Social Media Impact on Academic Performance: Lessons Learned from Cameroon

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Abstract. The continuously improving Internet penetration in the continent, coupled with the increasing number of smartphone users in Africa has been considered as the reasons for the adoption of social media among students and other adolescents. Even though this development has been recognizing in the literature, only a few studies have investigated the acceptance, use, and retention of social media for academic purposes. However, findings of prior studies suggest that the use of social media has an influence on academic performance. To address the lack of knowledge on the adoption of social media among students, this study aims to explore the factors that are related to students' acceptance and use of social media. We attempt to extend the Technology Acceptance Model by integrating relational engagement, Perceived Satisfaction, as well as the Perspective of the Use of Social Media in Education. The proposed theoretical model was evaluated using quantitative data collected from 460 students in Cameroon. We applied PLS-SEM technique to test the hypotheses and the theoretical model. Implications of the findings, as well as future research directions, are presented.

Keywords: Social media · Academic performance · TAM · Relational commitment · Africa

1 Introduction

In recent years, the use of social media among university students in sub-Saharan Africa has grown rapidly, thanks to the continuing Internet penetration and access to smartphones. It has been noted that the use of social media plays a role in strengthening the social and academic bonds that may exist between stakeholders at the university. This, in turn, is beneficial for building an essential educational eco-system. Previous

M. Themistocleous et al. (Eds.): EMCIS 2020, LNBIP 402, pp. 370–379, 2020.
https://doi.org/10.1007/978-3-030-63396-7_25

studies, for instance [1–4], have widely explored the use of social media and how it affects the academic performance of University students from diverse backgrounds. Although social media plays an important communication lever for students which fosters an effective sharing of educational content between users, its influence on academic performance has so far remained an under-exploited area of research. For example, a study conducted by Lau [5] in 2017 reports that social media has been the cause of several academic failures. Thus, it is of paramount importance to investigate how social media is accepted and used by students. To address the gap in the literature, this study aims to explore the factors that are related to students' acceptance and use of social media. To start with, we develop a research model based on the extant literature on social media and education to meet the research objectives.

This paper is structured as follows. In the next section, we develop our theoretical model and formulate the hypotheses based on the existing literature. The following section presents the research methodology—data collection and analysis methods, as well as the procedures, followed to evaluate the proposed research model and test the hypotheses. The subsequent section presents the results of the study. Finally, the conclusion briefly summarises the findings of the study and presents limitations as well as opportunities for future research.

2 Theoretical Background

The theoretical representation proposed in this research (Fig. 1) is an extension of the Technology Acceptance Model (TAM) with Perceived Satisfaction, Perspective of Social Media in Education, and Relational Commitment. The TAM model was proposed by [6, 7] to measure the potential for adoption and use of technology by individuals, and to identify the necessary reforms that need to be carried out for wider acceptance by users. The authors state that "*the goal of TAM is to provide an explanation of the determinants of computer acceptance that in general is capable of explaining user behaviour across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and the theoretically justified*" [7].

The TAM has been widely used in emerging literature related to social media and education. For example, [8] made use of TAM by branching out subjective norms to explore the use of social media by 145 business students at an elite management school in Mumbai, India. Besides, researchers investigated the perception of teachers in initial training to use social media in the performance of their duties given the important place occupied by technology within the education sector. Akman and Turhan [9] also investigated the perception of 142 students on the adoption of Web 2.0 technologies for social learning. In a context strongly influenced by political, religious and economic trends, [10] extended TAM to assess the level of acceptance of social media for e-learning among Lybian academic institutions. Also, [11] extended the TAM model by incorporating engagement and collaborative learning as a construct to measure the inclusion of social media in the collaborative learning system and engagement of different stakeholders in universities in Malaysia.

