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Abstract

Online learning intention among students from private universities in Malaysia: The role of past behavior and students' planned behavior

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This study examines the determinants that affect the intention of Malaysian private university students to continue using online learning. The study utilized structural equation modelling analysis to examine the connections between variables, employing the partial least squares method. A total of 564 data were collected from students enrolled in private higher education institutions. The suitability of the variable dimensions was established through reliability analysis. Key findings revealed that students' past online learning behavior significantly impacts their attitude, subjective norms, and perceived behavioral control towards online learning. Specifically, past behavior was positively correlated with attitude, subjective norms, and perceived behavioral control. Additionally, significant positive relationships were observed between attitude and online learning intention, subjective norms and online learning intention, and perceived behavioral control and online learning intention. The results showed that students with positive past behaviors tend to hold favorable attitudes and social support and are capable of succeeding in online learning environments.

Keywords:
Online learning;
Behavioral intention;
Higher education institutions;
Theory of planned behavior;
Past experience.

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1. Introduction

The COVID-19 pandemic has recently transformed education (Buffel et al., 2024). With the presence of online learning mode, a wide array of technology has been advancing to facilitate synchronous and asynchronous interactions (McCool, 2023; Mitchell et al., 2021). Higher education institutions faced challenges transitioning from physical classrooms into online teaching and learning platforms (Jakobsdottir et al., 2023; Prakaschandra et al., 2023). In Malaysia, unreliable internet connectivity and inadequate digital proficiency among students and instructors are among the difficulties (Jafar et al., 2022). Hence, it is vital for online learning to be sufficiently attractive and engaging, allowing students to apply their acquired knowledge across a myriad of contexts so that benefits such as flexibility, accessibility and potential personalized learning experiences can boost educational involvement (Maheshwari, 2021; Saleem et al., 2022).

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The efficacy of online learning was influenced by several factors, including the course design, the level of support provided by the university and instructors, and the quality of facilities and infrastructure (Saleem et al., 2022). It is imperative to scrutinize students' learning trajectories and their inclination to persist in online learning within cognitive learning theories and environmental influences, including contextual factors such as the pandemic, past classroom experiences, and perceptions of their learning environments. The readiness and engagement of students are closely interconnected with other factors, contributing to their overall success in their academic pursuits. This interconnectedness can be explained by the Theory of Planned Behavior (TPB).

TPB proposes that attitudes, subjective norms, and perceived behavior control collectively shape individuals' behaviors. Applied within the context of online learning, TPB offers a systematic framework to examine how students' attitudes towards online education, perceptions of their social norms, and beliefs regarding their capability to succeed in virtual courses impact their level of engagement and motivation. Past behavior (PB), particularly previous participation and achievement in virtual academic settings, is a reliable predictor of future behavior within this conceptual framework. The theoretical underpinning by Ajzen (1991) is extensively utilized in behavioral research, particularly in the theory of planned behavior.

Studies have shown that past behavior is crucial in forming students' attitudes toward online learning (Harper et al., 2024; Saleem et al., 2022). Students' evaluation of anticipated learning outcomes, influenced by significant individuals in their environment, and their assessment of their capacity to strategize and execute required learning tasks are essential. Moreover, students' perceptions of their prior learning styles and behavior can significantly influence their outlook on education in online settings, consequently impacting their academic performance. Hence, exploring how students' past actions integrate with the intent to pursue their learning journey becomes essential. This underscores the critical role of students' past learning behaviors and perceptions of online education in shaping their success and sustaining motivation throughout their educational journey (Gopal et al., 2021).

Although there is an increasing amount of research on online learning, there is a lack of studies that particularly examine how students' past behavior relates to their attitudes, subjective norms, and perceived behavioral control in the setting of Malaysian private colleges. Many studies have not included past behavior as a critical predictor in the Theory of Planned Behavior (TPB) framework, particularly in Malaysia. Examining past online learning experiences is important because online learning has become more relevant in today's education context, demanding primary, secondary, and tertiary education institutions to remain in tandem with their students' evolving needs. Online learning is increasingly recognized as effective as traditional classroom-based instruction, if not more effective. However, if students fail to attain comparable levels of learning in online classes as in physical classrooms, implementing online education risks losing its purpose.

This study addresses this gap by integrating past behavior into the TPB framework to understand students' intentions to persist with online learning. The study offers fresh perspectives specific to private universities in Malaysia and emphasizes the essential roles of attitude, subjective norms, and perceived behavioral control in anticipating intentions for online learning. The concept of "intention to continue online learning" (OLI) refers to the commitment to ongoing engagement in online learning (Maheshwari, 2021).

