



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

The International Journal of Management Education

journal homepage: www.elsevier.com/locate/ijme

Predicting students' intention to continue business courses on online platforms during the Covid-19: An extended expectation confirmation theory

Samsul Alam^a, Imran Mahmud^{b,c,*}, S.M. Saiful Hoque^b, Rozina Akter^b, S.M. Sohel Rana^d

^a Begum Rokeya University, Rangpur, Bangladesh

^b Daffodil International University, Dhaka, Bangladesh

^c Universiti Sains Malaysia, Malaysia

^d Independent University Bangladesh, Dhaka, Bangladesh

A B S T R A C T

The objective of this study was to analyze the intention of a University's business department students to continue their studies on e-learning platforms during the ongoing COVID-19 pandemic. To this end, a questionnaire was developed to collect primary data from students in business fields. The study took into account more than 285 respondents from two different universities and relied on the expectation confirmation model (ECM) theory and the structural equation model. The partial least squares (SEM-PLS) method was used to analyze the data. The results of the study showed that task skills (TS) and task challenges (TC) were significant for the enjoyment (EN) of the students which in turn had a positive effect on the satisfaction levels. Confirmation (CON) had an impact on the post adoption perceived usefulness (PAPU), which was deemed positive for student satisfaction (SAT). The SAT and psychological safety (PS) of online learning platforms were found to positively influence the continuance intention (CI) on e-learning platforms. Finally, both SAT and PS of online learning platforms were observed to positively influence CI on e-learning platforms. Further research in this area could be useful in making decisions about promoting educational programs based on e-learning. The researchers recommend that academicians and policymakers must ensure appropriate arrangements for teaching on e-learning platforms.

1. Introduction

Blended learning systems have gained a lot of attention from education providers, as many universities have already integrated such programs with face-to-face (F-T-F) learning systems. Recent studies have shown that introducing technology in higher education is the key to enhancing students' personal development during and after graduation by helping them actively learn to achieve their long-term goals (Zhu et al., 2020). Past EDUCAUSE reports by Becker et al. (2017, 2018) and Alexander et al. (2019) observed that adoption of technology in higher education was influenced by blended learning design acting as one of the short-term forces (Zhu et al., 2020).

Trends in learning have shifted from "know-how" and "know-what" to "know-where", as mentioned by Siemens (2005). Formal learning in a physical environment is therefore not the only way forward, and Massive Open Online Courses (MOOCs) first introduced by University of Manitoba in 2008 are a result of this trend.

This new system initially received little attention but gained popularity when elite universities joined forces with their offerings

* Corresponding author. Daffodil International University, Dhaka, Bangladesh.

E-mail addresses: alam@mis.brur.ac.bd (S. Alam), imranmahmud@daffodilvarsity.edu.bd (I. Mahmud), shyful@daffodilvarsity.edu.bd (S.M.S. Hoque), rozina@daffodilvarsity.edu.bd (R. Akter), sohelrana@iub.edu.bd (S.M. Sohel Rana).

<https://doi.org/10.1016/j.ijme.2022.100706>

Received 5 November 2021; Received in revised form 15 August 2022; Accepted 1 September 2022

Available online 22 September 2022

1472-8117/© 2022 Elsevier Ltd. All rights reserved.

(Dai et al., 2020). Many tools are used in electronic learning (e-learning) platforms in different countries of the world and some of the platforms include apps, blogs, augmented reality, e-books, distance learning, iCampus, e-learning, smart tutoring systems, mobile computing, learning management systems, podcasts, open educational resources, smartphones, tablets, social networks, video games, wiki and virtual environment to name a few (Wolfe & Cedillos, 2015, pp. 895–902).

Recently, Tadesse and Muluye (2020) reported that educational institutions at all levels around the world had to shut down the usual face-to-face educational systems on campus due to the COVID-19 pandemic. The educational institutions in Bangladesh were no exception to this and the struggle was real for both students and teachers alike. For Bangladeshi students and teachers, online education was something new which everyone had to accept and adapt to in the meantime.

It posed a major challenge for Bangladeshi students in particular because as a developing country, access to information technology was not widely available from anywhere and by anyone. Though top private universities began offering online courses shortly after the onset of the pandemic in March 2020, public universities were found not to have conducted academic activities online.

The recent Business Standard report (2022) revealed that enrolment of fresh students in 40 private universities had decreased by 70% year-on-year in comparison to the previous year. Sarkar et al. (2021) observed that students could not effectively interact with teachers or their classmates during online classes and group work opportunities amongst students were also restricted. Moreover, the availability of high-speed broadband or cellular internet connection was found to be rare outside urban centres in Bangladesh and hence students in rural areas continuously faced trouble in getting a stable internet connection for their academic pursuits.

This study takes into account private universities in Bangladesh and selected two fast-growing private universities that were more focused on information technology-based education. Since the beginning of the pandemic, Indiana University of Pennsylvania (IUP) was quite effective in moving its academic and administrative functions to online platforms and thereby necessitating the students to switch to e-learning. Private university students were fortunate enough to continue their studies through online education even though students were initially suspicious of the viability and faculty members had their own reservations about the success of online tests. Over time, the Universities managed to establish a somewhat seamless online review process albeit after several trials and errors.

In order to better understand the current situation, it is imperative to identify the underlying factors influencing the students' intention for continuing education on e-learning platforms. This could help other universities in Bangladesh to better understand the problem at hand for designing effective solutions. The findings of this study could prove a catalyst for newer private universities and existing public universities which are yet to adopt online learning platforms for disbursing education.

The current research study is presented in the following manner. The background section provides an insight to the COVID-19 outbreak, its effects on education systems around the world and in particular in Bangladesh, along with a focus on the e-learning platforms. This is followed by stating the research objectives. A brief review of literature from previous studies is presented in the next section. The development of the analytical model and the hypothesis behind the study are stated. The article then describes the methodology including data collection procedures, sample size, measurements, and data analysis strategy. The results of the sampled and analyzed data are presented followed by discussions, theoretical contributions, practical implications, limitations and future scope of work. Finally, the conclusion is presented wherein the authors formulate their recommendations based on the research conducted.

2. Background

The COVID-19 pandemic has negatively impacted the global higher education and disrupted its normal functions from various perspectives (Santiago et al., 2021). In order to restore parity to the situation, online education models have been introduced around the world (Qazi et al., 2020). A very recent study by Mok et al. (2021) stated that 84% of international students evinced no interest in studying abroad after the end of the pandemic. During the pandemic, a research showed that 71% of participants had to close their educational institutions (Naroo et al., 2020). The pandemic opened doors to digital education in the tertiary sector but posed challenges for teachers and learners simultaneously (Zheng et al., 2020). The ongoing pandemic has forced many universities to make transformative changes through implementing of information systems and technology (Dwivedi et al., 2020; Krishnamurthy, 2020). It has also been observed in many studies that the pandemic has caused many problems among students, especially the college students, by affecting their mental or psychological health due to frustration, depression, and stress (Chaturvedi et al., 2021; Khan et al., 2020; Marzo et al., 2021; Rahman et al., 2021; Sayeed et al., 2020; Shafiq et al., 2021), at a time when nearly 25% of the world population already suffer from some form of mental health disorder (Arusha & Biswas, 2020).

The impact of the COVID-19 pandemic has been felt in all fields of higher studies. A significantly strong impact was observed on the medical education and career advancement in students pursuing their studies in this field (Jones, Clark, Puyana, & Tsoukas, 2021). It was also found to affect the mental health of senior medical students, negatively affect their exam preparation (Dhahri et al., 2020) and have a critical impact on their educational programs (Wise et al., 2021). The same applied to students from other disciplines as well (Marques et al., 2021). Wise et al. (2021) found that around 75% of surgical education students believed that online training would be a better option than face-to-face training in the current situation. A study of students pursuing education in Urology showed that small group discussions and one-on-one interviews were essential in virtual education (Hanson et al., 2020).

Recent surveys conducted during the pandemic evidenced that 58% of institutions now offered online education, 68% used live online conferences and discussions, and 74% showed an interest in adopting online education (Naroo et al., 2020). Research has also shown that students adapted to and used online tools and social media services as learning supports (Chaturvedi et al., 2021). Naroo et al. (2020) named Zoom as the most used platform (56%) in their study, while WhatsApp was the most popular social media platform (48%). In the same study, 68% of the respondents of those surveyed said that by 2020, they would have completed more than half of their studies online (Naroo et al., 2020).

Studies have shown that the negative effects of COVID-19 would be long lasting (Ali et al., 2021). However, it is also expected to

create new opportunities for entrepreneurship education and development studies and new entrepreneurship education along with newer management practices would be needed to cope with the change (Ratten & Jones, 2021). It has also been observed that the academic performance of higher education students had increased in comparison to the pre-pandemic era (Santiago et al., 2021). According to Krishnamurthy (2020), the pandemic witnessed disruptions in business schools around the world, mainly due to the switch to distance education.

The Government of the People's Republic of Bangladesh decided to close all educational institutions in the country on March 18, 2020, in order to curb the spread of COVID-19. This decision had an immediate adverse impact on the student community in terms of study and career goals, and especially amongst university students (Al-Amin et al., 2021; Ela et al., 2021). Ela et al. (2021) also mentioned that Bangladeshi students continue to oppose online teaching as an alternative to face-to-face teaching for a variety of reasons including the lack of resources for online learning and the existing digital divide. Suggestions to alleviate the problem included reduced training times, addition of extra classes on weekends, and reducing vacations during exams.

Higher levels of depression, anxiety, and stress (DASS) have been observed in women, young people, adults, and university students with symptoms of COVID-19 as compared to men, older people, adolescents, university students, or others without disease symptoms (Arusha & Biswas, 2020; Hasan et al., 2020; Khan et al., 2020; Marzo et al., 2021; Sayeed et al., 2020). Children, women, and divorced people, in particular, suffered greatly from psychological problems (Marzo et al., 2021; Yeasmin et al., 2020), which were influenced by age, sex, income levels, costs of private university student tuition, online courses, infection levels, widespread social media news, location of residence, region, and family size. In Bangladesh, it was estimated that approximately 7 million people suffer from anxiety and depression (Arusha & Biswas, 2020). Hasan et al. (2020), in their study, claimed that about 50% of students in the medical discipline have different symptoms of depression. Hasan and Bao (2020) found that the perception of online learning could upset students and the fear of losing the school year negatively affected students' psychological stress levels. These negative aspects have led to an increase in the number of suicides, which could indirectly be attributed to the ongoing pandemic (Rahman et al., 2021).

Whenever faced with crisis, humanity has embraced some form of technology as a panacea. Even during this pandemic, technology has been widely used to contain the spread of the SARS-CoV-2 virus, by detecting infected people and by continuing production and providing education (Al-Amin et al., 2021). Although Bangladesh is a developing country, it has resumed academic activity, especially in higher education, by using technology in the form of online education platforms. Despite insufficient technological resources, willingness, and inclusiveness, e-learning platforms have helped Bangladesh to conduct academic activities during the pandemic. Many platforms, tools, and technologies have been adopted by students, teachers, and educational institutions.

3. Research objective

The general aim of this study is to examine the intention of students to continue their studies on the e-learning platforms. Again, the specific aim is to find out university students' intention to use information technology, their intention to continue online learning, and student resistance or aversion to using online learning. Based on the discussion above, the study seeks to answer the following research questions: The general objective of this study is to investigate students' intention to continue education on e-learning platforms used in universities. Again, the specific objectives are to know the intention of university students related to the use of information technology, their intention to continue e-learning, and students' resistance or aversion to using e-learning. Based on the above discussion, this study tries to answer the following research questions:

Q 1. Do the students intend to continue using e-learning?

Q 3. Does psychological safety influence continue to use e-learning?

