

## **Continuance Intention to Use Online Learning Platform during COVID-19 Pandemic: Perspective from Young Customers of Higher Learning Institutions In Northwest Borneo Island (Sarawak)**

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### **Abstract**

The COVID-19 pandemic in 2020 necessitated a transition to remote and online learning in the education sector to mitigate the virus's spread. However, the adoption of online learning faced challenges related to hardware and software, resulting in low usage rates. Despite the increased interest in online learning during the pandemic and the variations in study locations, certain findings in this research were incongruent, offering a distinct viewpoint on the acceptance or utilisation of online learning platforms. Hence, this study aimed to examine the influence of perceived usefulness, interactive learning, and self-efficacy on satisfaction and the intention to continue using online learning platforms among young customers in higher learning institutions on Northwest Borneo Island (Sarawak). Data from 219 participants with prior experience using online learning platforms were collected through an online questionnaire. The study employed SmartPLS 4 and utilised Partial Least Squares – Structural Equation Modeling (PLS-SEM) method to test the proposed hypotheses. The findings underscore the significant influence of perceived usefulness, interactive learning, and self-efficacy on students' satisfaction and intention to continue using online learning platforms. Theoretically and practically, this study adds to the existing literature on online learning platforms, offering valuable insights for educational institutions and policymakers seeking to enhance student satisfaction and promote the continued use of such platforms.

**Keywords:** Borneo Island, Continuance Intention to Use, Cognitive-affective-conative Theory, Online Learning, PLS-SEM, Satisfaction.

### **Introduction**

The term “technology” in the educational sector can be simplified as the use of multiple sources of problem-solving approaches, tools, techniques, theories, and methods to design, develop, and evaluate human and mechanical resources that transform educational systems and practices (Luppicini, 2005). Online learning or e-learning has emerged to be one of the innovative methods to transform conventional teaching and learning to be delivered online (Uppal, Ali, & Gulliver, 2018). At the initial stage of adoption, there were a lot of debates about the intention and usage of online learning by both educationists and students due to several shortcomings of the technology (Aixia & Wang, 2011). However, with the advancement of technology for decades that enhances the quality and reliability of it, the adoption of online learning is

increasing and slowly replacing the traditional classroom teaching and learning activities (Lian & Ru, 2020).

In 2020, the COVID-19 pandemic has severely impacted almost every industry including the educational sector. The teaching and learning activities were to be conducted remotely and on digital platforms to control the spreading of the viruses (Crawford et al., 2020). Following the increased demands and usage of online platforms for teaching and learning, several online learning platforms and tools were introduced; they are Open Learning, Microsoft Teams, Zoom, and Google Meet that allowed more interaction between students and lecturers (Lian & Ru, 2020). These innovated technologies aimed to enhance user experience and to encourage the usage of these platforms or tools for online learning (Dhawan, 2020). Notably, e-learning will continue to be popular in demand even in the post-COVID-19 era as the usage experience could be enhanced through the more advanced technologies such as Artificial Intelligence (AI), Augmented Reality (AR) or Virtual Reality (VR) (Singh, 2022).

On one hand, there is a clear sign in increased usage of online learning platforms for teaching and learning. However, on the other hand, numerous researchers found that the adoption of online learning was actually low due to several challenges (Adnan & Anwar, 2020; Kulikowski, Przytuła, & Sułkowski, 2022). These challenges faced by the users were derived from both hardware and software. For instance, there were a lack of resources to manage online learning by educators, limited face-to-face interaction, no prior experience or knowledge to use the online learning platform, and some are experiencing weak internet connectivity. Due to these challenges, globally and scholarly quite a number of researches were conducted to unveil factors that could enhance the users' intention to use of online learning platform, such as but not limited to in United States (Zheng, Bender, & Lyon, 2021), Bangladesh (Tamal, Sarker, Islam, & Hossain, 2022), and Thailand (Kim, Khamkhien, Suki, Akkakoson, & Lee, 2023), as well as in Malaysia (Hussein & Hilmi, 2022). Despite a spike of scholarly interest in the significant role of online learning during the pandemic, these notions have been rarely investigated in the context of Borneo. Also, due to the differences of study location, some of the findings were not congruent and hence provides a different perspective on the acceptance or usage of online learning platforms.

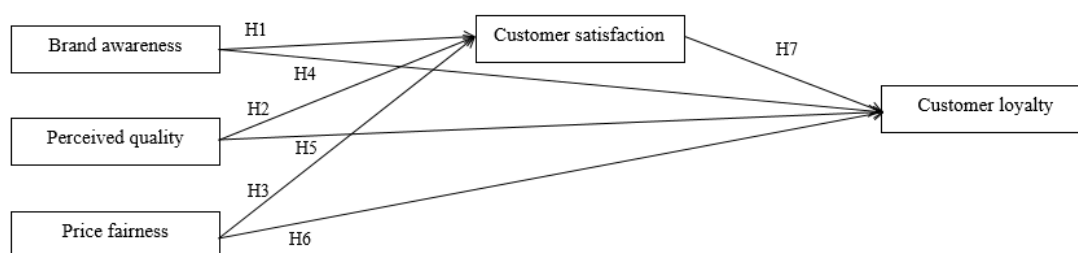
Therefore, based on the review of literature and differences of findings in the past studies, this study is intended to examine a list of proposed predictors (i.e., perceived usefulness, interactive learning, and self-efficacy) on satisfaction and continuance intention to use online learning platform among the young customers of higher learning institutions in Northwest Borneo Island (Sarawak). The study centers its attention on Sarawak due to the findings of Chung, Subramaniam and Dass (2020), which highlight that the primary obstacle faced by a majority of degree students in East Malaysia, including Sarawak, is internet connectivity. The findings that specifically concentrate on Sarawak are constrained in scope, thereby suggesting a need for broader research in order to acquire valuable knowledge about the cultural, socio-economic, and infrastructural elements that impact the acceptance and efficacy of online learning platforms in Northwest Borneo Island (Sarawak). Theoretically, the value of this study does not just contribute in extending the literature from the geographical aspect, however it also serves as a guideline for practitioners in the Northwest Borneo Island to enhance the quality of the online learning platforms to better serve the young customers in this region.