These primary objectives of the study are to answer three critical research questions: (i) What is the relation between past behavior (PB) and attitudes (AT), subjective norms (SN) and perceived behavioral control (PBC)? (ii) Do AT, SN, and PBC influence OLI? (iii) Does the presence of PB influence the outcome of OLI? This study extensively assessed students at Malaysia's leading and prestigious private educational institutions. The findings of this research can enrich the current

understanding of AT, SN, PBC, and OLI among higher education students, offering valuable insights for institutional administrators, educators, students, and relevant government agencies. This study offers an in-depth understanding of the factors determining online learning intention by emphasizing the critical role of past behavior and its impact on attitudes, subjective norms, and perceived behavioral control. This information can be used to build specific interventions and support systems to improve student engagement and achievement in online learning environments.

2. Literature review

2.1 Intention to continue online learning

In recent years, researchers have increasingly voiced concerns regarding the effectiveness of online learning (Aroonsrimarakot et al., 2023). Assessing students' intention to continue online learning (OLI) was found to be a critical factor in enhancing their performance in online learning (Butt et al., 2021). Farley and Burbules (2022) conducted a comprehensive evaluation of online learning implementation by analyzing scholarly articles. Their findings indicated that although online learning presents specific benefits, it typically lacks in comparison to traditional, face-to-face classroom training. Many scholars have proposed and presented extensive evidence indicating that online learning and traditional classroom settings can produce similar effectiveness (Kumari et al., 2021; Mastour et al., 2023). Technological advancements have significantly enhanced the convenience of online learning, facilitating remote collaboration among students with the desired quality. This remote collaboration fosters divergent thinking and enables the exploration of diverse perspectives of individuals more than is feasible in face-to-face interaction (Tang, 2019). Furthermore, online learning enables the monitoring of students' learning activities, facilitating the assessment of their experiences within the online learning platform (Altowairiki, 2021). Therefore, prioritizing and thoroughly assessing the ways to increase the efficacy of online teaching and learning becomes important to increase their intention.

However, a notable lack of research remains concerning the modelling and validation of factors influencing the intention to continue online learning (Adams et al., 2020). Although both Nadeem et al., (2023) and Tannoubi et al., (2023) have illustrated the significant impact of attitude (AT), subjective norms (SN) and perceived behavioral control (PBC) on student engagement, they have yet to verify the influence of past behavior (PB) on these factors. Furthermore, the study analyses the indirect effects of AT, SN, and PBC on the relationship between PB and OLI and between AT, PB, and OLI. Thus, our study seeks to address this research gap by examining the pathways between these variables. Al-Kumaim et al., (2021) underscore the absence of research investigating the influence of AT, SN and PBC on OLI despite their significant role in motivating students in online education. Consequently, our study goes beyond solely examining the impact of AT, SN, and PBC on OLI by additionally exploring the influence of PB on these three antecedent factors that affect OLI.

2.2 Past behavior, attitude, subjective norms and perceived behavioral control

In psychology, past behavior (PB) is a person's past actions in a similar situation (Ouellette & Wood, 1998). Research consistently indicates a positive correlation between individuals' PB and attitudes (AT) towards specific behaviors (Ajzen & Schmidt, 2020). In education, the perception regarding past behavior holds significant importance, as it has substantial implications for behavioral intention, acceptance, utilization, and the intention to continue using online learning modes. Students who harbor positive predispositions towards learning are more inclined to recognize and appreciate its advantages and value (Artino, 2010).

Expanding on the framework of TPB, our hypothesis posits that students' attitudes towards online learning will be positively impacted by their previous classroom learning behavior. It is expected that students who have shown positive qualities and attitudes in traditional face-to-face educational settings, such as active involvement, academic commitment, and meaningful interactions with peers and teachers, will also develop more favorable attitudes towards online learning as they switch to virtual environments.

Students' attitudes towards online learning will be positively influenced by their perceptions of competence and mastery in previous classroom learning. It is anticipated that students who have exhibited self-assurance in their scholastic capabilities, accomplished difficult assignments, and surmounted barriers in conventional classroom settings will similarly believe in their capability to thrive in online learning. Consequently, this perception will contribute to developing a more favorable perception of their capability for online education. Thus, the study proposes the following hypothesis:
H1: Past behavior is positively related to attitude.

Drawing upon the social aspect of the Theory of Planned Behavior (TPB), it is proposed that students' previous classroom learning behavior positively influences their subjective norms regarding online learning. Specifically, students' interactions with instructors, peers and authority figures in their past traditional classroom environments shape their perceptions of social norms related to online learning.

Positive feedback, encouragement and endorsements from these individuals regarding the benefits and importance of online education significantly impact students' perspectives on the subject. Consequently, favorable experiences and social reinforcements in traditional classrooms contribute to developing subjective norms that emphasize the value of active participation in online learning environments and enrolment in online courses. Based on the above, the study proposed that:
H2: Past Behavior is positively related to subjective norms.

It is proposed that students' previous classroom learning behavior positively influences their perceived behavioral control regarding online learning. This hypothesis is grounded in the Theory of Planned Behavior (TPB), which posits that individuals' perceptions of their ability to perform a behavior are influenced by their past experiences and available resources.