This study takes into account private universities in Bangladesh and selects two fast-growing private universities in Bangladesh that are more focused on information technology-based education. There are reasons to choose this institution. In Bangladesh, since the beginning of the global pandemic, the IUP had been quite effective in moving academic and administrative functions to online platforms. Thus, students had to switch to e-learning at the beginning of the Covid-19 pandemic. Hence, it is necessary to identify their intention to undertake higher education with the help of e-learning platforms that could help other universities in Bangladesh to better understand such a solution.

4. Literature review

E-learning platforms have continued to function as essential tools for imparting education during this pandemic. Past studies have shown that interactions achieve the ultimate learning and sharing goals and add tremendous value to participant interactions through video sessions (Engeness et al., 2020). However, it has also been shown that most colleges are still a long way from making the most of these online tools even though they are adequate, accessible and comfortable (Eze et al., 2018). The quality of the system, information, and service are the most important factors which affect student satisfaction in blended learning. When students are inherently satisfied with this method of learning, they subconsciously develop an intention to continue with the same.

From the teachers' point of view, some of the basic requirements of the learning management system (LMS) are the presentation of the lesson content, control of the lesson, communication with the students, motivation to learn, observation of learning progress and assessment (Balogh & Turčáni, 2011). Research efforts to examine the students' benefits, specifically their final grade, (Engeness et al., 2020), indicated that participants' interaction patterns with videos led them to create an opportunity to help and compare in learning sessions (Engeness et al., 2020). Videos offering support in guidance, leadership, and control may have helped to improve the learning

ability of the participants in digital environments and their transformative digital agency (Arain et al., 2019). By using different facilities during lessons, the occupancy rate is not maximized compared to most public universities. A study showed that user attitudes, inadequate internet access, and lack of training were the reasons why some are given less credit and the reliability of these platforms are questioned (König & Jucks, 2019). Similarly, another study stated that improper e-learning facilities and user attitudes, inadequate internet options and inadequate user training had a major impact on a widespread successful introduction of e-learning platforms (Eze et al., 2018). According to the study by Zhu et al. (2020), attitudes towards online learning were positive and were reinforced by regulatory factors and attitudes. This is further reinforced by social interactions and feedback which act as factors that contribute to attitude changes (Zhu et al., 2016, 2020).

With the learning management system, teachers and students use a small part of technology for primarily assimilative tasks (Bond et al., 2018). The significant effects of task characteristics (TAC) and technological characteristics (TEC) as well as the task technology fit (TTF) and facilitation conditions (FC) during the introduction of LMS (Qureshi et al., 2018). In a study conducted in the recent past, digital classroom was found to be more dynamic and carried the risk of an addictive dimension due to the ubiquitous presence of digital devices and social media in the lives of students (Pedro et al., 2018). The significant impact of a task characteristics (TAC) and technology characteristics (TEC) and task technology fit (TTF) and facilitating condition (FC) with LMS adoption. Both TAC and TEC were observed to have an impact on the perceived TTF by students, which greatly contributed to their perceived usefulness, assertion, and satisfaction with cloud based online learning systems. This in turn directly or indirectly led to their intention to continue with the system and had a perceived impact on the students' learning sessions (Mahmud et al., 2020).

Performance expectations, hedonic motivations, habits, ubiquity, and satisfaction have a significant effect on the behavioral intentions, information quality, system quality, and appearance quality, thereby affecting the satisfaction of mediators in terms of accepting m-learning (Arain et al., 2019). It has been exhibited that with a well-chosen e-learning framework, data on digital readiness aligns these patterns of strength with future educational innovations (Blayone et al., 2018). It has also been shown that gaming plays an important role in self-assessment and in managing student satisfaction (Bovermann et al., 2018). Lesson design and reading strategies have been observed to have pure impact and interventions (Burin et al., 2018). In order to achieve the process of institutional transformation during the pandemic, the e-learning modality must be articulated with existing pedagogical approaches in such a way that innovations in learning become institutionalized and sustainable (Galvis, 2018). Past studies on e-learning have exhibited that teachers and learners need to be equipped with practical skills in order to advance technology for student-centered learning in tech-rich environments (Ha & Lee, 2019). Research has also implied that though blended learning predates modern teaching technologies, its development is inextricably linked with some aspects of human thought processes (Dziuban et al., 2018). The practical assessment activities in OER-based blended learning play a positive role in the same (Sandanayake, 2019) wherein student feedback is presented, implications for practice is described and a small assessment is also noted. This constraint has been postulated to serve as a path for future research (Griffin & Howard, 2017). Using two models of team teaching, quantitative (questioning) and qualitative (self-disclosure) methods were used to describe students' attitudes towards the two models, their perception of cooperation, advantages and disadvantages as well as the conditions of implementation which they consider critical (Burt et al., 2006).

However, the transformative teaching and learning experiences of the teachers and students emerged (Quillinan, MacPhail, Dempsey, & McEvoy, 2018). Recent studies note that quality factors of digital library systems strongly influenced the satisfaction, behavioral intent, and variance during their actual use (Alzaharani et al., 2019; Alzaharani, Mahmud, Ramayah, Alfarraj, & Alalwan, 2017a, 2017b). Studies have also noted that talent development, rather than aptitude, should be based on a truly developmental, dynamic, and adaptive theory that adaptively changes during interaction with environmental opportunities and challenges (Dai et al., 2020). . Other studies have observed that there were significant moderating effects of the school category in all causal relationships with the exception of attitude relationship to autonomy-knowledge exchange (Soon & Kadir, 2017; Whittaker et al., 2019). According to Jean Piaget's theory of cognitive development, adaptation was one of the most important processes that guided cognitive development.

It has been exhibited that the process of adaptation can be achieved in one of two ways: either through assimilation or through accommodation (Bormanaki & Khoshhal, 2017). Lee (2010) opined in a study that a user's intention to continue on an online educational platform depended on satisfaction, perceived usefulness, perceived ease of use, and social impact. Thus it can be stated that the perceived interactivity has a positive effect on the improvement of perceived usefulness and the perceived user-friendliness of a learning system. Content quality has also been showed to significantly affect a user's perceived usefulness and confirmation of expectations, which indirectly affected the user's continuing intent (Zhang et al., 2012). Perceived joy, compatibility, usefulness, ease of use, and affirmation all have been shown to have a positive impact on a student's satisfaction with blog use. Additionally, perceived effects of thinking on learning were found to be positively influenced by perceived usability, joy, and satisfaction levels (Ifinedo et al., 2018). Same researcher also reported that five external factors, namely subjective norms, Internet experience, system interactivity, self-efficacy, and technical support, could explain students' intentions to use e-learning systems. Perceived usefulness, perceived ease of use, academic support, and computer skills were observed to be the key determinants of e-learning adoption in University environments (Williamset al., 2016).

The significant effects of autonomy, competence, and relationship on trust, attitudes to knowledge sharing, and behavioral intention, with the exception of the autonomy-attitude relationships and behavioral intention relationship. Past research has shown that psychological security, communication, and the environment, directly or indirectly influenced students' intention to continue with their participation through perceptions of responsiveness and self-efficacy (Zhang et al., 2012; Zhu et al., 2020).

The characteristics of online learning can weaken the relationship between a learner's characteristics and their intention to adopt other online learning offerings in the future. Additionally, past studies have found that high levels of support helps people with low technology efficiency in adopting e-learning methods (Sawang et al., 2013). Perceived utility (PU) has been exhibited to influence

instructor's satisfaction to continue using the Blackboard system (Mouakket & Bettayeb, 2016). Information quality, quality of the system, quality of support services, and quality of teachers greatly contribute to the perceived usefulness (PU), assertion, and flow of learning systems, which together explain the satisfaction of the teachers while using the blended e-learning system (Cheng, 2014; Mahmud et al., 2020). A direct effect of the technical support on the perceived usability and benefit to the students is evidenced by the use and acceptance of WebCT which is directly influenced by its perceived usefulness and indirectly by the perceived usability of the system (Arteaga Sánchez et al., 2013). Both the benefit and the confirmation had a positive effect. direct and indirect influence on the maintenance intention. In addition, the influence of the quality of the resources on the conservation intent was found to be significant.

Satisfaction with a learning system has been observed to be conveyed by the relationship between usefulness, validation, and the quality of resources and the intention to pursue it (Joo & Choi, 2016) i.e. users' intent to prosecute is determined by their satisfaction with previous use, the self-efficacy of the internet, and their expectations of the results. The outcome of expectations, in turn, was found to be influenced by satisfaction with previous use and previously perceived confirmation (Hsu et al., 2004). According to Wu et al. (2020), online impulse buying is an unexpected individual behavior with a strong interaction with online stores for spontaneous purchases. The study identified a specific buying process for the same by listing three key elements to the process viz. perceived risk, online store design, and buyer's mental health. Additionally, the study defined the design of online stores according to the theory of Confirmation of Expectations (ECM) model and psychological state. The overall results obtained in the study showed a high predictive power of 52% for impulse online shopping behavior ($R^2 = 0.52$). According to Nam et al. (2020), consumers' motivations to write a positive eWOM differed from consumers' motivations to write a negative eWOM.

In a study by Dai et al. (2020), the participants were found to be primarily motivated by interest, personal growth, curiosity about the course and the MOOC learning mode, the expected benefits of MOOC learning, or the pursuit of knowledge as a whole. Confirmation and perceived benefit were postulated to be the strongest predictors of lifestyle improvement, according to a study conducted by Leung and Chen (2019). External factors such as age and innovation, e-health/m-health registration/monitoring activities, health tutorials, medical services, and exchange of experience also played a role bearing a significant impact. According to Gupta et al. (2019) provides the current work through an ingenious framework, the EECM, a hierarchical mechanism that allows consumers to develop ongoing engagement with a particular M-Wallet, motivated by pre and post expectations of the safety and quality of the I -User interface, and self-efficacy.

. However, recent studies have found that young higher education students used lesser internet, especially when these students were more dependent on internet-related activities (Islam et al., 2020). Al-Amin et al. (2021), pointed out in their study that the problems of impractical coherence of internet and electricity, attention and understanding of lessons via an online platform were the main obstacles to online learning in developing countries.

5. Research gap in past literature

A summarized table of previous works on the related topic is presented in Table A (see Appendix 1). Although many studies on the context of e-learning have been conducted in different countries, very little studies have focused on Bangladesh in particular, and no studies have been conducted specifically on the intention of private university students to pursue e-learning in the business discipline amidst the ongoing COVID-19 pandemic. Therefore, this study aims to bridge this research gap. Two main gaps have been identified from previous studies and are stated below.

5.1. Gap 1: theoretical gap

In the prior sections, research investigating the influence of various variables to measure the continuance intention of e-learning or m-learning has been presented. However, limited research is available which tests the ECT model by integrating psychological safety. Just like in the face to face classrooms, it is possible that students might not engage in e-learning due to the fear humiliation or other complications in performance evaluation.

5.2. Gap 2: practical gap

The review of recent studies conducted in Bangladesh establishes that there are plenty of papers published on e-learning. But, very few studies were of the same nature like the proposed model in this study. To the best of knowledge, factors influencing the continuance intention of e-learning in Bangladesh students were not found in the exhaustive search of top level journal databases. Therefore, this research aims to provide empirical evidence to practitioners for identifying the critical success factors.

6. Constructs identification and model development

6.1. Predictors of enjoyment state

Previous studies have shown that Task Skill (TS) and Task Challenge (TC) were critical to customer loyalty such as online stores (Guo & Poole, 2009) and online shopping (Wu et al., 2020). For the role of task competence, a study by Wu et al. (2016) suggested that a search mode with flow status acted as an important mediator to examine online impulse purchases across multiple search engines. Another more recent study by Wu et al. (2020) reported that TS was one of the main task attributes acting as an important factor for determining the flow state.