## Literature Review and Hypotheses Development

### *Cognitive-affective-conative Theory*

The cognitive-affective-conative theory proposes that attitudes are composed of three interrelated components: cognitive, affective, and conative (Boulding, 1956). An individual's attitude can be described as their overall evaluation of an object based on their cognitive, affective, and conative responses (Lin, 2014). According to Mischel and Shoda (1995), cognitive refers to an individual's comprehension, thoughts, and convictions about a specific object; affective denotes the individual's emotions and evaluation of an object, person, situation, or event; and conative is the person's behavioral aims and actions concerning a particular thing. Past studies conducted in different contexts have used the cognitive-affective-conative theory as the underlying theory for their research. For instance, Dai, Ali, and Wang (2020) validate the relationship between perceived information overload (cognition) on the information avoidance intention of social media users (conation) employing fatigue, frustration, and dissatisfaction (affective).

Besides, Lim and Kim (2020) employed the cognitive-affective-conative theory to examine the relationship between emotional intelligence and consumer behavior in e-commerce. Similarly, Loh, Lee, Hew, and Lin (2021) used the cognitive-affective-conative theory to investigate the antecedents of continuance intention to use mobile payment during the pandemic. It also explored the positive and negative affective constructs such as satisfaction and technostress directly influencing the continuance intention of youth in using mobile payment. The relevance of this study is that the analysis that was carried out by past studies suggested that the cognitive-affective-conative theory was widely used for the assessment of consumer's specific behavior and thus has been proposed to include continuance intention in an online learning context. Hence, this study employs the cognitive-affective-conative theory to investigate the underlying mechanisms of young consumers' intention to continue using online learning. As depicted in Figure 1 of the research framework, this study examines how perceived usefulness, interactive learning, and self-efficacy (cognitive) influence young consumers' satisfaction towards the use of the online learning platform (affective) and their choice to continue using the online learning platform (conation).



**Figure 1: Research Framework**

Source: Own developed for the research used

### *Perceived Usefulness*

Perceived usefulness refers to how individuals perceive that online learning can enhance their learning productivity (Chen, 2022). The more users feel that a service or system is valuable, the more likely they are to continue using it over a long period of time (Rezvani, Khosravi, &

Dong, 2017). Recent studies on FinTech peer-to-peer payments (Savitha, Hawaldar, & Naveen, 2022) and mobile payment (Sasongko, Handayani, & Satria, 2022) have found that perceived usefulness has a significant relationship on user satisfaction and the intention to continue using a technology-related service. The importance of perceived usefulness lies in the fact that users are more inclined to use an online service when they believe in its benefits (Li & Fang, 2019). In the online learning setting, users may have perceived that the online learning as effective and more inclined to increase satisfaction and continuously use them. Subsequently, perceived usefulness influences their satisfaction and continuance intention to use online service (Jumaan, Hashim, & Al-Ghazali, 2020; Chen, 2022), and this study posits the following hypotheses:

H1: Perceived usefulness has a significantly positive relationship with satisfaction.

H4: Perceived usefulness has a significantly positive relationship with continuance intention.

### *Interactive Learning*

Online learning allows learners to interact socially and interpersonally through computer networks and interfaces instead of in-person communication (Liaw & Huang, 2013). Past studies have emphasized the importance of interaction has a positive influence on satisfaction and continuance intention. For example, Zhang and Lin (2019) found that interaction significantly and positively predicted satisfaction of high school students from the state virtual schools and full online schools in the United States. Moreover, Chen and Yao (2016) have found that the interaction between instructors and learners is correlated to high levels of satisfaction. In one-to-one online learning, interaction feedback was significantly related to continuance intention (Liu & Pu, 2020). Thus, in the context of online learning, the following hypotheses is developed:

H2: Interactive learning has a significantly positive relationship with satisfaction.

H5: Interactive learning has a significantly positive relationship with continuance intention.

### *Self-efficacy*

Self-efficacy refers to an individual's confidence in his or her capability to accomplish a task (Bandura, 1986). In the other words, self-efficacy is related to individuals' self-beliefs regarding their abilities can influence their choice of activities, the level of effort they invest in them, and their persistence in the face of obstacles (Trepte & Rein-ecke, 2011). Previous studies related to technology-related studies have revealed that self-efficacy is significantly related to user's satisfaction and continuance intention. For example, Alruwaie, El-Haddadeh, and Weerakkody (2020) has found that self-efficacy posited as a significant predictor of citizens' satisfaction and continuance intention to use online public service in the United Kingdom. Besides, Sharma et al. (2020) found that self-efficacy has substantial positive effect on continuance intention within online games context. Similarly, Chou and Chou (2021) stated that self-efficacy has a substantial influence on teachers' continuance intention to conduct online teaching. Taking cue from above mentioned, self-efficacy has been shown to act as important cognitive factors to drive young consumers' satisfaction and continuance intention to use online learning platforms. Therefore, the following hypotheses are proposed:

H3: Self-efficacy has a significantly positive relationship with satisfaction.

H6: Self-efficacy has a significantly positive relationship with continuance intention.

