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THE INFLUENCE OF EMOTION, SELF-EFFICACY AND MEDIATING ROLE OF ATTITUDE TOWARDS ONLINE LEARNING INTENTION AMONG PRIVATE UNIVERSITY STUDENTS IN MALAYSIA

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Abstract*: The rapid expansion of online learning has transformed education but faces challenges like high dropout rates and low engagement, raising questions about factors influencing students' attitudes and intentions. This study examines determinants of students' attitudes and intentions towards online learning, focusing on emotions, self-efficacy and attitude as mediators within Malaysian private higher education. Data from 564 undergraduates in Malaysia were analysed using SmartPLS (PLS-SEM) to explore relationships between emotions, self-efficacy, attitudes and intention for online learning. Additionally, mediation analysis assessed attitude's partial mediating role. Findings indicated that emotions and self-efficacy significantly influenced attitudes, which in turn predicted online learning intention. Attitude partially mediated the effects of emotions and self-efficacy on online learning intention. Emotional (feeling) and cognitive (thinking) factors are pivotal in shaping students' attitudes and intention towards online learning. The study suggests that fostering emotional support and self-efficacy can enhance online learning experiences, providing key insights for educators and policymakers.*

Keywords*: Online Learning Intention, Attitude, Self-Efficacy, Emotion, Mediation, Private Higher Education Institutions, Students*

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Introduction

The adoption of online learning has seen a significant surge in recent years, particularly in the wake of the COVID-19 pandemic (Daniel, 2020). As educational institutions worldwide were forced to close their physical doors, online platforms became the primary means of continuing education. This rapid shift brought online learning to the forefront, highlighting its potential as a flexible and scalable alternative to traditional, in-person education (Niyogushimwa, 2023). The appeal of online learning lies in its inherent advantages: it is often more cost-effective, accessible and convenient than conventional education. Students can attend classes from any location, eliminating geographical barriers and reducing costs associated with transportation and housing. Additionally, the asynchronous nature of many online courses allows learners to engage with the material at their own pace, fitting education into their schedules more easily than the rigid timetable of brick-and-mortar institutions.

Despite these perceived benefits, the widespread adoption of online learning has also unveiled several significant challenges. Contrary to the expectations that such flexibility and accessibility would lead to higher engagement and success, many institutions have reported the opposite. Online learning environments have been plagued by low engagement, high dropout rates and poor academic performance (Wang et al., 2019). Students may struggle with maintaining motivation due to online settings, where the lack of face-to-face interaction can lead to feelings of isolation and detachment (Kaufmann & Vallade, 2022). This paradox between the theoretical benefits of online learning and the actual adverse outcomes observed in practice raises essential questions about the factors influencing student success in virtual environments. It underscores the need for a deeper understanding of the psychological and emotional factors that drive students' attitudes and intentions towards online learning. By examining these factors, educators and policymakers can better address the challenges of online education and enhance its effectiveness as a mode of learning in the digital age.

While online learning theoretically allows for a more personalised and self-paced educational experience, many students report isolation, frustration and demotivation. These negative emotions often lead to declining academic performance and a reluctance to continue with online courses. However, the underlying reasons behind these negative attitudes are not fully explored and existing research has not adequately addressed why students, who should theoretically benefit from online learning, often struggle to engage with it (Liu et al., 2022). A key factor contributing to students' struggles in online learning is self-efficacy, which plays a critical role in their success. Self-efficacy refers to a student's belief in their ability to manage and complete tasks (Bandura, 1977) and it becomes particularly important in online learning environments where students must navigate technology, manage time independently and stay motivated without direct instructor support (Hodges, 2008). Students with high self-efficacy are likelier to stay engaged and persist in their studies, while those with low self-efficacy may face procrastination, frustration and disengagement (Cho & Jonassen, 2009; Zimmerman, 2008). Therefore, understanding and addressing self-efficacy is essential for improving student success in online learning environments (Joo et al., 2013). Additionally, there is a need to explore logistical and technological aspects of online education (ION Professional eLearning Programs, 2022), as well as psychological and emotional dimensions that contribute to students' negative perceptions. This study aims to assess the roles of emotions and self-efficacy in shaping students' attitudes and intentions towards online learning. Addressing this gap is crucial for improving the effectiveness of online education. It provides insights into their challenges and informs strategies to enhance engagement, satisfaction and overall success.

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Based on the above-mentioned, the purpose of this study is to answer the following research questions:

RQ 1: Are students' emotions and self-efficacy for online learning positively related to their attitude toward online learning?
RQ 2: Is there a positive relationship between students' attitudes toward online learning and their online learning intention?
RQ 3: Does students' attitude toward online learning mediate the relationship between their emotions, self-efficacy and online learning intention?

The rest of this article is organised as follows: literature review, hypotheses development, sampling, measurements, demographic statistics and data analysis. It concludes with a discussion of the findings, implications, contribution, limitations and recommendations for future research.

