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New Normal Learning Method Satisfaction Among University Students in the Post-Pandemic Period: A Myanmar Perspective

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Abstract

E-learning has become the new normal learning method in the post-pandemic period around the globe, including Myanmar. The present study aimed to examine the satisfaction of Myanmar university students with the new normal learning method. The study utilized an inductive quantitative approach, and structural equation modeling (SEM) was employed to analyze the data. Data was collected from 262 Myanmar students who were studying locally and abroad. The results of the study indicated that e-learning trust was more critical than e-learning effectiveness ($p < .001$), while e-learning system quality was insignificant for e-learning satisfaction. In addition, e-learning trust and effectiveness were mediating variables between e-learning system quality and e-learning satisfaction. This study delivers valuable insights for educators and university facilitators to enhance students' satisfaction with new normal learning methods.

Keywords: *New normal learning, satisfaction, post-pandemic period, Myanmar*

Introduction

The global outbreak of the coronavirus (COVID-19) presented the educational sector with unexpected difficulties and educators with enormous challenges (Phiakoksong et al., 2023). While on site instruction was suspended at private and public educational institutions including universities, the pandemic stimulated formulation of new methods of teaching and learning. Traditional educational systems were transformed due to restrictions on social gatherings to prevent virus transmission as more than 1.2 billion students were shut out of their physical classrooms due to various restrictions. In response, educators around the globe maintained ongoing education by utilizing communication technology, digital tools, and remote services (Su et al., 2020).

The higher education community had been evolving prior to the pandemic, driven by advancements in Internet technology, rapid developments in computer software, and the emergence of new technologies. Modern technologies revolutionized teaching and learning methods, notably in distance education (Northey et al., 2015). E-learning or online learning has been widely utilized in higher educational environments, leading to challenges and opportunities for student learning outcomes, collaborative learning activities, and digital literacy (Wang, 2010). The use of these technologies for educational purposes became inevitable during the pandemic (Kerres, 2020). During the COVID-19 pandemic, Myanmar, like other countries, understood that fulfilling the demands of higher education required implementing new learning methods. Myanmar universities prepared to establish new learning methods by implementing e-learning, despite various barriers such as insufficient Internet infrastructure, inadequate technical backgrounds, and lack of human resources (The & Usagawa, 2018).

E-learning is conducted on platforms that allow learners to access multimedia course materials stored on a centralized server through the Internet and serve as a communication channel to coordinate learning processes. This was considered an essential technology during the pandemic (Wang et al., 2021), and implementing e-learning enhances collaboration, convenience, and learning effectiveness (Abuhassna et al., 2020). For e-learning to be successful, it is vital to identify and investigate learners' expectations. While e-learning offers remote learning opportunities and sustainable education for students, research on e-learning in developing countries has been limited (Gurban & Almogren, 2022).

Research Motivation

Technology has been employed in learning activities for several decades. Wheeler (2001) explained that information and communication technologies (ICT) such as learning support systems, knowledge management systems, and communication systems transformed traditional teaching-learning methods. The rise of online learning during the pandemic has encouraged researchers to continue studying e-learning success, even in the post-pandemic period. According to a study by Vanitha and Alathur (2021), the satisfaction level of students is a vital predictor of e-learning adoption.

A number of studies (Butt et al., 2021; Mohammadi, 2015; Sayaf, 2023) also have reported similar results regarding the role of satisfaction in the e-learning context. Fleming et al. (2017) stated that learners' satisfaction with learning methods differed according to e-learning platforms. Despite Myanmar students being aware of and realizing the benefits of using e-learning during the pandemic, some students were reluctant to continue adopting e-learning during the post-pandemic period (Thant, 2022). Additionally, Su et al. (2020) argued that e-learning is new to many Myanmar students who were accustomed to conventional educational systems.