### *Satisfaction*

Satisfaction is the affective response that arises from a user's evaluation of a product or service after they have purchased or used it (Gong, Lee, Liu, & Zheng, 2020). When the actual outcome meets or exceeds users' expectations, they experience a pleasant feeling, which leads to satisfaction (Wang, Ou, & Chen, 2019). Several studies conducted in technology-related service settings, including FinTech peer-to-peer payments in India (Savitha et al., 2022), mobile payment in Indonesia (Sasongko et al., 2022), and mobile branded applications in Taiwan (Li & Fang, 2019) have found that satisfaction is an essential factor that is facilitating the intention to continue using the online service. In this study, when young consumers are satisfied with the service provided by online learning platforms, they tend to continue using them. Therefore, this study proposes the following hypothesis:

H7: Satisfaction has a significantly positive relationship with continuance intention.

### **Methodology**

This study used quantitative analysis through Partial Least Squares-Structural Equation Modeling (PLS-SEM). To ensure adherence to specific criteria set by the researchers, a purposive sampling method was employed to collect data from a particular target group (Bougie & Sekaran, 2019). The specific target group was individuals with experience using online learning platforms, as determined by screening questions. Data was collected through an online questionnaire, with eligibility limited to those previously using online learning platforms. The filter question was, "Have you ever used any online learning platform?"; if the answer is yes, the respondents will proceed with the rest of the questions; if the answer is no, they are instructed to stop.

Five variables comprise 30 measurement items in the questionnaire, excluding screening and demographic detailing queries. The six items of perceived usefulness relate to how individuals perceive that online learning can enhance their learning productivity (Chen, 2022). These items have been adapted from Davis (1989), Selim (2003), and Hung (2011). The measurement of interactive learning uses six items to evaluate how individuals engage in communication and explore activities (Liaw & Huang, 2013). These items were adapted from Abulibdeh and Hassan (2011) and Woo (2013). The six items of self-efficacy adapted from Hewitt (2003) and Murray, Perez, Geist, & Hedrick (2012) were scrutinized based on an individual's confidence in his or her capability to accomplish a task (Bandura, 1986). Satisfaction is the affective response that arises from a user's evaluation of a product or service after they have purchased or used it (Gong et al., 2020). The items were adopted from Oliver (1980), Bhattacharjee (2001), Liaw, Chen, & Huang (2008) and Chu (2010). The continued intention is addressed by the items adapted from Bhattacharjee (2001), Chang (2010), and Venkatesh, Thong, and Xu (2012) to observe the extent to which a person chooses to take specific action during the decision-making process of behavior selection (Fishbein & Ajzen, 1975). To ensure the respondents had a clear understanding of the items, a pre-test was carried out with experts to confirm that there were no issues with misinterpretation (Hardy & Ford, 2014).

A minimum sample size of 114 was calculated using the G\*power Software, with the effect size, significance level, and statistical power set at 0.15, 0.05, and 0.80, respectively (Keshminder & Del Rio, 2019). Three hundred questionnaires were sent to university students, with 242 responses received. The researchers proceeded with a second layer screening to check

missing values via the blank count method (Hair, Hult, Ringle, & Sarstedt, 2017), suspicious patterns via straight lining (Hair et al., 2017), and outlier analysis, leading to the exclusion of 23 responses. Consequently, there are 219 usable responses from this study, and their demographic details are presented in Appendix A.

### Data Analysis and Results

This study used SmartPLS 4 to test the proposed hypotheses through Partial Least Squares – Structural Equation Modeling (PLS-SEM). Kock (2015) and Hair et al. (2017) suggested that conducting a full collinearity test can help to identify potential standard method bias. Specifically, the model may be affected by common method bias if the variance inflation factors (VIFs) exceed 5.0 (Hair et al., 2017). In this study, PLS analysis was used to analyse VIFs, and the results indicated that all VIF values range from 1.877 to 3.293, below the suggested threshold of 5.0. The results from the standard method bias tests suggest that common method bias is not an issue for this study.

Furthermore, this study tests the developed model using a two-step approach (Anderson & Gerbing, 1988). First, the measurement model was evaluated to ensure the instruments' reliability and validity, as Ramayah, Cheah, Chuah, Ting, and Memon (2018) and Hair, Risher, Sarstedt, & Ringle (2019) suggested. Subsequently, the structural model was executed to test the proposed hypothesis. The loadings, average variance extracted (AVE), and composite reliability (CR) were assessed for the measurement model. For acceptable results, loadings should be greater than 0.5, AVE greater than 0.5, and CR greater than 0.7. As indicated in Table 1, all AVEs are above 0.5, and all CRs are above 0.7. The loadings were also satisfactory; only three loadings (IL2, IL3, and SAT6) were removed as it is below 0.708 (Hair et al., 2019).

In the second step of the analysis, the discriminant validity was assessed using the HTMT criterion suggested by Henseler, Ringle, and Sarstedt (2015) and Franke and Sarstedt (2019). It was recommended that HTMT values should be less than or equal to 0.90 for the more lenient standard (Gold, Malhotra, & Segars, 2001). Table 2 displays all HTMT values were below the more stringent criterion of 0.90, indicating that the five constructs were distinct and well-understood by the respondents. These validity tests demonstrated that the measurement items were both valid and reliable.

**Table 1: Measurement Model for the Constructs**

Constructs	Items	Loading	Average Variance Extracted (AVE)	Composite Reliability (CR)
Perceived Usefulness (PU)	PU1	0.872	0.764	0.939
	PU2	0.898		
	PU3	0.895		
	PU4	0.779		
	PU5	0.895		
	PU6	0.898		
Interactive Learning (IL)	IL1	0.711	0.637	0.813
	IL4	0.821		
	IL5	0.787		
	IL6	0.866		

Self-efficacy (SE)	SE1	0.848	0.695	0.914
	SE2	0.862		
	SE3	0.847		
	SE4	0.780		
	SE5	0.848		
	SE6	0.812		
Satisfaction (SAT)	SAT1	0.909	0.819	0.946
	SAT2	0.881		
	SAT3	0.885		
	SAT4	0.931		
	SAT5	0.916		
Continuance Intention (CI)	CI1	0.889	0.817	0.955
	CI2	0.892		
	CI3	0.925		
	CI4	0.930		
	CI5	0.906		
	CI6	0.879		