Specifically, students who have engaged in consistent and successful academic behaviors in the past are likely to perceive themselves as having greater control over their actions and outcomes in their current educational endeavors. For instance, students who have demonstrated disciplined study habits, applied time management skills and proactive learning approaches in previous academic settings are expected to feel more confident in navigating challenges and succeeding in their studies at private universities.

Furthermore, the socio-cultural context of Malaysia, with its emphasis on academic achievement and the competitive nature of higher education, may further reinforce the relationship between past behavior and perceived behavioral control. Students who have experienced academic success may internalize a sense of self-efficacy and mastery over their academic pursuits, thereby enhancing their perceived control over their educational outcomes. It is anticipated that private university students with a history of positive past behavior will perceive themselves as having greater control over their academic performance and learning experiences, as outlined by the hypothesis derived from the TPB framework. Thus, it is postulated that:
H3: Past Behavior is positively related to perceived behavioral control.

Students who exhibit a positive attitude towards online learning are more likely to express an intention to continue engaging in online learning activities (Tang & Zhu, 2024). In the context of

online learning, students' attitudes reflect their perceptions, beliefs, and feelings towards the online learning environment due to past perceptions of convenience, flexibility, effectiveness and overall satisfaction with the learning experience (Maisha & Shetu, 2023).

Individuals are more inclined to engage in behaviors they perceive favourably and believe will lead to positive outcomes (Al-Adwan et al., 2022). Therefore, students who hold positive attitudes towards previous online learning behavior are expected to view it as an attractive and valuable mode of education, leading to a higher intention to continue participating in online learning activities (Lutfi et al., 2022). This hypothesis aligns with prior research findings that consistently demonstrate a positive association between students' attitudes towards online learning behavior and their behavioral intentions to use online learning platforms or technologies. Hence, it is proposed that:
H4: Attitude is positively related to the intention to continue online learning.

Under TPB, it is hypothesized that students' intention to continue online learning is influenced by subjective norms, encompassing perceived social pressures and influences. It is anticipated that students who perceive positive subjective norms related to online learning, such as receiving encouragement and support from instructors, peers, or influential figures, will exhibit stronger intentions to persist in their engagement with online courses. This is driven by the desire to conform to societal expectations and standards regarding the importance and value of online education. Recent research has demonstrated that subjective norms substantially influence students' inclination to participate in online learning, with cultural and social factors playing a crucial role (Guo et al., 2024). Enhancing social support inside educational institutions may enhance students' intention and engagement in online learning. Consequently, it is proposed that:
H5: Subjective norms are positively related to the intention to continue online learning.

Drawing upon the framework of TPB, it is hypothesized that individuals' intention to persist with online learning is positively associated with perceived behavioral control (PBC). PBC reflects individuals' confidence in their ability to execute a particular behavior. It is anticipated that students will exhibit stronger intentions to continue engaging in online courses when they perceive themselves as having sufficient resources, competencies, and opportunities to participate in online learning while perceiving minimal obstacles or risks. Therefore, it is postulated that:
H6: Perceived behavioral control is positively related to the intention to continue online learning.

2.3 Past Behavior and intention to continue online learning

Recent studies have highlighted the growing significance of online learning, particularly during the COVID-19 pandemic, which has showcased heightened student motivation compared to traditional learning modalities. This surge in motivation can be attributed to online learning's ability to introduce students to innovative technology-supported educational methods, thereby enhancing the overall learning experience (Seow et al., 2023). Moreover, highly motivated learners who actively participate in and benefit from the learning process are strongly inclined toward engaging in online learning initiatives (Bender, 2023).

A crucial aspect of assessing online learning involvement is evaluating students' past behavior, which entails examining their level of engagement. Research indicates that active participation in online learning, whether manifested through cognitive, emotional, or behavioral involvement, yields numerous benefits, such as heightened motivation, enriched learning experiences, and improved academic performance (Wu et al., 2024). Therefore, based on these findings, the following hypothesis is proposed:
H7: Past behavior is positively related to the intention to continue online learning.

2.4 Research framework

Figure 1 illustrates the proposed research framework, wherein the significance of past behavior (PB) is asserted as a precursor or influencer of attitude towards a behavior (AT), subjective norms (SN) and perceived behavioral control (PBC). This assertion is grounded in the understanding that students' previous learning behaviors shape their expectations and confidence levels during the learning process. Students who have demonstrated similar learning behaviors in the past tend to exhibit greater confidence in engaging in those behaviors again.

Moreover, the study posited that attitude, subjective norms and perceived behavioral control are essential in strengthening students' intention to participate in online learning. These factors substantially impact students' cognitive functions, enhancing their motivation to pursue online learning. Additionally, the study contends that AT, SN and PBC are crucial indicators in explaining the relationship between past behavior and intention to continue online learning (OLI).

