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Factors Affecting Future E-Learning Acceptance and Continuation Among Students in Kelantan Community Colleges

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ABSTRACT

The outbreak of the pandemic COVID-19 in year 2020 has forced education systems including community colleges to fully implement online learning regardless of constraints faced by students, lecturers and the colleges themself. This study was designed to explore the relationship between students' motivation, students' mindset, computer competency and familiarity with technology to the intention to further use e-learning post-COVID-19 among students of community college in Kelantan, Malaysia. Self-administered survey forms were disseminated to 118 students using the convenience sampling method. For data analysis, partial least square structural equation modelling (SmartPLS) 4.0 was used. The result from this study revealed that students of community college in Kelantan have a high intention to use e-learning post-COVID-19 with students' motivation, computer competency and familiarity with technology have a positive relationship. Conversely, there is no evidence to support the relationship between students' mindset and intention. Significantly, the results of this study can serve as a guide for management of community colleges when developing policies for future teaching strategies that make use of technology, particularly e-learning

1. Introduction

The COVID-19 pandemic has left a huge impact on all activities globally. The severity of the COVID-19 disease in the year 2020 has forced governments globally to introduce procedures and methods to prevent the spread of the disease, including social distancing, smart working, and the closure of social and commercial activities. The 2019 coronavirus disease outbreak, has had a significant and unprecedented impact on education institution worldwide. Schools, colleges, and other learning institutions were closed in 177 nations in reaction to the World Health Organization's announcement of Covid-19 as a pandemic on March 11, 2020, disrupting 98.6% of the global student population [1]. 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 sessions [2]. Thus, e-learning has

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been recognized as the most necessary component of all educational institutions especially after the outbreak of the COVID-19 pandemic. The outbreak of the pandemic has forced education systems globally to fully implement online learning since it was the most efficient mean of learning as compared to the traditional classroom setting [2-4]. The situation has caused a paradigm shift, whereas online teaching and assessment practices remain to gain vital at the tertiary level [5]. Past studies had listed many benefits of online learning. Among them is the possibility of remote and flexible teaching and learning, engaging the diverse audience, cost-effectiveness, the use of tools to measure learning outcomes, increased access to a wealth of materials and resources as well as facilitated collaboration between students and educators [4-7].

Community college is a higher learning institution operated under the Department of Polytechnic and Community College; Ministry of Higher Education Malaysia has been operating since 2001. Community colleges offer certificate-level studies to provide a pathway 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 pandemic-COVID-19, teaching and learning sessions were conducted entirely physically [8]. The 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 students, lecturers and the colleges themself. Under normal conditions, e-learning can be a useful tool for enhancing, supplementing, and reinforcing educational experiences in general [9]. Even if e-learning is thought to be the most effective technique during the COVID-19 pandemic, its implementation is filled with difficulties and challenges. Switching abruptly from traditional classroom learning to online learning, students encounter a number of difficulties [10]. In addition, some institutions and courses are in a particularly favourable position in the implementation of online learning, because no practical skills are needed for the studies, which is one of the online learning hurdles that must be taken care of [11]. For courses that require practical skills, Bianchi *et al.,* [12], 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 [4,10-15].

Despite several studies emphasizing the value of teachers' and students' attributes in enhancing learning acceptability, online education during the pandemic is more forced than intentional [16]. The COVID-19 pandemic's circumstances were unprecedented, and there was reason to be concerned about the negative consequences of the lockdown and protracted quarantine on the students' mental health [17]. In addition, there are series of evidence that university students experiencing unpleasant consequences and mental health issues due to the closure of all kinds of education institutions during the pandemic [18,19]. Presently, there is limited understanding of the involuntary adoption of e-learning during the crisis [20]. The forced shift to online learning [3] and how students' experience with online learning during the pandemic influences their future intention to continuously use online learning post-COVID-19 are several further areas of research that have received very little attention. Thus, this research addresses that gap by examining the e-learning system acceptance and adoption by students in community college throughout the COVID-19 crisis.