Although many researchers have highlighted the role of e-learning among learners during the pandemic, there has been a limited focus on the post-pandemic period. Furthermore, previous studies on Myanmar students (Garton & Cleesuntorn, 2021; Thant, 2022; The & Usagawa, 2018) did not investigate factors that could improve satisfaction in online learning contexts. Another significant contribution of this study involved the aim to identify the roles of effectiveness and trust on system quality and satisfaction in the post-pandemic period. So the primary objective of the present study was to identify the factors that influenced e-learning satisfaction among university students from Myanmar. Thus, the following research questions have emerged for investigation.

RQ1: What are the factors affecting students' satisfaction with e-learning (EL)?

RQ2: What are the roles of system quality, effectiveness, and trust in ensuring students' satisfaction with EL?

Literature Review

A new normal learning method emerged from the blending of computing technology, telecommunication advancements, and pedagogical innovations, most notably during the pandemic. E-learning is an ICT-based platform encompassing various tools such as learning portals, learning management systems, and web and mobile applications. Online learning enables learners to access course materials digitally from anywhere, without the limitation of physical attendance in a classroom (Samsudeen & Mohamed, 2019). It allows participants in educational environments such as educators, professors, professionals, and students to impart or receive knowledge with minimal physical barriers (Krishnan & Hussin, 2017). Online learning utilizes electronic devices such as computers, tablets, and mobile phones as instruments to enhance communication accessibility between educators and learners, employing various learning methods (Gill et al., 2020).

E-learning has become an essential method for both lecturers and students in university environments, and the rapid improvement of telecommunication technologies has allowed them to use it easily. Ramadiani et al. (2021) explained that online learning is a distance learning system that provides various customized courses according to the requirements of learners. Online learning makes education cheaper, easier, and quicker to share and learn. Solangi et al. (2018) refer to e-learning as a technological platform that can create digital classrooms for students to attend from their own place of residence through online communication channels. Students can collaborate with others, submit assignments, take quizzes and exams, check their grades, and have discussions with teachers on the e-learning platform.

Basak et al. (2018) defined e-learning as a learning procedure provided by electronic tools and digital media. On the other hand, Sangra et al. (2012) defined e-learning as an educational program that delivers materials, courses, and training electronically. During the pandemic, the new learning methods depended entirely on e-learning tools such as Microsoft Teams, Google Classroom, Zoom, etc., which caused a widespread transformation from conventional ways of communication between

learners and educators (Shahzad et al., 2021). Delivering courses to students through e-learning platforms is cost-effective and convenient because educational processes on e-learning platforms are more flexible (Dhawan, 2020).

Research Hypotheses and Model Development

System Quality

The majority of e-learning (EL) users are concerned about system quality, anticipating that using an EL system will save a significant amount of their time and energy (Alkhawaja et al., 2022). Now EL system quality (SQ) refers to the functionalities of EL that support student ease of use. System quality can also be defined as a measurement associated with course contents, communication capability, interaction design, response time, and functional EL features (Fathema et al., 2015).

A study by Alshurideh et al. (2019) advocated system quality as a major determinant of EL's success, proposing that students perceive system effectiveness through its quality. Prasetyo et al. (2021) stated that enhancing system quality assists users in understanding the essence of utilizing EL. Dangaiso et al. (2022) found that system quality played an indispensable role in students' satisfaction with EL. Moreover, Mulhem (2020) suggested that system quality was a vital exogenous factor representing performance which led to student satisfaction with the educational environment. Additionally, the vital role of establishing trust in online learning communities in turn leads students to accept them as trustworthy providers of quality educational services (Wang, 2014). Thus, the following statements were hypothesized for this study.

H_1: System quality has a positive effect on effectiveness.

H_2: System quality has a positive effect on satisfaction.

H_3: System quality has a positive effect on trust.

Effectiveness

E-learning effectiveness (EF) can be referred to as the degree to which a learner or an educator assumes that utilizing an EL platform is useful and effective for performing educational activities such as learning and teaching (Davis, 1989). Additionally, EL effectiveness is the extent to which learners accept that its use will assist and enhance their learning performance. The usefulness of e-learning is exhibited by aiding users in saving energy, time, and cost in several ways (Pham et al., 2021). E-learning effectiveness is one of the major values that students expect from EL, and they are more likely to use EL if it is efficient (Alkhawaja et al., 2022).