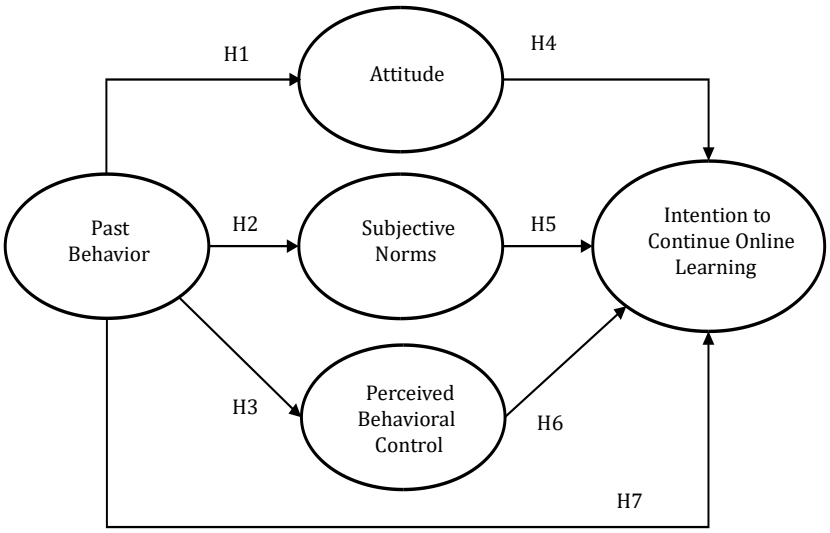

Figure 1. Proposed research model

3. Research method

3.1 Sample and procedure

The suggested model was validated using a cross-sectional quantitative research methodology, successfully achieving the intended study objectives. The study focused on full-time undergraduate students in private universities (MOHE, 2023) across Malaysia, ensuring a diverse representation of disciplines and geographical regions. A quota sampling methodology was utilized to select participants to accurately and carefully reflect the overall student population. Part-time students and those on leave of absence were excluded from the sample. Quota sampling was selected as it is most likely to maintain that the sample reflected the varied student population in demographics and academic disciplines.

Ethical approval for data collection activities was obtained from the researchers' institution's ethical committee, and data collection was conducted virtually by distributing an online survey link to eligible students. The research strictly followed ethical considerations. All participants provided informed consent, indicating their complete understanding of the study's objectives and methods and their ability to withdraw from the study at any point. The privacy of the respondents was preserved by strictly maintaining confidentiality and anonymity.

A total of 564 completed surveys were returned, representing a broad spectrum of academic disciplines, including business, health science, engineering, social science, science, liberal arts, Chinese studies, and technology, which are the humanities courses. The data collection process required six months to complete. Notably, a significant proportion of the sample comprised female students, accounting for 64% (n=361) of the total participants. For detailed demographic information, please refer to Table 1.

3.2 Measurements

The Attitude construct was evaluated using five items adapted from the works of Chu and Chen (2016) and Ndubisi (2006). Subjective Norms were assessed with seven items drawn from the literature, including contributions from Cheung and Vogel (2013), Chu and Chen (2016), Han et al. (2010), Mohd and Phuah (2016) and Tang et al., (2020). Perceived behavioral control was measured through six items adapted from Chu and Chen (2016) and Yang and Su (2017). Past behavior was assessed using six items modified from studies conducted by Mittelman and RojasMéndez (2018), Kim et al. (2021), Kovac et al., (2014), together with Mohd and Phuah (2016). The intention to continue online learning was measured using five items adapted from Sun et al., (2019), Bellingan (2020), and Sangeeta and Tandon (2020). All measurement items were evaluated using a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). Before data collection, thorough pre-testing and pilot-testing of the questionnaire were conducted to ensure its reliability and content validity. Subsequently, the inter-item reliability scores for each multi-item construct surpassed the threshold value set at a minimum of 0.708, indicating satisfactory internal consistency. Seven academics were consulted during the pre-testing to ensure the content and face validity of the items, ensuring that they were understandable and appropriate. The questionnaire's reliability and validity were assessed through pilot testing with 30 students. The adapted items were sourced from studies conducted in Asian countries to enhance cultural relevance for the Malaysian context. Additionally, feedback from local educational experts was incorporated to tailor the questions appropriately.

Table 1: Respondents' demographics

Demographic characteristics		**Frequency (n=564)**	**%**
Sex	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	28.9
	Bachelor Year 2	181	32.1
	Bachelor Year 3	143	25.4
	Bachelor Year 4	40	7.1
	Other	37	6.6
Study mode	Full-time	561	99.5
	Part-time	3	0.5
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

Table 2 shows respondents' online learning preferences and experiences. Generally, the respondents prefer both live and recorded lessons (67.7%). Many have spent between 5 and 10 hours on online courses each week (32.6%), and the majority reported that they sometimes experience internet connectivity problems during the online courses (68.4%). More than 80% of the respondents have 1 – 2 years of attending courses online.