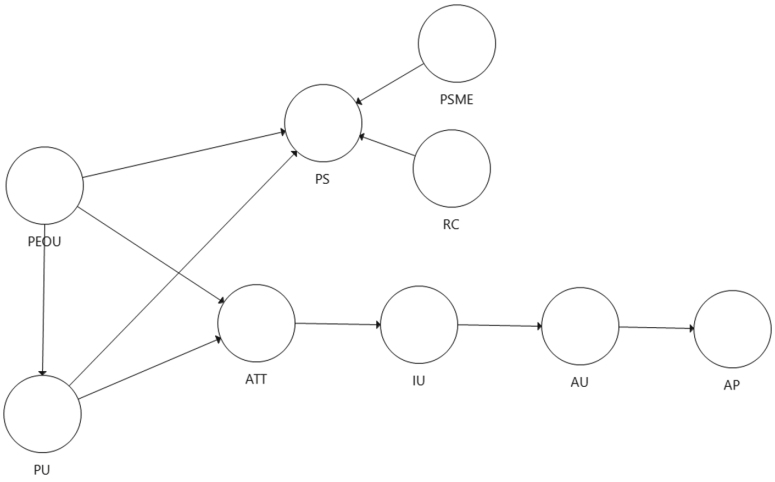

Fig. 1. Research model

Drawing from the foundations of the emerging literature on social media and education, we propose the following hypotheses in the context of social media and academic performance in university systems that find it difficult to adopt technology truly:

H_1: Perceived Ease of Use has a significant positive effect on Perceived Usefulness.
H_2: Perceived Ease of Use has a significant positive effect on Attitude.
H_3: Perceived Ease of Use has a significant positive effect on Perceived Satisfaction.
H_4: Perceived Usefulness has a significant positive effect on Attitude.
H_5: Perceived Usefulness has a significant positive effect on Perceived Satisfaction.

Besides, we emphasize that the perspective of social media in education plays a key role in the acceptance, use and effects of social media in education. Moreover, several studies have shown to what extent the perspective of social media in education plays an important role in the emerging literature on information systems [12].

Kanthawongs et al. [12] discover that Relational Commitment is a big part of user satisfaction with Facebook acceptance in education. Thus, we make use of previous research and suggest that in the context of economies in search of emergence, marked by a low acceptance and use of technologies, Relational Commitment remains a key factor in the process of acceptance, use. and satisfaction. In this context, therefore, we suggest the following hypotheses:

H_6: Perspectives of Social Media in Education has a significant positive effect on Perceived Satisfaction.
H_7: Relational Commitment has a significant positive effect on Perceived Satisfaction.
H_8: Attitude has a significant positive effect on Intention to Use.
H_9: Intention to Use has a significant positive effect on Actual System Use.
H_{10}: Actual System Use has a significant positive effect on Academic Performance.

3 Methodology

The study uses a survey questionnaire which was performed on Google form. The questionnaire's link was distributed through several social media students' groups. Data was collected from 460 (46.74% males and 53.26% females) students from public and private higher institutions in Cameroon. The items of each construct of the research model were adapted from prior studies of the extant literature about the subject. A total of 33 items were used to measure the nine variables of the structural research model. Besides the demographic profile, all the items were measured using a 7-point Likert Scale ranging from 1 to 7. SmartPLS, version 3.2.6 was used for data analysis. It is a PLS-SEM tool, to evaluate structural equations modelling (SEM) which helps researchers to assess the adequacy of the theoretical model and verify hypotheses.

Table 1. Demographic characteristics of respondents

Profile	Description	Frequency	%
Gender	Male	215	46.74
	Female	245	53.26
Age	15–17	4	0.88
	18–25	333	72.39
	26–35	116	25.21
	36–45	7	1.52
	46–60	0	0
Degree	Undergraduate	195	42.39
	Postgraduate	250	54.34
	PhD	15	3.26
Type of higher institutions	Public	211	45.87
	Private	249	54.13
Experience in use of social media	Between 1–3	38	8.26
	Between 4–6	138	30
	Between 7–9	144	31.3
	Between 9–10	57	12.40
	More than 10	83	18.04
Most frequently use social media	WhatsApp	237	51.52
	Facebook	42	9.13
	Twitter	112	24.35
	Instagram	12	2.61
	Wikipedia	16	3.48
	YouTube	28	6.09
	Pinterest	3	0.65
	Snapchat	5	1.07
	LinkedIn	5	1.07

Following the demographic statistics (Table 1), a total of 460 students completed the survey questionnaire. All fields of the survey were mandatory to avoid missing data. Of the 460 respondents, 215 were men (46.74%). It is an average distribution. As for age, the majority of respondents 97.60%, are between 18 and 35 years old while 72.39% is situated between 18 and 25. The participants' average age was between 18 and 25, which corresponds to individual's inclination to use information technologies services such as social media intensively.

