university medical students. The study found that the majority (75%) of the students admitted using SNSs. The findings further showed that 20% of the students used the sites for sharing educational and academic information.

In Bangladesh, Munshi et al. (2018) examined the use of SNSs among students at the University of Rajshahi. Data were collected from a sample of 150 postgraduate students using a questionnaire. The study found that Facebook was the most preferred SNSs. In addition, the majority of the respondents acknowledged that SNSs were useful in their education and in building relationships with educators, family, and friends.

Guo et al. (2018) explored the use of social media to improve student-instructor communication in an online learning environment at a public university in the USA. Data was collected from a control and treatment group where Facebook was used as an additional communication tool. The study found that the use of Facebook as an additional communication method can help instructors to reach out to students better and reduce a courses' failure rate while improving students' course performance.

Furthermore, Jehopio et al. (2017) investigated the effect of online SNSs use among university students at Makerere University in Uganda. Data were collected from a sample of 312 students using a questionnaire. The study found that students who use online SNSs more for academic purposes were more likely to perform better academically than non-academic purposes users.

In Malaysia, Al-Rahmi and Zeki (2017) investigated the use of social media for collaborative learning among university students. Three hundred-forty (340) respondents were interviewed using a questionnaire. The study found that collaborative learning and students' satisfaction had a positive influence on learners' performance in the context of learning Hadith and Quran.

Likewise, Raza et al. (2017) examined the use of social media among students of the University of Punjab, Lahore in Pakistan. Data were collected from a sample of 600 students using a questionnaire. The study found that 81.4% of the students were using social media for academic purposes including communicating with course mates, accessing course notes, using social media quizzes and online discussion tools.

In Nigeria, Lawanson et al. (2016) investigated the use of social media among undergraduate students at the University of Lagos. Data were collected from a sample of 407 students from the built environment disciplines using a questionnaire. The study found that for students in Urban Planning, Estates Management, and Architecture, the use of applications such as Easy Class and Google Earth enhanced their learning experience.

Another study (Khan et al. 2016) in Australia explored the use of social media sites by accounting university students and its relationship with student engagement. Data was collected using an online questionnaire from a sample of 126 students from four Australian universities. The study found that accounting students used social media for a number of academic-related purposes such

as organizing, communicating/exchanging information, allocating assignment related tasks, delegating responsibility and monitoring others' progress.

In addition, Ricoy and Feliz (2016) investigated the use of Twitter among 39 respondents at a university in Spain. The study employed a mixed methods research design using a case study. The findings showed that students' participation in the educational use of Twitter increased progressively as their technical knowledge of the tool improved. The study further found that the use of Twitter in the learning process was perceived as a motivating experience for the students.

## 2.2 Factors affecting the use of SNSs in learning among university students

The literature is replete with studies on the factors influencing the use of SNSs in learning among university students. For instance, Sarwar et al. (2018) investigated the use of social media tools for collaborative learning among university students in China. Data were collected from a sample of 360 students using a questionnaire. The study found that perceived enjoyment, perceived ease of use, as well as perceived usefulness, had a significant positive relationship with social media usage.

Balakrishnan et al. (2017) conducted a comparative study on social media use in learning among Australian and Malaysian university students. Three hundred fifty-two students were interviewed using a questionnaire. The study found three common factors to influence the use of social media across students from both countries, and these were barriers, academic reasons, and social networking. In the study, Malaysian students were found to exhibit a significantly greater emphasis on barriers and academic reasons than their Australian counterparts.

In Sweden, Bonilla and Osman (2017) explored the factors influencing students' decision to use social media for academic purposes at Lund University. Qualitative data were collected from a sample of ten students. The study found six factors to influence students' use of social media for academic purposes: technology characteristics, hedonic motivations, social motivations, personal concerns, utilitarian motivations and university/teacher support.

Furthermore, Lubua et al. (2017) examined the factors which affect the use of social media in learning among accountancy students in Tanzania. Data were collected from a sample of 100 students using a questionnaire. The findings revealed that 38% of the respondents used social media in learning. The study found that perceived relevance, perceived ease of use and security concerns affected the rate of use of social media. However, demographic variables such as Directorate of study (postgraduate or undergraduate), years of post-secondary education and the program of study did not influence the use of social media in learning.