Table 2: Online learning preference and experience

		n	%
Preferred method for online learning	Live lessons	107	19.0
	Recorded lessons	75	13.3
	Both	382	67.7
Hours spent on online courses per week	Less than 5 hours	34	6.0
	5 to 10 hours	184	32.6
	11 to 16 hours	166	29.4
	More than 16 hours	180	319
Internet connectivity problems	Always	55	9.8
	Sometimes	386	68.4
	Seldom	123	21.8
Online courses past experience	Less than 1 year	79	14.0
	1-2 years	475	84.2
	3-4 years	8	1.4
	More than 4 years	2	0.4

4. Data analysis

Data were analyzed using the SmartPLS software, which facilitated the partial least squares structural equation modelling (PLS-SEM) technique. With a sample size of 564 participants, the study was powered at 80%, ensuring robustness and reliability in the model and its outcomes (Hair et al., 2021). The PLS-SEM methodology was chosen for its ability to handle complex models and prioritize when estimating statistical models (Hair et al., 2021). This methodology is especially well-suited for conducting preliminary investigations when the main goal is to make predictions rather than to validate existing hypotheses. Furthermore, PLS-SEM offers the benefit of being adaptable to smaller sample sizes and non-normal data distributions, which are frequently encountered in social science research. Integrating past behavior as a variable in the TPB framework is an extended construct that uncovers novel connections and impacts within this proposed model.

Including past behavior as a variable in the TPB framework is exploratory, targeting to discover new relationships and effects within this extended model. This sample size was deemed sufficient to ensure the reliability and strength of the model and its results (Hair et al., 2021). Initially, preliminary analyses, including inter-correlation analysis and the Harman single-factor test, were performed to ensure data quality and address potential issues with common method bias. Intercorrelation analysis examines the relationship between variables to ensure that they assess different factors related to the study and are not duplicative (Kock, 2015). The Harman single-factor test is used to determine whether a single factor is exerting a significant influence on the results, which may suggest the presence of bias in the responses (Podsakoff et al., 2003).

Subsequently, the PLS algorithm technique was employed to evaluate the outer model, assessing the reliability and validity of the measurement model. Finally, a comprehensive examination of the internal model was conducted using bootstrapping with 5,000 subsamples. This approach facilitated an essential identification of the model parameters and assessment of the importance of connections between variables. Besides, bootstrapping improves the precision of the estimated path coefficients and standard errors, establishing a strong basis for hypothesis testing and model validation. This study uses SmartPLS and PLS-SEM to establish a robust analysis framework that can handle the intricacies of the research model and facilitate the extraction of valuable insights from the data.

4.1 Preliminary analysis

Inter-correlation analysis displayed in Table 3 indicates that all correlation values between constructs are equal to or less than 3.3, indicating the absence of multicollinearity issues (Becker, 2020). Table 3 displays the average and variability of each construct, as measured by the mean and standard deviation. Furthermore, to assess the possibility of common technique bias in the data set, a Harman single-factor test was performed, considering that the data was obtained from a single source (Podsakoff et al., 2003). The primary component discovered in the unrotated factor analysis explained just 33.5% of the variation, which is below the 50% threshold. Therefore, it can be deduced that the presence of common technique bias is not a cause for concern in this particular data set. Furthermore, multicollinearity among predictors was assessed, with variance inflation factor values ranging from 1.016 to 2.120, indicating no multicollinearity issues in the study.

Table 3: Multicollinearity test

Constructs	Factor loading	St. Dev.	AVE	C.R.	HTMT values 2	3	4	5
Past Behavior		0.021	0.541	0.853	*0.448*	*0.54*	*0.635*	*0.595*
PB1	0.799							
PB2	0.780							
PB3	0.783							
PB4	0.577							
PB5	0.715							
Attitude		0.016	0.726	0.930		*0.82*	*0.627*	*0.813*
AT1	0.857							
AT2	0.895							
AT3	0.814							
AT4	0.870							
AT5	0.823							
Subjective Norms		0.019	0.556	0.898				*0.758*
SN1	0.688							
SN2	0.736							
SN3	0.786							
SN4	0.814							
SN5	0.749							
SN6	0.727							
SN7	0.714							
Perceived Behavioral Control		0.019	0.555	0.882				*0.651*
PBC1	0.676							
PBC2	0.782							
PBC3	0.776							
PBC4	0.789							
PBC5	0.746							
PBC6	0.694							
Intention to Continue Online Learning		0.015	0.727	0.930				
BI1	0.844							
BI2	0.846							
BI3	0.893							
BI4	0.854							
BI5	0.826							

4.2 Results

The modified scale received comprehensive validation using the Partial Least Squares (PLS) algorithm, which confirmed its convergent and discriminant validity. Table 3 shows that the composite dependability of each construct surpassed the stipulated minimal level of 0.708, as indicated by Hair et al., (2021). Furthermore, all components exceeded the threshold value, demonstrating a satisfactory level of reliability (Hair et al., 2021). The average variance recovered

ranged from 0.680 to 0.926, which is higher than the minimum requirement of 0.500. This indicates that the measurement model has established convergent validity. Discriminant validity was assessed using the heterotrait-monotrait ratio criterion. Table 3 (italicized figures) demonstrates that all constructs met the heterotrait-monotrait threshold value of 0.90, confirming discriminant validity.

