



Examining the Mediation Effect of Computer Competency on the Familiarity with Technology and the Acceptance of Online Learning Post-COVID-19

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ABSTRACT

Online learning has been recognised as the most important component in all educational institutions especially after the outbreak of the COVID-19 pandemic. Even if e-learning is thought to be the most effective technique during the pandemic, its implementation faced difficulties and challenges, where not all institutions were in a particularly favourable position when implementing online learning. This research examined the relationship between students' motivation, mindset, computer competency, and technological familiarity, as well as their intention to continue using online learning after COVID-19. This study involved four community colleges in Kelantan, Malaysia. In this study, computer competency was also incorporated as a mediator. Self-administered survey forms were disseminated to 118 students using the convenience sampling method. For the data analysis, partial least square structural equation modelling (SmartPLS) 4.0 was used. The result from this study revealed that the community college students in Kelantan have a high intention to use e-learning after the pandemic. In fact, a positive relationship was found between the students' motivation, computer competency, and familiarity with technology. Nevertheless, no proof suggested a connection between students' intention and mindset. This research also confirmed a serial mediation relationship between computer competency and familiarity with technology and future intention on online learning adoption.

1. Introduction

Online learning is nothing new. It has been discussed by past researchers since late 90s and early 2000s [1–4]. It is recognised as the most important component in all educational institutions recently, especially after the outbreak of the COVID-19 pandemic. As online learning was deemed the more effective method of instruction compared to traditional classroom setting before the pandemic broke out, the education systems around the world were forced to fully implement it [5–6]. The situation has led to a paradigm shift, whereas online teaching and assessment practices remain crucial at the higher learning level [7]. Numerous advantages of online learning have been reported in prior studies.

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Among them are the potentials of remote and flexible teaching and learning, involving the varied audience, cost-effectiveness, the use of instruments to evaluate learning results, increased access to a wealth of materials and resources, as well as facilitation of student-teacher collaboration [7–9].

Due to the severity of the COVID-19 disease in Malaysia in 2020, the government felt obliged to implement policies and practices to stop the disease from spreading, including social segregation, smart working, and the closure of social and commercial activities. In addition, the COVID-19 pandemic enforces the authorities to mandate all types of educational institutions to hold physical operations and carry out virtual home-based learning session [10]. Community college is a higher learning institution which has been operating under the Department of Polytechnic and Community College, Ministry of Higher Education Malaysia since 2001. Community colleges offer certificate and diploma level studies to provide pathways for students with moderate academic achievement at the school level to continue their studies to a higher level, as well as contribute to the labour market, especially in technical and vocational education training (TVET)-related fields. Before the COVID-19 pandemic, teaching and learning sessions were conducted entirely physically [11]. However, the implementation of Movement Control Order and the closure of educational institutions have forced community colleges to carry out teaching and learning activities online regardless of constraints faced by the students, the lecturers, and the colleges themselves. Even if e-learning is thought to be the most effective technique during the pandemic, its implementation faced difficulties and challenges. Some institutions were in a particularly favourable position when implementing online learning. This is because no practical skills are needed for certain courses [12]. Conversely, for courses that require practical skills, Bianchi et al. [13] suggested that e-learning is not recommended. Besides, inadequate internet access and poor availability of necessary infrastructure and services, including high-speed internet connectivity, a lack of technical skills, as well as computer self-efficacy, inexperienced educators in handling online learning, weak administrative support, and inadequate content design are just a few of the e-learning barriers [7, 14–16].

Even though many studies have highlighted the importance of students' and teachers' qualities to boost learning acceptance, online education during the pandemic was more forced than intentional [17]. The circumstances surrounding the COVID-19 pandemic were remarkable, and there was a cause for concern over the unfavourable effects of the lockdown and lengthy quarantine period involving the students' mental health [18]. Furthermore, very little research focused on the forceful shift towards online learning [5] and how the students' experience in using online learning during the pandemic affected their future intention to continuously use it post-COVID-19. Other than that, no study has been done to test the mediation relationship of computer competency on familiarity with technology and e-learning intention. Several studies had posited that computer competency and familiarity with technology are among the important elements in online learning [6,19,20]. By examining the mediating relationship of these two factors, this study can determine the extent to which the computer competency strengthen the relationship between familiarity with technology (measures by looking at the frequency of used) and online learning.