Likewise, Akman and Turhan (2016) explored the factors influencing social media use for teaching and learning purposes among academic and university students in Turkey. Data were collected from a sample of 142 respondents using a questionnaire. The study found that age, gender, and position had significant influences on the usage of SNSs for academic purposes. The results further showed that with the exception of perceived awareness; perceived usefulness, perceived ease of use and social pressure had a significant influence on the adoption of SNSs for teaching and learning purposes in higher education institutions.

Another study (Ali et al. 2016) explored the academic usage of social media among university students in Saudi Arabia. Data were collected from a sample of 47 students using interviews. The study found that the majority (37%) of the students used social media for learning. The findings revealed that social influences, individual psychological characteristics, system usefulness and information quality were the leading factors influencing the use of social media.

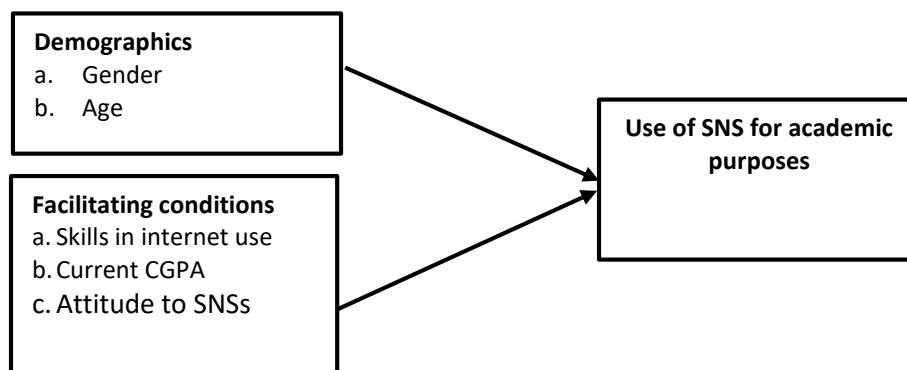
Furthermore, Elkaseh et al. (2016) investigated the factors which influence the use of social media for e-learning in Libyan higher education institutions. Data were collected from a sample of 184 teachers and students from four universities using a self-administered questionnaire. In their analysis, perceived usefulness and perceived ease were important factors in predicting students' and teachers' intention to use social network media for e-learning.

In Nigeria, Olatokun and Ilevbare (2014) studied university students' utilization and adoption of social networking websites. Data were collected from a sample of 600 undergraduate and postgraduate students using a structured questionnaire. The findings revealed that socio-demographic variables had a positive influence on the use and adoption of social networking websites. Also, the diffusion of innovation variables contributed significantly to the use and adoption of social network websites. In their findings, the strongest influence was from innovation characteristics, while time exerted had the least influence.

Figure 1 shows the hypothesized relationship between the dependent and explanatory variables. The explanatory variables were categorized into: (i) socio-demographic characteristics (i.e. gender and age) and (ii) facilitating conditions, a construct intended to measure students' perceptions of their technology environment. As is true with most perceptual constructs (Heilman et al. 2009), the exact structure of facilitating conditions may vary.

In this study, facilitating conditions were defined as the amount of intrinsic and extrinsic support available for the use of SNSs for academic purposes. The factors considered included skills in internet use (a proxy for the level of expertise in using SNSs), students grades (based on their CGPA) and attitude towards the use of SNSs for study purposes.

**Figure 1:** Conceptual model for the predictors of SNSs use for academic purposes



### 3. Methodology

#### 3.1 Sample

A cross-sectional survey research design was used. The sample comprised of second and third-year undergraduate Economics students from Makerere University. Multi-stage sampling technique was used. First, the study employed purposive sampling to select the schools with Economics students. These were the School of Economics, the School of Education, the School of Distance and Lifelong Learning, the School of Statistics and Planning, and the School of Business. Second, three hundred sixty-nine (369) questionnaires were distributed to first, second and third-year Economics students using captive audience sampling technique.

Of the 369 questionnaires, three hundred fifty-seven (357) were completely filled and returned, representing a high response rate of 96.7%. For the present analysis, sixty (60) questionnaires for first-year students were dropped for lack of data on CGPA. The analysis is based on 297 questionnaires for second and third-year Economics students.

