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RESEARCH PAPER

The Impact of Factors on E-Learning Continuance Intention in the Higher Education Sector in Pakistan

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ABSTRACT

The objective of the study is to determine the influence of the factors on continuance intention of e-learning in the higher education sector in Pakistan. The technology acceptance model was used as a basis to study the proposed theoretical relationships. Questionnaire was used to gather the data. The purposive and convenient sampling were used. A total of 400 sample data were analyzed. The initial test was performed by using SPSS and the structural test was performed by using PLS-SEM. The study developed 16 hypotheses. Out of 16 hypotheses, 15 were supported, giving much empirical support to the research model. The results showed positive impact of learner-content, learner-instructor interaction, academic performance, and course design quality on continuance intention of e-learning except for self-efficacy. The study recommends that teachers should boost self-efficacy of students with credible communication and motivation. It will encourage students to get interest in new technology and accept challenges.

Introduction

E-learning plays an important role in the education sector owing to neural networks, artificial intelligence and digital image processing (Nawaz & Naheed, 2020). It has been improving the academic performance of educational institutions. The technology of e-learning has been installed in educational systems both at the international and national levels (Tawafak, Romli, Arshah, & Malik, 2019). In the learning development process, e-learning has become one of the most common methods in the educational system. It has faced several issues that affect faculty and student satisfaction with learning continuity (Ashrafi, Zareravasan, Sovaji & Amani, 2020).

Thus, there is a need for institutions to evaluate their educational learning process towards improving the academic performance of their students through the development the application of e-learning (Wang, Lew, Lau, & Leow, 2019). Nowadays the education sector, especially universities is facing challenges of how to add value to student learning and at the same time achieve a top score in the world ranking community. Educational system must reflect the educational needs of technology learning. Findings from the development of educational institutions through different phases, from traditional or face-

to-face learning to e-learning (Wang et al., 2019). Thus, it is a new important area for study in high educational institutions. Information Technology acceptance is the initial development stage. The ultimate e-learning system depends on the acceptance of technologies by students in the initial stage (P. Wu et al., 2013).

Recently, the crisis of the covid-19 pandemic had led to a temporary termination of Schools, Colleges, and Universities worldwide to prevent the spread of coronavirus among students from 2019 to 2020 (Li C & F, 2020). In this time of emergency, technology plays a vital role in building opportunities and providing solutions such as e-learning for students (Raheem & Khan, 2020). It is a challenging task to move from traditional classes to online classes for Pakistan universities. In Pakistan, almost all the universities have started the e-classes from March 2020 (Iqbal, Ashiq, Rehman, Rashid, & Tayyab, 2022). Mahmood (2020).found that the factors affect significantly e-learning adoption, attitude, and e-learning continuance intention.

Moreover, the Higher education system has been improving and adopting new technologies day to day to provide better e-learning services to students. It mainly depends on technology where universities' management provides some sort of software by which faculty communicate with students through software namely, Zoom, meet, classroom and Blackboard Learning, etc. (McFadden et al., 2021).

E-learning has facilitated decreasing the distance between students and instructors through the use of technologies (Al-Maroof, Alhumaid, & Salloum, 2020). Moreover, it has been rising rapidly and is accepted by the new generation. According to Taylor, Parker, Lenhart, and Patten (2011), it includes the process of accessing and interrelating technology with teachers and services. The high-quality approaches to the delivery of the course format, content, and quality are considered important resources, which might be useful for the online classroom as well. Approaches to e-learning depend on the interaction between student and teacher. It has been improving the performance of academics (Tawafak et al., 2019).

Hence, this study explored the aspects of students' observation regarding the E-learning practices, where individuals are encouraged to reduce perceived conflict and problems by using the technology acceptance model (Gupta, Yousaf, & Mishra, 2020). Therefore, this study improves new theoretical connections and empirical indications on the interaction between factors, attitude, and continuance intention. This study comprises theoretical background, review of literature, methodology, data analysis, conclusion, discussion, implication, and recommendations.