Literature Review

Intention to continue online learning

Recognising the importance of students' online learning intention (OLI) is crucial for enhancing their performance in online education (Butt et al., 2021). Past researchers have increasingly raised concerns regarding the effectiveness of online learning (Aroonsrimarakot et al., 2023). Farley and Burbules (2022), in their comprehensive evaluation of online learning implementation, analysed various scholarly works and concluded that while online learning offers specific benefits, it often falls short compared to traditional, face-to-face classroom instruction. Nevertheless, growing evidence suggests that students continue online learning when key psychological factors are addressed (Kumari et al., 2021; Mastour et al., 2023). This is because online learning offers benefits like accessibility, flexibility and cost-effectiveness (Niyogushimwa, 2023). Thus, continued research in online learning intention is crucial to addressing its challenges and realising its full potential.

Past studies have emphasised various factors influencing online learning adoption and contributed to understanding the impact of external and structural factors on online learning. However, many have primarily focused on technological readiness, system quality, perceived usefulness, facilitating conditions, usability, and trust (refer to Table 1). While some research has examined psychological and motivational factors such as self-efficacy, emotion, and attitude, further exploration of their specific roles in shaping students' online learning intentions and behaviours remains necessary.

Table 1: Past Studies Related to Online Learning

Study	Focus	Findings
Adams et al. (2020)	Students' readiness for blended learning, covering technological and content readiness.	Technological and content readiness influence students' readiness for blended learning.
Ali et al. (2018)	Effectiveness of online learning systems in higher education through structural equation modelling.	System quality and perceived usefulness affect the effectiveness of online learning systems.

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Khan et al. (2022)	Meta-analysis of mobile learning adoption using UTAUT3.	Behavioural intention and facilitating conditions play significant roles in mobile learning adoption.
Samsudeen & Mohamed (2019)	Factors influencing students' intention to use online learning systems in Sri Lanka.	Usability, perceived usefulness, and trust are key factors that influence online learning intention.
Tey & Moses (2018)	UTAUT model integration with achievement goals and learning styles.	Achievement goals and learning styles contribute to shaping online learning intentions.

Underpinning Theories

Pekrun (2006) developed the Control–Value Theory of Achievement Emotions, which posits that emotions experienced in achievement contexts, such as learning environments, are influenced by two essential appraisals: the subjective value assigned to the task and the perceived control over the learning task in other words, the student's attitude and self-efficacy respectively. Control–Value Theory has been essential in comprehending the emotional dynamics in educational environments, thereby directing strategies to improve student engagement and motivation (Pekrun et al., 2011). In addition, the broaden-and-build theory of positive emotions posits that positive emotions broaden an individual's momentary thought-action repertoire and build enduring personal resources (Fredrickson, 2001). This broadened cognitive scope allows individuals to develop more positive evaluations, or attitudes, towards the object or experience that elicits the emotion. In an educational setting, positive emotions associated with online learning will likely enhance students' attitudes toward the learning platform, leading to greater acceptance and engagement (Ferrer et al., 2022).

The concept of self-efficacy stems from Bandura's Social Cognitive Theory, which posits that individuals with higher self-efficacy are more likely to view challenges as opportunities for growth, thereby fostering positive attitudes towards tasks or experiences (Zimmerman, 2000). Self-efficacy, an individual's belief in their capacity to execute tasks and achieve goals, is crucial in shaping attitudes across various contexts, including education environments (Bandura, 1997). Research supports this link, as students with high self-efficacy often demonstrate higher motivation, perseverance and positive attitudes towards learning (Pajares, 2002). Low self-efficacy, in contrast, can lead to self-doubt and negative attitudes, reducing engagement (Schunk, 1991). Lastly, studies in technology acceptance demonstrate that a favourable attitude towards technology use correlates with higher usage intention, as seen in the Technology Acceptance Model (TAM), which emphasises perceived usefulness and ease of use as drivers of positive attitudes (Davis et al., 1989; Teo, 2011).

This study integrates emotion and self-efficacy into the investigation of online learning intentions, drawing on prior studies and underlying theories to offer a more comprehensive and nuanced perspective on the factors that influence students' behaviours in online learning environments.

Emotions Towards Online Learning

Emotions are pivotal in shaping human attitudes and behaviours, particularly in learning environments. Emotions, defined as affective states that influence cognitive processing, are fundamental in determining how individuals perceive and engage with their surroundings (Pekrun, 2006). Positive emotions such as enjoyment, interest and hope have enhanced engagement, fostered favourable attitudes and improved outcomes in various contexts,

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including education and online learning (Artino, 2012). It can lead to deeper learning and better academic outcomes (Ambrose et al., 2010; Fredrickson, 2001). On the other hand, negative emotions such as anxiety and frustration can impair cognitive processes, reduce motivation and lead to disengagement (Ashcraft & Kirk, 2001). In contrast, negative emotions, like anxiety or frustration, can hinder motivation and lead to unfavourable attitudes (Fredrickson, 2001), where feelings of isolation and lack of immediate feedback often exacerbate negative emotions (Artino & Stephens, 2009). Empirical studies have demonstrated a strong link between emotion and attitude. For instance, Tan et al. (2021) found that positive emotions significantly influenced students' attitudes toward e-learning environments, while negative emotions had the opposite effect. Similarly, Linnenbrink-Garcia et al. (2016) concluded that students experiencing positive emotions in academic settings were more likely to exhibit positive attitudes toward their learning experiences. In online settings, students must manage their emotions more effectively and those who struggle with self-regulation may experience frustration or helplessness (Artino, 2010). Hence, it is hypothesised that:

H1: Positive emotion is positively related to attitude.