Generally, this study's primary goal was to examine the elements that influence students at Kelantan's community colleges to adopt e-learning, with the influencing elements help to define the study's major argument. This study specifically looked into the relationship between the characteristics of the students, such as their motivation, mindset, computer skills, familiarity with technology, and their acceptance and readiness (behavioural intention to continue using) of e-learning implementation following COVID-19 at the community colleges in Kelantan. This study also suggested computer competency as a mediator between familiarity with technology and the e-learning intention. A number of sections made up the study. Firstly, this paper reviews the e-learning during the COVID-19 pandemic. Next, the discussion on the learning system of the community

colleges prior to the pandemic is presented, continuing with the e-learning problems and gap of the study. The research technique, collection of data, analysis of data, as well as arguments of pertinent theories and earlier studies are then covered. The findings and conclusions are discussed towards the end.

2. Review of Literature and Development of Hypotheses

The decision to use a particular technology and the amount of time spent on it have long been the research sources of various disciplines, with implications for business, school, and everyday life [21]. Sayeed and Onetti [22] argued that the factors influencing the adoption of e-learning can be theoretically classified into technology, organisations, and people. In addition, several studies have shown that technology adoption is not only related to technological aspects, but has evolved as a much more complex process involving user attitude and personality, social influence, trust, and various facilitating conditions [23]. Several theoretical stances served as inspiration for the creation of research tools to assess intention to use (or accept) new technologies. The Technology Acceptance Model (TAM), Unified Theory of Technology Acceptance and Use (UTAUT), and Diffusion Theory (DOI) are commonly used models for evaluating e-learning adoption, acceptance, and use. In current online learning research, the most widely utilised theory to comprehend e-learning adoption intention is TAM. It mainly focuses on analysing how the attitudes of students or teachers about information and communication technology (ICT) influence its acceptance [5].

2.1 Students' Motivation

Previous studies have revealed that student motivation to use an e-learning system gives a huge influence on the effectiveness of technological adoption into the field of education [5, 6, 22, 23]. Indeed, Rahman, Samad *et al.*, [6], in their study, emphasised student motivation as one of the essential indicators that has been very helpful in assisting students to understand the significance of continuing their studies online. Moreover, it has become critical since the COVID-19 pandemic that universities and students migrate to online learning. Such abrupt shift may have dampened students' motivation to learn [25]. Lamb *et al.*, [26] also suggested similar findings by stating that student motivation for learning in a virtual environment relates to learning outcomes. Thus, in order for students to use online learning in a way that would improve their performance and attitude, motivation is crucial. Consequently, the following hypotheses were offered in this study:

H1: Students' motivation towards e-learning positively influences behavioural intention for future e-learning usage.

2.2 Students' Mindset

Most studies specifically discussed students' attitude and less study on students' mindset. Park [27], Hussein [28], and Mailizar *et al.*, [29] used TAM to develop a model and prove the effectiveness of students' attitude (students' mindset) and behavioural intention to use e-learning. It was proposed as the key factor to forecast college students' willingness to use e-learning. Studies done in Malaysia on the e-learning technology using TAM before the COVID-19 pandemic demonstrated that the construct significantly influenced the attitude and intention to use the technological system [29-30]. Moreover, a study by Rahman, Samad *et al.*, [6] on intention to use e-learning post-COVID-19 among students at pondok schools revealed that the mindset has a positive impact on students'

characteristic, which leads to the acceptance of e-learning usage in the future. As a result, the following hypothesis must be confirmed:

H2: Students' mindset towards e-learning positively influences behavioural intention for future e-learning usage.

2.3 Familiarity with Technology

The degree of technology familiarity, awareness, and readiness to accept and embrace the e-learning environment are among the factors that determine the adaptability and readiness of e-learning [19]. A study by Alyahya *et al.*, [20] found that students who are familiar with technology feel a positive experience with e-learning. In addition, the acceptability of e-learning in underdeveloped nations has been the subject of previous studies, which concluded that students' familiarity with computers and technology plays a key role in this acceptance [31]. Hence, the following hypothesis was proposed:

H3: Familiarity with technology positively influences behavioural intention for future e-learning usage.

2.4 Computer Competency

The ability to use computers effectively is essential for students to succeed in higher education. Previous research demonstrated that computer competency significantly improved technology adoption and served as a predictor of students' intent to continue utilising technology for learning [6,36]. However, Shuster and Pearl [32] opined that the competency of students increased with each successive group of students. They held that a student's intention to use technology for learning is greatly influenced by their level of computer skill, yet this could vary depending on the student. Consequently, the following hypothesis had been put forth:

H4: Computer competency positively influences behavioural intention for future e-learning usage.

