Evaluating the Effect of Students' Behavioural Intention to Use Social Media for Collaborative Learning

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RESEARCH ARTICLE

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ABSTRACT

With the rise of social media technologies, investigating the use of social media for learning has become all the more important. However, far too little research has been conducted to investigate factors that contribute towards students' attitude and behavioural intention to use social media for collaborative learning in Malaysian higher education. This study aims to examine the determinants that influence students' attitude and behaviour intention to use social media for collaborative learning by applying the Theory Acceptance Model (TAM) and Unified Theory of Acceptance and Usage of Technology (UTAUT). 243 respondents participated in this study. The Structural Equation modelling (SEM) was used to test the model fit and corresponding hypotheses. The findings indicated that students' attitudes and behaviour are strong indicators of their intentions to use social media for collaborative learning.

1. Introduction

The use of social media has become increasingly prevalent in the daily lives of students. Social media platforms are widely used for sharing knowledge, interacting with people globally, creating, sharing, and promoting work online, and are thus being utilized more frequently to support learning activities and facilitate collaborative learning [1, 2]. Many universities and educators now utilize social media as a learning tool, enabling students to share their interests, collaborate with peers, and access course content and study materials [3]. Collaborative learning occurs when students work together towards a shared objective using social media platforms [4]. However, these tools can also serve as sources of distraction and interfere with students' academic goals, promote negative behavior, or create confusion about learning outcomes [2, 5, 6]. Therefore, it is essential to understand students' attitudes and behavioral intentions towards social media use in the context of teaching and learning [7–10]. Knowing how students perceive and utilize social media can help to improve their learning outcomes and reduce potential distractions [2].

Over the past few years, there has been growing interest in understanding the factors that influence students' intent to use social media technologies, as this can be crucial for incorporating social media into the learning process, especially in higher education [7]. Previous research has focused on identifying the factors that determine learners' perceptions and acceptance of social media adoption for learning [7, 11], as well as the factors that impact users' attitudes and intentions to use social media [12]. Despite the increasing acceptance of social media technologies in universities worldwide, research on the factors influencing students' attitudes and behavioral intentions
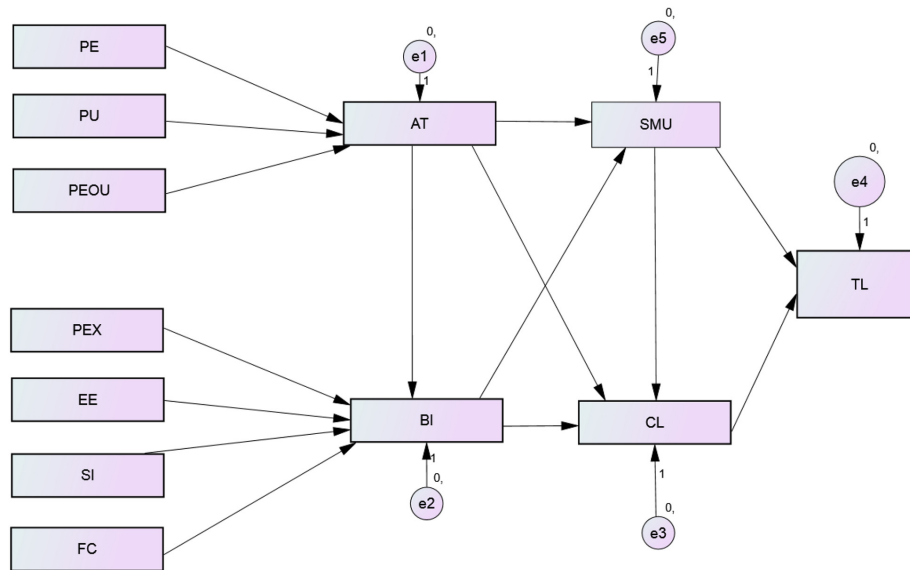
Fig. 1. Research framework.

towards using social media for collaborative learning remains largely unexplored in Malaysia, offering valuable insights [13]. This paper presents a research model that combines the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) to examine twelve factors that influence attitudes and behavioral intentions towards using social media for collaborative learning and their impact on teaching and learning. These factors include perceived enjoyment, usefulness, ease of use, performance expectancy, effort expectancy, social influence, facilitating conditions, attitude, behavioral intention to use, social media use, collaborative learning, and teaching and learning.