For the purpose of the present study, the functionality of e-learning platforms such as online quizzes, homework submissions, online video materials, forum, and interactive content can directly be associated with the fun component. Hence the proposed hypothesis is as follows.

H1. Task skill is positively associated with enjoyment.

Wu et al. (2020) exhibited in their study that task components and challenging tasks positively influence the state of the flow and reduce the boredom of customers shopping online. The results of the study indicated that the challenge of the task was an essential precursor to promoting a state of flux in the process.

A past study attempted to develop a research model for investigating the flow state in online hotel booking operations in terms of defining the antecedents and consequences (Bilgihan et al., 2014). These drivers included clear goal, task challenge, web design (interactivity, vividness and perceived usefulness), and media richness. The consequences indicated user satisfaction, intention to use, brand equity, and purchase intent of the buyer. The findings of this study reported that task challenge was a key precursor to foster flow state in the process.

In the present study, the functions of e-learning platforms such as problem-solving, online quizzes, video case studies, and exams were all significant work challenges that students could potentially enjoy more than in a traditional classroom. Therefore, the following hypothesis is proposed.

H2. Task challenge is positively associated with enjoyment.

6.2. *The link between enjoyment and satisfaction*

Task enjoyment has been defined as performing an activity for no other apparent reinforcement apart from the intrinsic process of performing the activity (Venkatesh et al., 2000). However, various research studies conducted on information systems exhibit that the perceived enjoyment of the task itself leads to satisfaction. In this study, the joy of the task was considered as a construct of intrinsic motivation. Certain other studies have shown that a positive relationship exists between customer satisfaction and customer satisfaction in online shops (Wu et al., 2020). One study proposed a three-tier research framework based on the stimulus-organism-response concept in order to examine the intent behind online purchase (Hsu et al., 2014). From these studies, it can reasonably be stated that if students experience a potential pleasure in the task, the resulting level of satisfaction would be high. Hence, the following hypothesis is proposed.

H3. Task enjoyment is positively associated with satisfaction while using e-learning platforms.

6.3. *Relationship with ECM*

Many researchers have adopted the Confirmation of Expectations (ECM) model in the past as a way to prove learners' intention for promoting and continuing digital literacy. ECM forms the basis for this study as well wherein an interactivity characteristic is defined for the importance of using e-learning as the confirmation of the performance of the e-learning platform with as a result a positive effect on the perceived utility after adoption.

Confirmation has been defined in the past as the extent to which one's actual experience is in line with their initial expectation (Oghuma et al., 2016). When the actual experience conforms to or exceeds the initial expectation level, confirmation occurs, which directly leads to the realization of customer satisfaction (Thong et al., 2006). Similarly, it can be stated that if students' original expectations with an e-learning system are confirmed, they would be satisfied with the experience of using the same.

The perceived usefulness of ECM was proposed in a past study as a post-adoption construct, which was reflective of the behavioral belief in a product's/service's usefulness after assimilation of the expected and actual consumption values (Nam et al., 2020). It has also been observed that for confirming/disconfirming experiences, users with initial usefulness expectations adjusted their post-adoption perceived usefulness in an upwards/downwards manner (Thong et al., 2006). The relationship between confirmation and post-adoption perceived usefulness has been validated in similar contexts in prior research, such as usage of desktop services (Huang, 2019), mobile applications (Tam, Santos, & Oliveira, 2020), M-shopping (Shang & Wu, 2017), M-banking (Yuan et al., 2016) and online hotel booking websites (Nam et al., 2020).

This leads to the following hypothesis.

H4. Confirmation is positively associated with perceived post-adoption usefulness.

ECM also provides a link between the confirmations of IT usage performance and user satisfaction in order to examine the intention of continued IT services usage, such as ERP usage, online shopping, online library, etc.

Studies have shown that post-adoption satisfaction was primarily an outcome of expectations and confirmation aligning through meaningful consumption experiences, a primary tenet of the ECM (Bhattacharjee, 2001). Ambalov (2018), through the meta-analytical work on ECM established the relationship between confirmation and user satisfaction. In the proposed study, a higher level of confirmation could potentially lead to a higher level of satisfaction while using e-learning platforms. Therefore, the following hypothesis is proposed.

H5. Confirmation is positively associated with satisfaction while using an e-learning platform.

A study by Bhattacharjee (2001) stated that belief in the use of IT after its introduction was suggestive of a significant correlation

with user satisfaction. It has been shown in the past that perceived usefulness post-adoption stems from a subjective belief that current consumption of a specific product/service increases the user's consumption performance, thereby becoming a key determinant of satisfaction with a technology (Davis et al., 1989). Drawing parallels with the prior study, the current study could employ the possibility that the perceived benefit after adoption could reflect a person's belief that the e-learning platform would help them perform their educational tasks more effectively. Thus, the perceived benefit after the introduction of the e-learning platform could motivate users to pursue expected and newly defined end goals, which in turn could lead to user satisfaction. Multiple studies in the past have used ECM as a theoretical underpinning construct in similar contexts to validate the relationship between satisfaction and continuance intention of users.

The following hypothesis is therefore posited.

H6. Post-adoption perceived usefulness is positively associated with the satisfaction of using e-learning platforms.

It has been noted that a user's satisfaction with an e-learning platform would be the key determinant as to whether the person continues using it as their primary means of education (Wixom & Todd, 2005). Several other studies have validated the relationship between satisfaction and willingness to continue in similar contexts, including e-learning platforms, while using ECM as the theoretical basis. The following hypothesis is therefore proposed.

H7. Satisfaction of using e-learning is positively associated with continuance intention.

6.4. Psychological safety and continuance intention

Kahn (1990) defined psychological safety (PS) as a feeling that manifests itself without the fear of adverse effects of self-esteem or status. In other words, psychological safety supports the self-expressive behavior of an individual. A past study by Zhang et al. (2010) reported that PS exerted a positive influence on the speaking behavior (Detert & Buriss, 2010) and knowledge-sharing behavior (Siemsen et al., 2008).

In the virtual community (essentially not completely virtual), members' participation may be potentially consequential to their well-being not only online but also in the real world. This is particularly true if the members are identifiable in real life and may even have occasional offline interactions. In such situations, the self-expressing behavior of members in the form of knowledge sharing could potentially hold their well-being at stake. This is because the community can easily associate an online message to its contributor and thereby hold the individual accountable in adverse situations. Given such characteristics, PS may also be a salient factor in facilitating knowledge sharing in this context. Members might be more willing to express themselves, demonstrate their expertise, and share their knowledge with others within a virtual community only when they feel psychologically safe. In other words, if a particular user feels that their sharing behavior would not result in negative consequences such as humiliation or complications in performance evaluation when knowledge is shared, then they would feel safe in sharing information even if not well received. A past study similarly stated that psychological safety facilitated better knowledge-sharing behavior within virtual communities (Zhang et al., 2010).

For the present study, it was assumed that students would be more willing to express themselves, prove their skills and share their knowledge with others within an online learning platform if they feel mentally safe. The authors therefore propose the following hypothesis.

H8. Psychological safety is positively associated with continuance intention of using e-learning platforms.

Based on the hypotheses, the proposed framework for this is illustrated below in Fig. 1.

7. Method

7.1. Data collection procedure and sample size

Due to Covid-19, the investigation required social distancing and only those who regularly take online courses were able to contribute to the research. In this study, Google Forms was used as a survey tool that was only distributed to students from the business

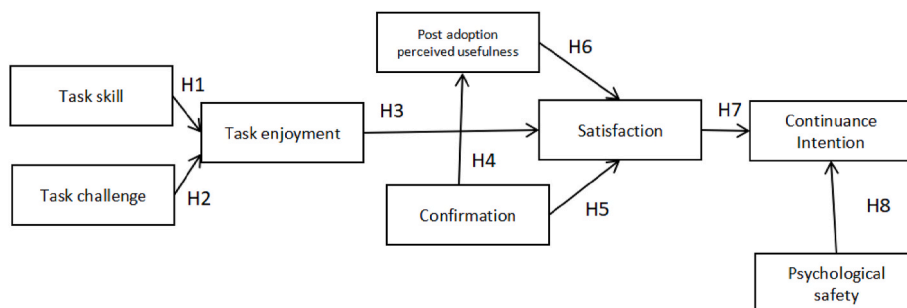


Fig. 1. Proposed research model.

departments from two different universities who already use e-learning platforms. Given our research objectives, we chose to survey individuals with the following three characteristics: 1) Are you a student of business faculty? 2) are you using online LMS system in your university? 3) Apart from download lecture slides and video materials, is there any other tasks like quiz, assignment, interactive contents, forum etc.?

This survey follows the sampling method specially designed for the non-probability sampling method. Participants in this study had experience using e-learning platforms in the tertiary sector in Bangladesh. The minimum sample size with a predictive power of 0.95 was obtained according to the research by Hair (2020). Calculations suggest that with a maximum of three predictors, the required sample size was 119(See appendix 2). A total of 400 people were surveyed using the online questionnaire. Google Forms was used to develop the questionnaire and distribute it to the respondents (See Appendix 3 for the detail process of the survey). The number of valid answers that passed the exams and framework requirements was 285. The respondent profiles are shown in the table below 2.

Table 1 shows that of 285 valid respondents, 64.2% were male and 35.8% were female. The most common age of the respondents was between 21 and 25 (66.00%), the lowest age over 25 years (1.1%). 56.5% of all respondents have been using online learning systems for less than four months. 46.7% of the respondents used Google Classrooms, 39.6% used BLC and the rest used other online learning platforms.

7.2. Measurement

The questionnaire has two sections. The first section begins with a demographic questionnaire. The second section contains the questionnaire for measuring business continuity, perceived usefulness after adoption, satisfaction, perceived quality of the user interface, task competence, task challenge, pleasure, and psychological safety.

The scale used to rate these items was the seven-point Likert scale ranging from “1 as strongly disagree” to “7 as strongly agree” as a measure for rating the items. All the items of the variables were taken from the previous literature.

In summary, information overload (IO1-IO3), communication overload (CO1-CO5), and social overload (SO1-SO5), which are the stressors in this research, were measured by the proposed elements of Cao and Sun (2018). The two variables of the adaptation strategy for the management of disorders (DH1-DH4) and self-preservation (SP1-SP4) were measured by the items proposed by Christophe et al. (2011). The elements for the escape variable (EX1-EX3) of the strain theory were adopted from Cao and Sun (2018). Items for fatigue (FG1-FG5) were measured by Lee et al. (2016).

In summary, continuance intention (CI1 - CI5) of Gupta et al. was accepted in 2019, the perceived benefit after adoption (PAPU1 - PAPU3) and satisfaction (SA1 - SA3) were also adopted by the same researchers. Task skills (TS1 - TS4), task challenge (TC1 - TC4), and enjoyment (EN1 - EN3) were drawn from research by Wu et al., 2020. Finally, from research by Zhu et al. (2020), we have retained the points of measurement of psychological security; see Table 2 for all items.

7.3. Common method bias test result

We induced marker variable technique to solve CMV issues. Previously, Mahmud et al. (2017) used a similar strategy to test common method bias. This study compared the results of the marker model with the ones of the baseline model. The result shows that with and without our marker variable, the results are similar. There are no changes in the relationship. This implies that no CMV problem in our data set. The marker variable were consisted of three items which are Mark_1: Once I've come to a conclusion, I'm not likely to change my mind, Mark_2: I don't change my mind easily and Mark_3: My views are very consistent over time.

7.4. Data analysis strategy

The structural equation model (SEM) is used to measure the relationship between the variables of the research model proposed in this study. There are reasons to use SEM in this area. SEM makes it easy for researchers to analyze a complex model with multiple independent and dependent variables at the same time. As a result, researchers in business information systems, business

Table 1
Demographic information.