Students expect that e-learning will remain effective and useful both during and after the pandemic period (Siron et al., 2020). Additionally, Almaiah and Alismaiel (2019) explicitly stated that perceiving a system as effective and useful is one of the most significant factors influencing user intentions to adopt EL. On the other hand, EL effectiveness is a major component in understanding the satisfaction or dissatisfaction of using EL (Mahande et al., 2019). Therefore, the following hypothesis was proposed.

H_4: Effectiveness has a positive effect on satisfaction.

Trust

Trust originates from assurance that is derived from reliable and morally upright providers, demonstrated through their consistency, competence, honesty, fairness, responsibility, support, and benevolence (Tri & Loc, 2013). Moreover, trust involves the expectation that people will act in a manner that prioritizes their own interests (Li, 2024). Additionally trust, which could be considered as the reliance of a learner on a service provider in whom they believe, has been demonstrated to be crucial in studies evaluating learner behavior (Dramani et al., 2022).

Students perceive a higher level of risk in online learning environments compared to traditional methods, particularly in terms of communication, submission, reading, and discussion (Wang, 2014). Therefore, students prefer to interact with online learning platforms that they can trust. Furthermore, trust is an essential antecedent in developing a connection between service providers and users. This

connection is particularly significant in online service contexts, where trust may be a fundamental element for establishing student satisfaction (Kim et al., 2009). Based on the above literature, the following hypothesis was formulated.

H_5: Trust has a positive effect on satisfaction.

Satisfaction

E-learning satisfaction can be defined as the degree to which participants perceive that the e-learning that they are using fulfills their needs (Zhao & Khan, 2022). It can also be understood as the perception of e-learning users regarding the extent to which their requirements are met by a specific e-learning system (Dangaiso et al., 2022). According to the Information Systems (IS) Success Model, satisfaction is a major determinant of system usage outcomes and a significant measure of IS success.

Integrating the Technology Acceptance Model (TAM) with the IS Success Model, it is logical to propose that the system quality and effectiveness of e-learning are antecedents of e-learning satisfaction (Mohammadi, 2015; Petter et al., 2008). Since e-learning is primarily utilized in the educational industry, trust becomes imperative in building satisfaction due to the absence of physical interaction among institutions, instructors, and students. Kim et al. (2009) explained that an unreliable, ineffective, and inferior e-learning system may lead students to feel dissatisfied. Based on the above arguments, the following hypotheses were tested in an exploratory study.

H_6: Effectiveness is mediating between system quality and satisfaction.

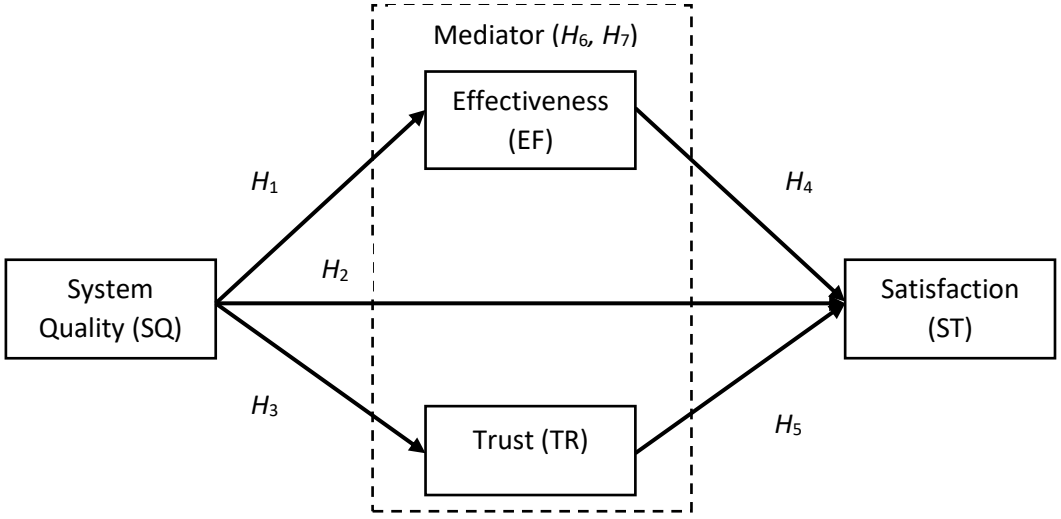
H_7: Trust is mediating between system quality and satisfaction.