Note: a. Average Variance Extracted (AVE) = (summation of the square of the factor loadings) / {(summation of the square of the factor loadings) + (summation of the error variances)}

b. Composite Reliability (CR) = (square of the summation of the factor loadings) / {(square of the summation of the factor loadings) + (square of the summation of the error variances)}

Source: Own developed for the research used

**Table 2: Discriminant Validity (HTMT)**

	Continuance Intention	Interactive Learning	Perceived Usefulness	Satisfaction	Self-efficacy
Continuance Intention					
Interactive Learning	0.773				
Perceived Usefulness	0.734	0.735			
Satisfaction	0.895	0.788	0.794		
Self-efficacy	0.829	0.891	0.696	0.814	

Note: HTMT < 0.90 (Gold et al, 2001)

Source: Own developed for the research used

According to Hair et al. (2017) and Cain, Zhang, and Yuan (2017), multivariate skewness and kurtosis were evaluated. Results indicated that the data collected did not follow a multivariate normal distribution, as evidenced by Mardia's multivariate skewness ( $\beta = 3.165$ ,  $p < 0.01$ ) and Mardia's multivariate kurtosis ( $\beta = 41.047$ ,  $p < 0.01$ ). Therefore, by the recommendations of Hair et al. (2019), a 5,000-sample re-sample bootstrapping procedure was used to report the path coefficients, standard errors, t-values, and p-values for the structural model (Ramayah et al., 2018). Additionally, based on the criticism of Hahn and Ang (2017) regarding using p-values for testing hypothesis significance, a combination of criteria, including p-values and effect sizes was employed. A summary of the criteria used to test the developed hypotheses is presented in Table 3.

As shown in Figure 2, the effect of the three predictors on satisfaction was evaluated, and the results showed that perceived usefulness ( $\beta = 0.415$ ,  $t = 7.245$ ), interactive learning ( $\beta = 0.113$ ,  $t = 1.757$ ), and self-efficacy ( $\beta = 0.405$ ,  $t = 6.567$ ) were all positively related to satisfaction. The  $R^2$  was 0.696 ( $Q^2 = 0.562$ ), indicating that the three predictors explained 69.6

percent of the variance in satisfaction. Therefore, H1, H2, and H3 were supported. Furthermore, the effect of four predictors on continuance intention was evaluated. The  $R^2$  was 0.767 ( $Q^2 = 0.618$ ), which indicates that the predictors explain 76.7 percent of the variance in continuance intention. Perceived usefulness ( $\beta = 0.077$ ,  $t = 1.280$ ) and interactive learning ( $\beta = 0.031$ ,  $t = 0.558$ ) were not positively related to continuance intention, which did not exceed the recommended t-value of 1.645 (or  $p < 0.05$ ). Hence, H4 and H5 were not supported. Self-efficacy ( $\beta = 0.272$ ,  $t = 3.795$ ) and satisfaction ( $\beta = 0.566$ ,  $t = 7.988$ ) positively related to continuance intention. This finding supported H6 and H7.