### 3.2 Data sources

Data were collected from August to November 2017 using a self-administered questionnaire. The questions were mostly organized into close-ended and supplemented with open-ended questions to give room for additional information/comments from the respondents. The study employed a seven-point Likert-scale to explore students' use of SNSs for academic purposes; with 1 indicating a very unfavorable response, and 7 signifying a more favorable response. The following are some of the items included in the questionnaire to measure students' attitude and use of SNSs for academic purposes. The lead question was that: "On a scale of 1-7, please indicate the extent to which you perceive/use SNS for accessing a vast quantity of materials related to the course outline; discussing different topics with classmates; finding lecture-related information; watching videos related to a particular course unit; keeping in contact with other students in the class; clarification of concepts/terminologies used by the lecturer, etc.". It is from these Likert-scale ratings that two indices of attitude and social media use for study purposes were computed by taking the average score that ranged from 1.0-7.0. The assumption was that higher scores denote a good attitude/a higher level of utilization of SNSs for study purposes and vice versa.

### 3.3 Analytical approach

It was hypothesized that students' demographic characteristics and facilitating conditions affect the level of SNSs use for study purposes. Accordingly, a hierarchical linear regression model (HLM) was employed to determine the best linear combination of the explanatory variables in predicting the outcome variable. Because each level in a multilevel analysis is represented by its own sub-model, HLM allows simultaneous estimates for different models while maintaining the appropriate level of analysis for the sets of explanatory variables (Raudenbush & Bryk, 2002). Three models were thus estimated in this study. Demographic characteristics (gender and age) were entered at stage one of the regression to control for facilitating conditions. At stage two, facilitating conditions were entered to control for the influence of students' demographic data. The final model involved regressing both demographic and facilitating conditions at once to determine which parameters are most sensitive to the use of SNSs for study purposes. Diagnostic tests were also conducted to determine the robustness of the model.

## 4. Findings and discussion

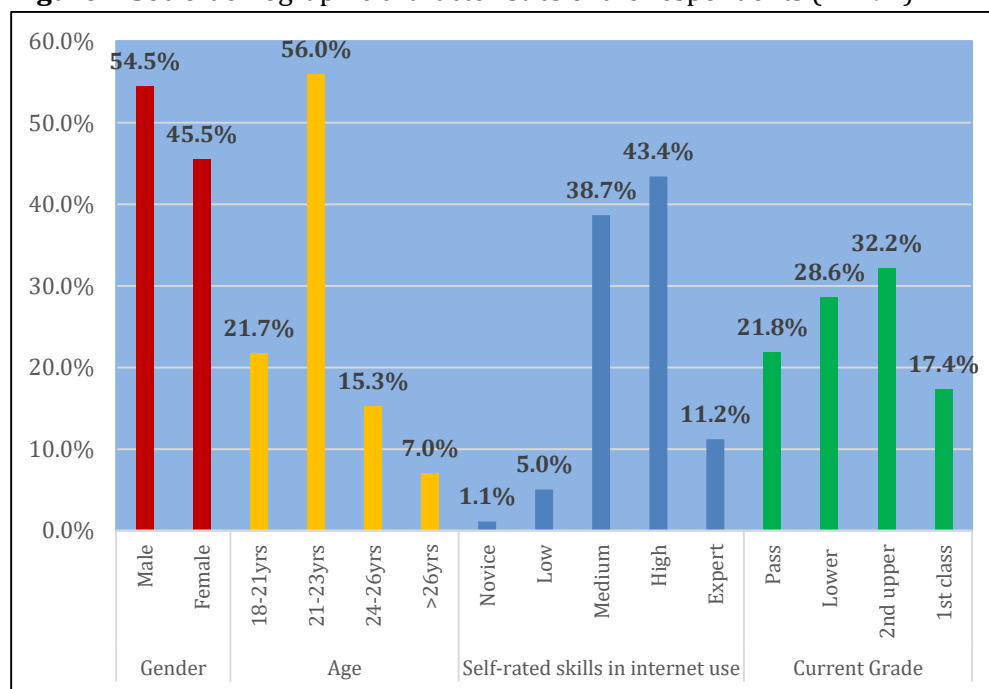
### 4.1 Descriptive statistics

In Figure 2, the socio-demographic characteristics of the respondents can be ascertained. The figure shows that out of the 297 students, the majority (54.5%) were male while 45.5% were females. Most of the respondents (56%) were in the 21-23 years age bracket, followed by students in the 18-21 age bracket (21.7%), then 24-26 years age bracket (15.3%). Only 7% of the respondents were above 26 years. Regarding self-rated skills in internet use, the majority rated themselves highly (43.4%), followed by medium (38.7%), then expert (11.2%), low (5%) and the novice (1.1%). The assumption was that high skill in internet use was expected to translate into

ease of use of SNSs, thereby increasing students’ ability to obtain up-to-date information, interact with other students on a particular topic, find lecture-related information, and so on.