The organization of this paper is as follows. Section 2 presents the research model and hypotheses. Section 3 outlines the methods of data collection and instrument development. Section 4 describes the results and analysis. Lastly, in Section 5, the study's findings will be discussed.

2. Research framework

The proposed research model for this study is depicted in Fig. 1. It comprises twelve pertinent factors: perceived enjoyment (PE), perceived usefulness (PU), and perceived ease of use (PEOU); performance expectancy (PEX); effort expectancy (EE); social influence (SI); facilitating conditions (FC); attitude (AT); behavioral intention (BI); social media use (SMU); collaborative learning (CL); and teaching and learning (TL).

2.1. Perceived enjoyment

According to Allam et al. [12], perceived enjoyment refers to the extent to which students find it enjoyable to participate in activities and conduct them through social media. This factor is crucial in predicting user acceptance of technology and their intention to use it [12, 14]. Previous research has indicated that perceived enjoyment significantly influences attitude [15]. When users enjoy performing certain activities, they have a positive attitude towards using the technology. Scholars such as Firdos et al. [16] and Yaprak et al., [17] have viewed social media as an information system focused on pleasure, where motivated users continue to use it when they derive greater perceived enjoyment. Therefore, this study proposes the following hypothesis:

H1. *Perceived enjoyment has a positive effect on the attitude towards using social media for collaborative learning.*

2.2. Perceived usefulness

According to the technology acceptance model, perceived usefulness is considered the primary predictor of an individual's intention to use information technology [18–20]. Mazman and Usluel [21] also suggest that perceived usefulness is the most significant factor driving behavioral intention to use information technology and has been found to be a predictor of social media adoption in education. In this study, perceived usefulness is defined as the extent to which a student

believes that using social media will impact their attitude towards using it for collaborative learning. Thus, the following hypothesis is proposed:

H2. *Perceived usefulness has a positive impact on the attitude towards using social media for collaborative learning.*

2.3. Perceived ease of Use

Several studies have demonstrated that the perception of ease of use is a crucial factor in determining attitudes towards technology [22]. Previous research has also suggested that perceived ease of use is positively associated with attitude [23, 24]. Specifically, Orak, and Saritepeci [23] found that perceived ease of use significantly affects students' attitudes towards using e-learning in Libyan higher education. This is consistent with Alharbi & Drew [25] finding that perceived ease of use positively influences attitudes towards using learning management systems. Based on these findings, we propose the following hypothesis:

H3. *Perceived ease of use has a positive impact on the attitude towards using social media for collaborative learning.*

2.4. Performance expectancy

Venkatesh et al. [26] propose that performance expectancy is a significant predictor of behavioral intention to use various technologies, in both voluntary and involuntary contexts. In the educational setting, some researchers have found that expectancy of achievement has a favorable impact on behavioral intention [27]. Based on this, we propose the following hypotheses:

H4. *Performance expectancy has a positive influence on the behavioral intention to utilize social media for collaborative learning.*

2.5. Effort expectancy

Effort expectancy refers to the students' perception that using social media technologies for learning will be easy and effortless. This study suggests that the students found no difficulty in using social media as a communication medium for their learning. Previous research has indicated that effort expectancy has a direct impact on behavioral intention [28, 29]. Thus, we propose the following hypothesis:

H5. *Effort expectancy has a positive effect on the behavioral intention to use social media for collaborative learning.*

2.6. Social influence

This study defines social influence as the perception of students regarding the belief of their peers or key figures about the use of social media for collaborative learning [26]. Previous research has indicated that students' decisions are often influenced by their peers or other figures such as teachers and parents [30]. Thus, it is crucial to include social influence as a construct in this research model. Therefore, the following hypothesis is proposed:

H6. *Social influence has a positive impact on the behavioral intention to use social media for collaborative learning.*

2.7. Facilitating conditions

Huang [7] argues that supportive frameworks are a critical factor in technology adoption because users may demonstrate a lower intention to use the technology if they lack the time for training or experience significant challenges with system compatibility. Multiple studies have found that enabling conditions are positively associated with behavioral intention [26]. Hence, we propose the following hypothesis:

H7. *Facilitating conditions have a positive impact on the behavioral intention to use social media for collaborative learning.*