2.5 Mediation

In order to improve models and advance theories, mediation analysis is essential [33]. Consequently, the aim of this study was to enhance the model's prediction capabilities by including computer competency as a mediator for the association between technological familiarity and intention to continue online learning.

As emphasised above, studies from Callo and Yazon [31], Naresh [19], and Moghavvemi [34] confirmed a positive relationship between familiarity with technology and intention to use e-learning. The studies found that students who are familiar and frequently used computer application have a more positive perception on e-learning usage. Next, a study by Haeuptle and Reinmannas, as being cited by Zander *et al.*, [35] also found a positive relationship between familiarity with technology and computer competency. The study claimed that the more frequently students use computer application, the more competent they are in the computer. Moreover, Baturay *et al.*, [36], Shuster and Pearl [32], and also Reddy *et al.*, [37], in their studies, revealed a positive relationship of computer competency and online learning intention. Students who are competent with computers feel more at ease using an online learning platform to boost their learning. Thus, based on the model,

there is a strong likelihood that the mediator (familiarity with technology) is connected with the intention to continuously use e-learning. Consequently, the following hypothesis was offered:

H5: Familiarity with technology positively influences computer competency

H6: Computer competency mediates the relationship between familiarity with technology and intention for future e-learning usage.

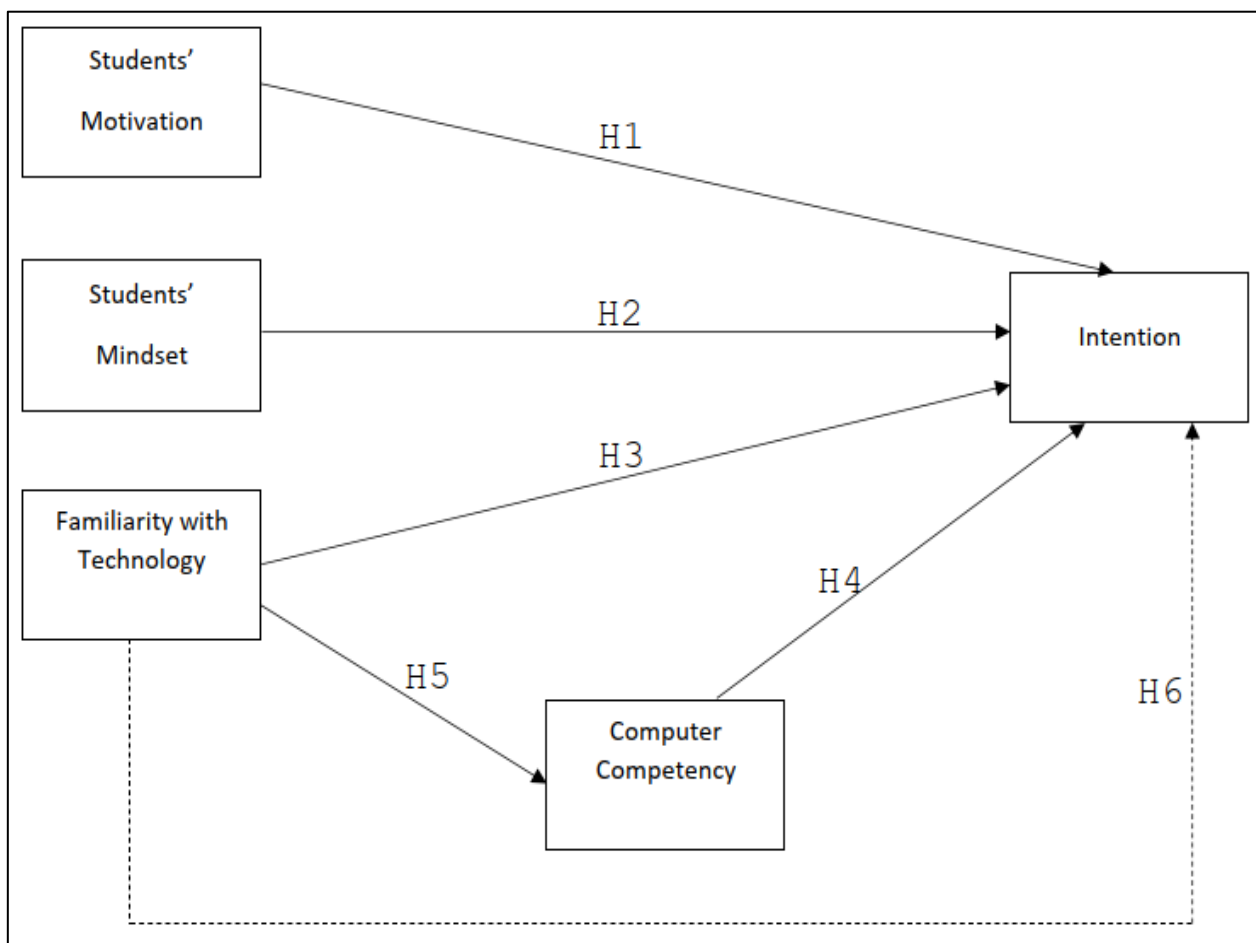


Fig.1. Research Framework

3. Methodology

3.1 Participant

Participants in this study ranged in age from 19 to 36 and attended four community colleges in Kelantan, Malaysia. The total population for this study was 310 students. The survey was disseminated by using convenience sampling method through an online platform from early May to end of August, 2022. As a result, 118 students answered the survey, which corresponded to a response rate of 38.06%. To protect privacy, names were omitted from Table 1's description of the respondents' demographic data, which also discusses their profile. Majority of the students were females (74.6%) aged between 19 and 20 years old (88.1%). Most of the respondents were from Jeli Community College (47.5%), followed by Pasir Mas Community College (24.6%), and the rest were from Rantau Panjang Branch and Kok Lanas. Only 14.4% of the participants belonged to the middle- and high-income groups, while the majority of them hailed from the socioeconomically

disadvantaged group, with 64.4% of their parents earning less than Ringgit Malaysia (RM) 2000 per month and 21.2% earning between RM2001 and RM4850.