Self-Efficacy Towards Online Learning

Self-efficacy refers to an individual's belief in their ability to succeed in specific tasks (Bandura,1977). In education, it is critical for motivating students, shaping how they approach learning, persist through challenges and achieve academic success. High self-efficacy leads to more significant effort, persistence and deeper engagement with learning, while low self-efficacy can result in anxiety, avoidance and disengagement (Pajares, 1996; Schunk, 1991). In online environments, students with higher self-efficacy are more likely to stay engaged, complete assignments and continue their educational journey, enrolling in additional courses or pursuing advanced degrees (Ajzen, 1991; Rovai, 2003). Conversely, students with low self-efficacy may struggle with motivation and procrastination, leading to higher dropout rates (Cho & Jonassen, 2009). Empirical research supports the relationship between self-efficacy and attitude. For example, Getenet et al. (2024) found that students with higher self-efficacy had more positive attitudes towards using technology in learning, particularly in online settings. Similarly, a study by Joo et al. (2013) demonstrated that self-efficacy in e-learning contexts significantly predicted students' attitudes toward online learning platforms. This construct is particularly important in online learning, where students with high self-efficacy are better equipped to meet these challenges, using effective strategies and showing greater participation in their courses (Joo et al., 2013). This suggests that confidence in one's abilities directly influences how one perceives the learning experience. Thus, it is hypothesised that:

H2: Self-efficacy is positively related to attitude.

Attitudes Towards Online Learning

Attitudes can be broadly defined as students' evaluations, feelings and predispositions toward online learning. It can influence students' engagement, performance and overall satisfaction. Positive attitudes toward online learning are often linked to flexibility, accessibility and the ability to self-pace learning (Kokoç, 2019). Conversely, negative attitudes may arise from technical difficulties, lack of social interaction and the need for greater self-discipline (T. Zhao et al., 2024). Research shows that many students value the flexibility and accessibility of online learning, allowing them to balance studies with other commitments (Navick & Gibbs, 2023). It also caters to diverse learning styles through multimedia resources, enhancing understanding and retention (Dubey, 2024). Additionally, online learning promotes self-directed learning and

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the development of time management skills, leading to higher satisfaction and course completion when adequate resources and support are available (Jaggars & Xu, 2016; Pan, 2023). Despite its advantages, negative attitudes often stem from feelings of isolation due to the lack of face-to-face interaction, leading to disengagement and reduced motivation (Bergdahl, 2022; Ivanec, 2022). Further empirical research validates this connection. Joo et al. (2013) found positive attitudes towards online learning correlated with higher engagement intention. Park (2009) reported similar findings regarding enrolment intentions. Beyond education, in fields like healthcare and marketing, positive attitudes often drive behavioural intentions aligned with personal evaluations and beliefs (Fishbein & Ajzen, 2009). Students who perceive online learning as effective and convenient are likelier to continue participating. Therefore, it is hypothesised that:

H3: Attitude is positively related to online learning intention.

The Role of Attitude in Online Learning as a Mediating Factor

In online learning, attitude is a crucial mediator, linking motivational factors to students' intention to engage with digital platforms. Mediation can occur without a direct effect, with the indirect effect often tested through bootstrapping (Hayes & Preacher, 2010; X. Zhao et al., 2010). Hair et al. (2021) emphasised the importance of indirect effects in complex models. Positive attitudes towards online learning boost students' motivation and behavioural intentions (Teo & Ho, 2024). Similarly, emotions affect how individuals perceive their environments, especially in educational settings, where emotions significantly impact cognitive processing, motivation and engagement (Pekrun, 2006). Evidence supports this mediating effect of attitude. Research indicates that positive emotions enhance attitudes, boosting motivation and learning intentions (Lee et al., 2005; Linnenbrink-Garcia et al., 2016). In online learning, students who feel optimistic about the flexibility and interactivity of digital platforms are more likely to develop favourable attitudes, strengthening their intention to continue (Yu et al., 2024). Conversely, negative emotions may reduce engagement, leading to unfavourable attitudes (Hutain & Michinov, 2022). Hence, it is hypothesised that:

H4: Attitude mediates the relationship between emotion and online learning intention.