The proposed hypotheses are listed below in Table 1, while the theoretical model is shown in Figure 1.

Table 1 *Proposed Hypotheses*

Hypotheses	Effects	Literature Support
H_1	SQ → EF	Vanitha & Alathur, 2021
H_2	SQ → ST	Dangaiso et al., 2022
H_3	SQ → TR	Wang, 2014
H_4	EF → ST	Zhao & Khan, 2022
H_5	TR → ST	Kim et al., 2009
H_6	SQ → EF → ST	Exploratory Study
H_7	SQ → TR → ST	

Figure 1 *Proposed Theoretical Research Model*



Research Design

The present research employed an inductive reasoning quantitative study. Data were collected using snowball sampling techniques to ensure that the target respondents were Myanmar students. The questionnaire was sent to target respondents via email with a restriction to answer only once. The questionnaire consisted of two sections to examine the proposed theoretical research model (Figure 1). Demographic questions about the participants' gender, type of university, and academic level were included in the first section of the questionnaire.

The second section of the questionnaire contained 14 items (see Appendix A) to measure the four factors from the proposed theoretical research model. Each item used a five-point Likert scale for respondents to express their attitudes. The Likert scale ranged from 1 = *Strongly Disagree* to 5 = *Strongly Agree*. The reliability and validity of research items were tested through convergent validity, discriminant validity, Cronbach's Alpha (CA), and composite reliability (CR) values using SPSS and AMOS software. The proposed hypotheses were tested using the structural equation modeling (SEM) approach.

Data Analysis and Results

Participants' Profile Analysis

The data were collected from 262 Myanmar university students from different majors and various types of universities worldwide who had experience using e-learning at their institutions. After eliminating 12 outliers from the dataset, the number of datasets decreased to 250. In the dataset, 84 (33.6%) respondents were male, and 166 (66.4%) were female. Almost half of the respondents (45.6%) were studying abroad, while the remainder (54.4%) were local university students. Less than 10% of participants were from local private universities, and more than 40% were from local public universities. Most respondents were post-graduate students (87.6%), and the rest (12.4%) were undergraduates. The participants' profile is presented in Table 2.

Table 2 *Results of Participants' Profile Analysis*

Demographic Profile		Freq (*N* = 250)	Percent
Gender	Male	84	33.6
	Female	166	66.4
Type of University	Local Private	18	7.2
	Local Government	118	47.2
	Abroad Private	55	22.0
	Abroad Government	59	23.6
Academic Level	Undergraduate	31	12.4
	Post-Graduate	219	87.6

Convergent Validity and Construct Reliability Analysis

The standardized regression weights and average variance extracted (AVE) were tested to validate the convergent validity of factors and their measurement items. According to the recommendation of Fornell and Larcker (1981), the threshold value of AVE must exceed .50 to establish convergent validity. The analysis results shown in Table 3 indicate that the AVE of all the constructs was above .50, suggesting that convergent validity was established. Furthermore, construct reliability was determined by composite reliability (CR) and Cronbach's Alpha (CA). All values of CR and CA exceeded the criterion value of .70.