Table 1
 Profile of respondents (n= 118)

Item	Option	Frequency	Percent
Gender	Female	88	74.6%
	Male	30	25.4%
Age	19-20 years	104	88.1%
	21-22 years	10	8.5%
	Above 23 years	4	3.4%
College	Jeli Community College	56	47.5%
	Rantau Panjang Branch Community College	8	6.8%
	Pasir Mas Community College	29	24.6%
	Kok Lanas Community College	25	21.2%
Program	Certificate of Fashion and Apparel	22	18.6%
	Certificate of Pastry	34	28.8%
	Certificate of Logistics Service	8	6.8%
	Certificate of Business Operation	29	24.6%
	Certificate of Creative Multimedia Advertising	25	21.2%
Parents' Income	RM 2000 and below	76	64.4%
	RM 2001 - RM 4850	25	21.2%
	RM 4851 - RM 10970	11	9.3%
	RM 10971 and above	6	5.1%

3.2 Instrument and Procedures

Six sections made up the designed questionnaire: (1) demographics, (2) e-learning intention, (3) motivation, (4) mindset, (5) computer competency, and (6) familiarity with technology. The first section covers demographic data, computer device ownership, and Internet connection. Next, four items in Part 2, using 5-point Likert scale statements, assess students' behavioural intentions to use e-learning. Part 3 consists of five items assessing students' motivation and Part Four consists of three items measuring students' mindset. All items in Parts 2, 3, and 4 were adapted from a study by Baber [5]. Next, Part 5 has five items that assess computer competency, which were adapted from Selim [38]. Part 6 consists of 12 items on familiarity with technology, which were adopted from Ngampornchai [15] where they relate to how frequently students use computer applications. The questionnaire was created in English at first, then it was translated into Malay. For content validity, a senior lecturer from Universiti Malaysia Kelantan and three lecturers from community colleges were contacted. Structured equation modelling using partial least squares (PLS-SEM) was adopted to examine the data for this investigation. Partial least squares (PLS), a subset of structural equation modelling (SEM), is a potent tool for understanding expected behaviour in the field of behavioural science. This method was chosen because it allows for the concurrent analysis of several dependent relationships [39].

4. Results

Smart-PLS 4.0, a variance-based SEM for hypothesis testing, was used to evaluate the data because it works well for studies that forecast relationships between variables [40]. This study assessed the normality of the data using multi-variate skewness and kurtosis, as suggested by Hair *et al.*, [40]. After running for the normality test, the findings showed that the collected data were not

multivariate normal with Mardia multivariate skewness ($\beta= 2.176, p<0.01$) and Mardia multivariate kurtosis ($\beta= 26.685, p<0.01$). Hence, SmartPLS, a non-parametric analytic programme, is the best one to employ.