Generally, the main purpose of this study is to investigate the factors contributing to the willingness of the students of community colleges in Kelantan, Malaysia to accept the future use of e-learning with the influencing factors shaping the main study's central point. In detail, this study aims to investigate the relationship between the students' characteristics which are students' motivation, mindset, computer competency and familiarity with technology to the students'

acceptance and readiness (behavioural intention to continue using) of e-learning implementation following COVID-19 in community colleges in Kelantan. Significantly, the results of this study can be utilised to help the management of community colleges in establishing policies for future teaching strategies that make use of technology, particularly e-learning. Next, the study is divided into several sections. First, this research reviews e-learning during the pandemic-COVID-19. Next, the discussion on the learning system in community colleges prior to the pandemic is present, continued with the e-learning problems and gap of study. The research technique, data collecting, data analysis, and a discussion of pertinent theories and earlier studies are then covered. The paper's findings are discussed towards the end.

2. Literature Review and Hypotheses Development

The decision to use a particular technology and the amount of time spent using it has long been a subject of research from numerous disciplines, with implications for business, school, and everyday life [21]. Theoretically, the elements impacting the adoption of e-learning can be divided into three categories: technology, organisation, 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 [22]. Several theoretical stances served as inspiration for the creation of research tools to assess the 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 e-learning technology research, TAM which represented by perceived ease of use and perceived usefulness is the most common theory used to understand e-learning adoption intention. It mainly focuses on analysing how the attitudes of students (students) or teachers (teachers) about information and communication technology (ICT) influence its acceptance [3].

2.1 Students' Motivation

Motivation was found to be associated with increased perceptions that computer systems in the workplace were easy to use. It is suggested that if computer tasks can be made to be more intrinsically motivating, that users may view the application as potentially easier to use and more useful [23]. Previous research has demonstrated that students' motivation to use technology in the classroom considerably influences how effectively it is adopted [2-3,17,21]. Indeed, a study by Rahman, Samad, *et al.,* [4] emphasized that student motivation is one important indicator that has been very helpful in helping students to understand the importance of continuing their studies online. Moreover, it has become critical since the COVID-19 pandemic, that universities and students migrate to online learning. Such an abrupt shift may have dampened students' motivation to learn [24]. A motivated learner will take an active role in class discussions and tasks despite a shift in methods [3]. Lamb *et al.,* [25] suggested similar findings stating student motivation to learn in the online environment relates to learning outcomes. A forceful shift towards online learning when students are not ready may result in a lack of motivation, leading to a detrimental effect on their mental health [26]. Thus, student motivation is important when it comes to the intention to use online learning which will help them boost their performance and create a more positive attitude. Consequently, the following hypotheses have been offered in this study:

- H1: Students' motivation towards e-learning positively influence behavioral intention for future e-learning adoption

2.2 Students' Mindset

Hochanadel and Finamore [27] discussed the fixed and growth mindset, where the growth mindset is the students who value effort with the perceived ability as a malleable skill. While, a fixed mindset is those who think intelligence is inherent, unchangeable and exert less effort to succeed. According to Allport [28] and supported by Pickens [29], a simpler definition of attitude is a mindset or a tendency to act in a particular way according to an individual's experience and personality. Most of the studies discuss the students' attitude and less study on the students' mindset specifically. Park [30], Hussein [31] and Mailizar *et al.,* [32] used TAM model to develop the model and prove the effectiveness of students' attitude (students' mindset) and behavioral intention to use e-learning and it suggested the prominent construct to predict university students' intention to use e-learning. Studies done in Malaysia before the pandemic COVID-19 on e-learning technology using TAM, proved that the construct had a significant effect on the attitude and the intention to use the technology system [29-30]. Moreover, a study by Rahman, Samad, *et al.,* [4] on intention to use e-learning post-COVID-19 among students in pondok school revealed that mindset give a positive impact on students' characteristic which led 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 influence behavioral intention for future e-learning adoption

2.3 Computer Competency

In general, the capacity to use information technology is referred to as computer competency. Technology adoption takes time and calls for a paradigm shift among all users. Therefore, it's crucial to consider users' preparation, their behaviour, and how they view the technology adoption process [33]. Computer competence would affect user's perceived ease of use of computer technology [34]. Thus, 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 utilizing technology for learning [3,31,33]. Shuster and Pearl [36] in their study found 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. Another study by Oducado and Soriano [37] among nursing students on e-learning attitude during the pandemic Covid-19 found that, more than half of the participants strongly agreed that e-learning environment needs advanced technical knowledge on computer use. In addition, a study on e-learning implementation during COVID-19 pandemic in Indonesia also stress the importance to enhance the students' ICT literacy and technology skills to achieve effective use of E-Learning. Consequently, the following hypotheses have been offered in this study:

- H3: Computer competency positively influences behavioral intention for future e-learning adoption

2.4 Familiarity with Technology

The degree of technology familiarity, awareness, and readiness to accept and embrace the e-learning environment are among the elements that influence the adaptability and readiness of e-learning [38]. The adoption of e-learning has been argued to be significantly influenced by students' familiarity with computers and technology in the previous study on e-learning in underdeveloped nations [39]. Next, in a study conducted by Alyahya *et al.,* [40] found that students who are familiar with technology feel a positive experience with e-learning. Consequently, the following hypotheses have been put forth:

- H4: Familiarity with technology positively influence behavioral intention for future e-learning adoption

3. Methodology

3.1 Participant

Participants in this study ranged in age from 19 to 36. 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. Since the purpose of the study is to test the veracity of the proposed theoretical effect, thus according to Hulland *et al.,* [41], convenience sample may suffice. As a result, 118 students answered the survey, which corresponded to a response rate of 38.06%. 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 RM2000 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 Instruments and Procedures

Six sections made up the designed questionnaire:

i. demographics
ii. behavioural intention to use e-learning constantly
iii. students' motivation
iv. students' mindset
v. computer competency
vi. familiarity with technology

Demographic information, computer device ownership, and Internet access are all covered in the first part. Next, four items in part two, using 5-point Likert scale statements, assess students' behavioural intentions to use e-learning. Part three consists of five items assessing students' motivation and part four consists of three item measuring students' mindsets. All items in part two, part three and part four were adapted from a study by Baber [3]. Next, part five has five items that assess computer competency adapted from Selim [42]. Lastly, part six consists of twelve items assessing familiarity with technology adopted from [14]. All items in part two to part five were using 5-point Likert scale statement (1- Strongly Disagree to 5- Strongly Agree). While items in part 6 were measured by using 5-point Likert scale statement of 1- Never to 5- Very Frequent. Notes are also given in the questionnaire to guide the respondents on how to evaluate the situation referring to 1- Never until 5- Very Frequent. At first, the questionnaire was created in English, then it was translated into Malay. For content validity, a senior lecturer from Universiti Malaysia Kelantan and three lecturers from community colleges were contacted. The data for this study were analysed using partial least squares structural equation modelling (PLS-SEM). 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 approach was chosen because it enables the simultaneous examination of numerous dependent relationships [43].

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 [44]. This study assessed the normality of the data using multi-variate skewness and kurtosis as suggested by Hair *et al.,* [44]. After running the normality test, the results revealed that the data gathered were not multivariate normal with Mardia multivariate skewness ($\beta = 3.240$, $p < 0.01$) and Mardia multivariate kurtosis ($\beta = 39.842$, $p<0.01$), thus SmartPLS, which is a non-parametric analysis software is the most appropriate software to be used.

4.1 Common Method Variance

Common method variance (CMV) can cause major issues when only a single-data source is used [45], where the same individual responded to the predictor and criterion variables at the same time. To curb the CMV problem, this study used full collinearity testing as proposed by Kock [46]. Table 2 shows the test analysis. This approach involves regressing each variable on a common variable while accounting for the variance inflation factor (VIF). The VIF value of fewer than 3.3 means that there is

no deviation from a single baseline. Single-source bias is not a significant issue in our data, as indicated by the analysis's VIF of less than 3.3.

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. When loadings and average variance explained (AVE) is larger than 0.5 and composite reliability is greater than 0.7, convergent validity is said to be attained [47]. The evaluation of construct validity using all the variables stated is shown in Table 3. The fact that all of the scores in Table 3 are higher than the minimum value suggested by the literature shows that the study's convergent validity has been proven. The next step is to confirm discriminant validity after verifying convergent validity. According to Franke and Sarstedt [48], the values of the heterotrait-monotrait ratio (HTMT) must be below 0.85 if discriminant validity is confirmed in a study.

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 demonstrates that there is no issue in determining the discriminant validity of the study, since all HTMT values were lower than the most conservative set of values.