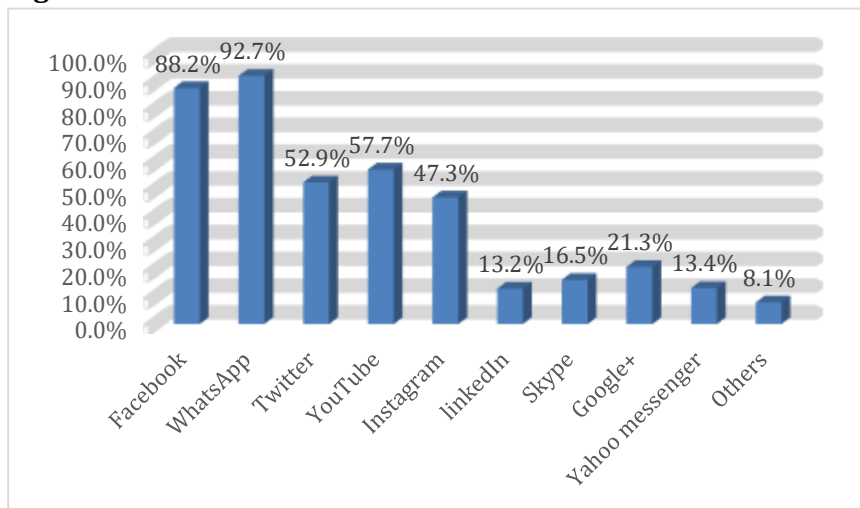
The students’ cumulative grade point average for the previous semesters was another independent variable hypothesized to correlate with the use of SNSs for academic purposes. This variable was based on students’ self-reported CGPA. The study used Makerere University's classification of degrees, diplomas, and certificates, which is as follows: 2.00 – 2.79 (Pass), 2.80 – 3.59 (Second Class – Lower Division), 3.60 – 4.39 (Second Class – Upper Division), and 4.40 – 5.00 (First Class). Figure 2 shows that by the time of the survey, 32.2% of the students had a Second Class – Upper Division, 28.6% has a Second Class – Lower Division, while 21.8% had a Pass degree. Only 17.4% of the Economics students reportedly had a First Class degree at the time of the survey.

**Figure2: Socio-demographic characteristics of the respondents (n=297)**



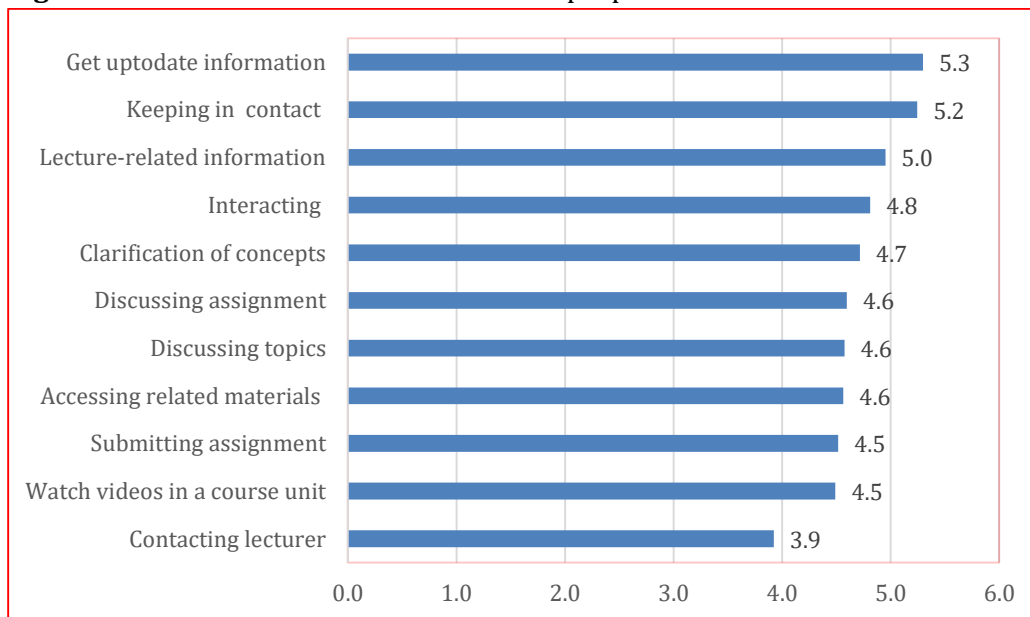
Students were asked to indicate the SNSs they mostly subscribed to. Figure 3 shows that WhatsApp (92.7%) was the most popular SNSs followed by Facebook (88.3%) then YouTube (57.7%), Twitter (52.9%), and Instagram (47.3%). The findings parallel Asare and Frimpong (2016) study in Ghana, where the majority (95.7%) of the students subscribed to WhatsApp.

