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Social media usage and acceptance in higher education: A structural equation model

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The adoption and use of social media as an educational technology in higher education has been exacerbated during the COVID-19 pandemic. As a result, this study applied the unified theory of usage and acceptance of technology theory and the technology acceptance model as predictors of behavioral intention to use social media and actual social media use. These, as posited by the model, affect the performance impact of social media usage. This study involved a quantitative survey with 312 undergraduate university students in Malaysia. Using structural equation modeling, this study identified that unified theory of usage and acceptance of technology theory and the technology acceptance model influence behavioral intentions to use and actual use of social media, resulting in an improved performance impact. That is, when students see the value in particular technologies, feel their performance (e.g., passing their studies) will be improved by using that technology, offers behavioral nudges toward adoption and use.

KEYWORDS

unified theory of usage and acceptance of technology theory, technology acceptance model, social media, Facebook, Instagram, YouTube, performance expectancy

Introduction

During the COVID-19 pandemic, global adoption of emerging technologies has accelerated. Government decisions to enter and exit lockdowns has had an immediate effect on higher education. For example, class cancelations, delayed commencement, emergency remote teaching, and paused international enrollments (Crawford et al., 2020). Teachers and instructors have been required to engage learners online (Kara et al., 2020), although this is not inherently new, only exacerbated. Social media usage, as a form of educational technology, is the focus of this study (Teräs et al., 2020). With its characteristics of digitally, interactivity, hyper textually, virtually, networking, and simulation, social media channels can

provide connected synchronous and asynchronous learning environments for students (Chawinga, 2017; Al-Rahmi et al., 2021a,b). Social media has been evidenced as a contributor to academic performance (Karakose et al., 2021; Sayaf et al., 2022).

Social media is pervasive across diverse facets of a student's life, not limited to educational settings (Chugh et al., 2021; Karakose et al., 2022b). For example, the use of social media applications by students has skyrocketed (from 11% in 2005 to 90% in US adults aged 18–29 (Mahdiuon et al., 2020), and the impact on academic performance has varied (Kulidtod and Pasagui, 2017). In educational environments, students may use social media for a variety of purposes, including knowledge finding, collaboration, and social interaction (Elsayed, 2016; Rasheed et al., 2020; López-Carril et al., 2021; Karakose et al., 2022a). Several studies have shown a connection between social media use and undergraduate university students' academic performance and achievement (Alnjadat et al., 2019; Al-Maatouk et al., 2020a; Al-Rahmi et al., 2020). Social media resources are claimed to improve learning by supporting social and collaborative learning (Al-Qaysi et al., 2019; Vandeyar, 2020). As a result, graduate research students are using a variety of social networking platforms (e.g., Facebook, Twitter, LinkedIn, and TikTok) to aid in the facilitation of their research training and education projects, and social media use has the potential to heighten cross-user information sharing (Ahmed et al., 2019; Almaiah and Al Mulhem, 2019). Social media can have both positive and negative impacts on learning. One study highlights for key effects of social media in learning: (i) improving their learning motivation; (ii) enhancing students' with tutor's relationships; (iii) offering students a personalized learning environment; and (iv) developing student collaborative and teamwork capabilities (Wheeler et al., 2008). This includes student connectivity, a key attribute of concern during the pandemic (Phua et al., 2017; Tice et al., 2021). To further examine this, this study proposes the following re-search questions:

> Research question 1. To what extent is student academic performance impacted by students' actual and behavioral intention to use social media.

> Research question 2. To what extent is students' actual and behavioral intention to use social media influenced by their acceptance and adoption of social media.

This study is situated in Malaysia, in contrast with much of the existing research on this topic (typically in the United States, United Kingdom, and Australia) (Balakrishnan et al., 2017; Alalwan et al., 2019; Tight, 2022). The significance of this study is in seeking to understand how two competing theoretical frameworks (technology acceptance model and unified theory of acceptance and usage of technology) can act in synergy to enable intention and actual use of social media. To do so, this study begins with a theoretical framework and method, before discussing the findings and implications of this re-search.

Theoretical model

The research model examines the technology acceptance model (perceive use, ease of use, enjoyment, behavioral intent to use, and actual social media usage (Davis, 1989; Venkatesh et al., 2003) as well as unified theory of usage and acceptance of technology (performance expectancy, effort expectancy, facilitating conditions, perceived use, perceive ease of use, and perceived enjoyment to behavioral intention to use, and actual social media usage as antecedents of behavioral intention to use, and actual use of, social media (see **Figure 1**). The novelty of the posited theoretical model is not in the individual relationships, many of which have been established and tested (primarily in Western contexts), but in how these form together to make a more com-apprehensive understanding of the influencers of a student's intention to use technology to improve, and actually improve, their academic performance. The following subsections discuss each relationship within the theorized model, and propose a testable hypothesis.