Self-efficacy, or confidence in one's ability to succeed, is a reliable predictor of behavioural intentions across domains, including education (Bandura, 1997). Students with high self-efficacy in online learning tend to navigate digital platforms, manage time and succeed academically, all of which encourage them to continue online learning (Zimmerman, 2000). Students who believe in their ability to succeed will likely develop favourable attitudes towards online learning, enhancing their commitment to these platforms (Artino, 2012). Studies substantiate the mediating effect of attitude between self-efficacy and behavioural intentions. For instance, Joo et al. (2013) and Moos and Azevedo (2009) found that students with high self-efficacy in online learning developed positive attitudes towards e-learning, which boosted their intention to engage. Lee et al. (2005) further demonstrated that self-efficacy influenced attitude, a strong predictor of students' intentions in adopting technology. In online learning, students who feel skilled and competent are more likely to develop positive attitudes, primary motivators for continued engagement. Conversely, low self-efficacy can lead to negative attitudes, reducing engagement. Thus, it is hypothesised that:

H5: Attitude mediates the relationship between self-efficacy and online learning intention.

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Proposed Research Framework

The study suggests that students' emotional states, combined with confidence in their abilities, shape their attitudes toward online learning, which, in turn, drive their behavioural intentions to engage in online education platforms. Hence, Figure 1 illustrates the proposed research framework, where emotions (EM) and self-efficacy (SF) are key influencers of attitude (AT) towards online learning, which subsequently affects online learning intention.

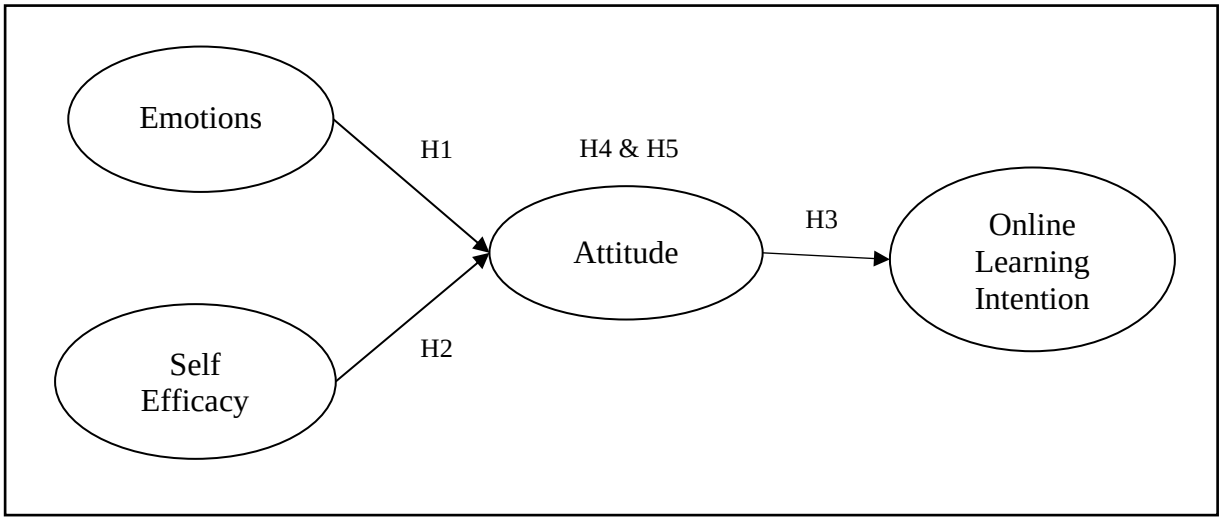

Figure 1: Proposed Research Framework

Research Method

Research Instrument

Before full deployment, a pilot test with thirty undergraduates ensured clarity and allowed necessary adjustments. Participants completed a survey using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) to quantify their perceptions and attitudes. Items were adapted from validated instruments to maintain reliability and validity across the following variables.

The Achievement Emotions Questionnaire (AEQ) developed by Pekrun et al. (2011) was used to measure various emotions such as enjoyment, anxiety and boredom in the context of learning. This variable focuses on positive emotions for this paper that captures students' emotional experiences during online learning, such as enjoyment, hopelessness and frustration. These emotions are expected to influence students' attitudes towards online learning and intentions to continue. Self-efficacy was assessed using a scale based on Bandura's self-efficacy theory, tailored to the online learning context (Zimmerman, 2000). This variable represents students' belief in their ability to successfully engage in and complete online learning tasks. Higher self-efficacy is hypothesised to positively impact attitudes towards online learning and intentions to persist in online courses. Attitudes towards online learning were measured using Liaw's (2008) items for perceived satisfaction and usefulness. This variable reflects students' overall evaluations of online learning, encompassing cognitive and affective components. It is posited to mediate the relationship between emotions, self-efficacy and intentions. The intention to continue online learning was measured using items adapted from Sangeeta and Tandon (2020). It measures the degree to which students intend to persist in online learning.