4.1 Common Method Variance

The social science researchers have to handle and analyse the self-reported data. The data from these surveys is used to measure both the independent and dependent variables in a data analysis. Also, the same individual responds to the independent and dependent variables at the same time. Thus, the estimated impact of one variable on other variable is at risk of being biased due to common method variance (CMV), which is the systematic variance shared among the variables. CMV can cause major issues when only single-data source is used [41]. In order to curb the CMV problem, this study used full collinearity testing, as proposed by Kock [42]. This approach involves regressing each variable on a common variable while accounting for variance inflation factor (VIF). The variance inflation factor (VIF) is often used to evaluate collinearity of the formative indicators. VIF values of 5 or above indicate critical collinearity issues among the indicators of formatively measured constructs. However, collinearity issues can also occur at lower VIF values of 3. Ideally, the VIF values should be close to 3 and lower[40]. The VIF value of less than 3 means that there is no deviation from a single baseline. Table 2 shows the test analysis. Based on the result in Table 2, single-source bias was not a significant issue in our data, as indicated by the analysis's VIF of less than 3.

Table 2
Full Collinearity Testing

Construct	BI	SM	MS	CC	FWT
VIF Value	1.758	2.351	1.864	1.972	1.412

Notes: BI= Behavioural Intention; SM= Students' Motivation; MS= Students' Mind-set; CC=Computer Competency; FWT= Familiarity with Technology

4.2 Measurement Model

Two steps must be taken when performing SEM analysis. Prior to verifying a structural model or hypothesis testing, a measurement model with convergent and discriminant validity should be confirmed. Convergent validity is considered to be reached when loadings and average variance explained (AVE) are greater than 0.5 and composite reliability is higher than 0.7 [39]. The evaluation of construct validity using all the variables stated is shown in Table 3. The study's convergent validity has been established because all of the scores in Table 3 are higher than the minimal value recommended by the literature. The next step is to confirm discriminant validity after verifying convergent validity. According to Franke and Sarstedt [43], the heterotrait-monotrait ratio (HTMT) values must be less than 0.85 in order for discriminant validity to be proven in a study . Table 4 demonstrates that there is no issue evaluating the discriminant validity of the study because all HTMT values fell below the most conservative set of values.

Table 3
 Convergent Validity

Construct	Loading	CR	AVE
Intention to continuously use e-learning (BI)			
(BI 1) I intend to continuously use e-learning in the near future.	0.933	0.967	0.880
(BI 2) I predict I would continuously use e-learning in the near future.	0.936		
(BI 3) I plan to continuously use e-learning in the near future.	0.960		
(BI 4) I intend to continuously use e-learning for learning as often as needed	0.922		
Students' Motivation (SM)			
(SM 1) In an online class, I prefer assignments and questions that challenge me so that I can learn new things.	0.804	0.874	0.634
(SM2) When I have the opportunity in the online class to choose class assignments, I choose the assignments that I can learn from even if they don't guarantee any grades	0.721		
(SM 3) I want to do well in the online class because it is important to show my ability to my family and friends	0.857		
(SM 4) I like to be one of the most recognized students in the online class	0.798		
Students' Mindset (MS)			
(MS 2) I learn best by construction (i.e., by participation and contribution)	0.911	0.922	0.855
(MS 3) I learn better by construction than absorption	0.938		
Computer Competency (CC)			
(CC 1) I enjoy using personal computers	0.828	0.891	0.621
(CC 2) I use the personal computers for work and play	0.714		
(CC 3) I was comfortable with using the PC and software applications before I took up the e-learning based courses	0.863		
(CC 4) My previous experience in using the PC and software applications helped me in the e-learning based courses	0.761		
(CC 5) I am not intimidated by using the e-learning based courses	0.764		
Familiarity with Technology (FWT)			
(FT1) Word processing (e.g: Microsoft Word)	0.756	0.880	0.512
(FT2) Spreadsheet (e.g: Microsoft Excel)	0.791		
(FT3) Email	0.590		
(FT5) Forum (e.g: webinar, fb live)	0.708		
(FT7) Video Chat (eg: GoogleMeet, Skype, Zoom)	0.725		
(FT8) Computer game	0.730		
(FT11) Blog	0.675		
(FT12) Social-media (e.g: Instagram, Twitter, Facebook)	0.529		