Performance expectancy

Performance expectation refers to individual belief that taking an action will increase their performance (Nurhayati et al., 2019). Unified theory of usage and acceptance of technology has promoted performance expectancy as a key antecedent for the behavioral intention to use a technology (Venkatesh et al., 2012). For example, (El-Masri and Tarhini, 2017) conducted research with university students from Qatar and the United States on learning adoption. In both studies, performance expectancy was found to be one of the most significant predictors of behavioral intention to use technology. Similarly, (Jung and Lee, 2015) found that influence student and educator YouTube adoption in higher education. Performance expectancy is a significant contributor to student acceptance of e-commerce and has a positive impact on the visual resources of social media communication during teaching or learning programs (Bennani and Oumlil, 2014). Indeed, when students expect that their performance will increase by using an educational technology (in this case, social media) they will exhibit intentions to use as well as increase their actual use of technology (i.e., social media) Thus:

> Hypothesis 1. Performance expectancy predicts behavioral intention to use social media.

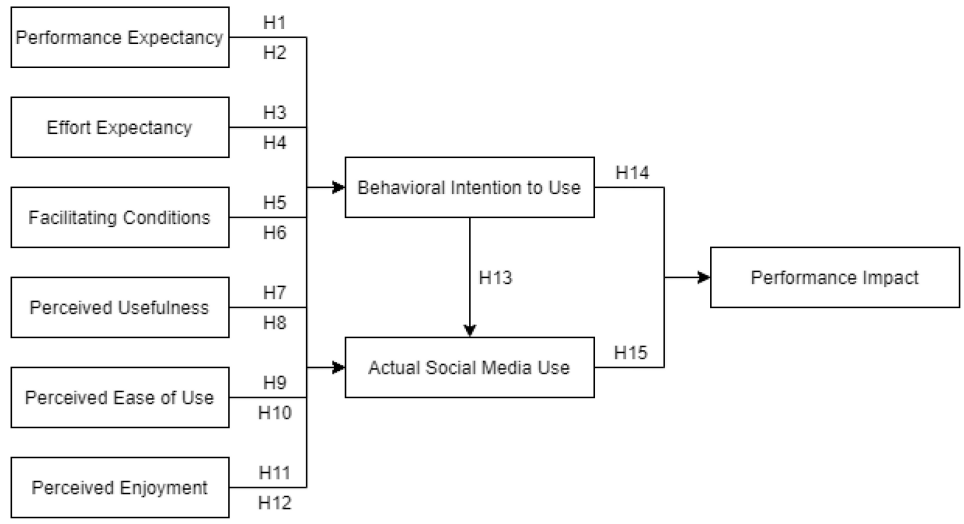

FIGURE 1
Antecedents of social media performance impact.

> Hypothesis 2. Performance expectancy predicts actual use of social media.

Effort expectancy

Web-based Effort expectancy is the degree of belief that investing effort into a system or technology will enable higher individual performance (Venkatesh et al., 2003). Effort expectancy, according to unified theory of usage and acceptance of technology, is a direct contributor to an individual's behavioral intention to use technology. For example, one study on pre-service teachers identified their intentions to utilize information technology was heightened by their effort and performance expectancy (Teo and Noyes, 2014). Added, (Sultana, 2020) found undergraduate student online learning readiness was fostered by effort and performance expectancy within the unified theory of usage and acceptance of technology. Hanson et al. (2011) concurs highlighting social media use and acceptance was influenced by effort expectancy. Thus:

> Hypothesis 3. Effort expectancy will predict behavioral intention to use social media.

> Hypothesis 4. Effort expectancy will predict actual use of social media.

Facilitating conditions

Facilitating conditions is the degree to which a person believes that organizational and techno-logical infrastructure exists to enable the use of the system (Venkatesh et al., 2003). In a higher education con-text, this may be student perception of resource and student support access (e.g., supporting guidelines, workshops, and tutorials). Facilitating conditions is a more recently proposed adaptation to the unified theory of usage and acceptance of technology model [e.g., (De Alwis et al., 2018)]. For instance, (Wong, 2016) found that facilitating conditions was a strong predictor for educational technology use compared with perceived ease of use. It is also congruent that when students feel that their environment is conducive to their learning, and the tools they use, that they will be more likely to engage with such tools.

> Hypothesis 5. Facilitating conditions will predict behavioral intention to use social media.

> Hypothesis 6. Facilitating conditions will predict actual use of social media.

Perceived usefulness

Perceived usefulness has been applied in diverse research contexts to date as an influencer of individual decisions to use technology (Venkatesh et al., 2003; Khayati and Zouaoui, 2013; Osubor and Chiemeke, 2015), and is a key component of the technology acceptance model. Perceived usefulness can be defined as the degree to which a person believes that using an information system can enhance their job performance or make achieving their goals easier (Arshad and Akram, 2018; Al-Rahmi et al., 2022). Technologies that support usefulness also support heightened wellbeing in end users (Evensen and Omfjord, 2019;

Al-Rahmi et al., 2021), a critical contribution in higher education. In higher education, student and teacher behavioral intentions of embracing and using learning is influenced by Elkaseh et al. (2016), Al-Rahmi et al. (2022).

> Hypothesis 7. Perceived usefulness will predict behavioral intention to use social media.

> Hypothesis 8. Perceived usefulness will predict actual use of social media.