In the structural model presented in Table 4, predictors moderately explain the three endogenous constructs, with R^2 values greater than 0.50 for AT (R^2= 0.160), SN (R^2= 0.216), PBC (R^2= 0.292) and OLI (R^2= 0.636) (Hair et al., 2021). Statistical findings presented in Table 3 and Figure 2 indicate that PB positively predicts AT, SN, and PBC, with regression coefficients (ß) of 0.402 (ρ < 0.001, t = 10.19), 0.465 (ρ < 0.001, t = 12.393) and 0.540 (ρ < 0.001, t = 15.220) respectively. Furthermore, AT, SN and PBC demonstrate positive and significant relationships with OLI, with ß values of 0.451 (ρ < 0.001, t = 9.522), 0.240 (ρ < 0.001, t = 5.055) and 0.203 (ρ < 0.005, t = 5.461), respectively.

Table 4. Structural model results

H	Path	Beta	Standard error	*t*-statistics	*f* square	Results
H1	PB ⟶ AT	0.402	0.040	10.178	0.193	Supported**
H2	PB ⟶ SN	0.465	0.037	12.687	0.276	Supported**
H3	PB ⟶ PBC	0.540	0.035	15.233	0.412	Supported**
H4	AT ⟶ OLI	0.453	0.046	9.800	0.240	Supported**
H5	SN ⟶ OLI	0.191	0.048	4.013	0.043	Supported**
H6	PBC ⟶ OLI	0.126	0.038	3.343	0.025	Supported**
H7	PB ⟶ OLI	0.187	0.032	5.796	0.064	Supported**

Notes: **= ρ <0.01; R^2=explanatory power; PB = past behavior; AT = attitude; SN = subjective norms; PBC = perceived behavioral control; OLI = intention to continue online learning; H=hypothesis; N/A = not applicable

The effect size analysis reveals a negligible correlation between PB and AT (f=0.193). In contrast, the correlation between PB and SN (f=0.276) is also negligible, and the correlation between PB and PBC (f=0.412) is moderate. Significant effect sizes are observed in the associations between AT, SN and PBC with OLI, confirming hypotheses H1 to H6. These findings underscore the importance of AT, SN and PBC in predicting OLI. Figure 2 displays the structural model.