2.8. Attitude

Rahman et al. [24] discovered that intention was influenced by individual attitude. Attitude can be utilized to predict individual behavior [7]. Research by Ootemo and Santoso [4] and Firdos et al., [16] found that attitude significantly affects behavioral intention and technology use. Therefore, we propose the following hypotheses:

H8. *Attitude positively influences the behavioral intention to use social media for collaborative learning.*

H9. *Attitude positively influences the use of social media for collaborative learning.*

H10. *Attitude positively influences collaborative learning.*

2.9. Behavioral intention

To describe the extent to which students will use social media applications for collaborative learning in the future, this study uses the term behavioral intention. Findings by Orak et al. [23] and Al-Rahimi et al. [31] demonstrate that behavioral intention directly influences the use of social media for collaborative learning. Therefore, we propose the following hypotheses:

H11. *Behavioral intention has a positive impact on the use of social media for collaborative learning.*

H12. *Behavioral intention has a positive impact on collaborative learning.*

2.10. Social media use

Social media has been shown to have a positive impact on student academic performance in various studies [31, 33]. Rahman et al. [24] suggest that social media supports collaborative learning, which enhances the creative learning process. Further research indicates that social media use leads to stronger peer relationships [10], deeper understanding of course content Liao et al. [1], higher GPA [24], and long-term retention of information [33]. Based on these findings, the study proposes the following hypotheses:

H13. *Social media use is positively related to collaborative learning.*

H14. *Social media use is positively related to teaching and learning.*

2.11. Collaborative learning

This study defines collaborative learning as the process of students interacting with course content and building knowledge together, as found by Al-Rahimi et al. [31]. Social media can serve as a useful tool to facilitate the development of these learning communities by promoting collaboration and communication. The use of social media for collaborative learning has been shown to enhance learning and facilitate information sharing among students and teachers [31]. Based on these findings, we hypothesize that social media will support collaborative learning and influence teaching and learning, leading to the following hypothesis:

H15. *Collaborative learning has a positive impact on teaching and learning.*

3. Research methodology

A sample of 243 undergraduate students was chosen randomly from a university in South Malaysia, and data analysis was carried out using SPSS application version 21 and AMOS 23. The objective of this study was to identify the factors that encourage Malaysian university students to use social media for collaborative learning, with the aim of enhancing teaching and learning. A questionnaire survey was used to collect data, and the instrument was developed based on the study objectives, piloted, and found to have a Cronbach's alpha reliability and validity of 0.986, which is acceptable. The questionnaire consisted of two parts. The first part collected respondents' personal demographics, including gender, age, institution, specialization, social media use, and use of social media for collaborative learning. The second part examined the measurement of the constructs used in the research model. The items were scored on a 5-point Likert scale ranging from Strongly Disagree = 1 to Strongly Agree = 5. The measurement elements used were mostly adopted from previous studies and adapted to the research context with minor modifications. The questionnaire was reviewed by content experts for refinement and then pre-tested before being finalized. The questionnaire included items measuring perceived usefulness, perceived ease of use, perceived enjoyment, performance expectancy, effort expectancy, social impact, supportive conditions, attitudes towards social media use, intention to use, social media use, collaborative learning, and teaching and learning, all of which were adapted from previous studies.

4. Data analysis and result

Table 1 displays the demographic characteristics of the 243 participants in this study. The sample consisted of 137 male and 106 female respondents. The majority of participants were aged 21–24 years old (77.0%), with 16.9% (n = 41), 5.8% (n = 14), and 0.4% (n = 1) in the age groups of 18–20 years old,

Table 1. Descriptive information of the sample.

Measure	Value	Frequency	Percentage
Gender	Male	137	56.4
	Female	106	43.6
Age	18–20	41	16.9
	21–24	187	77.0
	25–29	14	5.8
	> 30	1	0.4
Field	Social Science	4	1.6
	Engineering	89	36.6
	Science & Technology	150	61.7

25–29 years old, and 30–34 years old, respectively. In terms of academic specialization, 61.7% (n = 150) of the participants were from the science and technology field, 36.6% (n = 89) were from engineering, and 1.6% (n = 4) were from social sciences.

According to Zainuddin's [34] recommendation, the proposed model should be evaluated to demonstrate the relationship between the measuring items and the underlying latent constructs. In this study, structural equation modelling (SEM) was utilized to validate the reliability and validity of the measurement model. Confirmatory factor analysis (CFA) was conducted to examine the consistency among various variables. As suggested by Segar and Grover (1993), the measurement model should be evaluated and re-specified to generate the best model fit.