Perceived ease of use

Perceived ease of use is identified in the literature as a determinant of behavioral intentions to use technology (Davis, 1989; Sin et al., 2012; Taherdoost, 2018), including social media for educational purposes. Perceived ease of use can be defined as the degree to which an individual believes using social media for educational purposes require no additional effort. The perceived ease of use of social media has been suggested as a key factor in its rapid growth in adoption in educational settings as a communication tool (Balakrishnan et al., 2017). Given that (Balakrishnan et al., 2017) list some 198 social media providers, user familiarity with social media may also be a key contributor to future adoption in higher education. On balance, however, perceived ease of use of social media may influence future academic performance, particularly in online environments. The model proposed theorizes that when social media tools are seen as easier to use, that students will use them with more frequency, and exhibit intentions to apply social media tools within their learning environment. Thus:

> Hypothesis 9. Perceived ease of use will predict behavioral intention to use social media.

> Hypothesis 10. Perceived ease of use will predict actual use of social media.

Perceived enjoyment

Perceived enjoyment may be conceptually understood through two key lens in the context of social media. First, enjoyment gained through the use of social networking while spending time asynchronously or synchronously with friends. Second, the enjoyment gained through the provision of support for others (Di Gangi and Wasko, 2016). According to Hsu and Lin (2008), enjoyment can be defined as the extent to which a person uses a technology because usage provides or invokes a pleasure-based response. Venkatesh (2000) adds that uniqueness (or marginal utility) and exclusion of performance-based consequences from use are also key components of sustained perceptions of enjoyment. Perceived enjoyment is a form of intrinsic motivation that focuses on the process of using a device and represents the satisfaction and enjoyment of doing so. Perceived enjoyment has been linked to a positive attitude toward using a particular technology (Sharma et al., 2016), and can impact user behavior (Elkaseh et al., 2016; Sangeeta and Tandon, 2020). Thus, this study posits that when individuals have a belief that the social media tools will be enjoyable, that these individuals (or students) will exhibit higher behavioral intentions to use social media, alongside actual use.

> Hypothesis 11. Perceived enjoyment will predict behavioral intention to use social media.

> Hypothesis 12. Perceived enjoyment will predict actual use of social media.

Behavioral intention to use

Behavioral intention, in the context of this study, can be described as student intentions to use social media in the immediate future to support their learning (Venkatesh et al., 2012). That is, they will exhibit behavioral intentions to use social media for the purposes of learning and communicating throughout learning processes (e.g., group assignments or knowledge sharing). Previous re-search identifies the use of social media enhances learning (Al-Rahmi et al., 2015), and thus, building an understanding regarding how intentions become actual behaviors is critical to supporting such learning enhancements (Venkatesh et al., 2003). Behavioral intentions indicate how students plan to use social media applications for interactive learning in the future (Labib and Mostafa, 2015; Abdullah Moafa et al., 2018). According to recent literature, people who engage with online technologies, and continue to build a positive belief regarding this platform, continue to use these in the future (Al-Rahmi et al., 2021a). Likewise, when students present an intention to use social media as an educational technology, many of these students will likely continue to actually use social media providing the barriers are low.

> Hypothesis 13. Behavioral intention will predict actual use of social media.

Actual social media use and academic performance impact

As highlighted in previous research (Balakrishnan et al., 2017), students tend to be willing to try new technologies when the barriers are low. However, student behavioral intentions to use social media for learning is not a perfect predictor of actual use, although it likely explains some, as proposed in Hypothesis

13 (Oberheu, 2016). Social media is a valuable tool for enhancing students' education because it can improve established social relationships, assist them to stay connected, keep them up to date on long-standing interactions and events, and support new contact development (Phua et al., 2017; Chung and Zeng, 2020). Social engagement, social networking, exchanging useful knowledge with others *via* social networking sites, and access to sites that allow students to access online resources that would otherwise be limited in traditional interactions are all examples of the positive effects of social media that can support academic performance (Radovic et al., 2017).

A student or learner's performance impact is often described as how a particular pedagogy, tool, resource, or support has affected the academic performance or success of that student (Al-Rahmi et al., 2020). For example, increasing rates of success (e.g., pass rates), higher retention (e.g., persistence), or satisfaction. According to Junco and Cotten (2012), le Roux and Parry (2017), social media has been observed to have a direct effect on student educational achievement. In one study, forming a Facebook-oriented social group enables student progression to be simpler and smoother (Alamri et al., 2020b). Likewise, communication across multiple platforms (e.g., Twitter and Facebook in Alamri et al. (2020b) can support an extension of learning (Alamri et al., 2020a; Al-Maatouk et al., 2020b). However, the relationship between social media use and performance is not universally accepted, with one study indicating no significant relationship between the two variables (Oradini and Saunders, 2008; Papadakis, 2021), and another highlight reduced academic performance (Kirschner and Karpinski, 2010; Arora et al., 2019). However, when mentors and teachers establish appropriate social presences in online platforms, students tend to be supported to be better socialized (Cao et al., 2013). This study posits that despite some studies suggesting negative relationships, that in developing nations like Malaysia when students are supported to be more connected in synchronous and asynchronous means that they will be better able to generate knowledge together, and organize key learning activities and moments through social media. This, in turn, should support sustained gains in their academic performance. Thus,

> Hypothesis 14. Behavioral intention will predict social media performance impact.

> Hypothesis 15. Actual use of social media will predict social media performance impact.

Research method

The method comprised an online survey of Malaysian university students. The data was analyzed using IBM SPSS-26 and AMOS -23. All respondents were invited to complete to provide input on social media for contact and collaboration and their opinion on its effect on academic performance. Confirmatory factor analysis was completed on each measure to ensure validity of constructs included. Construct, convergent, and discriminant validity of the measures were analyzed alongside specific structural equation models and associated model fit (Alzahrani et al., 2012; Hair et al., 2012).