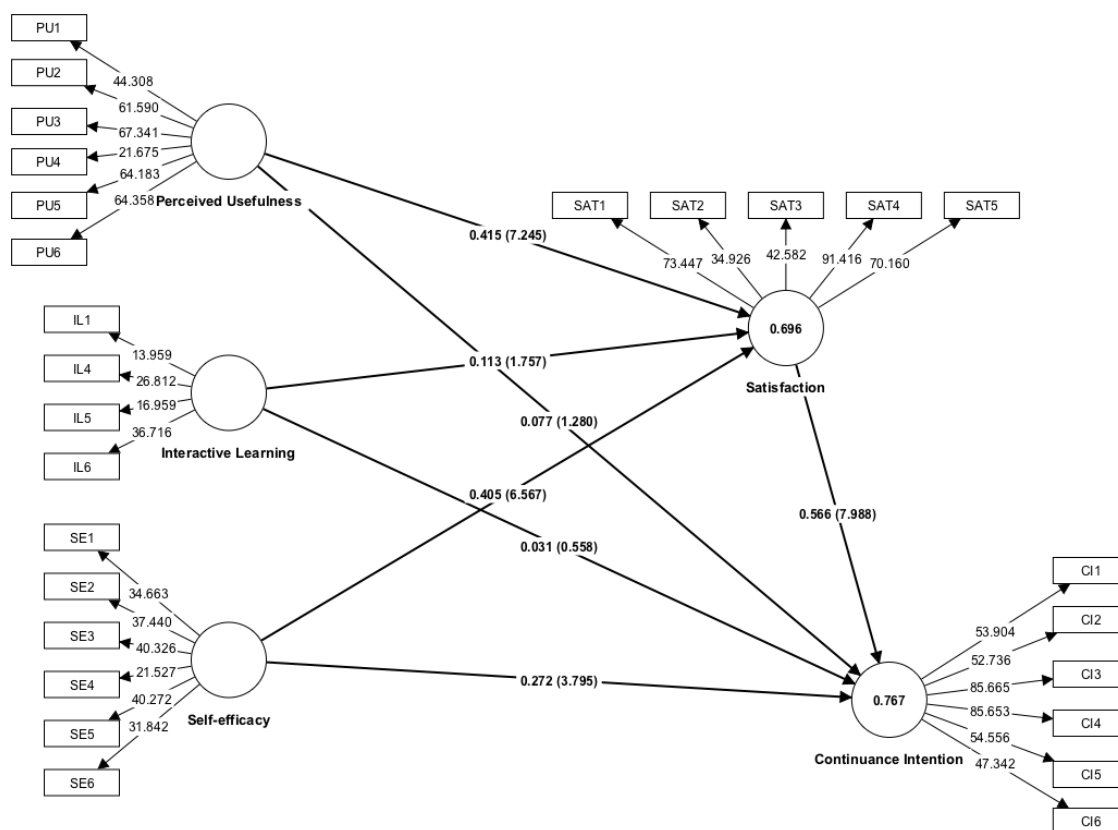
**Table 3: Hypothesis Testing**

Hypothesis	Relationship	Path Coefficient	t-values	p-values	f <sup>2</sup>	VIF	Decision
H1	Perceived Usefulness -> Satisfaction	0.415	7.245	0.000	0.302	1.877	Supported
H2	Interactive Learning -> Satisfaction	0.113	1.757	0.039	0.016	2.653	Supported
H3	Self-efficacy -> Satisfaction	0.405	6.567	0.000	0.203	2.666	Supported
H4	Perceived Usefulness -> Continuance Intention	0.077	1.280	0.100	0.010	2.445	Not Supported
H5	Interactive Learning -> Continuance Intention	0.031	0.558	0.289	0.002	2.695	Not Supported
H6	Self-efficacy -> Continuance Intention	0.272	3.795	0.000	0.099	3.207	Supported
H7	Satisfaction -> Continuance Intention	0.566	7.988	0.000	0.418	3.293	Supported

Note: t-value > 1.645 ( $p < 0.05^*$ ), t-value > 2.33 ( $p < 0.01^*$ )

Source: Own developed for the research used





**Figure 2: Results of the Path Analysis**  
 Source: Own developed for the research used

## Discussion

Hypothesis (H1) was supported as the results of the study indicate a significant relationship between perceived usefulness and student satisfaction, which aligns with previous research findings (Muñoz-Carril, Hernández-Sellés, Fuentes-Abeledo, & González-Sanmamed, 2021; Daneji, Ayub, & Khambari, 2019). This study reveals that students perceive the online learning system as useful, which aligns with their expectations and needs. For example, the use of an online learning platform enables students to complete evaluations more easily and independently (Padayachee, Wagner-Welsh, & Johannes, 2018). The platform may effectively fulfill its purpose by providing valuable resources, engaging content, and facilitating effective learning experiences. This alignment between expectations and actual utility may significantly contribute to student satisfaction. Moreover, the convenience offered by online learning, allowing students to study anywhere and at any time, further enhances their satisfaction levels. This implies that the level of perceived usefulness of the online platform positively correlates with students' satisfaction. In other words, the more students perceive the online platform as useful, the higher their satisfaction levels.

Hypothesis 2 was supported in this study which students find interactive learning significantly impact their satisfaction. The result is similar with the studies conducted by Wu, Tennyson, and Hsia (2010) and Cidral, Oliveira, Di Felice, and Aparicio (2018). According to them, the level of interaction in a fully online learning environment is considered a crucial determinant of students' satisfaction with their online education. Based on the findings, it can

be concluded that interactive learning fosters active student participation, enabling them to actively engage with the content, ask questions, and contribute to the learning process. This active involvement instills a sense of ownership and control, ultimately resulting in heightened satisfaction with the learning experience.

The study provides evidence supporting hypothesis (H3), indicating a significant correlation between students' self-efficacy and their satisfaction. Usher and Pajares (2008) highlight that self-efficacy is a predictor of academic achievement across various subjects and educational levels. Furthermore, Pajares and Schunk (2001) suggest that a strong sense of efficacy contributes to overall well-being. For instance, self-efficacy beliefs influence the levels of stress and anxiety individuals experience during activities, including academic engagement (Pajares & Miller, 1994). Higher levels of self-efficacy are associated with reduced anxiety and stress, thereby creating a positive and enjoyable learning environment that enhances satisfaction. Students who possess higher self-efficacy have confidence in their abilities to perform tasks and excel academically. This confidence boosts their motivation and engagement in learning activities, leading to a greater sense of competence. As a result, when students feel capable and competent in their academic pursuits, they are more likely to experience heightened levels of satisfaction.

Contrary to initial expectations, the perceived usefulness was found to have no influence on continuance intention, thus failing to support hypothesis H4. Similarly, the study conducted by Suzianti and Paramadini (2021) revealed that there is no significant influence between perceived usefulness and students' intention to continue using online learning platforms. One possible explanation could be that due to the pandemic, students are compelled by college policies to utilize online learning systems (Suzianti & Paramadini, 2021). As a result, students evaluate whether these systems align with their learning requirements for their college courses. Consequently, they develop their own perception of the system's usefulness.

The results indicated that the presence of interactive learning does not have an impact on the intention to continue using online learning platforms, and failed to support hypothesis (H5). Possible reasons would be the limited internet access and the absence of up-to-date technology have had an impact on the ability of lecturers to respond effectively, as well as hindered students' ability to engage in digital learning (Zhong, 2020). Internet connectivity issues can result in students being unable to effectively engage with instructors or other learners, rendering interactive learning ineffective and insufficient in terms of encouraging students to continue using the online learning platform. Inadequate instructor interaction may also be a significant issue related to online learning. The inability of students to ask immediate questions directly affects the effectiveness of interactive learning. Due to the reliance on email communication, students can only seek clarification from instructors with a delayed response time, resulting in ineffective interaction between students and lecturers (Zhong, 2020). Considering the outcome of the preceding hypothesis (H4), it can be inferred that although interactive learning has the potential to improve the learning experience, students' motivation to continue using the online learning platform may be dampened if they do not perceive it as beneficial in attaining their learning objectives.