Variables	Characteristics	Frequency	Percentage
Gender	Male	183	64.2
	Female	102	35.8
Age	15-20	93	32.6
	21-25	188	66.0
	26-30	3	1.1
	31-35	0	0.0
Online Learning System Experience	4-8 months	80	28.1
	8-12 months	10	3.5
	Less than 4 months	161	56.5
	More than 1 year	34	11.9
Types of e-learning	Google Class	133	46.7
	BLC	113	39.6
	Other	33	13.7
	Other	0	0.0

Table 2
Model measurement questionnaire.

Item	Description	Source
Continuance Intention		
CI1	I intend to continue using this E-LEARNING	Gupta et al. (2019)
CI2	I will keep using this E-LEARNING as regularly as I do now	
CI3	My intention is to continue using this E-LEARNING than using any alternative means	
CI4	I intend to increase my use of this E-LEARNING in the future	
Post-adoption perceived usefulness		
PAPU1	My basic experience of using the E-LEARNING is better than what I had expected	Gupta et al. (2019)
PAPU2	The basic services provided by the E-LEARNING is better than what I expected	
PAPU3	Overall, most of my basic expectations from using the E-LEARNING were confirmed	
Satisfaction		
SA1	My overall experience of the E-LEARNING is satisfying	Gupta et al. (2019)
SA2	My overall experience of the E-LEARNING is pleasant	
SA3	My overall experience of the E-LEARNING is delightful	
Task Skills		
TS1	I know how to find what I want for study on E-LEARNING	Wu et al. (2020)
TS2	I know how to solve it when I have a problem about using E-LEARNING for study.	
TS3	I am very skilled at using E-LEARNING for study	
TS4	I know more with functions about using E-LEARNING for study	
Task Challenge		
TC1	Using E-LEARNING for study challenges me for my competence	Wu et al. (2020)
TC2	Using E-LEARNING for study challenges me to perform the best of my ability	
TC3	Using E-LEARNING for study provides a good test of my skill.	
TC4	Using E-LEARNING for study stretches my capability to the limit.	
Enjoyment		
EN1	Browsing E-LEARNING for study is fun to me	Wu et al. (2020)
EN2	Browsing E-LEARNING for study is my favorite activity.	
EN3	Browsing E-LEARNING for study is much to entertainment of me	
Psychological Safety		
PS1	I am not afraid to be myself in this E-LEARNING tool	Zhang et al. (2010)
PS2	I am afraid to express my opinion in this E-LEARNING tool	
PS3	There is a threatening environment in this E-LEARNING tool	

administration, and social sciences continue to use this technique for their research (Hair et al., 2020). The SEM then enables researchers to test the specifications of the research model developed from theories. SEM is, therefore, suitable for use in exploratory research. Third, the functionality of SEM motivates researchers to use SEM as a modeling measurement to measure the construct and develop research models or test theories in modeling higher-order variables. This can easily be done with SEM. Based on Hair et al. (2020), the Partial Least Square (PLS) SEM can overcome the first generation method and allow researchers to extend the assessment data quality through the measurement model. Many recent studies have used PLS-SEM to assess their data in terms of continued intention use (Wu et al., 2020; Dai et al., 2020; Nam et al., 2020). Therefore, this study uses PLS-SEM to analyze the model path coefficient parameter to maximize the variance of the whole construct.

8. Result and analysis

We used EM method to ensure there is no missing values in the data set (Alzahrani et al., 2017) and also marker variable technique suggested that our data set has no common method bias issue (Mahmud et al., 2017), See Appendix 4 for common method bias test result. After training the research model, Hair et al. (2020) suggested testing the external model. The extracted mean variance (AVE), composite reliability (CR), and discriminant validity are used to evaluate the external model.

Table 3
Convergent validity.

	Composite Reliability (CR)	Average Variance Extracted (AVE)
CI	0.947	0.816
EN	0.959	0.885
PAPU	0.953	0.835
PS	0.795	0.566
SAT	0.969	0.912
TC	0.932	0.774
TS	0.940	0.797

*AVE must be more than 0.5 and CR must be more than 0.7.

8.1. Measurement model

According to Hair et al. (2020), the AVE of each construct must be greater than 0.50, suggesting that the construct explains more than 50% of the variance of its item. This threshold is reached by the data in the table above. The data also explains that the OR of all constructions reached the cut-off value greater than 0.7. see Table 3.

The discriminant validity of the measurement model evaluation is presented below. The square root of the AVE of each variable is greater than the correlation between the variable and the other variables. Thus, discriminant validity is established in the model of this research. See Table 4.

The square root of each variable is greater than the correlation between the variable and the other variables. Thus, discriminant validity is established in this model.

8.2. Structure model

The use of multiple squared correlations (R^2) and the significance level of the path coefficients can explain the power of a structural model. The T value was evaluated using the priming routine with 2000 resamples to evaluate the path coefficients in this research model.

The SmartPLS3 software is used to test the research model using a priming process with 2000 resamples. Table 4 shows that task competencies (TS) ($\beta = 0.399$, $p < 0.05$) and task challenge (TS) ($\beta = 0.404$, $p < 0.05$) are important for students with perceived enjoyment (EN). Joy (EN) has a positive effect on satisfaction ($\beta = 0.209$, $p < 0.05$). Confirmation (CON) ($\beta = 0.745$, $p < 0.05$) positively influences the perceived benefit after adoption (PAPU) and the perceived benefit (PU) after adoption ($\beta = 0.000$, $p < 0.05$), again had a significantly positive influence on student satisfaction (SAT). Finally, the SAT ($\beta = 0.412$, $p < 0.05$) and psychological safety (PS) ($\beta = 0.338$, $p < 0.05$) of online learning platforms positively influence the intention to continue (CI) online learning platforms. Surprisingly, CON has a positive but not significant influence on SAT. So, the complete structural model is given in Fig. 2.

9. Discussion

Though the present study yielded several significant results, the most important was the influence of joy and satisfaction while using e-learning systems. Furthermore, this study extends the ECM theory by testing the influence of PS on the intention to move on.

9.1. Antecedents of task enjoyment

Task skill and task challenge are two occasional behaviors that are associated with the flow state. The present study noted that the skills and challenges of student assignments arise while browsing e-learning systems and completing assignments provided by teachers. It was also noted that the challenges of gaining knowledge and getting grades created a positive emotional response. The more confident the students were about a task challenge, the more likely they were to enjoy the online learning platform. Also observed was that if a student felt they could exhibit their skills in completing a task, it also led to fun. Based on these arguments, H1 and H2 were postulated for this study. This result is also consistent with the previous study of Wu et al. (2020). This concludes that. In an e-learning setting, task skill which refers to a student's feeling of IT self-efficacy and the task challenge indicates a student's psychological experience for a response to the action. Thus, task skill and task challenge both reveal concerns of an individual's emotional state which is influencing for continuance of e-learning.

9.2. Relationship between task enjoyment and satisfaction

The occurrence of task enjoyment underlies a precondition for a balance between a self-feeling of task skill and an experience of task challenge in executing an activity. It is natural that a positive emotional state leads to the satisfaction of the students which is our H3. According to the results obtained in this study (presented in Table 5), the three hypotheses are significant and concur with the results obtained in the recent study by Wu et al. (2020). It is reasonable that task enjoyment (emotional state) may first arise for the potential effect on a further normative evaluation (satisfaction), in this case, for the context of online learning.

Table 4

Discriminant validity.

	CI	CON	EN	PAPU	PS	SAT	TC	TS
CI	0.903							
CON	0.723	0.911						
EN	0.626	0.691	0.941					
PAPU	0.777	0.745	0.708	0.914				
PS	0.546	0.563	0.607	0.577	0.753			
SAT	0.583	0.614	0.617	0.672	0.506	0.949		
TC	0.713	0.761	0.706	0.764	0.630	0.593	0.880	
TS	0.677	0.797	0.707	0.723	0.597	0.574	0.761	0.893

*Diagonal values must be higher than other values.

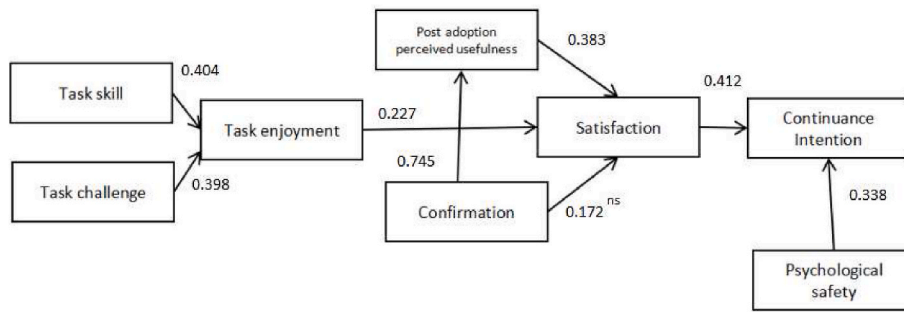


Fig. 2. Complete model with result.

9.3. ECM characteristics in e-learning system

In the ECM theory used as the basis in the model for the current study, it was observed that a higher level of confirmation for the use of e-learning system led to a higher perceived utility (PAPU), confirmation of H4 and satisfaction (SAT), along with confirmation of H5 based on the model Original ECM/ECT Theory. PAPU also leads to SAT, our H6. According to the results obtained in this study, confirmation of the hypotheses H4 and H6 were considered as significant. These result are aligned with previous works of Wu et al. (2020), Nam et al., (2020) and Fu et al. (2018). Since online teaching and learning for confirmation of H4 and H6 takes place through a complex interaction with an online learning platform, the subsequent confirmation of the performance (initial belief) such as system information and visual attractiveness are deemed important. This is in order to demonstrate the usefulness of e-learning (post-adoption belief) for finding appropriate study material and for using various learning-related functions. A student’s subsequent positive belief in the usefulness of e-learning can lead to a positive attitude towards an enhanced learning experience, thereby increasing student satisfaction with the e-learning system. . While analyzing the results from the perspective of H5, the direct impact of CON was not observed on SAT. This may be the result of the e-learning platform being a mandatory system for the students to use. Their class files, quizzes, homework, and other learning materials were available only on the e-learning platform. Therefore, it can reasonably be stated that student satisfaction does not depend on confirmation. However, it is.

Post-adoption satisfaction is primarily an outcome of the alignment between such expectations and confirmation through meaningful consumption experiences. A student’s continuance with e-learning service, is primarily an outcome of satisfaction with its consumption, defined as “the post-choice evaluative judgment” of the overall performance. Based on our result, H7 which the relationship between SAT and CI is also significant. Multiple works, using the ECM as a theoretical underpinning, have validated the relationship between satisfaction and continuance intention across similar contexts including e-learning applications (Gupta et al., 2019).

9.4. Relationship between psychological safety and continuance intention

Based on the results obtained in the current study, students were ultimately observed to be more willing to continue using e-learning platforms if they felt mentally safe. To the best of knowledge, this is the first work that examined the influence of psychological safety on the intention to continue while using e-learning platforms. The results of H8, conformed to those of a past study conducted by Zhang et al. (2010), which was based on knowledge sharing in virtual communities. In accordance, we define psychological safety as student’s emotional ability to express oneself in an e-learning platform without fear of negative consequences in relation to well-being, self-image, and status.

10. Contribution and implications

This study exhibits that to better understand the continuance intention of using e-learning platform in a developing country where it is new, it is imperative to focus on the following viz. tasks of e-learning, satisfaction, psychological safety and continuance intention.

Table 5
Path coefficient and hypotheses test result.

