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Social media for collaborative learning

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Article Info

ABSTRACT

Research on the field of using social media has gained more importance in the recent days due to the rapid development of social media technologies. Looking at the behavioral intention and attitude of using social media for collaborative learning within Malaysian higher educational institutions and the influencing factors in this regard has received little attention by researchers. The study aims at examining the determinants that affect learners' attitude and behavior intention regarding their use social media to achieve collaborative learning. Such examination is carried out by using the Theory Acceptance Model (TAM) and Unified Theory of Acceptance and Usage of Technology (UTAUT). A total of 243 participants were recruited for this study. The findings indicated that students' attitudes and behavior are strong indicators of their intentions in terms of using social media in collaborative learning.

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1.   INTRODUCTION

Currently, social media and its various tools became an integral part in the daily lives of students. Normally, these tools were used for sharing knowledge purpose and to socially communicate with others. Such tools can be also used for the purposes of sharing, promoting and creating online work. Therefore, the use of these tools is said to carry out a wide range of activities supporting collaborative learning [1, 2]. Recently, higher education levels are witnessing the use of such tools in learning as students discuss and share knowledge and communicate with other individuals through the numerous tools of social media. These tools are also used by the students to have access to learning materials [3].

Cheung et al. [4] Stated that the act of using social media by students to perform or carry out a collective objective can lead to collaborative learning. Other researchers highlighted the bad influence of using such tools as they can distraction students from their academic objectives, cloud their learning performance and even enhance negative sharing [2, 5, 6]. The importance of examining students' behavioral intention and attitude concerning the social media applications' use to assist in learning and teaching purposes goes back to the above mentioned reasons [7-10]. The students' learning performance can be enhanced and distractions can be avoided through learning their attitude and behavior as they use social media [2].

Recent years, understanding different reasons behind the use intention among student in using social media received much attention as they can be significant indicators of how to use social media in learning within higher educational level in particular [7]. For many years have received much attention to the factors that might have a role behind the social media acceptance for learning by students and their acceptance of such tools [7, 11]. Also, previous research highlighted those factors that might affected on students' attitude and use intention of social media [12]. Regardless of the fact that the different tools of social media received acceptance in terms of use in most universities around the world, there is no general agreement on the different elements that have an impact on students' behavioral intention and attitude in terms of using of social media in a way to achieve collaborative learning. This gab can be found in the research done in Malaysia as it lacks the depth of investigation [13].

A research model integrating both of the TAM and UTAUT is reported in the current study. The study also highlights and examines 12 constructs that can have an influence on the attitude and behavioral intention in reaching a collaborative learning. These elements are perceived usefulness, perceived enjoyment, perceived ease of use, effort expectancy, social influence and facilitating conditions, behavioral intention to use social media, attitude, collaborative learning, social media use, and teaching and learning. The research model and hypotheses are discussed in the second section of this study while the third illustrates the development of data collection tool and the date collected. Part 4 of the current study present the results and part 5 provide a discussion of the results obtained.

2. RESEARCH MODEL

As illustrated in Figure 1, twelve factors were presented for the proposed research model namely perceived ease of use; perceived enjoyment; perceived usefulness; performance expectancy; social influence; effort expectancy; attitude towards use; facilitating conditions; social media use; behavioral intention; teaching and learning and collaborative learning.
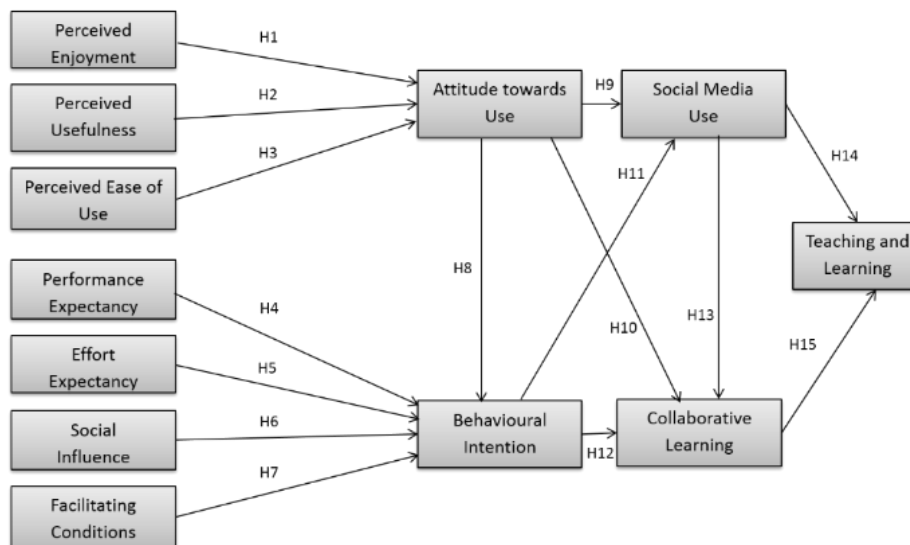