Sample

Almost 330 questionnaires were circulated, of which 312 were returned by respondents, indicating a 94.5% response rate. An additional 18 were incomplete and excluded. The final sample is 312. Thus, in terms of the respondents' demographic details: 217 participants (69.6%) were males, 95 participants (30.4%) were females. As for the age of the respondents, 7.1 percent were between 18 and 20, 16 percent between 21 and 24, 35.9 percent between 25 and 29, 20.5 percent between 30 and 34, 13.5 percent between 35 and 40, 4.5 percent were between 41 and 45, and 2.6 percent were 46 or above. Most students used social media several times a day (49.4 percent), compared to 42.9 percent being constantly logged on. However, 5.4 percent of the respondents used social network platforms once every few days, and 0.3 percent use social media platforms more than twice a week but less than every few days.

Measures

This study comprises nine construct measures: performance expectancy, effort expectancy, facilitating conditions, perceived usefulness, perceived ease of use, perceived enjoyment, behavioral intention to use social media, actual social media use, and performance impact (see **Table 1**).

Performance expectancy was measured using five items adapted from Escobar-Rodríguez et al. (2014), Almaiah and Al Mulhem (2019). The tool was robust with strong reliability (α = 0.91, composite reliability = 0.91) with average variance explained of 0.66. Confirmatory factor analysis loadings (CFA) were between 0.76 and 0.85.

Effort expectancy was measured across five items from Thomas et al. (2013), Escobar-Rodríguez et al. (2014). The tool was robust with strong reliability (α = 0.93, composite reliability = 0.93) with average variance explained of 0.72. CFA loadings were between 0.82 and 0.86.

Facilitating conditions was measured with five items from the sample survey of Thomas et al. (2013), Escobar-Rodríguez et al. (2014), and Almaiah and Al Mulhem (2019). The tool was robust with strong reliability (α = 0.90, composite reliability = 0.90) with average variance explained of 0.65. CFA loadings were between 0.72 and 0.87.

TABLE 1 Overall of validity and reliability for students (Male and Female).

	PEX	EEX	FC	PU	PEOU	PE	BI	ASMU	PI	AVE	CR	CA
PEX	0.810									0.661	0.907	0.906
EEX	0.385	0.955								0.720	0.928	0.928
FC	0.335	0.339	0.749							0.652	0.903	0.903
PU	0.516	0.381	0.317	0.816						0.602	0.880	0.880
PEOU	0.547	0.377	0.307	0.652	0.885					0.683	0.915	0.913
PE	0.585	0.386	0.328	0.470	0.548	0.808				0.653	0.904	0.903
BI	0.444	0.363	0.368	0.463	0.474	0.395	0.638			0.541	0.854	0.853
ASMU	0.279	0.347	0292	0.356	0.284	0.373	0.318	0.757		0.629	0.910	0.911
PI	0.444	0.447	0.402	0.421	0.354	0.423	0.397	0.394	0.844	0.594	0.880	0.879

Perceived usefulness was measured with five adapted items from Kwon and Wen (2010), Abdullah Moafa et al. (2018). The tool was robust with strong reliability (α = 0.88, composite reliability = 0.88) with average variance explained of 0.60. CFA loadings were between 0.56 and 0.89.

Perceived ease of use was measured with five items adapted from Osubor and Chiemeke (2015), Al-Maatouk et al. (2020b). The tool was robust with strong reliability (α = 0.92, composite reliability = 0.91) with average variance explained of 0.68. CFA loadings were between 0.73 and 0.86.

Behavioral intention to use social media was measured using a five item tool adapted from Kingsley Arthur et al. (2013), Escobar-Rodríguez et al. (2014). The tool was robust with strong reliability (α = 0.91, composite reliability = 0.91) with average variance explained of 0.54. CFA loadings were between 0.67 and 0.80.

Actual social media use was measured with six items from Almaiah and Al Mulhem (2019), Al-Rahmi et al. (2020). The tool was robust with strong reliability (α = 0.91, composite reliability = 0.91) with average variance explained of 0.63. CFA loadings were between 0.73 and 0.85.

Performance impact was measured using six items from Goodhue (1995), Karaaslan et al. (2021). The tool was robust with strong reliability (α = 0.88, composite reliability = 0.88) with average variance explained of 0.60. CFA loadings were between 0.70 and 0.82.

Findings

Preliminary modeling

To assure of suitability of the two underlying constructs (unified theory of usage and acceptance of technology, and technology acceptance model), these were first assessed independently for their validity and reliability. The unified theory of usage and acceptance of technology suggests that performance expectancy, effort expectancy, and facilitating conditions collectively predicts performance impact (Yi et al., 2016). This was held true in this study (see **Figure 2**, $p < 0.05$). The model as proposed in **Figure 2** shows good model fit ($\chi 2/df = 2.855$, CFI = 0.931, TLI = 0.920, RMSEA = 0.077, SRMR = 0.041).