		Path Coefficient	T Value	Result
H1	TS - > EN	0.404	5.176	Supported
H2	TC - > EN	0.398	4.731	Supported
H3	EN - > SAT	0.227	2.896	Supported
H4	CON - > PAPU	0.745	18.018	Supported
H5	CON - > SAT	0.172	1.604	Not Supported
H6	PAPU - > SAT	0.383	3.431	Supported
H7	SAT - > CI	0.412	5.194	Supported
H8	PS - > CI	0.338	4.245	Supported

Evaluation of the proposed research model revealed that the continuance intention was strongly affected by the satisfaction and psychological safety of the students. Therefore, this approach has several implications for both research and practice, and is discussed in the following sections.

10.1. Theoretical contribution: validation of ECM and integration of task and psychological safety

The findings of this research validate the modified ECM theory in the context of e-learning platforms being used in private universities in Bangladesh. Certain prior studies have mainly focused on the e-learning acceptance, m-learning acceptance, e-learning adoption, digital readiness for e-learning, digital transformation, and the continuance learning intention in the MOOC setting. Other studies have focused on new technologies in e-learning, outcomes of e-learning, continuance intention to use online library or digital text books, evaluation of video lecturers, factors of LMS, acceptance of LMS, *trans*-formative teaching and learning. Nevertheless, there have been studies highlighting the continuance intention of learners in using e-learning systems as evidenced by the findings of [Xu and Wang \(2018\)](#), [Zhang et al. \(2012\)](#), and [Zhu et al. \(2020\)](#). However, these studies primarily concentrated on a different domain for e.g., they were conducted in countries with varying learning environments and different domains e.g., online short courses. Contrary to the aforementioned studies, this study targets the formal educational settings (tertiary level) in a developing country like Bangladesh where e-learning is still nascent.

The main contribution is to combine the pleasure of the task (skill of the task, challenge, and pleasure) to examine how users rate it in terms of business students' satisfaction of online platforms especially in the region of South-Asian country like Bangladesh. Using past studies on ECM to integrate and complement the relevant conceptual theories hitherto unused in this context (task enjoyment), this study provides a better understanding into the continuation intention of using e-learning platforms. The study also makes it potentially possible to operationalize psychological safety and test the model developed through the survey methodology. This potential has largely been ignored in past studies focusing on e-learning. The empirical validation of the newly developed model in this study showed how psychological safety can be used in IS research to explain the continuation intentions of users in using online platforms, which can be best described as the extension of previous research studies. Based on the results of this study, modified ECM theory can best be applied in other settings as well, thereby adding new knowledge to existing literature. Therefore, this research has significant impact to enhance theoretical knowledge.

10.2. Practical implication: task based usage of e-learning and psychological safety

With regards to LMS management in educational institutes of developed countries, the results of this study reveal that the manifestation of workarounds are specifically related to psychological safety. Teachers should avoid criticizing participants in the event of mistakes occurring. This suggestion would be applicable not only within the domain of knowledge sharing between students, but also for knowledge-based collaborations within a project team.

This study offers suggestions to the management department of universities on how to maintain the intention to continue using an e-learning system. First, the administration must purchase or develop various features such as interactive content in order to increase student enjoyment in the task. Analytical tools can also be employed to monitor student engagement. Second, the e-learning platform must be made more user-friendly and teachers must be adequately trained so that the content provided by them translates into perceived utility and satisfaction after adoption by students. Finally, the managers of e-learning platforms should aim to improve the psychological safety of the students and create an encouraging atmosphere for students in order to promote student feedback and knowledge sharing.

11. Limitations and scope for future work

The present study is the result of the reaction of students to e-learning platforms used in universities in DIU. However, limitations of the study include being limited to the scope of universities in Bangladesh and not global in nature. Moreover, only private universities were considered for this study while public and international universities based in Bangladesh were left out.

Apart from the aforementioned implications, another scope for future research may be focused on technology induced research. Since the current study considered the impact of positive variable, future research might not only focus on the perspective of satisfaction but also consider the impact of exhaustion caused by technostress on the continuance intention. Furthermore, the present study did not use machine learning algorithms for predicting the influence of these variables over a time period. The authors propose to use the PLS-SM and artificial neural network (ANN) based hybrid model to predict the most important variable impacting the continuance intention. This may help stakeholders to take necessary steps for boosting the intention of students.

12. Concluding observations

This research is part of the limited studies - which explain students' intention to pursue academic studies on e-learning platforms - that integrate task-related enjoyment and psychological safety from a theoretical perspective with empirical validation. As we suffered in pandemic, our ability to understand information technology for learning is key to extended successful sustainable education. This research project was undertaken to provide a proof of concept for this individual level framework, finding support and more insightful results than what prior research and theory offer. Beyond previous research, this study develops a theoretical model using ECM theory and emphasizes psychological safety during the period of Covid-19.

This empirical investigation supports the notion that task skills (TS) and task challenges (TC) were significant for the enjoyment (EN) of the students which in turn had a positive effect on the satisfaction levels. Confirmation (CON) had an impact on the post adoption perceived usefulness (PAPU), which was deemed positive for student satisfaction (SAT). The SAT and psychological safety (PS) of online learning platforms were found to positively influence the continuance intention (CI) on e-learning platforms. Finally, both SAT and PS of online learning platforms were observed to positively influence CI on e-learning platforms.

This study contributes to higher education in emerging economies by providing a broader explanation of the persistence intention of educational technologies. The results of this study offer suggestions for enjoyable use of educational technology and aim to mitigate technological failures.

Author statement

Dr. Imran Mahmud: Data Analysis. Samsul Alam: Methodology. S.M. Saiful Hoque: Questionnaire development and data collection. Dr. S M Sohel Rana: Conceptualization and model development. Rozina Akter: Literature review.

Appendix 1

Table A

Topic-related papers

Sl.	Author and Year	Dependent variable	Independent variables	Theory	Method	Sample size	Analysis technique	Country	Respondents	Findings
1	Dai et al. (2020)	Continuance intention to learn in the massive open online course (MOOC) setting	Confirmation Satisfaction Perceived usefulness Attitude Curiosity	Modified expectation confirmation model (ECM)	Pre-defined questionnaire survey (conducted by mooc.guoker.com)	306	Two-step structural equation modeling (SEM) Confirmatory factor analysis (CFA)	China	Three universities' undergraduate students	The modified ECM model explains 48% of continuance intention MOOC learners are primarily influenced by interest, personal growth, curiosity about MOOC course benefits and learning mode, or knowledge-seeking
2	Zhu et al. (2020)	Continuance intention	Self-regulated learnings Perceived online interactions Course attitude in online	Variance extraction methods Inner model	Pre-and post-survey	94	Factor analyses SPSS SmartPLS	China	Students	After completing courses online, participants' learning attitudes are basically significantly positive, and thus their continuous intention to learn is predicted by self-regulatory factors and attitudes mediated through perceived online social interactions
3	Arain (2019)	Behavioral intention to accept M-learning Satisfaction	Performance expectancy (PE) Efort expectancy (EE) Social influence (SI) Facilitating conditions (FC) Hedonic	Extended unified theory of acceptance and use of technology (UTAUT2)	Cross-sectional survey Random sampling	730	SEM IBM SPSS Statistics	Pakistan	Students	The PE, HM, HA, UB, and SA have statistically significant impact on the behavioral intention and the IQ, SQ, and AQ also have

(continued on next page)

Table A (continued)

Sl.	Author and Year	Dependent variable	Independent variables	Theory	Method	Sample size	Analysis technique	Country	Respondents	Findings
			motivation (HM) Habit (HA) Ubiquity (UB) Information quality (IQ) System quality (SQ) Appearance quality (AQ) Satisfaction (SA)							statistically significant impact on the mediator satisfaction toward m-learning acceptance
4	Huang (2019)	Continuance intention	Confirmation Effort expectancy Performance expectancy Satisfaction Group norm Social identity: Cognitive social identity, Affective social identity, Evaluative social identity, Subjective norm	ECM	Questionnaire survey	167	SEM	Taiwan	University students	Satisfaction exerts the strongest internal influence on the subjects' continued use, and the degree of satisfaction is determined by effort-and performance-expectancy
5	Sharif et al. (2018)	Behavioral intention to adopt learning management system	Performance expectancy (PE) Effort expectancy (EE) Social influence (SI) Facilitating conditions (FC) Hedonic motivation (HM) Habit (HT) Learning value (LV) Task technology fit (TTF)	UTAUT2 Task technology fit (TTF) theory	Convenience sampling method	178	Exploratory factor analysis (EFA) SEM	Pakistan	Students	The TTF and FC support with intention to adopt learning management system The model suggests 60.1% of the behavioral intention to adopt learning management
6	Xu and Wang (2018)	Continuance intention	Perceived usefulness (PU) Satisfaction (SA) Confirmation (CON) Perceived ease of use (PEOU) Social impact (SI) Perceived interactivity (PI) Content quality (CQ)	Technology acceptance model (TAM) ECM Unified theory of acceptance and use of technology (UTAUT)	Online survey questionnaire	151	SPSS 22.0 Structural equation analysis validation, parameter estimation, and path analysis using AMOS software	China	Online education platform users	Potential factors that have a direct impact on user's continuance intention are SA, PU, PEOU, and SI The greatest factor is user's satisfaction, it has the most obvious impact effects and definitely it is the key impact factor of user's continuance intention in online education platform
7	Ifinedo (2018)	Satisfaction (SAT) Perceived impact on learning (PIL)	Perceived enjoyment (PE) Perceived compatibility (PC) Perceived usefulness (PU) Perceived ease of use (PEOU) Confirmation (CO)	TAM ECM Innovation diffusion theory Flow theory	Cross-sectional survey	108	Structural equation modeling-partial least squares (SEM-PLS)	Canada	Undergraduate students taking MIS	PE, PC, PU, PEOU, CO have positive influence on students' SAT with blog use PE has the greatest influence on students' SAT with blog use for learning

(continued on next page)

Table A (continued)