**Figure 3:** SNSs students subscribe to



Data was also collected on students’ attitude to use of SNSs for academic purposes. The level of the importance students attach to SNSs was used as a proxy for measuring attitude. The mean response on the index of attitude was 4.7(±1.0). Since 4.7 was above the average of 3.5, the implication is that most Economics students in this sample held a positive attitude towards using SNSs in learning. Figure 4 gives a breakdown of students’ use of SNSs for academic purposes.

**Figure4:** Students’ use of SNSs for academic purposes



As can be seen in Figure 4, students use SNSs to get up-to-date information, keep in contact with other students in the class, and get lecture-related information. Other areas in which SNSs are used in learning include interacting with other students, discussing topics and assignments, getting clarification on particular concepts, accessing lecture-related material, submitting assignments, watching videos in a course unit and contacting the lecturer.

#### 4.2 Hierarchical linear model

A hierarchical linear model was employed to predict the factors that influence the use of SNSs for academic purposes. Table 1 presents the estimation results. In the first stage, the influence of demographic variables (age and gender) on the use of SNSs for academic purposes was modeled,

holding facilitating conditions constant. Model 1 shows that age and gender are not significant predictors in the use of SNSs for academic purposes (F=3.52, p=0.4744). However, the coefficient on gender is positive (0.16), implying that females are more likely to use SNSs for academic purposes than their male counterparts. This finding parallels Mazman and Usluel (2011) study in Turkey, who found females to use Facebook for learning than males.

In Model 1, all the dummy coefficients on age are negative, implying that as age increases, the likelihood of using SNSs for academic purposes decreases. Specifically, students aged 18-21 years are more likely to use SNSs for academic purposes than other age groups. These findings contrast with other studies such as Akman and Turhan (2016), Kalmus et al. (2011) and Poellhuber et al. (2011), who noted that students' use of SNSs for academic purposes rises with age. However, the insignificant influence of age on SNSs usage among students has been reported by Ngozi and Madu's (2015) study in Nigeria.

**Table 1:**HLMfor the predictors of Economics students' use of SNSs for academic purposes

Dependent variable					
Use of SNSs for academic purposes					
	Model 1	Model 2	Model 3	Tolerance for	
	β	B	B	Model 3	VIF
<b>Gender</b> ( <i>Reference group=male</i> )					
Female	0.16	-	0.004	1.13	0.89
<b>Age</b> ( <i>Reference group=18-21</i> )					
22-23yrs	-0.02	-	0.001	1.62	0.62
24-26yrs	-0.06	-	0.001	1.59	0.63
>26yrs	-0.01	-	0.002	1.26	0.79
<b>Skills internet use</b> ( <i>Reference group =Novice</i> )					
Low	-	0.63**	0.63**	4.85	0.21
Medium	-	0.66**	0.65**	2.37	0.42
High	-	0.60**	0.59**	2.32	0.43
Expert	-	0.53***	0.53***	7.39	0.14
<b>Grades</b> ( <i>Reference group =Pass</i> )					
2.8-3.59 (Lower)	-	0.03	0.03	1.79	0.56
3.6-4.39 (2nd Upper)	-	0.23**	0.23**	2.16	0.46
4.4-5 (1st class)	-	0.45*	0.45*	2.29	0.44
<b>Attitude</b>	-	0.30*	0.29*	1.56	0.64
F-value	3.52	201.77	206.84		
p-value	0.4744	0.0000	0.0000		
R <sup>2</sup>	0.0215	0.4403	0.4383		