Table 2 shows that all Cronbach's Alpha values ranged from 0.832 to 0.927, which exceeds the recommended value of 0.7 [35]. Most of the factor loadings exceeded 0.50, indicating satisfaction with the recommended criteria by Fornell and Larcker [36] and Hair et al. [37]. The average variance extracted (AVE) values ranged from 0.531 to 0.672, all exceeding the recommended value of 0.50. All construct reliability (CR) for each construct was over 0.7, suggesting that the scale has good convergence validities.

Table 3 depicts the fitness of the measurement model, which was assessed based on the following goodness of fit indices: X^2-square, root mean squared residual (RMR), incremental fit index (IFI), Tucker-Lewis index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). According to Hair et al. [37], TLI, IFI, and CFI values should be equal to or greater than 0.90, and the X^2-square value should be less than 3. Moreover, RMR values should be less than 0.05 and RMSEA values should be less than 0.08 [37]. As indicated in Table 3, all the fitness measures exceeded their respective recommended thresholds, indicating that the measurement model had a good fit.

Table 4 depicts the correlation coefficient matrix for all constructs. According to the criteria proposed by Fornell and Larcker [36], in order to establish discriminant validity, the AVE construct value should be higher than other correlation coefficients of the construct. The diagonal elements represent the square roots of the 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. The constructs in this research are found to be distinct from one another, indicating that all constructs in this research possess sufficient discriminant validity. Therefore, the measurement model in this research is deemed reliable, convergent and discriminant. The results of the structural model analysis and hypothesis testing can be observed in Fig. 2 and Table 5, respectively.

5. Discussion

Table 5 illustrates that the majority of the hypotheses were supported, except for H2, H5, H6, H8, and H13. The findings indicate that perceived enjoyment and perceived ease of use had significant effects on attitude towards using social media for collaborative learning ($\beta = 0.713$, p < 0.001; $\beta = 0.535$, p < 0.001), which supports H1 and H3. These results align with Leng et al. [38] who reported that perceived enjoyment and perceived usefulness strongly influence attitude and behavioral intention towards using social media. Therefore, when students recognize the usefulness of a particular social media platform, they are more likely to use it.

Contrary to expectations, perceived usefulness ($\beta = 0.056$, p < 0.001) had no direct impact on attitude, which rejects H2. The findings also revealed that performance expectancy ($\beta = 0.418$, p < 0.001) and facilitating conditions ($\beta = 0.386$, p < 0.001) had significant effects on behavioral intention to use, supporting H4 and H7. This implies that students' willingness to use social media for collaborative learning is influenced by performance expectancy and facilitating conditions. However, effort expectancy ($\beta = 0.087$, p < 0.001), social influence ($\beta = 0.116$, p < 0.001), and attitude ($\beta = 0.100$, p < 0.001) had no direct impact on behavioral intention to use, which means H5, H6, and H8 were not supported. These results differ from Lwoga & Komba [9] who found a positive relationship between social influence and intention to use e-learning among students in Tanzania. Additionally, they contradict Leng et al. [38] who found that attitude strongly influences behavioral intention towards using social media.

Behavioral intention to use ($\beta = 0.656$, p < 0.001) and attitude ($\beta = 0.269$, p < 0.001) were positively related to social media use, supporting H9 and H10. Furthermore, social media use ($\beta = 0.405$, p < 0.001) and attitude ($\beta = 0.280$, p < 0.001) were found to have a positive relationship with collaborative learning, supporting H11 and H12. However, behavioral intention to use ($\beta = 0.070$, p < 0.001) was not positively related to collaborative learning, rejecting H13. Lastly, collaborative learning ($\beta = 0.575$, p < 0.001) and social media use ($\beta = 0.256$, p < 0.001) were positively related to teaching and learning, which supports H14 and H15.

An analysis was conducted to examine potential differences between male and female students. The

Table 2. Descriptive information of the sample.