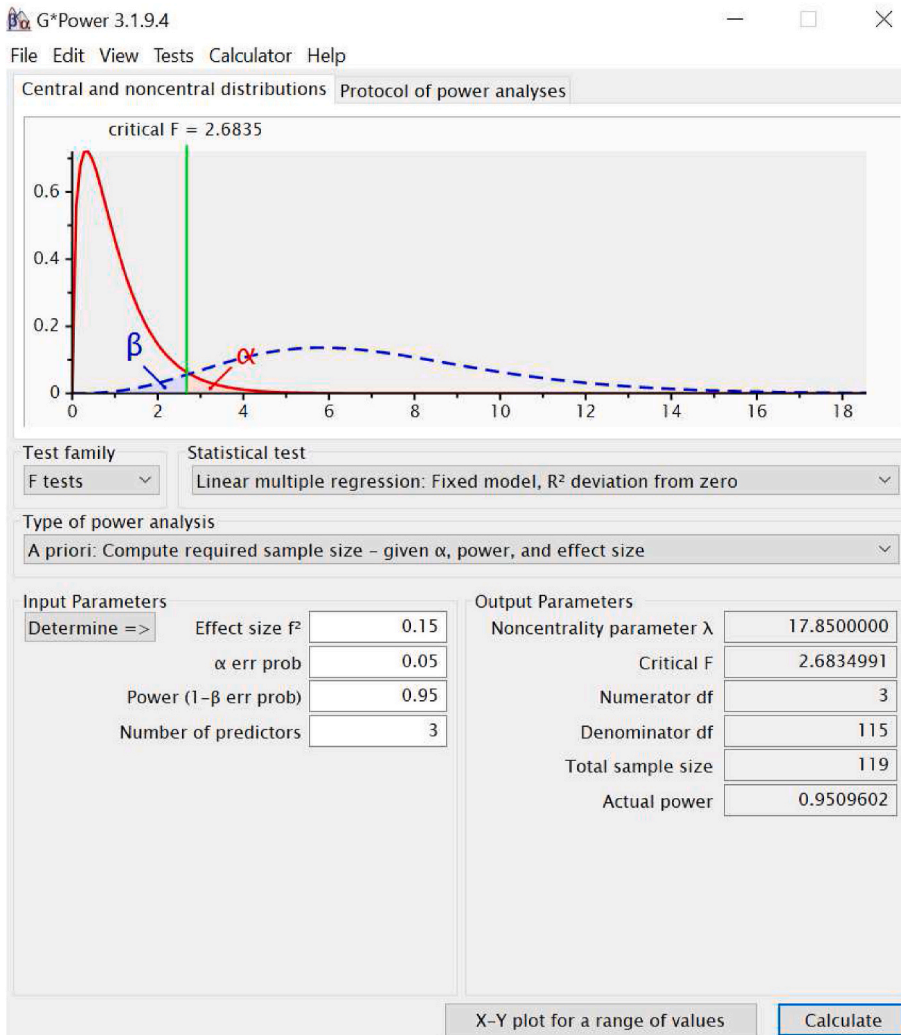
Sl.	Author and Year	Dependent variable	Independent variables	Theory	Method	Sample size	Analysis technique	Country	Respondents	Findings
8	Salim & Bakri (2017)	Intention to use the wiki to learn	Performance expectancy (PE) Effort expectancy (EE) Social influence (SI) E-collaboration (EC)	UTAUT	Literature review analysis		Content analysis approach	Malaysia	Students	PIL is positively influenced by PEOU, PE, SAT Some factors are proposed to add in the proposed conceptual model namely PE, EE, SI, EC, and IU for intention to use in collaborative eLearning
9	Joo, Park, & Shin (2016)	Continuance intention (CI) to use digital text-books	Expectation (EXP) Perceived enjoyment (PE) Perceived usefulness (PU) Satisfaction (SAT)	ECM	Paper-and-pencil-based questionnaire survey	137	SEM	Korea	Middle school students	More expectations of digital textbooks are satisfied, more likely students are to PE and PU of digital textbooks SAT plays a mediating role in linking EXP, PE, PU, and CI to use digital textbooks PU and SAT have a direct and positive influence on CI to use digital textbooks
10	Mouakket and Bettayeb (2016)	Continuance intention (CI) to use	Perceived usefulness (PU) Satisfaction (SAT) User-interface design Technical support Training Computer self-efficacy	ECM	Survey questionnaire (paper & online)	158	SEM	UAE	University instructors	PU influences instructors' SAT and CI on using Blackboard system
11	Joo and Choi (2016)	Continuance intention (CI) to use online library resources	Usefulness (USE) Confirmation (CON) Resource quality (RQ) Satisfaction (SAT)	Extended expectation confirmation theory (ECT)	Survey questionnaire	606	PLS	USA	Student	Both USE and CON have a positive direct and indirect influence on CI The effect of RQ on CI is found to be significant SAT has a mediating effect on the relationship between USE, CON, RQ, and CI
12	Cheng (2014)	Intention to continue using the blended e-learning system	Information quality (IQ) System quality (SQ) Support service quality (SSQ) Instructor quality (IrQ) Perceived usefulness, confirmation, and flow (PUCF) Satisfaction (SAT)	ECM Flow theory Updated DeLone and McLean IS success model	Survey questionnaire	378	SEM	Taiwan	Hospitals' nurses	IQ, SQ, SSQ, and IrQ contribute significantly to PUCF which together explain nurses' SAT with the usage of the blended e-learning system, and this in turn leads to their continued system usage intention

(continued on next page)

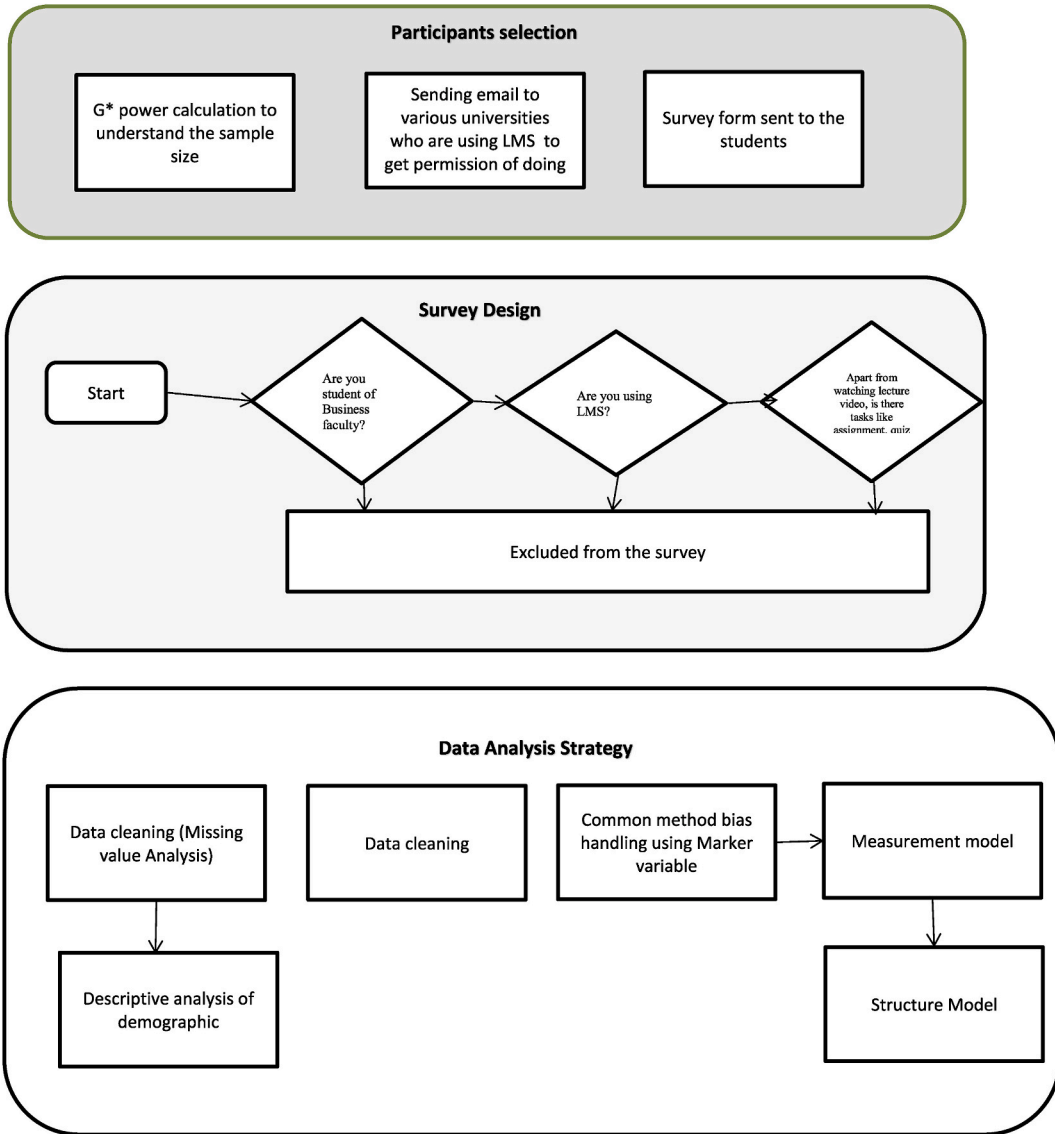
Table A (continued)

Sl.	Author and Year	Dependent variable	Independent variables	Theory	Method	Sample size	Analysis technique	Country	Respondents	Findings
13	Al-Mushasha (2013)	Acceptance of e-learning	Perceived usefulness (PU) Perceived ease of use (PEOU) University support (US) Computer self-efficacy (CSE)	TAM	Survey questionnaire	224	EFA Multiple regression analysis	Saudi Arabia	Students	PU, PEOU, US, and CSE are important determinants of e-learning acceptance in higher educational environment
14	Tahar et al. (2013)	Satisfaction in blended learning (BL) Intention to use	Service quality System quality Information quality	D&M IS success model	Survey questionnaire	61	Factor analysis (FA) SPSS	Malaysia	Students	System quality, information quality, service quality are the most important factors that will affect students' satisfaction in BL When the students satisfy with this method of learning, it will lead to intention of use
15	Sawang et al. (2013)	Overall learners' satisfaction Intention to adopt more e-learning in the future	Openness to change Technological efficacy Authenticity Complexity Organizational support		Online survey	683	Statistical analysis	Australia	Employees of rail-sector organization	E-learning characteristics can buffer the relationship between learner characteristics and intention to adopt further e-learning in the future
16	Arteaga Sánchez et al. (2013)	acceptance of the WebCT learning system	Technical support (TS) Computer self-efficacy (CSE) Perceived ease of use (PEOU) Perceived usefulness (PU) Attitude (A) System usage (SU)	TAM	Survey questionnaire	226	SEM	Spain	Students	There is a direct effect of TS on PEOU and PU among the students WebCT usage and acceptance is directly influenced by PU and indirectly by PEOU
17	Abbad (2012)	Intention to adopt e-learning systems	Ease of use (EU) Perceived usefulness (PU) Subjective norms (SN) Prior internet experience (PIE) System interactivity (SI) Self-efficacy (SE) Technical support (TS)	TAM	Group interviews		Content analysis	Bahrain	Students and tutors	Five external factors, namely SN, IE, SI, SE, and TS explain the students' intention to use e-learning systems
18	Zhang et al. (2012)	Intention to continue participation	Self-efficacy (SE) Perceived responsiveness (PR) Psychological safety (PS) Communication (COM) Climate (CL)	Social cognitive theory	Survey questionnaire	144	PLS	Hong Kong	Students	PS, COM, CL affect students' intention to continue their participation both directly and indirectly through PR and SE

Appendix 2. G* power calculation



Appendix 3. Process of the survey



Appendix 4. Common Method Bias Using Marker Variable

		Without Marker variable		With Marker variable	
		Path Coefficient	Result	Path Coefficient	Result
H1	TS -> EN	0.404	Supported	0.404	Supported
H2	TC -> EN	0.398	Supported	0.398	Supported
H3	EN -> SAT	0.227	Supported	0.225	Supported
H4	CON -> PAPU	0.745	Supported	0.745	Supported
H5	CON -> SAT	0.172	Not Supported	0.172	Not Supported
H6	PAPU -> SAT	0.383	Supported	0.384	Supported
H7	SAT -> CI	0.412	Supported	0.411	Supported
H8	PS -> CI	0.338	Supported	0.338	Supported