The technology acceptance model suggests that perceived usefulness, ease of use, and enjoyment will predict performance impact (Alalwan et al., 2019). As seen in **Figure 3**, this was also held true ($p < 0.05$). The model as proposed in **Figure 3** shows good model fit ($\chi 2/df = 2.721.$, $p = ??$, CFI = 0.971, TLI = 0.951, RMSEA = 0.061, SRMR = 0.037).

Primary model

The structural equation model in this study. The model as proposed in **Figure 1** (and presented in **Figure 4**) shows good model fit ($\chi 2/df = 2.577$, CFI = 0.93, TLI = 0.92, RMSEA = 0.042, SRMR = 0.038 RMR = 0.049).

Validity and reliability

Confirmatory factor analysis (CFA) was used to investigate suggested hypotheses, and average variance explained, Cronbach's alpha, and composite reliability values were used to establish discriminant validity. The study examined discriminant validity for the social media usage implementation for teaching and learning during the COVID-19 pandemic in higher education over the three criteria: first, the relationship index among constructs is less than 0.80 (Hair et al., 2012). Second, the average variance extracted (AVE) of every variable is equal to or greater than 0.5. The average variance extracted (AVE) of every variable is greater than the inter-construct correlations connected to that element (Fornell and Larcker, 1981), (iii); the measurements and the confirmatory factor examination outcomes factor loading of 0.5 or higher is satisfactory, CA 0.70, and CR 0.70 (Davis et al., 1989; Hair et al., 2012).

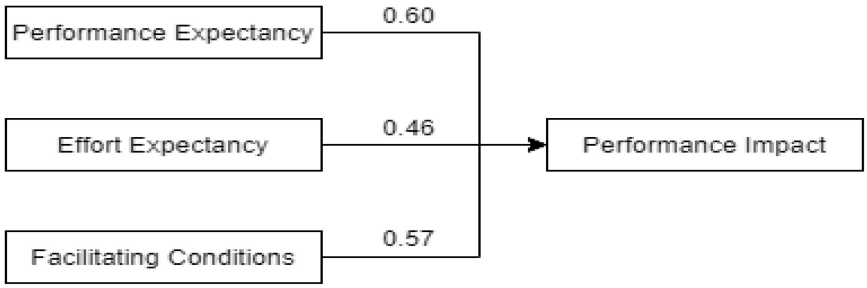

FIGURE 2
Unified theory of usage and acceptance of technology and performance impact.

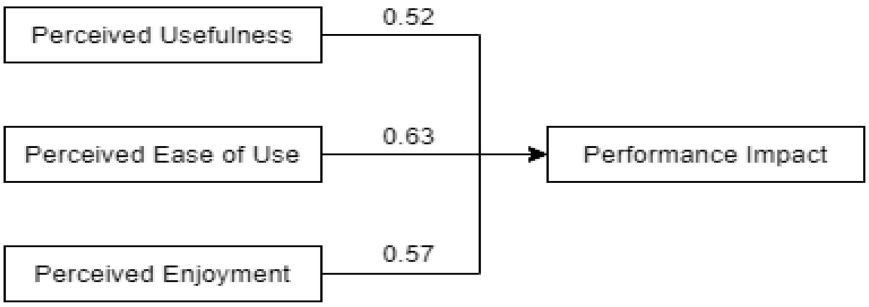

FIGURE 3
Technology acceptance model and performance impact.

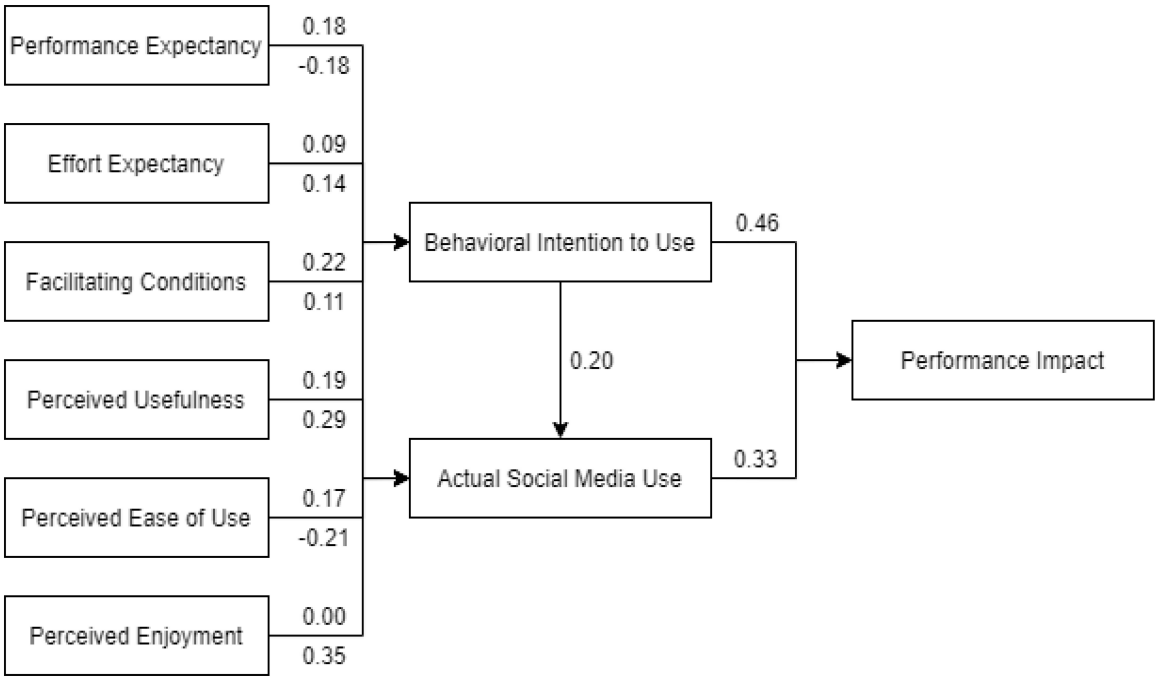

FIGURE 4
Antecedents of social media performance impact.