Table 3 *Results of Convergent Validity and Construct Reliability Analysis*

Factors	Measurement Items	Std. Regression Weights	AVE	CR	CA
Effectiveness (EF)	EF1	.836	0.697	0.902	0.901
	EF2	.883			
	EF3	.812			
	EF4	.806			
System Quality (SQ)	SQ1	.729	0.550	0.829	0.815
	SQ2	.837			
	SQ3	.615			
	SQ4	.769			
Trust (TR)	TR1	.748	0.674	0.861	0.858
	TR2	.854			
	TR3	.857			
Satisfaction (ST)	ST1	.792	0.698	0.874	0.871
	ST2	.849			
	ST3	.863			

Discriminant Validity Analysis

Discriminant validity was tested to confirm that factors from the proposed research model were not highly related to one another. Discriminant validity was examined by comparing the square root of the AVE with the correlation coefficient between factors (Hair et al., 2010). According to the results of the discriminant validity analysis (Table 4), the values of the square root of the AVE were greater than correlations between factors. Therefore, the validity of the research instrument was confirmed.

Table 4 *Results of Discriminant Validity Analysis*

Factors	EF	SQ	TR	ST
Effectiveness	**0.835**			
System Quality	0.462	**0.742**		
Trust	0.609	0.611	**0.821**	
Satisfaction	0.706	0.562	0.795	**0.835**

Model Fit Indices Analysis

The values of CMIN/*df*, GFI, AGFI, NFI, CFI, and RMSEA for both the measurement and structural models are presented in Table 5. The minimum cut-off value for GFI, NFI, and CFI should be greater than .90, AGFI should be greater than .85, CMIN/*df* should be less than 3.0, and RMSEA should be less than 0.08. According to the analysis of model fit indices, all the values exceeded the minimum cut-off values. Therefore, both the measurement and structural models resulted in a good fit.

Table 5 *Results of Model Fit Indices Analysis*

Indices	Good-Fit	Measurement	Structural
CMIN/*df*	< 3.0	2.026	2.512
GFI	> 0.9	.926	.911
AGFI	> 0.85	.891	.870
NFI	> 0.9	.936	.919
CFI	> 0.9	.966	.949
RMSEA	< 0.08	.064	.078

Note. Minimum Discrepancy of Confirmatory Factor Analysis/Degrees of Freedom (CMIN/*df*); Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA).

Casual Direct Effects Analysis

The analysis results of the causal direct effects are shown in Table 6. E-learning system quality positively affected e-learning effectiveness (β = .514, $p < .001$) and e-learning satisfaction (β = .651, $p < .001$), which meant that H_1 and H_3 were both supported. E-learning effectiveness (β = .396, $p < .001$) and e-learning trust (β = .570, $p < .001$) both evidenced a positive effect on e-learning satisfaction. Therefore, H_4 and H_5 were accepted. However, the results indicated that the causal direct effect between e-learning system quality and e-learning satisfaction (β = .048, $p = .555$) was insignificant. Therefore, H_2 was rejected.

Table 6 *Results of Casual Direct Effect Analysis*

Hypotheses	Direct Effects	Beta	*t* value	*p* value	Result
H_1	SQ → EF	0.514	6.845	***	Accepted
H_2	SQ → ST	0.048	0.590	0.555	Rejected
H_3	SQ → TR	0.651	7.874	***	Accepted
H_4	EF → ST	0.396	6.234	***	Accepted
H_5	TR → ST	0.570	6.804	***	Accepted