The findings of this study support Hypothesis (H6), indicating a significant relationship between students' self-efficacy and their intention to continue using online learning platforms. This aligns with previous research that has also identified self-efficacy as a valuable predictor of continuance intention (Mathieson, 1991). For instance, Bhattacharjee et al. (2008) discovered that information technology self-efficacy significantly influenced continuance intention. Students who possess high self-efficacy in utilizing online learning platforms and

feel confident in their abilities are more likely to be motivated to continue using the platform. Additionally, higher levels of self-efficacy are often associated with improved learning outcomes. When students believe in their capacity to succeed, they approach learning tasks with a positive mindset, exert effort, and achieve positive results. These positive learning outcomes further reinforce their intention to persist with the online learning platform.

Lastly, the study successfully validated the final hypothesis (H7), which is consistent with the findings from previous research conducted by Chen, Chen, and Chen (2009) and Rahman, Syed Zamri, and Eu (2017). One potential explanation for this outcome is that satisfaction, as operationalized in the study, encompasses the overall experience of positive, indifferent, or negative feelings towards e-learning (Sørebø, Halvari, Gulli, & Kristiansen, 2009). Consequently, when the online learning experience meets or surpasses students' expectations, it is more likely to elicit satisfaction. This can be accomplished through the provision of valuable resources, engaging content, effective communication channels, and a supportive learning environment by the platform. These elements contribute to positive experiences for students, ultimately resulting in a higher level of satisfaction.

The results and findings on online learning platforms provide valuable insights for educational institutions and policymakers aiming to improve student satisfaction and encourage the continued utilization of these platforms. Educational institutions can leverage the insights gained from the results to design and develop online learning platforms that prioritize interactivity and active student engagement.

On the other hand, policymakers can utilize the findings to shape policies and guidelines that promote the effective implementation of online learning platforms. They can provide support and resources to educational institutions to improve their technological infrastructure, ensuring reliable internet connectivity and access to interactive tools. Policymakers can also prioritize professional development programs for educators, equipping them with the necessary skills to facilitate interactive and engaging online learning experiences.

## Conclusion

In conclusion, this research aimed to investigate the impact of perceived usefulness, interactive learning, and self-efficacy on satisfaction and continuance intention to use online learning platforms among young customers in higher learning institutions on Northwest Borneo Island (Sarawak). The findings highlight the significant influence of perceived usefulness, interactive learning, self-efficacy, and other factors on students' satisfaction and continuance intention to use online learning platforms. These results contribute to the understanding of factors influencing the adoption and usage of online learning platforms among students in higher learning institutions. Theoretically and practically, this study contributes to the existing literature on online learning platforms and provides valuable insights for educational institutions and policymakers seeking to enhance student satisfaction and promote the continued use of such platforms.

However, it is important to acknowledge the limitations of this study. The research was conducted specifically in the context of Northwest Borneo Island (Sarawak), limiting the generalizability of the findings to other regions or populations. Furthermore, the data collection relied solely on self-reported responses, which may be subject to biases or inaccuracies. Future research should consider expanding the sample size and diversifying the geographical scope to enhance the external validity of the findings. Additionally, incorporating objective measures and qualitative research methods could provide a more comprehensive understanding of the

factors influencing satisfaction and continuance intention in the context of online learning platforms.

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### References

- Abulibdeh, E. & Hassan, S.S. (2011). E-learning interactions, information technology: Self-efficacy and student achievement at the University of Sharjah. UAE. *Australasian Journal of Educational Technology*, 27(6), 1014-1025.
- Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 pandemic: Students' perspectives. *Online Submission*, 2(1), 45-51.
- Aixia, D. & Wang, D. (2011). Factors influencing learner attitudes toward e-learning and development of e-learning environment based on the integrated e-learning platform. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 1(3), 264.
- Alruwaie, M. El-Haddadeh, R., & Weerakkody, V. (2020). Citizens' continuous use of eGovernment services: The role of self-efficacy, outcome expectations and satisfaction. *Government Information Quarterly*, 37, 1-11.
- Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psy-chological Bulletin*, 103(3), 411-423.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bhattacharjee, A. (2001). Understanding information systems continuance: An expectation–confirmation model. *MIS Quarterly*, 25(3), 51–370.
- Bougie, R., & Sekaran, U. (2019). *Research methods for business: A skill-building approach*, (8th ed). Hoboken, NJ, USA: John Wiley & Sons Inc.
- Boulding, K. (1956). *The image-knowledge in life and society*. Ann Arbor: University of Michigan Press.
- Cain, M.K., Zhang, Z., & Yuan, K.H. (2017). Univariate and multivariate skewness and kurtosis for measuring nonnormality: Prevalence, influence and estimation. *Behavior Research Methods*, 49(5), 1716-1735.
- Chang, H.H. (2010). Task-technology fit and user acceptance of online auction. *International Journal of Human-Computer Studies*, 68(1), 69–89.
- Chen, J. (2022). Adoption of m-learning apps: A sequential mediation analysis and the moderating role of personal innovativeness in information technology. *Computers in Human Behaviour Reports*, 8, 1-13.
- Chen, S., Chen, H., & Chen, M. (2009). Determinants of satisfaction and continuance intention towards self-service technologies. *Industrial Management and Data Systems*, 109(9), 1248–1263.
- Chen, W.S., & Yao, A.Y.T. (2016). An empirical evaluation of critical factors influencing learner satisfaction in blended learning: A pilot study. *Universal Journal of Educational Research*, 4(7), 1667–1671.