Structural model analysis

The effect of performance impact on their intention to use and actual use of social media, as well as the participation of different classes, was investigated using path modeling analysis. During the hypothesis testing discussion, all results are presented based on learning performance during the COVID-19 pandemic, and findings are contrasted. The model highlights factor loadings were greater than 0.50, a critical cut-off for maintaining these loadings (Fornell and Larcker, 1981; Hair et al., 2012). **Figure 4** illustrates that all the hypotheses between the fifteen major constructs and the fourteen hypotheses were considered and only one of the fifteen hypotheses was rejected (Hypothesis 11).

Unified theory of usage and acceptance of technology

The unified theory of usage and acceptance of technology is discussed in the first three direct assumptions. **Figure 4** shows that student performance expectancy has a significant and positive relationship with their behavioral intention (H1, $\beta = 0.176$, $t = 3.321$, $p = 0.001$). To put it another way, all students in the current sample have high performance expectancy from their peers, contributing to behavioral intention ability to use information communication, conversation, or share information with their peers. The second hypothesis revealed a significant and positive relationship between performance expectancy for learning and actual social media use during the COVID-19 pandemic ($\beta = 0.143$, $t = 2.974$, $p = 0.001$), indicating that the second hypothesis revealed a significant and positive relationship. To put it another way, all students in the current sample have effort expectancy from their peers, contributing to actual social media to use for communication, conversation, or sharing information with their peers.

The third hypothesis was also confirmed with a significant and positive relationship between effort expectancy for learning and behavioral intention ($\beta = 0.086$, $t = 2.379$, $p = 0.001$). To put it another way, all students in the current sample have effort expectancy for learning and sharing information with their peers, contributing to student behavioral intentions. Thus, the fourth hypothesis revealed a significant and positive relationship between effort expectancy for learning and actual social media use during the COVID-19 pandemic ($\beta = 0.143$, $t = 2.974$, $p = 0.001$). That means, all students in this study indicate that all learners anticipate putting forth effort in studying and sharing their information with peers, which contributes to actual social media use. According to the fifth hypothesis, there is a significant and positive relationship between facilitating conditions and behavioral intention ($\beta = 0.22$, $t = 5.526$, $p = 0.001$). That means, all students in this study have facilitating requirements for learning and exchanging information with peers, which contributes to behavioral intentions to use. The sixth hypothesis suggested a significant and positive relationship between facilitating conditions for learning and actual social media use during the COVID-19 pandemic ($\beta = 0.114$, $t = 2.043$, $p = 0.001$). To put it another way, all students in the current sample have facilitated learning to share information with their peers, which contributes to actual social media use. This is consistent with previous research (Aldahdouh et al., 2020; Mittal et al., 2021).

Technology acceptance model

The technology acceptance model is discussed in the second three direct assumptions. As illustrated in **Figure 4**, students' perceived usefulness has a significant and positive relationship with their behavioral intention ($\beta = 0.176$, $t = 3.321$, $p < 0.001$). To put it another way, all students in the current sample have perceived usability from their peers, contributing to behavioral intention through information communication, conversation, or sharing information with their peers. The eighth hypothesis proposed a significant and positive relationship between PU for learning and social media use during the COVID-19 pandemic ($\beta = 0.287$, $t = 3.895$, $p < 0.001$). That means, all learners in this study expect to put forth an eighth effort in studying and sharing their information with peers, which contributes to actual social media use. The ninth hypothesis proposed a significant and positive relationship between perceived ease of use and behavioral intention ($\beta = 0.168$, $t = 3.099$, $p < 0.001$). That means, all learners in this study expect to put their ninth effort into studying and sharing their information with peers, which contributes to behavioral intention through information communication, conversation, or sharing information with their peers.

The tenth hypothesis suggested a substantial and positive relationship between perceived ease of use for learning and actual social media use during the COVID-19 pandemic ($\beta = -0.208$, $t = -2.851$, $p < 0.001$). That means, this study shows that all learners expect to put forth a tenth effort in studying and sharing their information with peers, which contributes to actual social media use. Furthermore, the eleventh hypothesis indicated neither a positive nor a significant relationship between perceived enjoyment for learning and behavioral intention during the COVID-19 pandemic ($\beta = 0.005$, $t = 0.094$, $p < 0.001$). Hypothesis 12 suggested a substantial and positive relationship between perceived enjoyment for learning and actual social media usage during the COVID-19 pandemic ($\beta = 0.352$, $t = -5.107$, $p < 0.001$). Thus, the twelfth hypothesis indicated that there is a substantial and positive relationship. That means, this study shows that all learners expect to put their twelfth effort into studying and sharing their information with peers, which contributes to actual social

TABLE 2 Structural model for hypothesis testing results.