4 Results

Table 2 presents our constructs along with measurement items and corresponding values for loadings, composite reliability as well as average variance extracted (AVE). We can observe that the values of Composite Reliability are above 0.7, and the figures for AVE are above 0.5. Regarding the items, we can notice that the only loading below the value of 0.7 is the item PSME. However, this is not likely to compromise the validity of the construct. Apart from this single case, all the items used in our study have a value of higher than 0.7. Thus, the thresholds specified in the literature are respected for the values mentioned above [13, 14]. Therefore, we can include all constructs in the proposed research model.

Table 2. Outer loadings, composite reliability (CR) and average variance extracted (AVE) values of the constructs.

Constructs	Items	Loadings	CR	AVE
Academic Performance (AP)	AP1	0.897	0.932	0.774
	AP2	0.915		
	AP3	0.820		
	AP4	0.885		
Attitude (ATT)	ATT1	0.852	0.869	0.691
	ATT2	0.901		
	ATT3	0.732		
Intention to Use (IU)	IU1	0.881	0.912	0.775
	IU2	0.889		
	IU3	0.870		
Perceived Ease of Use (PEOU)	PEOU1	0.891	0.927	0.810
	PEOU2	0.908		
	PEOU3	0.900		
Perceived Satisfaction (PS)	PS1	0.884	0.897	0.685
	PS2	0.797		
	PS3	0.846		
	PS4	0.779		

(*continued*)

Table 2. (*continued*)

Constructs	Items	Loadings	CR	AVE
Perspectives of Social Media in Education (PSME)	PSME1	0.782	0.834	0.560
	PSME2	0.742		
	PSME3	0.603		
	PSME4	0.846		
Perceived Usefulness (PU)	PU1	0.843	0.917	0.689
	PU2	0.834		
	PU3	0.820		
	PU4	0.812		
	PU5	0.842		
Relational Commitment (RC)	RC1	0.791	0.925	0.713
	RC2	0.864		
	RC3	0.859		
	RC4	0.853		
	RC5	0.852		
Actual System Use (AU)	AU1	0.863	0.877	0.781
	AU2	0.904		

In Table 3, the values associated with Composite Reliability go up to 0.932, which exceeds the threshold of 0.7 [14]. For Cronbach's alpha values, the associated values go up to 0.903, thus exceeding the threshold of 0.7 [14]. These values show a strong internal coherence as well as the reliability of the constructs which form our research model. For AVEs, Table 3 shows values up to 0.810, which is above the acceptable threshold of 0.5 [14]. Concerning the values obtained, we can affirm that the convergent validity of our model is confirmed.

Table 3. Construct reliability and validity

	Cronbach's alpha	rho_A	CR	AVE
AP	0.903	0.920	0.932	0.774
ATT	0.780	0.839	0.869	0.691
AU	0.721	0.735	0.877	0.781
IU	0.855	0.855	0.912	0.775
PEOU	0.883	0.884	0.927	0.810
PS	0.846	0.853	0.897	0.685
PSME	0.735	0.774	0.834	0.560
PU	0.887	0.887	0.917	0.689
RC	0.900	0.906	0.925	0.713

Table 4. Discriminant Validity

	AP	ATT	AU	IU	PEOU	PS	PSME	PU	RC
AP	**0.880**								
ATT	0.619	**0.831**							
AU	0.685	0.589	**0.883**						
IU	0.667	0.799	0.654	**0.880**					
PEOU	0.673	0.463	0.552	0.525	**0.900**				
PS	0.699	0.688	0.594	0.659	0.567	**0.828**			
PSME	0.586	0.625	0.470	0.564	0.487	0.759	**0.749**		
PU	0.762	0.689	0.633	0.727	0.697	0.674	0.586	**0.830**	
RC	0.378	0.363	0.330	0.321	0.318	0.396	0.366	0.350	**0.844**

As shown in Table 4 the discriminant validity of our research model is supported. It is measured by making a comparison between the data in the correlation matrix and the square root of the AVEs in the diagonals. This involves checking whether each value of the square root of the AVEs is greater than the intercorrelation with the values of the other constructs. [15–17].