Factor	Item	Standard loading	Average variance extracted (AVE)	Construct reliability (CR)	Cronbach's alpha
Perceived enjoyment	PE1	0.733	0.603	0.924	0.927
	PE2	0.809			
	PE3	0.765			
	PE4	0.742			
	PE5	0.813			
	PE6	0.777			
	PE7	0.788			
	PE8	0.781			
Perceived usefulness	PU1	0.743	0.641	0.926	0.927
	PU2	0.773			
	PU3	0.792			
	PU4	0.839			
	PU5	0.801			
	PU6	0.794			
	PU7	0.856			
Perceived ease of use	PEOU1	0.800	0.558	0.835	0.832
	PEOU2	0.750			
	PEOU3	0.688			
	PEOU4	0.747			
Performance expectancy	PEX1	0.775	0.600	0.857	0.857
	PEX2	0.757			
	PEX3	0.792			
	PEX4	0.773			
Effort expectancy	EE1	0.755	0.627	0.870	0.870
	EE2	0.815			
	EE3	0.801			
	EE4	0.795			
Social influence	SI1	0.756	0.551	0.860	0.859
	SI2	0.764			
	SI3	0.745			
	SI4	0.730			
	SI5	0.717			
Facilitating condition	FC1	0.720	0.550	0.880	0.887
	FC2	0.733			
	FC3	0.807			
	FC4	0.771			
	FC5	0.708			
	FC6	0.704			
Attitude	AT1	0.778	0.626	0.870	0.869
	AT2	0.764			
	AT3	0.805			
	AT4	0.816			
Behavioural intention	BI1	0.835	0.639	0.925	0.922
	BI2	0.798			
	BI3	0.797			
	BI4	0.776			
	BI5	0.793			
	BI6	0.784			
	BI7	0.812			
Social media use	SMU1	0.763	0.672	0.911	0.910
	SMU2	0.835			
	SMU3	0.853			
	SMU4	0.865			
	SMU5	0.778			
Collaborative learning	CL1	0.709	0.531	0.850	0.842
	CL2	0.711			
	CL3	0.721			
	CL4	0.780			
	CL5	0.720			
Teaching & learning	TL1	0.746	0.542	0.892	0.898
	TL2	0.750			
	TL3	0.695			
	TL4	0.709			
	TL5	0.702			
	TL6	0.773			
	TL7	0.776			

Table 3. Fitness of measurement model.

Model	X^2	df	X^2/df	RMR	IFI	TLI	CFI	RMSEA
Base	3127.990	1994	1.569	0.025	0.908	0.900	0.907	0.048

Table 4. Discriminant validity.

	SI	PU	PEOU	PEX	AT	PE	EE	SMU	BI	TL	CL	FC
SI	0.775											
PU	0.551	0.800										
PEOU	0.707	0.709	0.856									
PEX	0.743	0.741	0.747	0.827								
AT	0.636	0.665	0.834	0.799	0.857							
PE	0.597	0.721	0.814	0.706	0.791	0.776						
EE	0.714	0.606	0.714	0.745	0.706	0.665	0.792					
SMU	0.730	0.673	0.767	0.774	0.711	0.655	0.635	0.820				
BI	0.715	0.620	0.766	0.726	0.711	0.666	0.717	0.797	0.830			
TL	0.574	0.625	0.753	0.756	0.700	0.670	0.634	0.754	0.670	0.798		
CL	0.688	0.615	0.764	0.777	0.730	0.647	0.719	0.793	0.680	0.737	0.734	
FC	0.755	0.557	0.690	0.770	0.729	0.694	0.786	0.715	0.799	0.664	0.729	0.741

Table 5. Hypothesis testing results (general; N = 243).