- Chou, H.L. & Chou, C. (2021). A multigroup analysis of factors underlying teachers' technostress and their continuance intention toward online teaching. *Computers and Education*, 175, 1-12.
- Chu, H.C. (2010). A knowledge engineering approach to developing e-libraries for mobile learning. *The Electronic Library*, 26(3), 303–317.
- Chung, E., Subramaniam, G., & Dass, L.C. (2020). Online learning readiness among university students in Malaysia amidst Covid-19. *Asian Journal of University Education*, 16(2), 45.
- Cidral, W.A., Oliveira, T., Di Felice, M., & Aparicio, M. (2018). E-learning success determinants: Brazilian empirical study. *Computers and Education*, 122, 273–290.
- Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., & Lam, S. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning and Teaching*, 3(1), 1-20.
- Dai, B., Ali, A., & Wang, H. (2020). Exploring information avoidance intention of social media users: A cognition–affect–conation perspective. *Internet Research*, 30(5), 1455-1478.
- Daneji, A.A., Ayub, A.F.M., & Khambari, M.N.Md. (2019). The effects of perceived usefulness, confirmation and satisfaction on continuance intention in using massive open online course (MOOC). *Knowledge Management and E-Learning: An International Journal*, 11(2), 201–214.
- Davis, F.D. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003.
- Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of educational technology systems*, 49(1), 5-22.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley Publishing Company.
- Franke, G., & Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: A comparison of four procedures. *Internet Research*, 29(3), 430-447.
- Gold, A.H., Malhotra, A., & Segars, A.H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*, 18(1), 185–214.
- Gong, X., Lee, M.K., Liu, Z., & Zheng, X. (2020). Examining the role of tie strength in users' continuance intention of second-generation mobile instant messaging services. *Information Systems Frontiers*, 22(1), 149-170.
- Hahn, E.D., & Ang, S.H. (2017). From the editors: New directions in the reporting of statistical results in the Journal of World Business. *Journal of World Business*, 52(2), 125-126.
- Hair, J.F., Hult, G.T.M., Ringle, C.M., & Sarstedt, M.A. (2017). *Primer on partial least squares structural equation modeling* (2nd ed). London, UK: Sage Publication.
- Hair, J.F., Risher, J., Sarstedt, M., & Ringle, C. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24.
- Hardy, B., & Ford, L.R. (2014). It's not me, it's you: Miscomprehension in surveys. *Organisational Research Methods*, 17, 138–162.
- Henseler, J., Ringle, C., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135.
- Hewitt, J. (2003). How habitual online practices affect the development of asynchronous discussion threads. *Journal of Educational Computing Research*, 28(1), 31–45.
- Hung, M.C. (2011). An exploratory study on the continuance of mobile commerce: An extended expectation–confirmation model of information system use. *International Journal of Mobile Communications*, 5(4), 409–422.

- Hussein, L.A., & Hilmi, M.F. (2022). Intention to continue using online learning among Malaysian university students. *Asian Journal of University Education*, 18(4), 998-1009.
- Jumaan, I.A., Hashim, N.H., & Al-Ghazali, B.M. (2020). The role of cognitive absorption in predicting mobile internet users' continuance intention: An extension of the expectation-confirmation model. *Technology in Society*, 63, 1-10.
- Keshminder, J., & Del Rio, P. (2019). The missing links? The indirect impacts of drivers on ecoinnovation. *Corporate Social Responsibility and Environmental Management*, 26(5), 1100-1118.
- Kim, L.C., Khamkhien, A., Suki, N.M., Akkakoson, S., & Lee, H-A. (2023). Examining factors influencing students' acceptance of online learning during Covid-19 pandemic: Evidence from Thailand. *Malaysian Journal of Social Sciences and Humanities*, 8(1), 1-14.
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1-10.
- Kulikowski, K., Przytuła, S., & Sułkowski, Ł. (2022). On the unintended consequences of COVID-19 forced e-learning on academic teacher motivational job characteristics. *Higher Education Quarterly*, 76(1), 174-189.
- Li, C.Y., & Fang, Y.H. (2019). Predicting continuance intention toward mobile branded apps through satisfaction and attachment. *Telematics and Informatics*, 43, 1-13.
- Lian, T.Y., & Ru, C.J. (2020). A study on the perception and acceptance of UiTM's undergraduates towards open and distance learning method in Mandarin language teaching and learning during covid-19 movement control order period. *International Journal of Modern Languages and Applied Linguistics*, 4(4), 61-79.
- Liaw, S.S., & Huang, H.M. (2013). Perceived satisfaction, perceived usefulness and interactive learning environments as predictors to self-regulation in e-learning environments. *Computers and Education*, 60, 14-24.
- Liaw, S.S., Chen, G.D., & Huang, H.M. (2008). Users' attitudes toward web-based collaborative learning systems for knowledge management. *Computer and Education*, 50(3), pp 950-961.
- Lim, S.H., & Kim, D.J. (2020). Does emotional intelligence of online shoppers affect their shopping behavior? From a cognitive-affective-conative framework perspective. *International Journal of Human Computer Interaction*, 36(14), 1304-1313.
- Lin, J. (2014). The effects of gratifications on intention to read citizen journalism news: The mediating effect of attitude. *Computers in Human Behavior*, 36, 129-137.
- Liu, N., & Pu, Q. (2020). Factors influencing learners' continuance intention toward one-to-one learning. *Interactive Learning Environments*, 31(3), 1742-1763.
- Loh, X.M., Lee, V.H., Hew, T.S., & Lin, B. (2021). The cognitive-affective nexus on mobile payment continuance intention during the COVID-19 pandemic. *International Journal of Bank Marketing*, 40(5), 939-959.
- Luppigini, R. (2005). A systems definition of educational technology in society. *Educational Technology and Society*, 8(3), 103-109.
- Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review*, 102(2), 246-268.
- Muñoz-Carril, P.-C., Hernández-Sellés, N., Fuentes-Abeledo, E.-J., & González-Sanmamed, M. (2021). Factors influencing students' perceived impact of learning and satisfaction in Computer Supported Collaborative Learning. *Computers and Education*, 174(2021), 104310.