*** $p < .001$

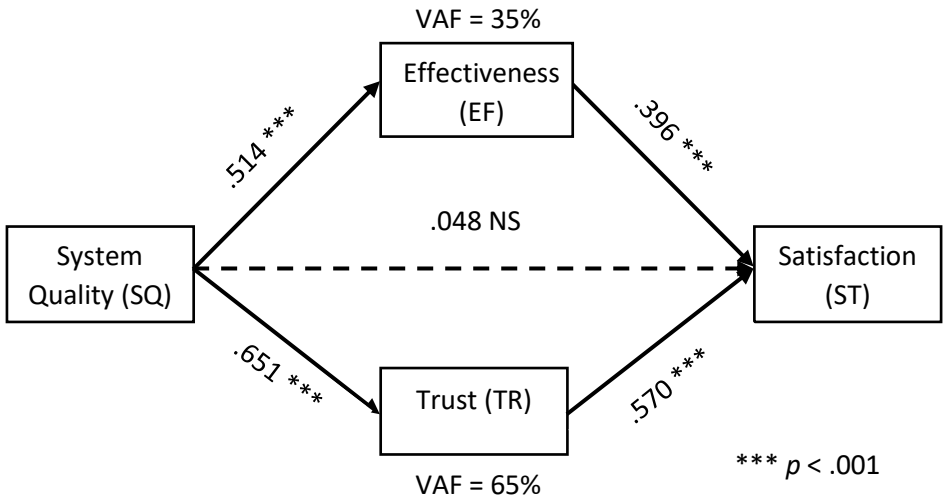
Mediating Effect Analysis

The value of Variance Accounted For (VAF) was tested to confirm the mediating effects. The extent of VAF can be determined by dividing the indirect effect by the total effect, and if the result is greater than 20% it means that the factor is a mediator; otherwise there is no mediation (Hair et al., 2016). The analysis results (Table 7) confirmed that both e-learning effectiveness (VAF = 35%) and e-learning trust (VAF = 65%) were mediating factors between e-learning system quality and e-learning satisfaction. Thus, H_6 and H_7 were both accepted. The research model with analysis results is shown in Figure 2.

Table 7 *Mediating Effect Analysis Results*

Hypotheses	Indirect Effect	Beta	VAF	Result
H_6	SQ → EF → ST	0.204	35%	Accepted
H_7	SQ → TR → ST	0.371	65%	Accepted

Figure 2 *Theoretical Research Model with Analysis Results*



Discussion

The present study contributes to a better theoretical understanding of Myanmar students' perspective on new normal learning methods, as indicated by the data analysis results based on the proposed theoretical research model (Figure 2). All the proposed hypotheses in this study were accepted except for H_2. First, if institutions provide e-learning with better system quality, students will perceive the effectiveness of the system, leading to satisfaction with it (SQ → EF → ST). Second, users determine the reliability and trustworthiness of digital learning methods based on system quality, and their satisfaction with the system ultimately relies on their trust in e-learning (SQ → TR → ST). Surprisingly, system quality cannot improve users' satisfaction, and this result may be considered a new finding.

The analysis results indicated that system quality can enhance students' trust in e-learning and its effectiveness; these results were aligned with the findings of Mahande et al. (2019). Improving trust in e-learning depends on stakeholder perspectives of various factors, including institutional infrastructure, technological readiness, effective management, swift support, and new pedagogical approaches (Zalat et al., 2020). The findings of this investigation extend the knowledge and literature, indicating that trust can be built by improving the system quality of e-learning. Moreover, effectiveness and trust can be improved if the system quality of e-learning is better. In terms of satisfaction with the new normal learning method, trust and effectiveness had a significant positive effect on satisfaction, while system quality was insignificant, answering RQ1. This finding implies that system quality alone does not improve users' satisfaction in e-learning, especially for users from Myanmar, unless e-learning is unreliable and ineffective. Bwachele et al. (2023) suggested that satisfaction with learning platforms has shifted from emphasizing quality to prioritizing reliability and effectiveness, due to changing trends in higher learning institutions.

Furthermore, trust is more critical than effectiveness in achieving satisfaction, thus answering RQ2. Kim et al. (2009) reported that trust is the most important factor for users' satisfaction in the context of online activities. When users increasingly perceive e-learning as effective and useful, their satisfaction with e-learning improves (Mahande et al., 2019). According to the findings, trust (VAF = 65%) mediates the relationship between system quality and satisfaction even more strongly than effectiveness (VAF = 35%). Previous studies have also demonstrated that effectiveness and trust are significant mediators between system quality and satisfaction in the online context (Mahande et al., 2019; Lee & Chung, 2009). The and Usagawa (2018) warned that e-learning readiness among Myanmar students might decrease over time unless institutions update requirements for e-learning, teaching materials and formats, communication devices, and Internet usage behaviors. Additionally, institutions in Myanmar should note that e-learning will not succeed based on system quality alone.