H	Independent	Relationship	Dependent	Estimate	S.E.	C.R.	P	Result
H1	PEX	————->	BI	0. 176	0. 053	3.321	0.000	Supported
H2	PEX	————->	ASMU	−0. 180	0. 071	−2.520	0.012	Supported
H3	EEX	————->	BI	0. 086	0. 036	2.379	0.001	Supported
H4	EEX	————->	ASMU	0. 143	0. 048	2.974	0.003	supported
H5	FC	————->	BI	0. 222	0. 040	5.526	0.000	Supported
H6	FC	————->	ASMU	0. 114	0. 056	2.043	0.041	Supported
H7	PU	————->	BI	0. 193	0. 054	3.538	0.000	Supported
H8	PU	————->	ASMU	0. 287	0. 074	3.895	0.000	Supported
H9	PEOU	————->	BI	0. 168	0. 054	3.099	0.002	Supported
H10	PEOU	————->	ASMU	−0.208	0. 073	−2.851	0.004	Supported
H11	PE	————->	BI	0. 005	0. 052	0.094	925	Unsupported
H12	PE	————->	ASMU	0. 352	0. 069	5.107	0.000	Supported
H13	BI	————->	ASMU	0. 204	0. 075	2.720	0.007	Supported
H14	BI	————->	PI	0. 460	0. 058	7.885	0.000	Supported
H15	ASMU	————->	PI	0. 326	0. 054	6.100	0.000	Supported

media use. For example, Hypothesis 13 proposed a significant and positive relationship between behavioral intention and actual social media usage for teaching and learning during the COVID-19 pandemic ($\beta = 0.204$, $t = 2.720$, $p < 0.001$). That is, according to this study, learners expect to put in the effort in studying and sharing their knowledge with peers, which contributes to actual social media use. Thus, the fourteenth hypothesis indicated a significant and positive relationship between behavioral intention for learning and performance impact during the COVID-19 pandemic ($\beta = 0.460$, $t = 7.885$, $p < 0.001$). That is, according to this study, all learners expect to put forth a fourteenth effort in studying and sharing their knowledge with peers, which contributes to performance impact. The fifteenth hypothesis suggested a substantial and positive relationship between actual social media use for learning and performance impact during the COVID-19 pandemic ($\beta = 0.326$, $t = 6.100$, $p < 0.001$) thus, the fifteenth hypothesis indicated that is a substantial and positive relationship. That means, in this study shows that all learners expect to put fifteenth effort in studying and sharing their information with peers, which contributes to performance impact (see **Table 2**). Hence collectively, all the technology acceptance model hypotheses reported reliable with the facts and figures of our research, that reinforce the majority of the previous research that found; the perceived usefulness and ease of using social media enhance the behavioral intention for using social media platforms besides the appropriate social media for the purpose teaching-learning during the COVID-19 pandemic, it increases students' learners for the teaching besides the learning during the COVID-19 pandemic.

Discussion

The findings of this study suggest an insight into students' academic performance impacts and relationships with their (performance expectancy, effort expectancy for, facilitating conditions for teaching and learning during the COVID-19 pandemic, perceived usefulness, perceived ease of use for teaching and learning) were significantly affected by the acceptance of using social media for learning during the COVID-19 pandemic. Social media usage eases a context that is described through behavioral intention and actual social media that can support students in social media and makes changes to flexible models of learning a necessity. A little previous research is available that combines and integrates ideas for the acceptance of a group of students as social media as a supportive educational tool in higher education. Student interactions are identified as important stakeholders from the learner's point of view as they can use social media to facilitate information and co-creation of knowledge (Alnjadat et al., 2019; Alyoussef et al., 2019). This may explain the quantitative evidence indicating that students are more likely to use social media in their teaching and learning during the COVID-19 pandemic.

As a result of combining the unified theory of usage and acceptance of technology model factors with the technology acceptance model factors found in this analysis, a new integrated structural model was created. This study also provides preliminary insights into the behavioral intention to use and real social media use benefits in higher education. According to quantitative evidence from the student study, using social media as a support tool can result in intensive, higher learning and comprehension. Students have behavioral aim to use social media, and real use is often perceived ease of use, performance expectancy, and perceived use, which improves students' academic performance by allowing them to access vital resources from their peers (Hrastinski and Aghaee, 2012; Alyoussef et al., 2019; Al-Maatouk et al., 2020b). The relationship between perceived enjoyment, behavioral intention to use social media, and actual social media use has been investigated using the structural model developed for this research. The findings showed a substantial association between

performance expectancy to behavioral intention and real social media use for teaching and learning during the COVID-19 pandemic by using the unified theory of usage and acceptance of technology model variables. Thus, it is reasonable to conclude that students associate this perceived enjoyment factor with their willingness to use social media for educational purposes. The original theoretical basis of the unified theory of usage and acceptance of technology model is reflected in this result (Mittal et al., 2021). This is to be anticipated because when students believe that using social media can benefit them, they are more likely to use it to improve their results. The findings also showed that behavioral intention and actual social media usage for learning is significantly influenced by effort expectancy and facilitating conditions.