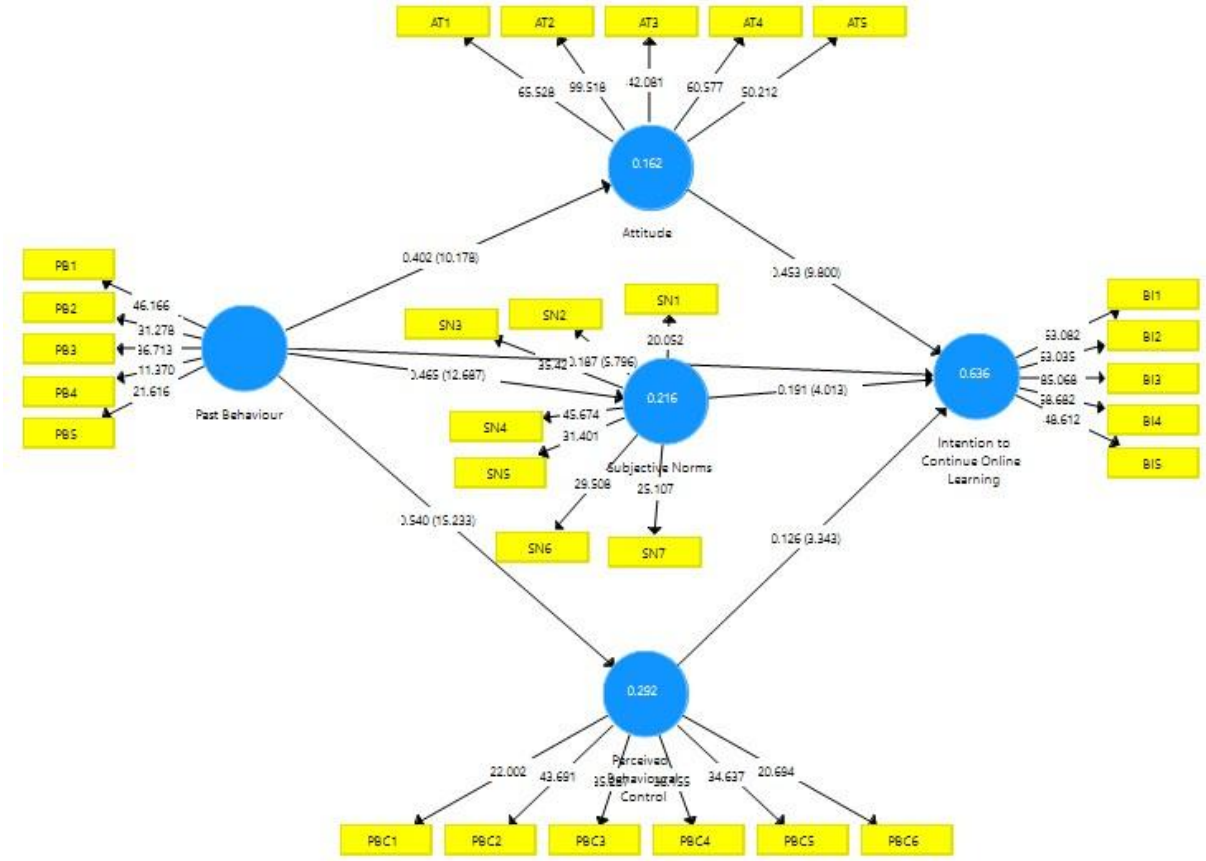

Figure 2. Research model with results

5. Discussion

The present study has illuminated a robust and positive correlation between students' past behavior and attitude, past behavior and subjective norm, and past behavior and perceived behavioral control, past behavior and intention to continue online learning. As Brown et al., (2023) demonstrated, these findings echo those of previous research.

Consequently, a university student with a favorable disposition toward active learning will harbour a positive attitude toward online learning, owing to their prior educational experiences. This optimistic outlook enhances their performance and cultivates a constructive mindset conducive to effective engagement in online learning, thereby contributing to overall learning improvement. Conversely, a negative attitude toward online learning may impede students' perception of its efficacy and potential benefits. Thus, fostering positive attitudes and perceptions toward online learning among students is required to maximize its effectiveness and foster a conducive learning environment.

Based on the findings of this study and in alignment with existing research, there is compelling evidence supporting the hypothesis that past behavior (PB) exerts a pivotal influence on attitude (AT), subjective norms (SN), and perceived behavioral control (PBC) as well as intention to continue online learning (OLI) in the context of online learning. Creating an optimal learning environment becomes inherently challenging in online education, whereby geographic distances often separate learners and instructors. Consequently, students must adopt a proactive approach and take charge of their learning processes to achieve optimal learning outcomes.

Supporting this notion, Bender (2023) asserts that students who possess favorable attitudes toward learning, are influenced positively by their social networks and possess the necessary

skills and resources for online learning are more likely to perceive it as beneficial for achieving their learning objectives. These students are expected to exhibit stronger intentions to continue engaging in online learning.

Moreover, Tang et al. (2020) emphasize the critical role of PB in promoting positive AT, SN, and PBC, fostering positive intentions toward learning. PB has a direct influence on OLI. Thus, it is evident that PB plays a crucial role in shaping students' perceptions and intentions toward online learning, underscoring the importance of fostering positive learning attitudes and providing adequate support and resources for practical online learning experiences. The current results align with the research results reported by Larreamendy-Joerns and Leinhardt (2006) and Allen and Seaman (2007), demonstrating the crucial influence of psychology and cognitive experiences in boosting motivation for learning in online educational environments.

Similarly, Brown et al. (2023) discovered that students' past behaviors substantially influence their attitudes, subjective norms, and perceived behavioral control. This finding underscores the significance of these aspects in forecasting intentions towards online learning. In addition, Bender (2023) and Tang et al., (2020) emphasized the importance of positive social influences and adequate resources, which aligns with our findings that past behaviors have a positive impact on all three constructs (AT, SN, and PBC) and consequently, the intention to continue online learning. The consistency with previous studies enhances the validity of these conclusions. It emphasizes the need for institutions to improve students' past learning behavior and present support systems to enhance online learning outcomes.

6. Implications

6.1 Theoretical implications

The findings of this study hold significant theoretical implications for professionals and contribute meaningfully to the existing body of literature. These implications are multifaceted and can be narrowed by investigating two primary research questions. However, it is crucial to note that these implications are contextualized within the subjective understanding of students amidst the unique circumstances of the COVID-19 pandemic lockdown period. During this period, students were compelled to pursue their education solely through online platforms, as traditional in-person learning methods were not feasible due to the pandemic-induced restrictions.

One notable theoretical implication is the differential impact of PB on AT compared to SN among students navigating the challenges of the COVID-19 pandemic. The findings indicate that the influence of PB on AT was more pronounced than that of SN in this context. This suggests that students who perceive online learning as a beneficial mode of education, are surrounded by a supportive social circle endorsing online learning and possess a strong sense of technological proficiency are better equipped to effectively utilize technology-based tools during exigent situations such as a pandemic.

Moreover, this research underscores the significant role of AT in the relationship between PB and cognitive determinants in the context of online learning. These findings highlight the crucial importance of PB in navigating online learning environments, particularly during challenging periods, potentially exerting additional influence on students' OLI. Consequently, students' favorable disposition towards online learning emerges as a pivotal factor driving their engagement in various online learning behaviors (OLB), such as active participation in virtual discussions, responsiveness to instructor inquiries, demonstration of organizational skills in online study management, and eagerness to participate in future online learning activities (Liang et al., 2017).