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Research Procedure and Sampling

The study's population comprises undergraduate students in private universities across Malaysia. A sample of 564 students was selected using a purposive random sampling technique to ensure that the sample was representative of the diverse demographic and academic backgrounds found within this population. The inclusion criteria for participation included being currently enrolled in an online course and having completed at least one semester of online learning. This ensured that respondents had sufficient experience with the online learning environment to provide meaningful insights. The sample was generated using the enrolment data from highly populated, competitive-rated private universities in Malaysia, as classified by the SETARA 2022 rating issued by the Malaysian Ministry of Higher Education (Kementerian Pendidikan Tinggi, 2023). By focusing on SETARA-5 universities, this study ensures the inclusion of institutions that have consistently met high benchmarks in education delivery, making the study well-suited for investigating the students' intention on online learning. This approach facilitated a proportional representation of students from each institution while reducing potential biases. In particular, the stratification helped mitigate biases related to urban and suburban distributions, providing a more comprehensive understanding of the factors shaping students' attitudes and intentions towards online learning across geographically dispersed universities in Malaysia.

Data were collected through a structured survey administered online, which ensured ease of access for participants and consistency in data collection procedures. SPSS 27 software was used to analyse the respondents' profiles, while SmartPLS 4 was used to analyse the relationship of the variables in the study. The sample for this study comprised 564 undergraduate students enrolled in eight major private universities across Malaysia, ensuring representation from diverse regions. The demographic characteristics of the sample are summarised in Table 2.

Table 2: Respondents' Characteristics

Demographic details	Description	Frequency (n=564)	Percentage (%)
Gender	Male	203	36
	Female	361	64
Age	18 to 20	264	46.8
	21 to 22	230	40.8
	23 to 24	54	9.6
	Above 24	16	2.8
Ethnicity	Malay	122	21.6
	Indian	59	10.5
	Chinese	361	64.0
	Other	22	3.9
Year of study	Bachelor Year 1	163	28.8
	Bachelor Year 2	181	32.1
	Bachelor Year 3	143	25.4
	Bachelor Year 4	40	7.1
	Other	37	6.6
Programme	Accounting, Business, Entrepreneurship, Finance, Management and Taxation	249	44.1

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	Architect and Built Environment	4	0.7
	Arts, Design, Fashion and Creative Industries	16	2.8
	Computing, Information, Communication and Technology	63	11.2
	Education and Humanities (Language, Literature, Philosophy, Liberty Arts)	27	4.8
	Engineering and Technology	73	12.9
	Law, Governance and Public Policy	7	1.2
	Mathematics, Pure and Applied Sciences	40	7.1
	Medicine, Dentistry and Pharmacy	26	4.6
	Social Sciences (Economics, History, Politics, Psychology, Religious Studies)	44	7.8
	Tourism, Hospitality, Culinary, Leisure and Event Management	2	0.4
	Transportation and Logistics	11	2.0
	Others	2	0.4
Number of online courses taken in the current semester	1	58	10.3
	2 to 3	234	41.5
	4 to 5	136	24.1
	6 to 7	114	20.2
	More than 7	22	3.9

Resource: SPSS Report, 2024

The gender distribution included 64% female and 36% male participants. The majority of students (87.6%) were aged between 18 and 22 years, with diverse fields of study, including business, technology, social sciences and more. Most students were in their third or fourth year of study, indicating substantial online learning experience.

By capturing a wide range of demographics and academic disciplines, this study provides a robust foundation for understanding the influence of emotions, self-efficacy and attitudes on students' online learning intention within the Malaysian context.

Result And Discussion

The research employs an empirical approach, utilising Partial Least Squares Structural Equation Modelling (PLS-SEM) to investigate the proposed hypothesis. The data analysis process using PLS-SEM involves several key steps. First, the measurement model is assessed in Section 4.1 to ensure that the constructs have adequate reliability and validity. This involves checking the composite reliability (CR) to confirm internal consistency and average variance extracted (AVE) to ensure convergent validity (Fornell & Larcker, 1981). Discriminant validity is also assessed using Heterotrait-Monotrait (HTMT) ratio. The second step entails structural model assessment, such as path analysis, discussed in Section 4.2 below.

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Measurement Model Assessment

Outer Loadings

Table 3 presents outer loadings, with all but three indicators (EM9, SF1, SF6) above 0.7. Despite these lower loadings, deleting these indicators did not improve reliability, as AVE values met the 0.50 benchmark for both emotions (0.639) and self-efficacy (0.554) (Hair et al., 2021).

Table 3: Outer loadings

	Emotion	Self-Efficacy	Attitude	Online Learning Intention
EM1	0.850			
EM2	0.832			
EM3	0.769			
EM4	0.867			
EM5	0.852			
EM6	0.788			
EM7	0.766			
EM8	0.773			
EM9	0.682			
SF1		0.680		
SF2		0.792		
SF3		0.766		
SF4		0.791		
SF5		0.759		
SF6		0.669		
AT1			0.855	
AT2			0.892	
AT3			0.816	
AT4			0.872	
AT5			0.825	
OLI1				0.842
OLI2				0.850
OLI3				0.896
OLI4				0.852
OLI5				0.822

Note: EM=Emotion, AT=Attitude, SF=Self-Efficacy, OLI=Online Learning Intention
Source: PLS-SEM Report, 2024

Construct Reliability and Convergent Validity

Table 4 shows that construct reliability and convergent validity have been established. All Cronbach's alpha, rho_A and rho_C shown are above the required benchmark of 0.707, while all the AVE is above the benchmark of 0.50.