Figure 1. Research model

2.1. Perceived enjoyment (PEN)

PEN has been described by Allam et al. [12] as the level of enjoyment perceived by students as they participate in activities by using social media. This concept is considered as integral factor and also used as a predictor of the intention to use the system [12, 14]. Past work mentioned that attitude can be influenced by perceived enjoyment [15]. In other words, the user's attitude toward the use of certain activity can be positive when this user finds it enjoyable to do this activity. Social media has been defined by some researchers as the pleasure-oriented information system that pushes the users to continuously use it. This is accompanied with high level motivation by the users with a high level of enjoyment [16, 17]. This introduces the first hypothesis as follows:

H1: The attitude is positively influenced by perceived enjoyment

2.2. Perceived usefulness (PU)

It is suggested by the technology acceptance model that perceived usefulness is considered the greatest force behind a person's intention of suing information technology [18, 19]. Mazman and Usluel [20] pinpointed that the behavioural intention can be greatly effected by perceived usefulness. Other went to describe perceived usefulness as the catalyst when it comes to the adoption of social media in educational settings. In the current study, the PU is referred to as the tools to measure students' belief in using social media. It is also said to influence students' attitudes as it is used in collaborative learning. This introduced the second hypothesis as follows:

H2: The attitude can be positively influenced by the perceived of usefulness.

2.3. Perceived ease of use (PEU)

It was highlighted by Elkaseh et al. [21] and Labib & Mostafa [15] that PEU can determine person's attitude towards the use of technology. Studies relating to these two factors were also reported in the previous literature [8, 15, 21, 22]. In one of the previous studies discussed about E-Learning, it was found out that both of the students' behavior of using and the attitude was influenced by the PEU [21]. This was supported by Alharbi and Drew [22] who found out the similar result in one study in using the learning management system. This introduced the third hypothesis as follow:

H3: Attitude has a high impact on perceived ease of use.

2.4. Performance expectancy (PEX)

It had been reported by Venkatesh et al. [19] That the behavioral intention of using some technologies as found within either involuntary or voluntary settings can be highly determined by performance expectancy. PEX was found to be influenced by behavioral intention within the learning context expectancy [23-24]. This introduces the following hypothesis:

H4: The behavioral intention can be affected by the performance expectancy.

2.5. Effort expectancy (EE)

This concept is referred to as the students' perception concerning social media technology use as effortless. It assumed that there are no difficulties or challenges facing students in using social media as their medium of communication for learning. In past research, behavioral intention was proved to be directly influenced by effort expectancy [24]. This point introduced the following hypothesis:

H5: The behavioral intention can be positively influenced by effort expectancy.

2.6. Social influence (SIN)

This term is referred to as the measurement by which students perceive other individuals or certain people to trust social to enhance collaborative learning [19]. Previous research on this point found out that others such as peer students, instructors and parents can influence the decision of the students [25]. On light of the above mentioned, this study found that it is significant to include social influence in the proposed model. This introduces the following hypothesis:

H6: The behavioral intention can be highly influenced by social influence.

2.7. Facilitating conditions (FAC)

Huang [7] stated that technology adoption can be highly determined by facilitating conditions. This can be due to the reasons that users do not have the training time or they might not be willing to use the technology because of a compatibility problem with the system. Looking at the outcome of some research, it has been reported that behavioral intention has a positive relation with facilitating conditions [23, 26-27]. This introduces the following hypothesis:

H7: The behavioral intention can be highly affected by facilitating conditions.