The technology acceptance model component of perceived ease of use, perceived useability, and perceived enjoyment supports the original hypothesis of the unified theory of usage and acceptance of technology model (Mittal et al., 2021). The findings revealed that perceived ease of use and perceived useability have a substantial positive impact on behavioral intention and the actual use of social media for teaching and learning during the COVID-19 pandemic. This result is in line with the technology acceptance model's original theoretical basis (Elkaseh et al., 2016; Alalwan et al., 2019; Alyoussef et al., 2019; Al-Rahmi et al., 2021b). The findings also showed that perceived enjoyment has a substantial positive impact on real social media learning use (Alenazy et al., 2019; Alyoussef et al., 2019). Although there was no substantial impact of perceived enjoyment on behavioral intention for teaching and learning during the COVID-19 pandemic in this analysis, this is due to the poor use of social media for teaching and learning during the COVID-19 pandemic by students and the fact that there is not enough of them to have a meaningful effect on their peers.

The model established in this study identified the key factors for teaching and learning acceptance during the COVID-19 pandemic, which could be useful for higher education in ensuring the effective adoption of social media resources for learning. Furthermore, by combining an expanded version of the unified theory of usage and acceptance of technology with technology acceptance model variables, this study adds to the existing body of knowledge. As a result, the results of this study would be useful to university policymakers and researchers in determining students' preferences for using social media platforms, thus increasing students' acceptance of social media use in educational institutions. This research provides two empirical evidences: first empirical evidence of behavioral intention through performance and effort expectancy, perceived usefulness, ease of use and perceived enjoyment for teaching and learning during the COVID-19 pandemic; and second empirical evidence of actual social media use as a means of performance and effort expectancy, perceived usefulness, ease of use and perceived enjoyment for teaching and learning during the COVID-19 pandemic, which can improve learners' educational achievements in higher education. This is a substantial theoretical contribution to previous studies of technology acceptance model and unified theory of usage and acceptance of technology that did not recognize the effect behavioral intention and actual social media use had on utilizing social media (Howard et al., 2015; Chawinga, 2017; Hossain et al., 2019; Al-Rahmi et al., 2020).

The COVID-19 home confinement (or "lockdowns"), which saw colleges close, and all instruction become virtual, the education system's long-term viability was put to the test. The higher education institutions must guarantee that education is inclusive, egalitarian, and of high quality to bridge the digital gap and promote sustainable activities (Alismaiel, 2021; Faura-Martínez et al., 2022). Furthermore, COVID-19 had negative effects on the well-being of students in four countries: Cambodia, Nigeria, Oman, and Spain, leading us to learn about COVID-19's cross-cultural effects on higher education students (Cifuentes-Faura et al., 2021). Based on these findings, we infer that COVID-19 imprisonment improved students' efficiency by changing their learning tactics into a more consistent habit. As a result of these factors, greater grades in students' evaluations are predicted because of COVID-19 imprisonment, which may be explained by an increase in their learning performance because of their usage of social media use for collaborative learning. Two of the conclusions based on the findings of this research are outlined below:

- It is important to utilize social media for behavioral intention or actual social media use to encourage students to utilize social media for behavioral intention to use or actual social media usage in educational institutions by influencing students' academic performance. Components of social media, for instance, such as YouTube, Facebook, and blogs, for instance.
- Educational institutions are encouraged to enroll savvy students with peers or lectures to utilize the platforms of social media in behavioral intention and actual social media use courses without compelling them to follow orders. Accordingly, educational institutions may include all the tools necessary to utilize social media for learning during the COVID-19 pandemic.

Conclusion

Higher education students' increased use of social media necessitates more focus from both students and teachers for teaching and learning during the COVID-19 pandemic. Students are encouraged to engage in learning through participation in social media, which also allows for personal

reflection and collaborative learning during the COVID-19 pandemic. This study aimed to examine the impact of social media as a learning tool has had on academic performance in education. The study's results shed light on the potential advantages of using social media platforms in higher education in terms of behavioral intention and actual social media use. The study also adds to the growing body of literature on social media in higher education by enhancing knowledge of student attitudes and perspectives on social media usage in higher education. Our findings suggest that using social media for teaching and learning may positively impact academic performance. Furthermore, students' willingness to use social media for learning would increase if they found it a valuable learning tool during the COVID-19 pandemic. Students, on the other hand, would be unable to use social media for educational purposes if they believe it is unsafe. As a result, when incorporating social media into learning and teaching activities, students must understand the possible risks and drawbacks of using social media in the classroom and devise methods to minimize those risks. Other factors that are important to the adoption and use of social media by academic students in higher education, such as collaborative learning, experience, engagement with students in using social media, and students' perceptions of social media, were not considered in this study. As a result, future research is needed to look at variables like student participation, collaborative learning during the COVID-19 pandemic, and student involvement in class as they relate to their learning during the COVID-19 pandemic *via* social media tools.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the patients/participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

AA-R, AS, and EW: conceptualization, methodology, resources, and data curation. AA-R, WA-R, and OA: software. AA-R, AS, EW, JC, and OA: validation. AA-R, AS, EW, and WA-R: formal analysis. AA-R: investigation. AA-R and AS: writing—original draft preparation and writing—review and editing. AA-R, AS, EW, WA-R, OA, and JC: visualization. AS and EW: supervision. AA-R, AS, EW, and WA-R: project administration. All authors read and agreed to the published version of the manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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