| H	Relationship	Estimate	SE	C.R	p	Result
H1	PE → AT	.713	.092	7.721	***	Supported
H2	PU → AT	−.056	.084	−.673	.501	Not supported
H3	PEOU → AT	.535	.099	5.381	***	Supported
H4	PEX → BI	.418	.077	5.393	***	Supported
H5	EE → BI	.087	.067	1.303	.192	Not supported
H6	SI → BI	.116	.062	1.861	.063	Not supported
H7	FC → BI	.386	.072	5.351	***	Supported
H8	AT → BI	.100	.056	1.793	.073	Not supported
H9	BI → SMU	.656	.084	7.836	***	Supported
H10	AT → SMU	.269	.065	4.145	***	Supported
H11	SMU → CL	.405	.090	4.486	***	Supported
H12	AT → CL	.280	.063	4.425	***	Supported
H13	BI → CL	.070	.084	.831	.406	Not supported
H14	CL → TL	.575	.111	5.166	***	Supported
H15	SMU → TL	.256	.085	3.028	.002	Supported
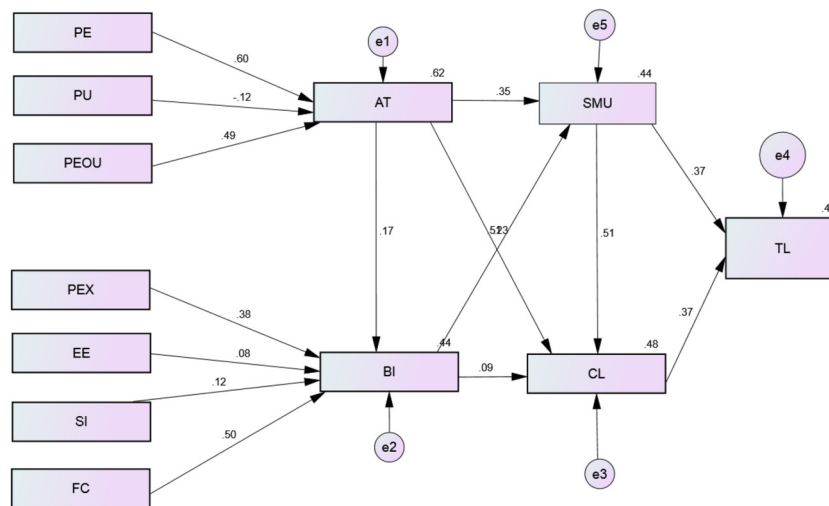
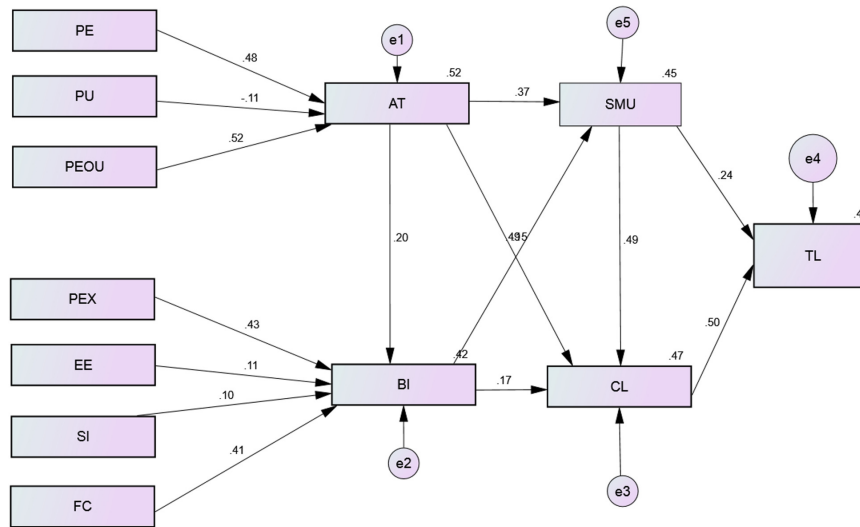**Fig. 2.** Structural model analysis (general; N = 243).

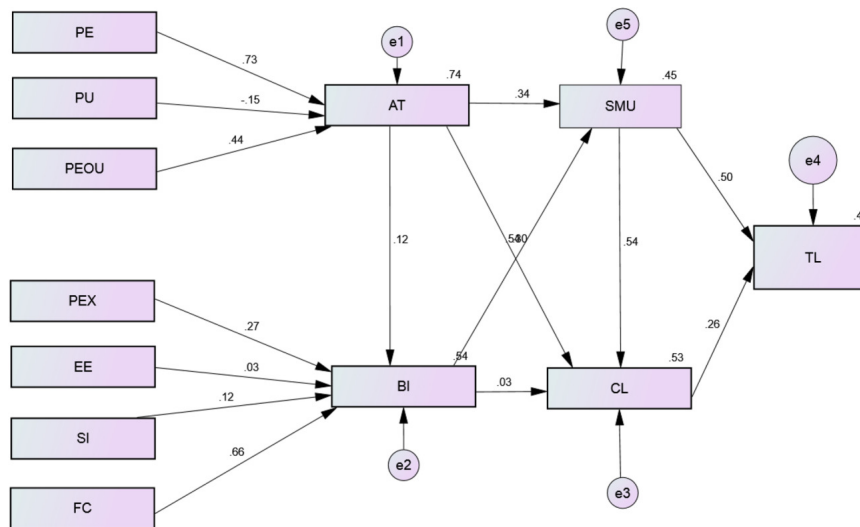**Fig. 3.** Structural model analysis (Male students; N = 137).