References

- Abbad, M. (2012). Proposed model of e-learning acceptance. In *International Conference on Education and e-Learning Innovations* (pp. 1–9). IEEE.
- Al-Amin, M., Zubayer, A. A., Deb, B., & Hasan, M. (2021). Status of tertiary level online class in Bangladesh: Students' response on preparedness, participation and classroom activities. *Heliyon*, 7(1), Article e05943. <https://doi.org/10.1016/j.heliyon.2021.e05943>
- Alexander, B., Ashford-Rowe, K., Barajas-Murphy, N., Dobbin, G., Knott, J., McCormack, M., ... Weber, N. (2019). *EDUCAUSE horizon report: 2019 higher education edition*. Louisville: EDUCAUSE.
- Ali, M., Allihyani, M., Abdulaziz, A., Alansari, S., Faqeh, S., Kurdi, A., & Alhajjaji, A. (2021). What just happened? Impact of on-campus activities suspension on pharmacy education during COVID-19 lockdown – a students' perspective. *Saudi Pharmaceutical Journal*, 29(1), 59–66. <https://doi.org/10.1016/j.jsps.2020.12.008>
- Alzahrani, A. I., Mahmud, I., Ramayah, T., Alfarraj, O., & Alalwan, N. (2017a). Modelling digital library success using the DeLone and McLean information system success model. *Journal of Librarianship and Information Science*, 51(2), 291–306. <https://doi.org/10.1177/0961000617726123>
- Alzahrani, A. I., Mahmud, I., Ramayah, T., Alfarraj, O., & Alalwan, N. (2017b). Extending the theory of planned behavior (TPB) to explain online game playing among Malaysian undergraduate students. *Telematics and Informatics*, 34(4), 239–251. <https://doi.org/10.1016/j.tele.2016.07.001>
- Ambalov, I. A. (2018). A meta-analysis of IT continuance: An evaluation of the expectation-confirmation model. *Telematics and Informatics*, 35(6), 1561–1571.
- Arain, A. A., Hussain, Z., Rizvi, W. H., & Vighio, M. S. (2019). Extending UTAUT2 toward acceptance of mobile learning in the context of higher education. *Universal Access in the Information Society*, 18(3), 659–673. <https://doi.org/10.1007/s10209-019-00685-8>
- Arteaga Sánchez, R., Duarte Hueros, A., & García Ordaz, M. (2013). E-learning and the university of huelva: A study of WebCT and the technological acceptance model. *Campus-Wide Information Systems*, 30(2), 135–160. <https://doi.org/10.1108/10650741311306318>
- Arusha, A. R., & Biswas, R. K. (2020). Prevalence of stress, anxiety and depression due to examination in Bangladeshi youths: A pilot study. *Children and Youth Services Review*, 116, Article 105254. <https://doi.org/10.1016/j.childyouth.2020.105254>
- Balogh, Z., & Turčáni, M. (2011). Possibilities of modelling web-based education using IF-THEN rules and fuzzy petri nets in LMS. In *International conference on informatics engineering and information science* (pp. 93–106). Berlin, Heidelberg: Springer.
- Becker, S. A., Brown, M., Dahlstrom, E., Davis, A., DePaul, K., Diaz, V., & Pomerantz, J. (2018). *NMC horizon report: 2018 higher education edition*. Louisville: EDUCAUSE.
- Becker, S. A., Cummins, M., Davis, A., F., Giesinger, C. H., & V, A. (2017). *NMC horizon report: 2017 higher education edition*. Austin, Texas: The New Media Consortium.
- Bhattacharjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, 351–370.
- Bilgihan, A., Okumus, F., Nusair, K., & Bujisic, M. (2014). Online experiences: Flow theory, measuring online customer experience in e-commerce and managerial implications for the lodging industry. *Information Technology & Tourism*, 14(1), 49–71.
- Blayone, T. J., Mykhailenko, O., Kavtaradze, M., Kokhan, M., VanOostveen, R., & Barber, W. (2018). Profiling the digital readiness of higher education students for transformative online learning in the post-Soviet nations of Georgia and Ukraine. *International Journal of Educational Technology in Higher Education*, 15(1). <https://doi.org/10.1186/s41239-018-0119-9>
- Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2018). Digital transformation in German higher education: Student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, 15(1). <https://doi.org/10.1186/s41239-018-0130-1>
- Bormanaki, H. B., & Khoshhal, Y. (2017). The role of equilibration in piaget's theory of cognitive development and its implication for receptive skills: A theoretical study. *Journal of Language Teaching and Research*, 8(5), 996. <https://doi.org/10.17507/jltr.0805.22>
- Bovermann, K., Weidlich, J., & Bastiaens, T. (2018). Online learning readiness and attitudes towards gaming in gamified online learning – a mixed methods case study. *International Journal of Educational Technology in Higher Education*, 15(1). <https://doi.org/10.1186/s41239-018-0107-0>
- Burin, D. I., Irrazabal, N., Ricle, I. I., Saux, G., & Barreyro, J. P. (2018). Self-reported internet skills, previous knowledge and working memory in text comprehension in E-learning. *International Journal of Educational Technology in Higher Education*, 15(1). <https://doi.org/10.1186/s41239-018-0099-9>
- Burt, C. H., Simons, R. L., & Simons, L. G. (2006). A longitudinal test of the effects of parenting and the stability of self-control: Negative evidence for the general theory of crime. *Criminology*, 44(2), 353–396. <https://doi.org/10.1111/j.1745-9125.2006.00052.x>
- Cao, X., & Sun, J. (2018). Exploring the effect of overload on the discontinuous intention of social media users: An SOR perspective. *Computers in Human Behavior*, 81, 10–18.
- Chaturvedi, K., Vishwakarma, D. K., & Singh, N. (2021). COVID-19 and its impact on education, social life and mental health of students: A survey. *Children and Youth Services Review*, 121, Article 105866. <https://doi.org/10.1016/j.childyouth.2020.105866>
- Cheng, Y. (2014). Extending the expectation-confirmation model with quality and flow to explore nurses' continued blended E-learning intention. *Information Technology & People*, 27(3), 230–258. <https://doi.org/10.1108/itp-01-2013-0024>
- Dai, H. M., Teo, T., Rappa, N. A., & Huang, F. (2020). Explaining Chinese university students' continuance learning intention in the MOOC setting: A modified expectation confirmation model perspective. *Computers & Education*, 150, Article 103850. <https://doi.org/10.1016/j.compedu.2020.103850>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003.
- Dhahri, A. A., Arain, S. Y., Memon, A. M., & Rao, A. (2020). The psychological impact of COVID-19 on medical education of final year students in Pakistan: A cross-sectional study. *Annals of Medicine and Surgery*, 60, 445–450. <https://doi.org/10.1016/j.amso.2020.11.025>
- Dwivedi, Y. K., Hughes, D. L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J. S., ... Upadhyay, N. (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. *International Journal of Information Management*, 55, Article 102211. <https://doi.org/10.1016/j.ijinfomgt.2020.102211>
- Dziuban, C., Graham, C. R., Moskal, P. D., Norberg, A., & Sicilia, N. (2018). Blended learning: The new normal and emerging technologies. *International Journal of Educational Technology in Higher Education*, 15(1). <https://doi.org/10.1186/s41239-017-0087-5>
- Ela, M. Z., Shohel, T. A., Shovo, T., Khan, L., Jahan, N., Hossain, M. T., & Islam, M. N. (2021). Prolonged lockdown and academic uncertainties in Bangladesh: A qualitative investigation during the COVID-19 pandemic. *Heliyon*, 7(2), Article e06263. <https://doi.org/10.1016/j.heliyon.2021.e06263>
- Engeness, I., Nohr, M., Singh, A. B., & Mørch, A. (2020). Use of videos in the information and communication technology massive open online course: Insights for learning and development of transformative digital agency with pre- and in-service teachers in Norway. *Policy Futures in Education*, 18(4), 497–516. <https://doi.org/10.1177/1478210319895189>
- Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2018). The utilisation of E-learning facilities in the educational delivery system of Nigeria: A study of M-university. *International Journal of Educational Technology in Higher Education*, 15(1). <https://doi.org/10.1186/s41239-018-0116-z>
- Galvis, Á. H. (2018). Supporting decision-making processes on blended learning in higher education: Literature and good practices review. *International Journal of Educational Technology in Higher Education*, 15(1). <https://doi.org/10.1186/s41239-018-0106-1>
- Griffin, C. P., & Howard, S. (2017). Restructuring the college classroom: A critical reflection on the use of collaborative strategies to target student engagement in higher education. *Psychology Learning and Teaching*, 16(3), 375–392. <https://doi.org/10.1177/1475725717692681>
- Guo, Y. M., & Poole, M. S. (2009). Antecedents of flow in online shopping: A test of alternative models. *Information Systems Journal*, 19(4), 369–390.
- Gupta, K. P., Manrai, R., & Goel, U. (2019). Factors influencing adoption of payments banks by Indian customers: Extending UTAUT with perceived credibility. *Journal of Asia Business Studies*.
- Hair, J. F., Jr. (2020). Next-generation prediction metrics for composite-based PLS-SEM. *Industrial Management & Data Systems*, 121(1), 5–11. <https://doi.org/10.1108/IMDS-08-2020-0505>
- Ha, C., & Lee, S. (2019). Elementary teachers' beliefs and perspectives related to smart learning in South Korea. *Smart Learning Environments*, 6(1). <https://doi.org/10.1186/s40561-019-0082-5>