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Table 4: Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_A)	Composite reliability (rho_C)	Average variance extracted (AVE)
Emotion	0.929	0.934	0.941	0.639
Self-Efficacy	0.839	0.860	0.881	0.554
Attitude	0.906	0.907	0.930	0.727
Online Learning Intention	0.906	0.909	0.930	0.727

Source: PLS-SEM Report, 2024

Discriminant Validity

A test has been carried out to assess the discriminant validity of the data, namely, Heterotrait Monotrait (HTMT). Table 5 shows that all HTMT values are below the 0.85 benchmark except for 0.868, deemed acceptable. HTMT below 0.90 is considered acceptable (Hair et al., 2021).

Table 5: HTMT (Heterotrait Monotrait)

Constructs	Emotion	Self-Efficacy	Attitude
Emotion			
Self-Efficacy	0.714		
Attitude	0.837	0.627	
Online Learning Intention	*0.868*	0.651	0.813

Source: PLS-SEM Report, 2024

Collinearity Statistics (VIF) - Inner Model

Table 6 shows that all VIF values were below 3.3, indicating no collinearity issues (Becker et al., 2014; Hair et al., 2021). Therefore, the measurement model is reliable and valid to proceed to the following structural model assessment.

Table 6: VIF Collinearity Statistics (VIF) Inner Model

Constructs	**Attitude**	**Online Learning Intention**
Attitude	NA	2.503
Emotion	1.724	2.928
Self-Efficacy	1.724	1.759

Note: NA represents data not available.
Source: PLS-SEM Report, 2024

Structural Model Assessment

The hypothesis tests revealed significant results for Hypotheses 1 to 3 (refer to Tables 6, 7 and 8). Emotions strongly correlated with attitudes towards online learning ($\beta = 0.694$, $p < 0.01$). Self-efficacy positively influenced students' attitudes ($\beta = 0.118$, $p < 0.01$). Finally, positive attitudes significantly contribute to students' online learning intention ($\beta = 0.286$, $p < 0.01$). These findings highlight the importance of emotions and self-efficacy in shaping positive attitudes and online learning intentions.

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Table 7: Path Analysis

H	Path	Beta, β	Standard Deviation	T-Statistics	Results	*p-value*	R^2	Q^2
H1	EM ⟶ AT	0.694	0.037	18.978	Supported**	0.000	0.601	0.596
H2	SF ⟶ AT	0.118	0.041	2.860	Supported**	0.002		
H3	AT ⟶ OLI	0.286	0.047	6.109	Supported**	0.000	0.683	0.647

Notes: **= ρ <0.01; R^2=explanatory power; EM = Emotion; AT = Attitude; SF = Self-Efficacy; OLI = Online Learning Intention; H=hypothesis.
Source: PLS-SEM Report, 2024

All p-values are less than 0.01, with a one-tailed test setting in SmartPLS 4. R^2 values indicate the variance explained by the model. Emotions and self-efficacy explained 60.1% of the variance in attitude and the overall model explained 68.3% of the variance in online learning intention, signifying strong explanatory power (Table 7 and Figure 2). Q^2 values also exceeded 0.35, indicating high predictive relevance (Hair et al., 2014).

Mediation Analysis

Bootstrapping revealed that attitude partially mediated the relationship between emotions and online learning intentions (H4) and self-efficacy and online learning intention (H5) (Tables 7 & 8). Significant indirect effects confirmed these mediating relationships.