Note: Item MS1, FT4, FT6, FT9 and FT 10 were deleted due to low loading)

Table 4
 Discriminant Validity (HTMT)

	BI	CC	FT	MS	SM
BI					
CC	0.608				
FT	0.422	0.439			
MS	0.488	0.635	0.593		
SM	0.672	0.774	0.513	0.734	

4.3 Structural Model

Prior to assessing the structural model, it is essential to make sure there are no collinearity issues. As shown in Table 2, each construct's VIF value was below the threshold value of 3.3 established by Diamantopoulos and Siguaw [44], indicating that the study had no issues pertaining to collinearity. Standardised beta (β), t-values obtained using a 5,000 resampled bootstrapping technique, and effect

sizes (f^2) were observed to assess the structural model, as being proposed by Hair *et al.*, [39]. The results in Table 5 illustrate that student motivation ($\beta = 0.387$, $t = 2.872$: LL = 0.168, UL= 0.612, $p < 0.05$), computer competency ($\beta = 0.251$, $t = 2.411$, LL = 0.084, UL= 0.426 $p < 0.05$), and familiarity with technology ($\beta = 0.147$, $t = 1.823$: LL = 0.004, UL= 0.265, $p < 0.05$), were significantly related to the intention to continuously use e-learning in the future. Thus, H1, H3, and H4 were supported. Moreover, familiarity with technology also significantly affected computer competency ($\beta = 0.382$, $t = 5.024$, LL = -0.220, UL= 0.482, $p > 0.05$). Thus, H5 was also supported. However, students' mindset ($\beta = -0.006$, $t = 0.056$, LL = -0.172, UL= 0.182, $p > 0.05$) was found to have no relationship with the intention. This result indicates that H2 was not supported. For f^2 , Cohen [50] suggested that 0.02 as small, 0.15 as medium, and 0.35 as large effect size. Hence, the study found that four out of five hypotheses for direct relationship, supported with students' motivation to intention and familiarity to computer competency, had a medium effect size while computer competency and familiarity with technology to the intention had a small effect size. The value of the coefficient of determination (R^2) for intention was 0.431, suggesting that the exogenous variables in this study, which are students' motivation, students' mindset, familiarity with technology, and computer competency could explain 43.6% of the variances in intention. Moreover, the value of the coefficient of determination (R^2) for computer competency was 0.146, suggesting that the exogenous variable in this study which is familiarity with technology could explain only 14.6% of the variance in computer competency. Next, the usage of PLS predict was suggested by Shmueli *et al.*, [45] to enhance the predictive capability in light of recent criticism of the blind-folding technique. Table 6 demonstrates that only three RMSE for PLS-SEM were lower than LM, demonstrating that the model has a low predictive ability.

Table 5

Path Coefficient

Hypotheses	Beta	Std Error	t-value	p-value	LL	UL	f^2	Decision
H1 SM → BI	0.387	0.135	2.872	0.002	0.168	0.612	0.126	Support
H2 MS →BI	-0.006	0.110	0.056	0.477	-0.172	0.182	0.000	Not Support
H3 FT → BI	0.147	0.081	1.823	0.034	0.004	0.265	0.028	Support
H4 CC →BI	0.251	0.104	2.411	0.008	0.084	0.426	0.060	Support
H5 FT →CC	0.382	0.076	5.024	0.001	0.220	0.482	0.171	Support

Notes: BI= Behavioural Intention; SM= Students' Motivation; MS= Students' Mind-set; CC=Computer Competency; FWT= Familiarity with Technology

Table 6

PLS Predict

	Q^2 predict	PLS-SEM_RMSE	LM_RMSE	PLS-LM
BI1	0.33	0.976	0.968	0.008
BI2	0.266	1.08	1.133	-0.053
BI3	0.242	1.056	1.091	-0.035
BI4	0.269	1.014	1.054	-0.04
CC1	0.038	0.911	0.837	0.074
CC2	0.004	1.031	1.022	0.009
CC3	0.112	0.896	0.806	0.09
CC4	0.072	0.923	0.834	0.089
CC5	0.118	1.055	0.986	0.069

For the mediation analysis, in order to test the mediation effect, Preacher and Hayes [46], as well as Hair *et al.*, [39] recommended performing bootstrapping to test the mediation effect. Preacher and Hayes [46] added that if lower level (LL) and upper level (UL) did not cross a zero, this indicates that there is a mediation effect between the independent and dependent variables. The findings of

this study supported the hypothesis (H6) by showing that computer competency has a serial mediating effect on the association between technology familiarity and intention. The outcomes of the mediation effect in this investigation are presented in Table 7.