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	

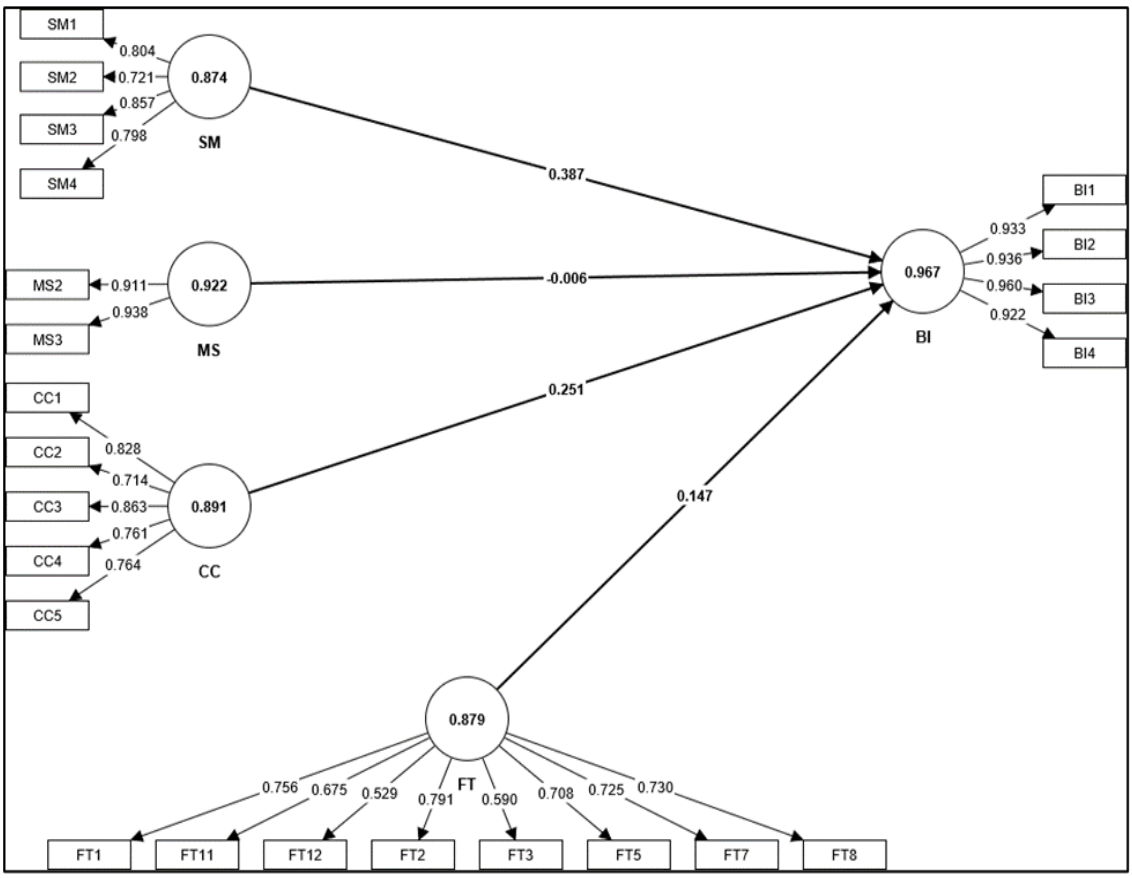

Fig. 1. Measurement model

4.3 Structural Model

It is crucial to confirm that there are no collinearity problems with the structural model before evaluating it. As shown in Table 2, each construct's VIF value is below the threshold value of 3.3 established by Diamantopoulos and Siguaw [49], indicating that the study has no issues pertaining to collinearity. To evaluate the structural model, standardized beta (β), t-values using a 5,000 resampled bootstrapping procedure, and effect sizes (f^2) were observed as proposed by Hair *et al.,* [43].