2.8. Attitude (ATT)

According to Yueh et al. [28], individuals' attitude is the reason behind intention. Moreover, the behaviors of individuals can be highly determined by attitude [29]. Previous studies by [13, 21] further highlight that behavioral intention can be determined by attitude. This leads to the following hypotheses:

H8: The behavioral intention can be highly influenced by attitude.

H9: The use of social media can be positively influenced by the attitude.

H10: Attitude has a high impact on collaborative learning.

2.9. Behavioral intention to use (BITU)

This term refers to the students' adoption of applying social media for collaborative learning. Past research found out that the practice of social media in collaborative learning can be influenced by behavioral intention [30]. This leads to the following hypotheses:

H11: The social media use is highly determined by behavioral intention positively affects.

H12: Collaborative learning is highly determined by behavioral intention positively affects.

2.10. Social media use (SM)

Students' academic achievement is enhanced by social media a significant platform [31-33]. Through strengthening the creative learning process, social media can enhance collaborative learning. In addition to its role in establishing strong relationships among friends, social media can also lead to thorough understanding of the teaching and learning materials [34]. It can also enhance students' GPA's [35] and foster a lasting retention of information [31]. This leads to the following hypotheses:

H13: Collaborative learning has a high impact with the use of social media.

H14: Teaching and learning has a high impact with the use of social media.

2.11. Collaborative learning (CL)

This term used in this study as the interactions and connection between the course content and the students. Through working in groups in constructing knowledge, students can develop learning communities [36]. Through the enhancement of collaboration and communication, such learning communities are assisted by social media. In other words, the practice of social media and the resulting CL can boost the transition of knowledge among students and instructors [37]. This introduces the following hypothesis:

H15: Teaching and learning have positive relationships collaborative learning.

3. RESEARCH METHOD

This current study used random sampling and involved 243 undergraduate students took part in this study. Statistical significance was analyzed by using both SPSS-21 and AMOS-23. The present paper aims to study the antecedents which might influence Malaysian university students' decisions of using social media for the purposes of collaborative learning. The data were obtained from the survey approach. The questionnaire items were customized to suit all the research objectives.

The questionnaire survey is of two main sections. Firstly, respondents required to complete demographic information including gender, age, institution and specialization in the first section. Next, section two of the survey included items on the questionnaire measured the different constructs as stated in subsection 2. The questionnaire items were customized from previous related research and underwent slight modification to suits the study environment [38-44]. The piloted results found to be reliable according to Cronbach's alpha results of 0.986.

4. RESULTS AND DISCUSSION

As for demographic information, of the participants who completed the questionnaire were 137 male and 106 female undergraduate students. 77.0% of the participants were between 21-24 years of age, 16.9% were between of 18-20 years, 5.8% were between 25-29 years and 0.4% were between of 30-34 years. As for their majors, 61.7% of the participants were majored in science and technology, 36.6% were majored in engineering, and 1.6% were majored in social science. Based on their preferred tools of social media, Facebook was number one with a percentage of 95.5% while 75.7% were found to use Instagram and 75.3% of the participants were using YouTube.

This study utilized Structural Equation Modeling to measure and evaluates measurement model and structural model. The resulting between measurement items and underlying latent construct was demonstrating by measurement model. In addition, correlation among the different measurements was demonstrated by the structural model [45]. In the measurement model analysis, confirmatory factor analysis was used to assess the individual item reliability among varying variables. Hair et al. [46], pinpoint that assessment and re-specification of the measurement model aims at producing the 'best fit' model. The item loadings result analysis for each factors shows the Cronbach alpha (α) value have a good scale of reliability for all constructs were above 0.7 [47]. As suggested by [46, 48], the results for factor loadings are satisfactory as most of these results comply with and exceed 0.50. Moreover, the average variance extracted (AVE) was also good as all of the values ranged between 0.531 and 0.672. The values of the construct reliability (CR) were also acceptable as they were all over 0.7. Table 1 shows item loading for each factor.