Literature Review

Technology Acceptance Model

Current research aims to examine the effect of factors on attitude and e-Learning continuance intention of students to take e-classes are mainly based on previous various models. The theory of the technology acceptance model TAM introduced by (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989) stated that the intention of students to learn online tends to emphasize various aspects, including the encouragement, motivation, competence, interactions, ease of use, the use of technology and systems of E-Learning.

According to TAM, the technology benefits, easy use, and usefulness experienced by students were hypothesized as the elements of their purpose of behavior and actual use of technology (Tarhini, Hassouna, Abbasi, & Orozco, 2015). The observed usefulness and ease of use of technology are two essential factors to explain the continuance of E-Learning (Teo

& Noyes, 2011). The attitudes balance skill and required knowledge to clear the goal, achieve the task of e-Learning continuance and get instant feedback on the completion of tasks, and feel pleased with the environment of e-Learning(Almaiah & Alyousee, 2019; Tawafak et al., 2019)

Attitude towards E-learning

It is defined as the learning attitude of students determines their willingness and ability to learn. It enhances problem-solving activities, external and internal, beliefs, and goal-level setting (Soriano, 2020; M. Wang et al., 2021). Baker, Farrokhnia, Meyer, Pagel, and Yannelis (2020) argued that the switch from traditional learning to e-learning occurred to covid-19 pandemic increases the attitudes and intention of the learner to take online classes. McFadden et al. (2021) argued that faculty enhances the learning activities of students, course materials interaction, and the teacher-learner distance minimize by it that positively increasing the intention to continue e-learning and its attitudes. Tawafak et al. (2019) found academic performance, ease of use, interactivity, content interaction, teacher subject knowledge, technology integration, and support assessment positively influence attitudes and e-learning continuance intention.

E-learning continuance intention

It is defined as the student's decision about e-learning to continue (Wang et al., 2019). According to Joo, Park, and Lim (2018) universities work to deliver courses by using technology to better address current needs and attract new students and increase the intention of eLearning . Zhu, Zhang, Au, and Yates (2020) argued that the continuance intention is affected by the factors that include learning motivation, self-efficacy, capability, attitude, and experience. Ashrafi et al. (2020) argued that a learning management system is considered an important web-based innovation that enhances the attitude of students and intention toward e-learning. Tawafak et al. (2019) examined the university communication model, and framework design to enhance the e-learning process and e-learning continuance intention.

Self-Efficacy

It is defined as the person's ability or confidence regarding completing the online task (Alqurashi, 2018; Verkijika, 2019). Students can use cognitive and metacognitive strategies that encourage by learning motivation. It is a self-determined endeavor by learners to obtain academic results. Heckel and Ringeisen (2019) students gain self-efficacy based on prior technology interactions. It may require assistance to use resources and platforms before beginning an e-course. Alghamdi, Karpinski, Lepp, and Barkley (2020) argued that it encourages students to get interested in new technology and accept challenges. Hampton et al. (2020) found that the strongest predictor of satisfaction is self-efficacy. Shen, Cho, Tsai, and Marra (2013) argued that e-course and self-efficacies are interrelated that increases continuance intention. B. Wu and Chen (2017) demonstrated that factors significantly influence the attitude, which enhances the e-learning continuance intention.

Course Design Quality

It is defined as the process of creating quality learning experiences and environments for students (Cheng, 2020). It develops the interest and gives rise to four central ideas: organization versatility, e-events, interactive classes, and e-course interaction (Rodríguez-Ardura & Meseguer-Artola, 2014). The adaptation of e-assessment and gratification of course increases the continuance intention (Cheng, 2020). Kimiloglu, Ozturan, and Kutlu (2017) argued that quality antecedents include quality of education,

content, information, and technical system enhance attitudes. Vlachopoulos (2016) argued that high course design quality enhances the interest of students' continuance intention. Chou, Wang, and Tang (2015) recognized that it is beneficial as e-learning sessions offer the best course design to all students at a single time.