Fig. 4. Structural model analysis (Female students; N = 106).

structural model analysis and hypothesis testing results for each group are presented in Fig. 3 and Fig. 4, as well as in Table 6 and Table 7. The results indicate that perceived enjoyment and perceived ease of use have a positive and significant effect on attitude towards the use of social media for collaborative learning for both male and female students. In contrast, there is a negative significant relationship between perceived usefulness and attitude towards the use of social media for collaborative learning for both male and female students. All hypothesis testing results were the same for both groups, except for H8 and H15.

The results for male students reveal that attitude has a positive and significant relationship with behavioral intention towards using social media for collaborative learning. This differs from the results for female students, which show that attitude has a negative significant relationship with behavioral intention towards using social media for collaborative learning. This suggests that the intensity of using social media for collaborative learning among male students is influenced by their attitude, whereas the behavioral intention to use social media for collaborative learning among female students is not influenced by their attitude. Additionally, the results indicate that social media use has a negative significant relationship with teaching and learning for male students, which contradicts the results for female students, where social media use has a positive significant relationship with teaching and learning.

Table 6. Hypothesis testing results (Male students; N = 137).

H	Relationship	Estimate	SE	C.R	p	Result
H1	PE → AT	.652	.133	4.905	***	Supported
H2	PU → AT	−.062	.122	−.508	.611	Not supported
H3	PEOU → AT	.660	.174	3784	***	Supported
H4	PEX → BI	.441	.104	4.230	***	Supported
H5	EE → BI	.089	.092	.958	.338	Not supported
H6	SI → BI	.118	.087	1.349	.177	Not supported
H7	FC → BI	.364	.094	3.876	***	Supported
H8	AT → BI	.165	.082	2.005	.045	Supported*
H9	BI → SMU	.728	.137	5.308	***	Supported
H10	AT → SMU	.324	.115	2.830	.005	Supported
H11	SMU → CL	.263	.096	2.750	.006	Supported
H12	AT → CL	.251	.086	2.913	.004	Supported
H13	BI → CL	.174	.100	1.731	.083	Not supported
H14	CL → TL	.972	.232	4.186	***	Supported
H15	SMU → TL	−.058	.128	−.466	.641	Not supported*

Table 7. Hypothesis testing results (Female students; N = 106).

H	Relationship	Estimate	SE	C.R	p	Result
H1	PE → AT	.836	.130	6.430	***	Supported
H2	PU → AT	−.093	.120	−.776	.438	Not supported
H3	PEOU → AT	.447	.116	3.841	***	Supported
H4	PEX → BI	.279	.119	2.343	.019	Supported
H5	EE → BI	.075	.092	.812	.417	Not supported
H6	SI → BI	.133	.087	1.525	.127	Not supported
H7	FC → BI	.467	.121	3.866	***	Supported
H8	AT → BI	.049	.072	.673	.501	Not supported
H9	BI → SMU	.583	.106	5.492	***	Supported
H10	AT → SMU	.215	.073	2.924	.003	Supported
H11	SMU → CL	.530	.156	3.392	***	Supported
H12	AT → CL	.280	.086	3.267	.001	Supported
H13	BI → CL	.090	.128	.704	.481	Not supported
H14	CL → TL	.302	.126	2.395	.017	Supported
H15	SMU → TL	.581	.148	3.917	***	Supported

6. Conclusion

The aim of this research was to investigate the factors that affect Malaysian higher education students' attitude and behavioral intention to use social media for collaborative learning, using a combined theoretical framework of TAM and UTAUT. The study found that the model was a good fit for the collected data, and relationships between the factors were established. Specifically, perceived enjoyment and perceived ease of use influenced attitude, while performance expectancy and facilitating conditions influenced behavioral intention. The study confirmed ten hypotheses, and the framework could be applied to predict students' attitude and behavioral intention towards using social media for collaborative learning. However, the study's sample was limited to one institution of higher education in Malaysia, so further research involving students and lecturers from different institutions would be needed to increase the generalizability of the findings.

Funding

Acknowledgement

Conflicts of interest

The author declares no conflict of interest.

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