Table 2 illustrates the average variance extracted (AVE) for all constructs. As shown in Table 3, the value of AVE for all constructs has surpassed the other correlation coefficients of the construct which is inline with suggestion by Fornell and Larcker [48]. Diagonal elements are known as the square roots of average variance extracted for the constructs. The correlation coefficients between any two constructs are smaller than the square root of the average variance extracted for the constructs [49]. There was a difference among the constructs of this study which indicate a sufficient discriminant validity for all of them. Thus, the three major tests: reliability, convergent validity, and discriminant validity turned out to be successful which strongly serves the credibility of the study. These results as shown in Figure 2 and Table 2: the hypothesis testing and the structural model analysis.

Table 1. Item loadings for each factors

Construct	Item	Loading	CR	α	Construct	Item	Loading	CR	α
	PE1	0.733				FC1	0.720		
	PE2	0.809				FC2	0.733		
	PE3	0.765				FC3	0.807		
	PE4	0.742			FAC	FC4	0.771	0.880	0.887
PEN	PE5	0.813	0.924	0.927		FC5	0.708		
	PE6	0.777				FC6	0.704		
	PE7	0.788				AT1	0.778		
	PE8	0.781			ATT	AT2	0.764	0.870	0.869
	PU1	0.743				AT3	0.805		
	PU2	0.773				AT4	0.816		
	PU3	0.792				BI1	0.835		
PU	PU4	0.839	0.926	0.927		BI2	0.798		
	PU5	0.801				BI3	0.797		
	PU6	0.794			BITU	BI4	0.776	0.925	0.922
	PU7	0.856				BI5	0.793		
	PEOU1	0.800				BI6	0.784		
PEU	PEOU2	0.750	0.835	0.832		BI7	0.812		
	PEOU3	0.688				SMU1	0.763		
	PEOU4	0.747				SMU2	0.835		
	PEX1	0.775			SMU	SMU3	0.853	0.911	0.910
PEX	PEX2	0.757	0.857	0.857		SMU4	0.865		
	PEX3	0.792				SMU5	0.778		
	PEX4	0.773				CL1	0.709		
	EE1	0.755				CL2	0.711		
EE	EE2	0.815	0.870	0.870	CL	CL3	0.721	0.850	0.842
	EE3	0.801				CL4	0.780		
	EE4	0.795				CL5	0.720		
	SI1	0.756				TL1	0.746		
	SI2	0.764				TL2	0.750		
SIN	SI3	0.745	0.860	0.859		TL3	0.695		
	SI4	0.730			TL	TL4	0.709	0.892	0.898
	SI5	0.717				TL5	0.702		
Note:						TL6	0.773		
CR: Construct Reliability						TL7	0.776		

Table 2. Discriminant validity

|	AVE	SIN	PU	PEU	PEX	ATT	PEN	EE	SMU	BITU	TL	CL	FAC
SIN	0.551	0.775											
PU	0.641	0.551	0.800										
PEU	0.558	0.707	0.709	0.856									
PEX	0.600	0.743	0.741	0.747	0.827								
ATT	0.626	0.636	0.665	0.834	0.799	0.857							
PEN	0.603	0.597	0.721	0.814	0.706	0.791	0.776						
EE	0.627	0.714	0.606	0.714	0.745	0.706	0.665	0.792					
SMU	0.672	0.730	0.673	0.767	0.774	0.711	0.655	0.635	0.820				
BITU	0.639	0.715	0.620	0.766	0.726	0.711	0.666	0.717	0.797	0.830			
TL	0.542	0.574	0.625	0.753	0.756	0.700	0.670	0.634	0.754	0.670	0.798		
CL	0.531	0.688	0.615	0.764	0.777	0.730	0.647	0.719	0.793	0.680	0.737	0.734	
FAC	0.550	0.755	0.557	0.690	0.770	0.729	0.694	0.786	0.715	0.799	0.664	0.729	0.741
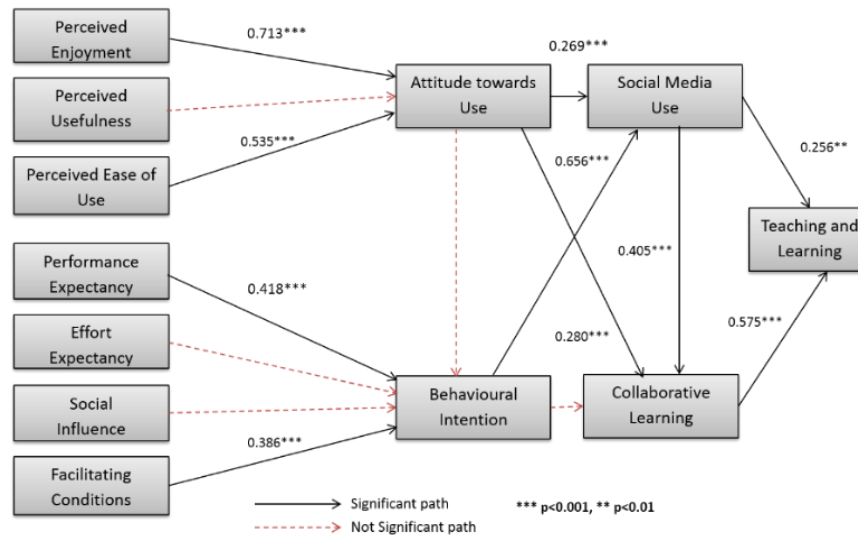
Figure 2. Structural model analysis