Note: VIF, variance inflation factor. \*P < .01 . \*\*P < .05 . \*\*\*P < .1

In the second stage, facilitating conditions were introduced while holding demographic variables constant. Results in Model 2 show that the three facilitating conditions (skills in internet use, grades, and attitude to SNSs) explained 44.0% of the variation in the dependent variable, and this model was statistically significant (F=201.77, p=0.000). In the analysis, the findings demonstrated that more skills in internet use are significantly (p<0.05) associated with the use of SNSs for academic purposes. Other researchers such as Kalmus et al. (2011), Hong et al. (2013) and Schlenkrich and Sewry (2012) also concluded that experience, self-efficacy, and computer literacy are key factors in explaining the successful use of social media.



Model 2 shows that students' grades significantly affect the use of SNSs for academic purposes. In particular, students with a Second Class – Lower, a Second Class – Upper and a First Class were more likely to use SNSs for academic purposes than those with a Pass. However, statistical significance was evident among students who reportedly had a Second Class – Upper ( $p < 0.05$ ) and a First Class ( $p < 0.01$ ). This finding indicates that a high CGPA increases the likelihood of using SNSs for academic purposes.

In Model 2, the coefficient on attitude was positive (0.30) and statistically significant at 1 percent level. This means that a positive attitude towards the use of SNSs for academic purposes significantly translates into the use of SNSs in getting up-to-date information, keeping in contact with other students in the class, finding lecture-related information, interacting with other students on a particular topic, among others. These findings are in conformity with other studies such as Divya and Mitushi (2016), Durai et al. (2016) and Ekechukwu (2017), who reported that students' attitudes towards social media use in education affect their learning.

Finally, when all the five independent variables were included at stage three of the regression model, they accounted for 43.8% of the variance in the dependent variable (Model 3). In Model 1, neither gender nor age was a significant predictor of the outcome variable. This, therefore, implies that facilitating conditions such as self-rated skills in internet use, grades as indicated by a student' CGPA and attitude to SNSs for learning are the most important predictors of SNSs use for academic purposes.

The values of Variance Inflation Factor (VIF) for all the five independent variables were below 10, implying that the variables were completely uncorrelated with each other. The chi-square value of the Breusch-Pagan test was 1.31 with a p-value of 0.2516. Since this test was insignificant, this means that the model passed the heteroskedasticity test. The results of the F-statistics of Model 1 were insignificant ( $P > 0.05$ ) with a very small value of  $R^2 = 0.0215$ , an indication that other things being equal, students' demographic factors play a paltry percentage (2.1%) towards the dependent variable. On the other hand, Model 2 and Model 3 are significant at 99 percent and according to their corresponding values of  $R^2$ , Model 2 explains 44% of the variation in the dependent variable, and this value is the same for the final model which implies that the five parameters explain 44 percent of students' use of SNSs for academic purposes.

## **5. Conclusion and recommendations**

This study aimed to determine the best linear combination of demographic and facilitating conditions predicting Economics students' use of SNSs for academic purposes at Makerere University in Uganda. To achieve this objective, a hierarchical linear model was employed to carry out a simultaneous estimation of the independent contribution of students' demographic variables and facilitating conditions towards the adoption of SNSs for learning as the dependent variable. Gender and age were the demographic variables, whereas skills in internet use, students' CGPA (grades) and attitude towards SNS use for study purposes were included in the facilitating conditions. In the analysis, it was established that the major areas in which students use SNSs for academic purposes were in relation to getting up to date information, keeping in contact with other students in the class, checking lecture notes or assignments posted by the lecturer and interacting with other students on a particular topic and share ideas. Results from inferential statistics indicated that the two demographic variables (gender and age) were not significantly

important in differentiating users of SNSs for academic purposes. On the other hand, all variables under facilitating conditions were significantly important in accounting for the variations in the outcome variable. The study thus concludes that self-rated skills in internet usage, students' CGPA and attitude to SNSs for learning are the leading predictors of SNSs use by Economics students for academic purposes. On the basis of the findings, university authorities, academicians, and policymakers should take advantage of the educational uses of SNSs and integrate them into the learning process for student benefit. Also, future studies employing the HLM should extend the present analysis by incorporating a larger set of predictors at both levels or even add another level to fully explain the variations in SNSs use.

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