Table 5. Structural model testing hypothesis using bootstrapping

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
H1: PEOU => PU	0.697	0.696	0.041	17.216	0.000****
H2: PEOU => ATT	−0.034	−0.035	0.074	0.457	0.648
H3: PEOU => PS	0.096	0.101	0.062	1.545	0.123
H4: PU => ATT	0.712	0.712	0.058	12.200	0.000****
H5: PU => PS	0.273	0.264	0.067	4.088	0.000****
H6: PSME => PS	0.524	0.527	0.045	11.647	0.000****
H7: RC => PS	0.078	0.083	0.048	1.630	0.104
H8: ATT => IU	0.799	0.801	0.025	31.834	0.000****
H9: IU => AU	0.654	0.656	0.041	16.156	0.000****
H10: AU => AP	0.685	0.686	0.034	19.974	0.000****

****P < 0.001

In Table 5, we can observe that the p-values of all of the hypotheses of our study. Thus, these findings support hypotheses H_1, H_4, H_5, H_6, H_8, H_9 and H_{10} while hypotheses H_2, H_3 and H_7 are not supported (Table 6).

Table 6. Hypotheses testing results

Hypothesis	Test results
H_1: Perceived Ease of Use has a significant positive effect on Perceived Usefulness.	Supported
H_2: Perceived Ease of Use has a significant positive effect on Attitude.	Not supported
H_3: Perceived Ease of Use has a significant positive effect on Perceived Satisfaction.	Not supported
H_4: Perceived Usefulness has a significant positive effect on Attitude.	Supported
H_5: Perceived Usefulness has a significant positive effect on Perceived Satisfaction.	Supported
H_6: Perspectives of Social Media in Education has a significant positive effect on Perceived Satisfaction.	Supported
H_7: Relational Commitment has a significant positive effect on Perceived Satisfaction.	Not supported
H_8: Attitude has a significant positive effect on Intention to Use.	Supported
H_9: Intention to Use has a significant positive effect on Actual System Use.	Supported
H_{10}: Actual System Use has a significant positive effect on Academic Performance.	Supported

The present study provides support for the Technology Acceptance model in the context of the use and impact of social media on academic performance. The results show that Perceived Ease of Use positively influences Perceived Usefulness. Besides, perceived usefulness positively influences attitude and perceived satisfaction which is in line with [12, 18]. However, our study did not confirm a positive effect of perceived ease of use on attitude and perceived satisfaction, and in the other hand, of relational commitment on perceived satisfaction.

5 Conclusions, Limitations and Future Research Directions

The objective of this research was to propose an extension of the TAM model by incorporating Perceived Satisfaction, the Perspective of the Use of Social Media in Education, Relational Engagement, as well as academic performance. The aim was to explore the acceptance of social media in an educational context where technology has not yet reached its cruising speed. The data were collected from students in Cameroon and analysed through the software SmartPLS Version 2.8 to assess the research hypotheses of the proposed theoretical representation. The findings show strong support for the Technology Acceptance Model when it comes to using social media in universities and thus assessing the consequences on Academic Performance. The study also found a strong correlation between Relational Commitment and Perceived Satisfaction when using social media.

However, this study bears some limitations. The first one is the absence of a qualitative approach in this study to explain the findings. A mixed-method approach

with both qualitative and quantitative methods could have provided more detailed information for a better understanding of the influence of social media on academic performance in higher education in African countries. The second limitation relates to the geographical restriction of the study area to only Cameroon. Broadening the study to other African countries, and specifically, sub-Saharan ones such as francophone (Ivory Coast, Senegal, Chad etc.) and anglophone (Nigeria, Ghana, Kenya etc.) could have improved our findings to make a better generalisation. This is a setback to be considered in future research attempts. Lastly, future works should take in to account additional adoption constructs, especially big five personality traits such as Openness, Neuroticism, Extraversion. These traits are fundamental to understand users' psychological status since the use of ICT remains new in several sectors of life in sub-Saharan Africa. Besides, future studies might include access to the internet, network infrastructure, and connection costs might to the list of variables that could explain the adoption of social media among students in the region.

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