Table 3. Results

H	Relation	Estimate	SE	C.R	p	Result
H1	PEN→ATT	0.713	0.092	7.721	***	Supported
H2	PU→ATT	-0.056	0.084	-0.673	0.501	Not supported
H3	PEU→ATT	0.535	0.099	5.381	***	Supported
H4	PEX→BITU	0.418	0.077	5.393	***	Supported
H5	EE→BITU	0.087	0.067	1.303	0.192	Not supported
H6	SIN→BITU	0.116	0.062	1.861	0.063	Not supported
H7	FAC→BITU	0.386	0.072	5.351	***	Supported
H8	ATT→BITU	0.100	0.056	1.793	0.073	Not supported
H9	ATT→SMU	0.269	0.065	4.145	***	Supported
H10	ATT→CL	0.280	0.063	4.425	***	Supported
H11	BITU→SMU	0.656	0.084	7.836	***	Supported
H12	BITU→CL	0.070	0.084	0.831	0.406	Not supported
H13	SMU→CL	0.405	0.090	4.486	***	Supported
H14	SMU→TL	0.256	0.085	3.028	**	Supported
H15	CL→TL	0.575	0.111	5.166	***	Supported

5. DISCUSSION

The current study looked at both attitude and behavior intention to use social media for collaborative learning and aimed at investigating the various factors that might have an impact on them. Based on the outcome of this study (refer Table 3), majority of the hypotheses result were supported with the exception of H2, H5, H6, H8, and H13. One of the major findings is that attitude to use social media for collaborative learning was strongly influenced by both perceived enjoyment and perceived ease of use providing support to H1 and H3. These results correlate satisfactory with Leng et al. [13] Who shared same result in their previous findings. This result confirms students' willingness of using social media tools increases as they find them useful to be used. It is remarkable to mention that H2 was rejected in this study as attitude was not directly influenced by perceived usefulness.

Another major discovery reported that behavioral intention to use social media was strongly affected by the expectancy performance and facilitating conditions. This finding support hypotheses H4 and H7 which assumed such a positive relation. Surprisingly, the behavioral intention to use social media was not influenced by effort expectancy, social influence, and attitude. These findings however caused H5, H6 and H8 to be rejected. This finding also contradicts with the findings by Lwoga and Komba [50] in Tanzania who reported a positive relation between social influence and the students' intention of using e-learning. In addition, the finding of the current study in this regard contradicts with those by Leng et al. [13] Who found that behavioral intention in using social media can be vigorously determined by attitude.

Another finding this study shares is that there is a positive relation between social media usage and both of attitude and behavioral intention to use. This finding support both H11 and H9. This finding also entails the positive relation between collaborative learning and both attitude and social media use providing support to H13 and H10. However, no positive relation was detected between behavioral intention to use and

collaborative learning causing H12 to be rejected. The last finding this study shares is the positive relation found between teaching and learning and both of social media use and collaborative learning. Another analysis that was mentioned above was performed to investigate the differences between male and female participants. The results regarding the hypothesis testing according to each group of the respondents is apparent in Table 4 and Table 5.