Learner-Content Interaction

It is defined as the interaction between a student and the content including online course material, PowerPoint presentations, course videos, quizzes, etc. It not only leads to an improvement in confidence but also encourages to use of technology Kyei-Blankson, Ntuli, and Donnelly (2016), argued that well-designed content encourages students to learn more. High-quality video and audio can lead to successful communication among students, content, instructor, and learning material delivery. Buxton (2014) argued that it allows students to equalize studies on a job or at home. It enhances ideas and thinking power. Watts (2016) argued that e-learning advantages and challenges meet up by students when finding the best content interaction. Alexander, Lynch, Rabinovich, and Knutel (2014) argued that the best content positively increases the interest and satisfaction of students.

Learner-Instructor Interaction

It **is** defined as the communication between the instructor and students in a course. The instructor attempts to stimulate the interest of the student. It facilitates the process of learning and motivates students (Ashrafi et al., 2020). (Kimiloglu et al., 2017) stated that during e-classes, technical issues including video conference issues or audio glitches reduce the interest of the learner. It creates a misunderstanding that does not occur in traditional learning. In that situation, students can use the chat feature instead of using a microphone that is not a fully satisfied learner. Anderson and Wdowik (2014) argued that sessions on blackboard such as quizzes, and test review classes discovered that e-classes engaged students successfully. Louis-Jean and Cenat (2020) stated that the presence of an instructor increases student learning and progress to improve the attitudes of students toward e-learning and digital training environments.

Academic Performance

It is defined as the student achievement measure across various subjects of academics. education officials and teachers measure students' performance by assigning grades, rank or rates, class participation, and results from the standardized test (Arnold, Hodgkins, Kahle, Madhoo, & Kewley, 2020), and argued that e-Learning has a great impact on students' grades. Thongsri, Shen, and Bao (2019) found a positive influence of academic performance and quality on attitude. Information system adoption is an essential part of the educational system. Tawafak et al. (2019) argued that technology learning needs continuous e-learning and a high attitude and perception to accept the technologies. Tawafak et al. (2019) argued that high perception with the collaboration of multimedia applications and technologies enhances e-learning continuance intention.

Material and Methods

This study has an explanatory purpose, to identify the relationships among the factors and continuance intention. In addition, this research aims to offer a solution for the e-learning problems, that did not determine in prior studies. The study collected primary and quantitative data from the target population including universities student. Data was collected through a questionnaire. The non-probability sampling namely convenient and purposive sampling techniques have been used. Data was analyzed to measure the statistical outcomes and conceptual model hypothesis result.

However, the Sample size was generated by (Kline, 2015), (45 items x 10 = 450 samples). The items of the questionnaire were adapted and adopted from different sources from past papers with acceptable reliability (Cronbach's alpha). The questionnaire has a five-point Likert scale ranging from (1) "strongly disagree" to (5) "strongly agree" was employed to measure all variables. The questions on the survey questionnaires related to each of the variables were being provided were valid and authentic to get reliable results for the study.

Results and Discussion

Data Analysis

A total of 450 questionnaires were distributed among university students in Pakistan. 422 filled out the questionnaire, which has been returned. 400 questionnaires were usable for analysis, of which 175 were male and 225 were females. 102 participants' age was below 25, 164 were 26-30, 111 were 31-40 and 18 were above 40. A total of 57 participants have done diplomas, 127 have done bachelors, 199 have done masters, and 18 have done PhDs. The results from descriptive statistics were the variables mean score ranging from 3.72 to 4.01 and the standard deviation ranging from 0.677 to 0.844. After SPSS, first, the study assessed the measurement model for reliability and validity of items. Second, the structural model assessed for the hypothesized structural relationships, using PLS-SEM.

Assessment of PLS-SEM Path Model

Before determining the structural model, the reliability of internal consistency, reliability of individual items, discriminant validity, and convergent validity was tested. Therefore, to improve the quality of the data, the items were deleted, which has lower loading (Hair, Sarstedt, & Ringle, 2019). Five items were deleted because the value of loading was less than 0.7 including OLSE8, LII6, ATL1, ATL3, and ATL10, retaining 35 items that had loading between 0.702 and 0.915.