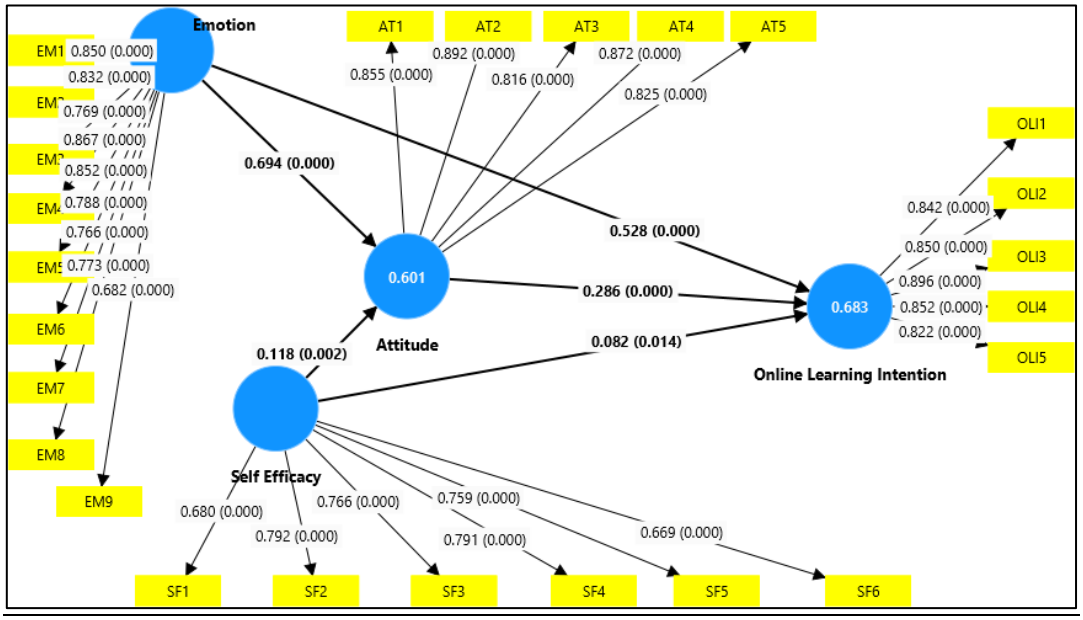

Figure 2: Research model with all available path coefficients, beta values (β) and variance (R^2).

Source: PLS-SEM Report, 2024

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Table 8: Mediation Analysis Results for H4

Total effects (EM->OLI)			Direct effect (EM->OLI)				Indirect effects (EM->OLI)					
Coefficient	T value	p-value	Coefficient	T value	p-value	Hypothesis	Coefficient	SD	T value	p-value	Percentile bootstrap 95% confidence interval	
											Lower	Upper
0.727	19.745	0.000*	0.528	10.177	0.000*	H4: EM->AT->OLI	0.198	0.034	5.822	0.000*	0.132	0.264

Remark: *=p<0.01; SD=Standard Error, EM=Emotion, OLI=Online Learning Intention; H=hypothesis.
Source: PLS-SEM Report, 2024

Mediation analysis was performed to assess the mediating role of AT in the relationship between EM and OLI. The results (see Table 8) revealed a significant indirect effect of EM on OLI through AT (H4: β=0.198, t=5.822, p<0.05). The total effect of EM on OLI was significant (β=0.727, t=19.745, p<0.05); with the inclusion of the mediator, the effect of EM on OLI was still significant (β=0.528, t=10.177, p<0.05). The confidence interval (Lower=0.132, Upper=0.264) also contains no zero in between, showing that a mediation relationship exists.

Since $p_1.p_2$ is significant, p_3 significant and $p_1p_2p_3>0$, this means that there is a complementary partial mediating role of Attitude in the relationship between EM and OLI (Hair et al., 2021; X. Zhao et al. 2010). Hence, H4 is supported, where attitude mediates the relationship between emotion and online learning intention.

Table 9: Mediation Analysis Results for H5

Total effects (SF->OLI)			Direct effect (SF->OLI)				Indirect effects (SF->OLI)					
Coefficient	T value	p-value	Coefficient	T value	p-value	Hypothesis	Coefficient	SD	T value	p-value	Percentile bootstrap 95% confidence interval	
											Lower	Upper
0.116	2.796	0.005*	0.082	2.187	0.029*	H5: SF->AT->OL	0.034	0.013	2.544	0.011*	0.011	0.062

Note: *=p<0.05; SD=Standard Error, SF=Self-Efficacy, AT=Attitude, OLI=Online Learning Intention; H=hypothesis.
Source: PLS-SEM Report, 2024

Mediation analysis was performed to assess the mediating role of AT in the relationship between SF and OLI. The results (see Table 9) revealed a significant indirect effect of SF on OLI (H5: β=0.034, t=2.544, p<0.05). The total effect of SF on OLI was significant (β=0.116, t=2.796, p<0.05); with the inclusion of the mediator, the effect of SF on OLI was still significant (β=0.082, t=2.187, p<0.05).

As $p_1.p_2$ is significant, p_3 significant and $p_1p_2p_3>0$, it shows Attitude's complementary partial mediating role in the relationship between SF and OLI (Hair et al., 2021; X. Zhao et al., 2010). Hence, H5 is supported, where attitude mediates the relationship between self-efficacy and online learning intention.

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Discussions

This study's findings underscore the influence of emotions and self-efficacy on students' attitudes and intentions towards online learning. Positive emotions and a strong sense of self-efficacy are linked to favourable attitudes, which, in turn, positively affect students' intention to continue with online learning. The study also shows that attitudes partially mediate the relationship between emotions, self-efficacy and intentions, indicating that these factors influence students' persistence through direct and indirect paths.

Focusing on the Malaysian private higher education context, this study fills a gap in the literature by exploring how emotions and self-efficacy affect online learning intention. It demonstrates that positive emotional experiences and self-efficacy are essential for sustaining motivation in online learning, suggesting that cultural and contextual factors, sometimes less emphasised in broader global studies, are crucial to understanding student engagement.

Interpretation of Findings

The results emphasise the significance of psychological factors, specifically emotions and self-efficacy, in shaping students' attitudes and intentions toward online learning.

Emotions and Attitudes Towards Online Learning

The study highlights the role of emotions in influencing students' attitudes, with positive emotions leading to more favourable views of online learning. This finding aligns with the literature, showing that emotions such as enjoyment and satisfaction enhance engagement and motivation (Pekrun et al., 2011). Conversely, negative emotions like frustration can lead to disengagement, underscoring the importance of emotional experiences in determining how students perceive online education.