Table 7
Mediation Analysis

Hypothesis	Relationship	Beta	SE	T-value	p-value	LL	UL
H5	FT -> CC -> BI	0.097	0.047	2.044	0.0410	0.014	0.202

4. Conclusions

The purpose of this study was to investigate the relationship between students' motivation, students' mindset, computer competency, and familiarity with technology, and their intention to continue using online learning after COVID-19 among students at community colleges in Kelantan, Malaysia. This study also examined the mediation effect of computer competency on the relationship between familiarity with technology and intention. The study's findings showed that the students in Kelantan's community colleges had a high (mean=3.4195) intention to use online learning after COVID-19, with students' motivation, computer competency and familiarity with technology showing a favourable relationship. The positive relationship of students' motivation was aligned with past studies' findings by Baber [5], Rafiee and Abbasian-Naghneh [24], and Rahman, Samad *et al.*, [6]. The study also concluded that student motivation is an important indicator that can significantly raise students' awareness on the importance of continuing with online learning. However, the result of this finding is contrary to the results of a study by Rosmilawati Ab Rahman *et al.*, [11] on students of community colleges in Perak. It was noted that most of the students were less motivated in online learning during the COVID-19 pandemic. The contradicting results were possibly due to the fields of study where most of the offered programmes at Perak community colleges involve practical skills. This in line with the suggestion made by Szopiński and Bachnik [12].

Additionally, the study also discovered that computer competency showed a favourable impact on how well the students were involved in embracing e-learning. Students who were competent with computers feel more at ease using an online learning platform to boost their learning. Hence, this study's findings are consistent with those of Naresh *et al.*, [19] and Rahman, Yaso' *et al.*, 's [10], which highlighted the significance of computer proficiency and computer self-efficacy on the user's behavioural intention to utilise technology.

Next, the positive relationship between familiarity with technology and intention is in line with the previous studies by Callo and Yazon [31] and Naresh *et al.*, [19] Generation Z, who were born from 1992 onwards, are familiar and comfortable with technologies and also known as digitally-savvy individuals [47]. Thus, most of these students are familiar with technologies which help them in using online learning.

Initially, it was hypothesised that students' mindset would have a positive relationship, however, the result displayed the opposite. The way students think reflects the way students experience and acquire information from lecturers. Some students just sit and take in everything they are told instead of participating in the conversation, which do not promote critical thinking [5]. Asian mindset about learning still follows an absorption-based model [48]. Thus, it shows that the mindset has nothing to do with the adoption of e-learning. Thus, the result of this study confirmed that there is no evidence to support the relationship between students' mindset and intention.

The frequency of using computer applications is able to increase the computer competency among students. Students who frequently use computer application and are familiar with it, tend to spend more time using computers, thus this will help them become more competent. This situation

will strengthen the intention to use e-learning among students, as being confirmed by the result of the mediation analysis.

The issues on technological gender gap where male and female have distinct attitudes, actions, and skills towards technology has been discussed extensively in previous studies. In particular, compared to female students, male students are more positive about computers and are more likely to have greater expertise and interest in computers than female students [49]. However, the findings from this study are contrast with the previous studies. Most of the participants in this study was female from low-income families. Results from the study shows that they have a high intention to use e-learning and majority of them have a good computer competency as well as familiar with the technology. With various programs organized by the government to empower women as well as incentives provided by the government to the low-income families, more and more women today are IT literate.

The study has several limitations. This study was completed during a brief period of time, thus less than 40% of the respondents responded. Second, only community colleges in the Kelantan province were consulted for the study's conclusions and consequences. Therefore, when extrapolating the results of this study to other user groups or organisations, this restriction must be taken into account.

Therefore, this study recommends to include all community colleges in Malaysia for future research to get a better view on the acceptance of e-learning. Moreover, research among the lecturers of community colleges is also critical in order to get a comprehensive view of the online learning system. The decision whether to resume online learning, maintain physical learning as prior to the pandemic, or have a combination of online and physical learning does not only depend on the students alone, but also the readiness among the lecturers, as well as the ability of the institutions to provide sufficient facilities, equipment, and system to support and smoothen the online learning process.

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