All Cronbach's alpha values and composite reliability scores were above 0.7, indicating that all the variables were highly reliable, and the average variance extracted values were above the cutoff point of 0.50, which shows that the measurement model was reliable for further analyses. After performing factor loading, no variable was dropped. All loadings are greater than 0.7 or around the threshold value. Therefore, discriminant validity using cross-loadings was achieved. In HTMT, the values were below 0.9 which indicated that the values for the inter-construct ratio were below 0.90 and that the confidence intervals did not contain the value of 1.0 (Hair, Ringle, & Sarstedt, 2011; Henseler, Hubona, & Ray, 2016)

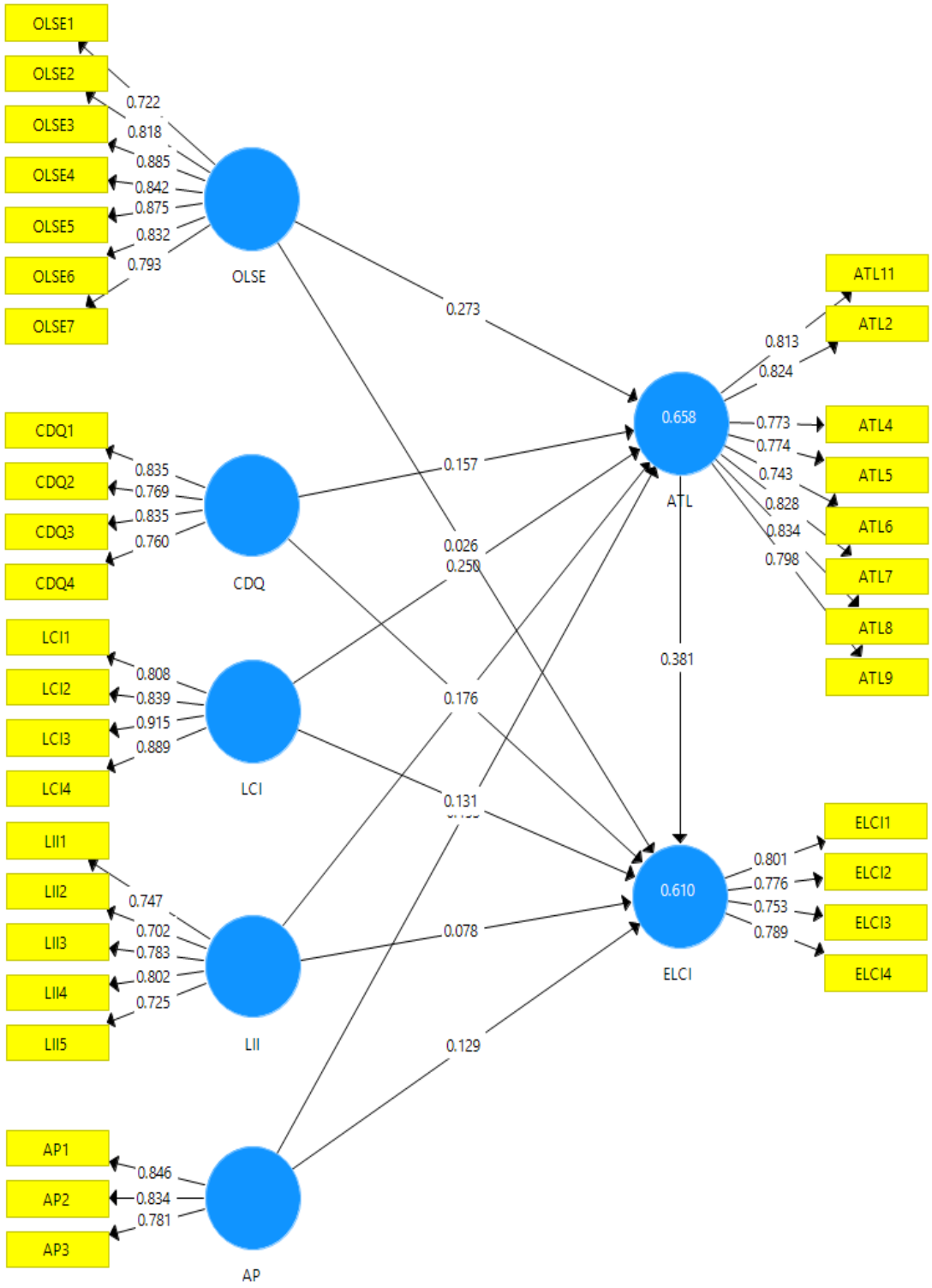

Figure 1 Results of Measurement Model (PLS-Algorithm)

Note: OLSE = E-learning self-efficacy CDQ = Course design quality; LCI = Learner-Content interaction; LII = Learner-Instructor interaction; AP = Academic performance, ATL = Attitude towards E-learning, ELCI = E-learning continuance intention.