The results in Table 5 shows that student motivation (β = 0.387, t = 2.872: LL = 0.168, UL= 0.612, p < 0.05), computer competency (β = 0.251, t = 2.411, LL = 0.084, UL= 0.426 p < 0.05) and familiarity with technology (β = 0.147, t = 1.823: LL = 0.004, UL= 0.265, p < 0.05), is significantly related to the intention to continuously use e- earning in the future. Thus, H1, H3 and H4 were supported. However, students' mindset (β = -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] suggests that, 0.02 as small, 0.15 as medium and 0.35 as large effect size. Hence, the study found that only three out of four hypotheses supported with students' motivation has a medium effect size while computer competency and familiarity with technology have a small effect size. The value of the coefficient of determination (R^2) is 0.431 suggesting that the exogenous variables in this study, which are, students' motivation, students' mindset, computer competency and familiarity with technology could explain 43.1% of variances in intention. Next, the usage of PLS predict has been suggested by Shmueli *et al.,* [51] to enhance the predictive capability in light of recent criticism of the blind-folding technique.

Table 5
Path Coefficient

Hypotheses		Beta	Std Error	t-value	p-value	LL	UL	f2	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	CC →BI	0.251	0.104	2.411	0.008	0.084	0.426	0.060	Support
H4	FT → BI	0.147	0.081	1.823	0.034	0.004	0.265	0.028	Support

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

Table 6 demonstrates that all RMSE for PLS-SEM is lower than LM, demonstrating the model has a strong predictive ability.

Table 6
PLS Predict

Item	Q^2predict	PLS-SEM_RMSE	LM_RMSE	PLS-LM
BI1	0.355	0.958	1.008	-0.050
BI2	0.275	1.073	1.165	-0.092
BI3	0.296	1.018	1.103	-0.085
BI4	0.312	0.984	1.061	-0.077

5. Discussion

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. The study's findings showed that students at Kelantan's community college have a high

(mean=3.4195) intention to use online learning after COVID-19 pandemic, with students' motivation, computer competency and familiarity with technology having a favourable link. The positive relationship of students' motivation was aligned to the past studies by Baber [3], Rafiee and Abbasian-Naghneh [52] and Rahman, Samad, *et al.,* [4]. The study also concluded that student motivation is an important indicator that could significantly raise students' awareness of 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.,* [8] among students of community colleges in Perak which found that most students were less motivated in online learning during the COVID-19 pandemic. The contrary results possibly due to the fields of study offered where most of the programs offered at Perak community colleges involve practical skills. This in line with the suggestion made by Szopiński and Bachnik [11].

Next, this study found that majority of the students (60.20%) owns a desktop computer. According to Furst-Bowe *et al.,* [53], computer ownership also appears to have a significant influence on student computer competency, and students who are competent with computers feel more at ease using an online learning platform to boost their learning. Thus, it supported findings of the study that computer competency had a favourable impact on how well the students involved embraced e-learning. This study's findings are consistent with those of Reddy *et al.,* [54] and Rahman, Yasoa', *et al.,* [2], which highlight 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 [39] and Naresh *et al.,* [38]. Generation Z or Gen Z are those who were born from 1992 onwards. They are familiar and comfortable with technologies and are also known as digitally-savvy individual [55]. Thus, most of these students are familiar with technologies and helps them in using online learning.

Initially, it was hypothesized that students' mindset will have a positive relationship, however, the result shows 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 [3]. Asian mindset about learning is still following an absorption-based model [56]. This is the reality faced by lecturers including at community colleges where it was difficult to get responses and feedback on topics discussed from the students especially during online classes. Thus, the result of this study revealed that there is no evidence to support the relationship between students' mindset and intention. It shows that mindset has nothing to do with the adoption of e-learning.

6. Conclusion

The world of education today has grown rapidly along with the advancement of technology. Unlike decades ago, online learning is now no longer foreign to students, especially after the Covid-19 pandemic that hit the whole world in 2020.

From the analysis, this study concludes that student motivation, computer competency and familiarity with technology have a positive impact on the intention to use online learning in the future among students of community colleges in Kelantan. However, student mindset appears to have no relationship with the student's intention in online learning. Results from the study also showed that the younger generation which is the Generation Z has been ready to switch from traditional learning to more advance learning including online learning.

The study has several limitations. Among them is time constraint. This study was completed during a brief period of time, thus less than 40% of respondents responded. Second, only community

colleges in 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. Despite its limitation, the results of this study offer various ramifications for educational institutions.

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 or to maintain physical learning as prior to the pandemic or to have a combination of online and physical learning does not only depend on the students itself, but also the readiness among the lecturers as well as the ability of the organisation to provide sufficient facilities, equipment and system to support and smoothen the online learning process.

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