Most users are dissatisfied with e-learning systems due to the lack of physical interaction, reliance on Internet connections, poor visualization quality, and high software and hardware requirements. Institutions should pay more attention to providing appropriate and reliable learning materials in educational environments to earn students' trust in specific new learning methods. When institutions develop new learning methods for students, they should consider that these newly developed methods assist students in accessing learning resources effectively, improving their learning performance, and achieving better learning outcomes. Furthermore, institutions should note that if a system is easy to use, interact with, and understand, this will reduce user dissatisfaction and alleviate users' doubts about it. Simultaneously, to improve students' satisfaction with EL, educational institutions need to assure students that e-learning platforms will increase their performance, productivity, and efficiency.

Research Limitations

The research objectives were achieved in this study, but there were still certain research limitations. The usage of online questionnaires was one limitation because the results may only reflect the attitudes of respondents who have proper Internet access. Additionally, a majority of respondents were post-graduate students, and so the findings may not be the same for students at other academic

levels, who might have different perceptions and usage of e-learning. The results may also be biased toward the viewpoints of university students because the e-learning experiences of lecturers, professors, and academic administrators were not considered. Furthermore, the respondents of this study were Myanmar students. Therefore, the implications of this study may not be appropriate for students from other nations with different academic domains and facilities. Finally, teachers from different subjects might have different approaches and teaching strategies, but their opinions on e-learning were not considered in this study.

Conclusion and Recommendations for Future Studies

It is not easy to create and develop satisfactory new learning methods without a comprehensive understanding of existing theories. In this study, effectiveness and trust were not only investigated as antecedents of satisfaction, but also as mediators between system quality and satisfaction. This study confirmed that effectiveness and trust act as mediators between system quality and satisfaction. System quality was statistically insignificant according to the data analysis results. Additionally, the findings revealed that trust was the foremost variable in online learning environments.

The role of trust in an institution should be investigated in future research studies on Myanmar students' satisfaction with new learning methods. In the present study, technical perspectives were the focus; therefore, it is recommended that future studies consider extending the current research model by incorporating social perspectives. Future studies should also endeavor to identify strategic and technological barriers in online learning environments, particularly for Myanmar students, so that education policymakers can make constructive and effective decisions.

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Appendix A *Questionnaire and Preliminary Data Analysis*

Items	Statements	Mean	Std. Deviation	Skewness	Kurtosis
EF1	E-learning enhances my effectiveness of learning.	4.27	0.742	-0.595	-0.552
EF2	E-learning improves my learning performance.	4.23	0.771	- 0.576	-0.596
EF3	E-learning increases my learning outcomes in my course work.	4.14	0.768	-0.467	-0.532
EF4	E-Learning improves my learning achievements.	4.13	0.739	-0.328	-0.726
SQ1	E-learning is easy to use.	4.02	0.836	-0.420	-0.613
SQ2	There is clarity in my interaction with the e-learning.	3.82	0.889	-0.433	-0.166
SQ3	Interacting with the e-learning does not require a lot of my mental effort.	3.37	1.076	-0.190	-0.599
SQ4	The interaction with the e-learning is clear and easy to understand.	3.78	0.837	-0.114	-0.700
TR1	I believe I can trust the e-learning of my university.	4.16	0.775	-0.494	-0.561
TR2	I believe that the e-learning is reliable.	4.03	0.763	-0.212	-0.811
TR3	I believe that the e-learning provides dependable service.	3.93	0.776	-0.090	-0.855
ST1	I am satisfied with using e-learning as a learning assistant.	4.21	0.720	-0.464	-0.505
ST2	If I am asked, I would likely recommend the e-learning as an ideal learning platform.	4.20	0.717	-0.382	-0.752
ST3	I am satisfied with using the functions of e-learning of my university.	4.11	0.673	-0.216	-0.498