- Hanson, K. A., Borofsky, M. S., Hampson, L. A., Breyer, B. N., Kern, N. G., Conti, S. L., ... Sorensen, M. D. (2020). Capturing the perspective of prospective urology applicants: Impacts of COVID-19 on medical education. *Urology*, 146, 36–42. <https://doi.org/10.1016/j.urol.2020.09.027>
- Hasan, N., & Bao, Y. (2020). Impact of “E-Learning crack-up” perception on psychological distress among college students during COVID-19 pandemic: A mediating role of “fear of academic year loss”. *Children and Youth Services Review*, 118, Article 105355. <https://doi.org/10.1016/j.childyouth.2020.105355>
- Hasan, M. T., Hossain, S., & Safa, F. (2020). Immediate psychological responses during the initial period of the COVID-19 pandemic among Bangladeshi medical students. <https://doi.org/10.31234/osf.io/9fdu2>
- Hsu, M. H., Chiu, C. M., & Ju, T. L. (2004). Determinants of continued use of the WWW: An integration of two theoretical models. *Industrial Management and Data Systems*, 104(9), 766–775. <https://doi.org/10.1108/02635570410567757>
- Hsu, M. H., Chuang, L. W., & Hsu, C. S. (2014). *Understanding online shopping intention: The roles of four types of trust and their antecedents*. Internet research.
- Huang, Y. M. (2019). Examining students’ continued use of desktop services: Perspectives from expectation-confirmation and social influence. *Computers in Human Behavior*, 96, 23–31.
- Ifinedo, P., Pyke, J., & Anwar, A. (2018). Business undergraduates’ perceived use outcomes of Moodle in a blended learning environment: The roles of usability factors and external support. *Telematics and Informatics*, 35(1), 93–102. <https://doi.org/10.1016/j.tele.2017.10.001>
- Islam, M. S., Sujana, M. S., Tasnim, R., Ferdous, M. Z., Masud, J. H., Kundu, S., ... Griffiths, M. D. (2020). Problematic internet use among young and adult population in Bangladesh: Correlates with lifestyle and online activities during the COVID-19 pandemic. *Addictive Behaviors Reports*, 12, Article 100311. <https://doi.org/10.1016/j.abrep.2020.100311>
- Jones, V. A., Clark, K. A., Puyana, C., & Tsoukas, M. M. (2021). Rescuing medical education in times of COVID-19. *Clinics in Dermatology*, 39(1), 33–40. <https://doi.org/10.1016/j.clindermatol.2020.12.010>
- Joo, S., & Choi, N. (2016). Understanding users’ continuance intention to use online library resources based on an extended expectation-confirmation model. *The Electronic Library*, 34(4), 554–571. <https://doi.org/10.1108/el-02-2015-0033>
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692–724.
- Khan, A. H., Sultana, M. S., Hossain, S., Hasan, M. T., Ahmed, H. U., & Sikder, T. (2020). The impact of COVID-19 pandemic on mental health & wellbeing among home-quarantined Bangladeshi students: A cross-sectional pilot study. <https://doi.org/10.31234/osf.io/97s5r>
- König, L., & Jucks, R. (2019). When do information seekers trust scientific information? Insights from recipients’ evaluations of online video lectures. *International Journal of Educational Technology in Higher Education*, 16(1). <https://doi.org/10.1186/s41239-019-0132-7>
- Krishnamurthy, S. (2020). The future of business education: A commentary in the shadow of the COVID-19 pandemic. *Journal of Business Research*, 117, 1–5. <https://doi.org/10.1016/j.jbusres.2020.05.034>
- Lee, J. W. (2010). Online support service quality, online learning acceptance, and student satisfaction. *Internet and Higher Education*, 13(4), 277–283.
- Lee, A. R., Son, S. M., & Kim, K. K. (2016). Information and communication technology overload and social networking service fatigue: A stress perspective. *Computers in Human Behavior*, 55, 51–61.
- Leung, L., & Chen, C. (2019). E-health/m-health adoption and lifestyle improvements: Exploring the roles of technology readiness, the expectation-confirmation model, and health-related information activities. *Telecommunications Policy*, 43(6), 563–575.
- Mahmud, I., Ramayah, T., & Kurnia, S. (2017). To use or not to use: Modelling end user grumbling as user resistance in pre-implementation stage of enterprise resource planning system. *Information Systems*, 69, 164–179.
- Mahmud, I., Sultana, S., Rahman, A., Ramayah, T., & Cheng Ling, T. (2020). E-waste recycling intention paradigm of small and medium electronics store managers in Bangladesh: An S-O-R perspective. *Waste Management & Research: The Journal for a Sustainable Circular Economy*, 38(12), 1438–1449. <https://doi.org/10.1177/0734242x20914753>
- Marques, G., Drissi, N., Díez, I. D., De Abajo, B. S., & Ouhbi, S. (2021). Impact of COVID-19 on the psychological health of university students in Spain and their attitudes toward mobile mental health solutions. *International Journal of Medical Informatics*, 147, Article 104369. <https://doi.org/10.1016/j.ijmedinf.2020.104369>
- Marzo, R. R., Singh, A., & Mukti, R. F. (2021). A survey of psychological distress among Bangladeshi people during the COVID-19 pandemic. *Clinical Epidemiology and Global Health*, 10, Article 100693. <https://doi.org/10.1016/j.cegh.2020.100693>
- Mok, K. H., Xiong, W., Ke, G., & Cheung, J. O. (2021). Impact of COVID-19 pandemic on international higher education and student mobility: Student perspectives from Mainland China and Hong Kong. *International Journal of Educational Research*, 105, Article 101718. <https://doi.org/10.1016/j.ijer.2020.101718>
- Mouakket, S., & Bettayeb, A. M. (2016). Factors affecting University instructors’ continuance intention to use learning management systems: The blackboard system case. In *Proceedings of the 18th international conference on enterprise information systems*. <https://doi.org/10.5220/0005748102150222>
- Nam, K., Baker, J., Ahmad, N., & Goo, J. (2020). Determinants of writing positive and negative electronic word-of-mouth: Empirical evidence for two types of expectation confirmation. *Decision Support Systems*, 129, Article 113168.
- Naroo, S. A., Morgan, P. B., Shinde, L., & Ewbank, A. (2020). The impact of COVID-19 on global contact lens education. *Journal of Optometry*. <https://doi.org/10.1016/j.optom.2020.11.002>
- Oghuma, A. P., Libaque-Saenz, C. F., Wong, S. F., & Chang, Y. (2016). An expectation-confirmation model of continuance intention to use mobile instant messaging. *Telematics and Informatics*, 33(1), 34–47.
- Qazi, A., Naseer, K., Qazi, J., AlSalman, H., Naseem, U., Yang, S., ... Gumaee, A. (2020). Conventional to online education during COVID-19 pandemic: Do develop and underdeveloped nations cope alike. *Children and Youth Services Review*, 119, Article 105582. <https://doi.org/10.1016/j.childyouth.2020.105582>
- Quillinan, B., MacPhail, A., Dempsey, C., & McEvoy, E. (2018). Transformative teaching and learning through engaged practice: Lecturers’ and students’ experiences in a University and underserved community partnership in Ireland. *Journal of Transformative Education*, 17(3), 228–250. <https://doi.org/10.1177/1541344618809681>
- Qureshi, M. A., Sharif, A., & Afshan, S. (2018). Acceptance of learning management system in University students: An integrating framework of modified UTAUT2 and TTF theories. *International Journal of Technology Enhanced Learning*, 1(1), 1. <https://doi.org/10.1504/ijtel.2018.10017608>
- Rahman, M. E., Zubayer, A. A., Al Mazid Bhuiyan, M. R., Jobe, M. C., & Ahsan Khan, M. K. (2021). Suicidal behaviors and suicide risk among Bangladeshi people during the COVID-19 pandemic: An online cross-sectional survey. *Heliyon*, 7(2), Article e05937. <https://doi.org/10.1016/j.heliyon.2021.e05937>
- Ratten, V., & Jones, P. (2021). COVID-19 and entrepreneurship education: Implications for advancing research and practice. *International Journal of Management in Education*, 19(1), Article 100432. <https://doi.org/10.1016/j.ijme.2020.100432>
- Sandanayake, T. C. (2019). Promoting open educational resources-based blended learning. *International Journal of Educational Technology in Higher Education*, 16(1). <https://doi.org/10.1186/s41239-019-0133-6>
- Santiago, C. D., Bustos, Y., Jolie, S. A., Flores Toussaint, R., Sosa, S. S., Raviv, T., & Cicchetti, C. (2021). The impact of COVID-19 on immigrant and refugee families: Qualitative perspectives from newcomer students and parents. *School Psychologist*, 348–357. <https://doi.org/10.1037/spq0000448>
- Sarkar, S. S., Das, P., Rahman, M. M., & Zobaer, M. S. (2021). Perceptions of public university students towards online classes during COVID-19 pandemic in Bangladesh. In *Frontiers in education*, . 6Frontiers Media SA. July.
- Sawang, S., Newton, C., & Jamieson, K. (2013). Increasing learners’ satisfaction/intention to adopt more E-learning. *Education + Training*, 55(1), 83–105. <https://doi.org/10.1108/00400911311295031>
- Sayed, A., Kundu, S., Banna, M. H., Hasan, M. T., Begum, M. R., & Khan, M. S. (2020). Mental health outcomes during the COVID-19 and perceptions towards the pandemic: Findings from a cross sectional study among Bangladeshi students. *Children and Youth Services Review*, 119, Article 105658. <https://doi.org/10.1016/j.childyouth.2020.105658>
- Shafiq, S., Nipa, S. N., Sultana, S., Rahman, M. R., & Rahman, M. M. (2021). Exploring the triggering factors for mental stress of university students amid COVID-19 in Bangladesh: A perception-based study. *Children and Youth Services Review*, 120, Article 105789. <https://doi.org/10.1016/j.childyouth.2020.105789>
- Shang, D., & Wu, W. (2017). Understanding mobile shopping consumers’ continuance intention. *Industrial Management & Data Systems*, 117(1), 213–227.
- Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1), 1–8.

- Soon, H. T., & Kadir, S. L. S. A. (2017). The drivers for cloud-based virtual learning environment: Examining the moderating effect of school category. *Internet Research*, 27(4), 942–973.
- Tadesse, S., & Muluye, W. (2020). The impact of COVID-19 pandemic on education system in developing countries: A review. *Open Journal of Social Sciences*, 8(10), 159–170.
- Tahar, N. F., Mokhtar, R., Jaafar, N. H., Zamani, N. D., Sukiman, S. A., & Ismail, Z. (2013, December). Students' satisfaction on blended learning: The use of factor analysis. In *2013 IEEE Conference on e-Learning, e-Management and e-Services* (pp. 51–56). IEEE.
- Tam, C., Santos, D., & Oliveira, T. (2020). Exploring the influential factors of continuance intention to use mobile Apps: Extending the expectation confirmation model. *Information Systems Frontiers*, 22(1), 243–257.
- Thong, J. Y., Hong, S. J., & Tam, K. Y. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. *International Journal of Human-Computer Studies*, 64(9), 799–810.
- Whittaker, A., Densley, J., Cheston, L., Tyrell, T., Higgins, M., Felix-Baptiste, C., & Havard, T. (2019). Reluctant gangsters revisited: The evolution of gangs from postcodes to profits. *European Journal on Criminal Policy and Research*, 26(1), 1–22. <https://doi.org/10.1007/s10610-019-09408-4>
- Williams, L., Ralphs, R., & Gray, P. (2016). The normalization of cannabis use among Bangladeshi and Pakistani youth: A new frontier for the normalization thesis? *CrimRxiv*. <https://doi.org/10.21428/cb6ab371.9d49a0d4>
- Wise, C. E., Bereikney Merrell, S., Sasnal, M., Forrester, J. D., Hawn, M. T., Lau, J. N., ... Knowlton, L. M. (2021). COVID-19 impact on surgical resident education and coping. *Journal of Surgical Research*, 264, 534–543. <https://doi.org/10.1016/j.jss.2021.01.017>
- Wixom, B. H., & Todd, P. A. (2005). A theoretical integration of user satisfaction and technology acceptance. *Information Systems Research*, 16(1), 85–102.
- Wolfe, C. R., & Cedillos, E. M. (2015). *E-communications platforms and E-learning* (pp. 895–902). International Encyclopedia of the Social & Behavioral Sciences. <https://doi.org/10.1016/b978-0-08-097086-8.41022-6>
- Wu, L., Chen, K. W., & Chiu, M. L. (2016). Defining key drivers of online impulse purchasing: A perspective of both impulse shoppers and system users. *International Journal of Information Management*, 36(3), 284–296.
- Wu, L., Chiu, M. L., & Chen, K. W. (2020). Defining the determinants of online impulse buying through a shopping process of integrating perceived risk, expectation-confirmation model, and flow theory issues. *International Journal of Information Management*, 52, Article 102099.
- Xu, N., & Wang, H. (2018). Research on impact factors of user's continuance intention in online education platform [Conference session]. April. In *2017 international conference on industrial informatics - computing technology*. Wuhan, China: Intelligent Technology, Industrial Information Integration (ICIICII).
- Yeasmin, S., Banik, R., Hossain, S., Hossain, M. N., Mahumud, R., Salma, N., & Hossain, M. M. (2020). Impact of COVID-19 pandemic on the mental health of children in Bangladesh: A cross-sectional study. *Children and Youth Services Review*, 117, Article 105277. <https://doi.org/10.1016/j.childyouth.2020.105277>
- Yuan, S., Liu, Y., Yao, R., & Liu, J. (2016). An investigation of users' continuance intention towards mobile banking in China. *Information Development*, 32(1), 20–34.
- Zhang, Y., Fang, Y., Wei, K. K., & Chen, H. (2010). Exploring the role of psychological safety in promoting the intention to continue sharing knowledge in virtual communities. *International Journal of Information Management*, 30(5), 425–436.
- Zhang, Y., Fang, Y., Wei, K., & Wang, Z. (2012). Promoting the intention of students to continue their participation in E-learning systems. *Information Technology & People*, 25(4), 356–375. <https://doi.org/10.1108/09593841211278776>
- Zheng, F., Khan, N. A., & Hussain, S. (2020). The COVID 19 pandemic and digital higher education: Exploring the impact of proactive personality on social capital through internet self-efficacy and online interaction quality. *Children and Youth Services Review*, 119, Article 105694. <https://doi.org/10.1016/j.childyouth.2020.105694>
- Zhu, Z., Yu, M., & Riezebos, P. (2016). A research framework of smart education. *Smart Learning Environments*, 3(1). <https://doi.org/10.1186/s40561-016-0026-2>
- Zhu, Y., Zhang, J. H., Au, W., & Yates, G. (2020). University students' online learning attitudes and continuous intention to undertake online courses: A self-regulated learning perspective. *Educational Technology Research & Development*, 68(3), 1485–1519. <https://doi.org/10.1007/s11423-020-09753-w>