Assessment of Structural Model Significance

Table 4.9 shows that the R-square value of attitude was 0.658 and continuance intention was 0.610. According to Chin (1998), the R^2 values assessment criteria is 0.19 consider weak 0.33 as moderate, and 0.67 as substantial. Table 4.1 shows the results of direct relationships between factors, attitude, and continuance intention. Based on these results, the decision was made to support our hypotheses. The results are as follows:

Table 1
Results of Hypothesis Testing: Direct Relationship

Hypotheses	Relationship	Beta	SE	T-Value	P-Value	Decision
H1	OLSE -> ATL	0.273	0.061	4.492	0.000	**Supported**
H2	CDQ -> ATL	0.157	0.040	3.894	0.000	**Supported**
H3	LCI -> ATL	0.250	0.061	4.107	0.000	**Supported**
H4	LII -> ATL	0.167	0.056	2.990	0.001	**Supported**
H5	AP -> ATL	0.153	0.049	3.141	0.001	**Supported**
H6	OLSE -> ELCI	0.026	0.047	0.558	0.288	**Not Supported**
H7	CDQ -> ELCI	0.176	0.041	4.319	0.000	**Supported**
H8	LCI -> ELCI	0.131	0.055	2.364	0.009	**Supported**
H9	LII -> ELCI	0.078	0.046	1.705	0.044	**Supported**
H10	AP -> ELCI	0.129	0.046	2.805	0.003	**Supported**
H11	ATL -> ELCI	0.381	0.061	6.248	0.000	**Supported**

Note: OLSE = E-learning self-efficacy CDQ = Course design quality; LCI = Learner-Content interaction; LII = Learner-Instructor interaction; AP = Academic performance, ATL = Attitude towards E-learning, ELCI = E-learning continuance intention.

The results show that the influence of e-learning self-efficacy (t = 4.492), course design quality (t = 3.89), learner-content interaction (t = 4.10), learner-instructor interaction (t = 2.99), academic performance (t = 3.14) significantly influence on attitude. Similarly, course design quality (t = 4.31). learner-Content interaction (t = 2.36), learner-Instructor interaction (t = 1.70). academic performance (t = 2.80), (t = 6.248) and attitude significantly influence on continuance intention. Hence, Hypothesis one to five and seven to eleven were supported.

After that, the indirect relationship between factors and continuance intention was tested. Hayes (2009) stated that there are several steps in assessing the relationship. First, a researcher needs to fit a model through SEM to estimate the relationship between the predictor and the mediator. Then, the t-values were identified. Third, the standard errors (SE) of all indirect effects were determined. Table 4.2 shows the indirect relationship between factors and e-learning continuance intention. The detailed results are as follows:

Table 2
Results of Hypothesis Testing: Indirect Relationships

Hypotheses	Relationship	Beta	SE	t-value	P-value	Decision
H12	OLSE -> ATL -> ELCI	0.104	0.029	3.590	0.000	Supported
H13	CDQ -> ATL -> ELCI	0.060	0.017	3.510	0.000	Supported
H14	LCI -> ATL -> ELCI	0.095	0.027	3.530	0.000	Supported
H15	LII -> ATL -> ELCI	0.064	0.026	2.468	0.007	Supported
H16	AP -> ATL -> ELCI	0.058	0.020	2.969	0.002	Supported

Note: OLSE = E-learning self-efficacy CDQ = Course design quality; LCI = Learner-Content interaction; LII = Learner-Instructor interaction; AP = Academic performance, ATL = Attitude towards E-learning, ELCI = E-learning continuance intention.