Typically, students who hold positive attitudes towards online learning fully embrace the online learning experience and may derive more significant benefits from it. For instance, when students perceive the online learning environment as conducive to their academic success, they are more inclined to invest effort in actively discovering strategies to participate in online learning activities. As a result, these psychological factors may significantly impact online learning intentions, leading to an increased propensity towards academic achievement and enriched learning experiences (Lau et al., 2020; Seow et al., 2023).

6.2 Practical implications

The results of this study have important practical consequences for universities and teachers of online courses. The findings highlight the significance of taking into account variables such as Attitude (AT), Subjective Norms (SN), Perceived Behavioral Control (PBC), and Past Behavior (PB) when creating and executing online courses. Given the ongoing impact of online learning on higher education, extending beyond the COVID-19 pandemic (Li & Lalani, 2020), it is crucial for higher education institutions and the Ministry of Higher Education to consider these valuable findings. These entities should prioritize the efficacy of online education in both post-pandemic and potential future epidemic situations.

Important consequences involve the necessity of promoting favorable attitudes and a sense of strong personal control over online education among students. It is important for universities and instructors to foster productive student learning habits and establish attainable learning goals that are specifically designed for the online setting. Implementing resilient online learning platforms can facilitate students in acquiring invaluable academic competencies.

Establishing effective communication channels between instructors and learners is crucial. It is important for instructors to swiftly respond to concerns and consistently update students on course materials and assignments. This will help reduce confusion and improve the overall learning experience. Online teachers have a vital role in strengthening students' effective learning practices, utilizing past accomplishments to enhance academic performance in online environments (Brown et al., 2023). Promoting the transfer of effective classroom learning strategies to online education helps bolster students' motivation and perseverance.

Students who have a favorable disposition towards online learning, surround themselves with supporting social networks, and possess self-assurance in their online learning capabilities are more inclined to sustain motivation. Thus, it is vital for online instructors to enhance their teaching techniques and cultivate favorable student attitudes in order to maximize online learning intentions (OLI).

To cater to the particular requirements of online learners, it is necessary to provide them with the necessary abilities to utilize information and communication technologies proficiently. Participating in regular training sessions, such as webinars, tutorials, and user manuals, can enhance the proficiency of both instructors and students in online learning. This can lead to improvements in attitudes, subjective norms, and perceived behavioral control.

Undertaken throughout the COVID-19 pandemic lockdown, this study emphasizes the significance of being attentive during difficult periods. Online instructors must diligently check students' perceptions in order to enhance motivation. Students who have a positive self-perception and receive encouragement from others, combined with confidence in their abilities to study online, are more likely to obtain positive results.

In order to enhance engagement, it is advisable for online teachers to prompt students to reflect on their accomplishments, establish attainable objectives, and incorporate multimedia elements into their instructional materials. These can encompass films, animations, and interactive simulations to enhance the dynamism and engagement of the learning process.

7. Limitations and future research

While this study has yielded significant insights, it is essential to acknowledge its limitations, primarily from its focus on private universities within Malaysia. To gain a more comprehensive understanding, future research endeavors should extend their scope to include Malaysian public universities. Additionally, it is crucial to note that the data for this study were collected during enforced isolation due to the pandemic, raising concerns about the representativeness of the findings. Given that the data were derived solely from an online survey, there is a possibility that the results may not accurately reflect the typical or widespread situation. The students' perspectives on online learning became crucial since it was the sole method of education accessible, impacting their level of involvement and achievement. Amidst the outbreak, the need to adjust to emerging technology bolstered students' perceived ability to control their conduct, boosting their confidence in effectively navigating online learning. Therefore, it is strongly recommended that future studies be conducted during the endemic phase and later post-pandemic period, providing stakeholders with relevant insights to promote online learning initiatives and facilitate highly motivated student engagement for knowledge acquisition.

Moreover, this study's cross-sectional or quasi-experimental approaches may not offer sufficiently robust results when examining causal relationships. To comprehensively establish causal relationships, future scholars are encouraged to adopt a longitudinal research design (Seow et al., 2023) to monitor the evolution of students' attitudes, subjective norms, perceived behavioral control, and goals about online learning. Furthermore, supplementing quantitative analyses with qualitative research methods, including interviews and focus groups, can enrich the findings and provide deeper insights into the phenomena under investigation. Therefore, conducting a future qualitative study would complement the quantitative examination and offer a more comprehensive understanding of the factors influencing online learning outcomes.

8. Conclusion

This study highlighted the primary determinants of intention to continue online learning: past behavior, attitude, subjective norms, and perceived behavioral control. These variables have a substantial influence on students' level of engagement and motivation in online educational settings. By comprehending these variables, instructors may create more efficient online courses and support systems, boosting student achievement and well-being.

The acquired insights are vital for enhancing online education practices, hence leading to improved academic results. Continuing research in this field is crucial to meet the evolving needs of online learners and to ensure instructional techniques remain efficient and inclusive.

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