Self-Efficacy and Attitudes Towards Online Learning

Self-efficacy also plays a crucial role in shaping students' attitudes. Higher self-efficacy is linked to more positive attitudes, supporting research suggesting that students confident in their abilities approach tasks more optimistically (Bandura, 1997; Zimmerman, 2000). In online learning, where self-management is key, self-efficacy can increase students' confidence in navigating digital platforms, fostering a positive outlook.

Mediation of Attitudes in the Relationship Between Emotions, Self-Efficacy and Intentions

The mediation analysis reveals that attitudes partially mediate the effects of emotions and self-efficacy on students' intentions to continue online learning. This suggests that while emotions and self-efficacy directly influence intentions, attitudes also play a role, translating these psychological factors into sustained engagement in online learning.

Conclusion

Theoretical Implications

The findings contribute to theoretical frameworks on online learning by integrating emotional and cognitive perspectives. The results support the Control-Value Theory of Achievement Emotions (Pekrun, 2006), which posits that emotions impact learning through motivation and cognitive processes. They also align with Bandura's Social Cognitive Theory, highlighting the role of self-efficacy in shaping behaviour (Bandura, 1986). This study bridges these theories, underscoring their relevance to online learning.

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Practical Implications

The findings suggest several strategies that can be implemented to enhance students' attitudes and intentions towards online learning. Given the significant role of emotions in shaping attitudes, educators should prioritise creating emotionally supportive online learning environments. This can be achieved by incorporating interactive and engaging content that fosters positive emotions such as enjoyment and interest. Providing timely and constructive feedback can also help alleviate anxiety and frustration, encouraging a more positive emotional experience (Artino & Stephens, 2009). Incorporating interactive multimedia, social interaction and timely feedback in course design can help foster positive emotions and create a more supportive learning environment (Garrison & Cleveland-Innes, 2005). Additionally, offering opportunities for social interaction through discussion forums, group projects and virtual meetings can reduce feelings of isolation and enhance students' emotional connection to the course (Garrison & Cleveland-Innes, 2005).

To improve students' self-efficacy, educators should focus on building students' confidence in their ability to succeed in online learning. This can be done by providing clear instructions, offering resources for technical support and designing tasks that gradually increase in complexity. Encouraging goal-setting and self-regulation strategies can also help students manage their learning more effectively, boosting their self-efficacy (Zimmerman, 2008). Furthermore, highlighting successful examples of peers who have thrived in online learning can serve as a source of motivation and reinforce students' belief in their capabilities (Bandura, 1997).

The partial mediation effect of attitudes suggests that interventions should address students' emotional and cognitive needs. For instance, integrating emotional regulation techniques into online learning, such as mindfulness exercises or stress management workshops, could help students manage negative emotions and maintain a positive attitude towards learning (Pekrun et al., 2011). At the same time, cognitive strategies, such as scaffolding complex tasks and providing regular feedback, can enhance students' self-efficacy and directly influence their intention to persist in online learning.

Lastly, addressing emotional and cognitive aspects enables educators and policymakers to create more supportive and effective online learning environments, fostering sustained student engagement and success in online education. Policymakers should consider these findings when designing and implementing online learning programs at institutional and national levels. Policies that promote emotional and psychological support for students, such as mental health resources and counselling services, are essential for fostering positive online learning experiences. Additionally, investing in training programs for educators to develop their skills in creating engaging, supportive and practical online courses can help improve student outcomes (Hodges, 2008).

Limitations, Future Research and Conclusions

While this research provides crucial insights, it also has limitations. The reliance on self-reported data may not fully capture students' actual behaviours and the study sample from a limited number of Malaysian universities may not reflect the broader student population. Additionally, contextual variables such as platform quality, internet access and socio-economic factors, which can significantly impact learning experiences, were not included. Further research could broaden the scope by incorporating these variables and exploring additional factors like time management skills and study practices.

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This study offers a unique contribution by examining the impact of emotions and self-efficacy on online learning intentions within the Malaysian private higher education context, adding valuable regional insights. The findings support the control-value theory, proposing that it better fits online environments by extending the theoretical model. Recognising the complex nature of online learning, future research should address additional factors influencing online learning intentions. By focusing on emotions and self-efficacy, this study provides educators and policymakers with actionable insights to create supportive digital learning environments that enhance engagement and persistence in Malaysia. Therefore, fostering self-efficacy is essential for immediate academic success and sustaining long-term engagement in learning. Educators can help students achieve their goals and maintain lifelong learning momentum by enhancing their self-efficacy.

In conclusion, this study highlights the pivotal roles of emotion, self-efficacy and attitude in shaping students' intentions for online learning, underscoring the importance of understanding these psychological factors. These insights offer valuable guidance for educators and administrators, enabling them to develop online courses and support systems that enhance student engagement, performance and overall learning experience. The findings are particularly relevant for improving online education's design and delivery, contributing to better academic outcomes and student well-being. However, it also recognises the complex nature of the online learning environment and the potential for unaccounted variables that might influence the findings.

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