The result shows that attitude towards e learning mediates the relationship between OLSE and ELCI, shows full mediation (β = 0.104, t =3.59). The attitude mediates the relationship between course design quality and continuance intention. (β = 0.06, t = 3.51), Learner-Content interaction and continuance intention (β = 0.095, t =3.53), academic performance and continuance intention. (β = 0.058, t =2.96, p = 0.00), Learner-Instructor interaction and continuance intention. The mediation is partial (β = 0.064, t =2.46, p = 0.00). The results indicated Hypotheses 12 to 16 have supported.

Conclusion

The present study has been inspired by the e-learning adaptation by the higher education sector and the purpose of the study is to determine the impact of factors on attitudes and e-learning intention of e-learning in the higher education sector in Pakistan. data were collected from the students of higher education in Pakistan. A total of 450 questionnaires were distributed among the university students of Pakistan, in which 400 questionnaires. Data were analyzed by using SPSS and PLS-SEM. The finding of this study supported the technology acceptance model. The results found that H1 to H5 was supported. Ashrafi et al. (2020) found course quality, self-efficacy positively influence attitude, satisfaction, hedonic value, and continuance intention. Thongsri et al. (2019) found the need to fulfill and offer a good quality course to enhance the information system adoption, it considers an essential part of the educational system. While e-learning self-efficacy does not has a direct effect on e-learning continuance intention. Hypothesis 6 was not supported. The results show that H7 to H10 was supported.

Rodríguez-Ardura and Meseguer-Artola (2014) found that course quality; academic performance and instructor interactions have a positive impact on attitude towards learning that enhances the continuance intention. Li, Nishimura, Yagami, and Park (2021) found course quality, service quality, learner-learner interaction, learner-content interaction, and learner-instructor interaction have a positive influence on perceived value and continuance interaction. In contrast, the self-efficacy of e-learning helps students to self-evaluate their trust in the use of the websites of e-learning, however, self-efficacy indirectly affects continuance intention, and the intention to continue eLearning is influenced by the attitudes of students towards e-learning (Iqbal et al., 2022).

Hypothesis 11 proposed that attitude has a positive effect on e-learning continuance intention The results supported the developed hypothesis. B. Wu and Chen (2017) found that task technology fit, perceived usefulness, reputation, openness, ease of use, social influence, and recognition have a positive impact on attitude towards learning. Further, the impact of attitude is positive on continuance learning intention. The study demonstrated that factors significantly influence the attitude, which enhances the continuance intention of e-learning. (Zhu et al., 2020) argued that the continuance intention of the students is affected by the factors that include learning motivation, self-efficacy, capability, attitude, and experience of e-learning.

The study found that the attitude towards e-learning continuance intention is positive. The findings of this study showed that mediates the relationship between self-efficacy, factors, and e-learning continuance intention in the higher education sector in Pakistan. (Zhu et al., 2020) found that the attitude toward e-learning continuance intention is positive. The study recommended that an appropriate course design would improve the students' self-efficacy learning skills, which significantly influence attitude and continuance intention. The study demonstrated that factors significantly influence the attitude, which enhances the continuance intention of e-learning.

Practical Implications

This study will help online Education institutes to offer academic staff technical infrastructure, training, and support so that they can project and appliance high-quality moralistic materials that are sensual. They can successfully make the Students in their virtual classrooms feel that they are energetic members of an exact educational community and benefit them to relate within the community and be completely involved in the E-learning activities. Moreover, professors and staff must benefit to produce Education Environments that deal with educational challenges for E-learners so that they feel obliged to meet inspirational demands coming from their instructors.

Future Recommendations

In the future, the researchers may consider other education sectors including institutes, schools, colleges, etc. as due to covid-19 the rapid change (adaptation of online education) can be found around the world. Other variables such as learner-learner interaction or course content quality may include in the future study. The present study used quantitative data only. Future research may use qualitative or mixed methods to examine the effects of factors on continuance intention. Lastly, other mediator variables such as loyalty towards e-learning, behavior toward e-learning, and student's satisfaction with e-learning being should also be considered to help us understand other mechanisms of e-learning adaptation.

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