After investigating any differences, it was found that most of the hypothesis-testing results were the same across the two groups except for H8 and H15. As for the similarities, attitude of using social media for collaborative learning was highly determined by perceived enjoyment and perceived ease of use across the two groups. Also, there was no positive relation between usefulness and attitude for both male and female students. As for the differences across the two groups, the results has been found a positive relationship between attitude and behavioral intention in the case of male students. This was the opposite in the case of female students as there was no significant relation between behavioral intention and attitude. Another difference is statistically significant between social media use and teaching and learning for the case of female students and male students.

Table 4. Male's results

H	Relation	Estimate	SE	C.R	p	Result
H1	PEN→ATT	0.652	0.133	4.905	***	Supported
H2	PU→ATT	-0.062	0.122	-0.508	0.611	Not supported
H3	PEU→ATT	0.660	0.174	3.784	***	Supported
H4	PEX→BITU	0.441	0.104	4.230	***	Supported
H5	EE→BITU	0.089	0.092	0.958	0.338	Not supported
H6	SIN→BITU	0.118	0.087	1.349	0.177	Not supported
H7	FAC→BITU	0.364	0.094	3.876	***	Supported
H8	ATT→BITU	0.165	0.082	2.005	*	Supported
H9	ATT→SMU	0.324	0.115	2.830	**	Supported
H10	ATT→CL	0.251	0.086	2.913	**	Supported
H11	BITU→SMU	0.728	0.137	5.308	***	Supported
H12	BITU→CL	0.174	0.100	1.731	0.083	Not supported
H13	SMU→CL	0.263	0.096	2.750	**	Supported
H14	SMU→TL	-0.058	0.128	0.128	0.641	Not supported
H15	CL→TL	0.972	0.232	4.186	***	Supported

Table 5. Female's Results

H	Relation	Estimate	SE	C.R	p	Result
H1	PEN→ATT	0.836	0.130	6.430	***	Supported
H2	PU→ATT	-0.093	0.120	-0.776	0.438	Not supported
H3	PEU→ATT	0.447	0.116	3.841	***	Supported
H4	PEX→BITU	0.279	0.119	2.343	*	Supported
H5	EE→BITU	0.075	0.092	0.812	0.417	Not supported
H6	SIN→BITU	0.133	0.087	1.525	0.127	Not supported
H7	FAC→BITU	0.467	0.121	3.866	***	Supported
H8	ATT→BITU	0.049	0.072	0.673	0.501	Not supported
H9	ATT→SMU	0.215	0.073	2.924	**	Supported
H10	ATT→CL	0.280	0.086	3.267	**	Supported
H11	BITU→SMU	0.583	0.106	5.492	***	Supported
H12	BITU→CL	0.090	0.128	0.704	0.481	Not supported
H13	SMU→CL	0.530	0.156	3.392	***	Supported
H14	SMU→TL	0.581	0.148	3.917	**	Supported
H15	CL→TL	0.302	0.126	2.395	*	Supported

6.   CONCLUSION

Our research highlighted the factors that might have a significant impact on the attitude of students and behavioral intention to use social media for collaborative learning in Malaysian higher education context. Proposed model used in this study which is combining TAM and UTAUT was credible and reliable and included these factors the relation between them. In general, the attitude was proved to be influenced by perceived enjoyment and perceived ease of use. At the same time, both of performance expectancy and facilitating conditions proved to have a strong impact on behavioral intention. 10 of the hypotheses in this study were supported indicating that the proposed framework can be used to predict the attitude and behavioral intention of students to use social media for collaborative learning. Even though the current study produced significant findings, the study still has some limitations. For example, this study was done on just one institution in Malaysia and this is an invitation to future studies to include other educational institutions.

Including more than one educational institutions in the study can give the study the advantage of generalizability of the findings. In the future, other research works such as [51-53] will be embedded to enhance our method.

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