- Murray, M.C., Perez, J., Geist, D., & Hedrick, A. (2012). Student interaction with online course content: Build it and they might come. *Journal of Information Technology Education: Research*, 11(1), 125-140.
- Oliver, R.L. (1980). A cognitive model for the antecedents and consequences of satisfaction. *Journal of Marketing Research*, 17, 460–469.
- Padayachee, P., Wagner-Welsh, S., & Johannes, H. (2018). Online assessment in Moodle: A framework for supporting our students. *South African Journal of Higher Education*, 32(5).
- Pajares, F., & Miller, M.D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: A path analysis. *Journal of Educational Psychology*, 86(2), 193–203.
- Pajares, F., & Schunk, D. (2001). Self-beliefs and school success: Self-efficacy, self-concept, and school achievement. In R. J. Riding & S. Rayner (Eds), *Self perception*. Greenwood Publishing Group.
- Rahman, M.N.A., Syed Zamri, S.N.A., & Eu, L.K. (2017). A meta-analysis study of satisfaction and continuance intention to use educational technology. *International Journal of Academic Research in Business and Social Sciences*, 7(4), 1059-1072.
- Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M.A. (2018). *Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 3.0: An Updated Guide and Practical Guide to Statistical Analysis* (2nd ed.). Kuala Lumpur, Malaysia: Pearson.
- Rezvani, A., Khosravi, P., & Dong, L. (2017). Motivating users toward continued usage of information systems: Self-determination theory perspective. *Computers in Human Behavior*, 76, 263-275.
- Sasongko, D.T., Handayani, P.W., & Satria, R. (2022) Analysis of factors affecting continuance use intention of the electronic money application in Indonesia. *Procedia Computer Science*, 197, 42-50.
- Savitha, B., Hawaldar, I.T., & Naveen, K.K. (2022). Continuance intentions to use FinTech peer-to-peer payments apps in India. *Heliyon*, 8, 1-11.
- Selim, H.M. (2003). An empirical investigation of student acceptance of course websites. *Computer and Education*, 40(4), 343–360.
- Sharma, T.G., Hamari, J., Kesharwani, A., & Tak, P. (2020). Understanding continuance intention to play online games: roles of self-expressiveness, self-congruity, self-efficacy, and perceived risk. *Behaviour and Information Technology*, 41(2), 348-364.
- Singh, P. (2022). How will e-learning transform education in a post-Covid-19 world? Online articles in training. Retrieved from: <https://trainingmag.com/how-will-e-learning-transform-education-in-a-post-covid-19-world/>
- Sørebø, Ø., Halvari, H., Gulli, V.F., & Kristiansen, R. (2009). The role of self-determination theory in explaining teachers' motivation to continue to use e-learning technology. *Computers and Education*, 53(4), 1177–1187.
- Suzianti, A., & Paramadini, S.A. (2021). Continuance intention of e-learning: The condition and its connection with open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 97.
- Tamal, M.A., Sarker, M.F.H., Islam, M.K., & Hossain, M.E. (2022). Acceptance of e-learning among university students during Covid-19 crisis: Bangladesh perspective. *International Journal of Emerging Technologies in Learning*, 17(6), 152-162.

- Trepte, S., & Reinecke, L. (2011). The pleasures of success: game-related efficacy experiences as a mediator between player performance and game enjoyment. *Cyberpsychology, Behavior, and Social Networking*, 14(9), 555–557.
- Uppal, M.A., Ali, S., & Gulliver, S.R. (2018). Factors determining e-learning service quality. *British Journal of Educational Technology*, 49(3), 412-426.
- Usher, E.L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of Educational Research*, 78(4), 751–796.
- Venkatesh, V., Thong, J.Y.L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory. *MIS Quarterly*, 36(1), 157-178.
- Wang, W.T., Ou, W.M., & Chen, W.Y. (2019). The impact of inertia and user satisfaction on the continuance intentions to use mobile communication applications: A mobile service quality perspective. *International Journal of Information Management*, 44, 178-193.
- Woo, H.L. (2013). The design of online learning environments from the perspective of interaction. *Educational Technology*, 53(6), pp. 34-38.
- Wu, J.-H., Tennyson, R.D., & Hsia, T.-L. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers and Education*, 55(1), 155–164.
- Zhang, Y., & Lin, C.H. (2019). Student interaction and the role of the instructor in a virtual high school: What predicts online learning satisfaction? *Technology, Pedagogy, and Education*, 29(1), 57-71.
- Zheng, M., Bender, D., & Lyon, C. (2021). Online learning during Covid-19 produced equivalent or better student course performance as compared with pre-pandemic: Empirical evidence from a school-wide comparative study. *BMC Medical Education*, 21(495), 1-11.
- Zhong, R. (2020). The coronavirus exposes education’s digital divide. *The New York Times*. <https://www.nytimes.com/2020/03/17/technology/china-schools-coronavirus.html>



### Appendix A: Respondents' Profile

<b>Respondent (n=219)</b>			
<b>Demographic Variable</b>	<b>Category</b>	<b>Frequency</b>	<b>Per cent (%)</b>
Gender	Male	79	36.10
	Female	140	63.90
Age Category	Under 25 years old	208	95.00
	26-35 years old	11	5.00
Ethnicity	Malay	14	6.40
	Chinese	157	71.60
	Iban	24	11.00
	Others	24	11.00
Current Education Level	Foundation	43	19.60
	Diploma	7	3.20
	Bachelor	167	76.20
	Master	1	0.50
	PhD	1	0.50
Which type of online learning platforms have you used?	Google Meet	87	39.70
	Microsoft Team	-	-
	Zoom Meeting	14	6.40
	Open Learning	14	6.40
	Others	104	47.50
How many years have you been using the online learning platforms?	Less than one year	23	10.50
	1-2 years	119	54.30
	2-3 years	63	28.80
	More than 3 years	14	6.40
How often do you use online learning platforms on a day?	Less than hour 2 hours	42	19.20
	3-4 hours	93	42.50
	5-6 hours	48	21.90
	More than 6 hours	36	16.40