Investigating Students' Acceptance of Moodle E-Learning Platform for Teaching and Learning during COVID-19 Pandemic at Makerere University Business School

Joseph Kizito Bada[1], Brenda Amah Dopia[2]
Department of Computer Science and Engineering
Faculty of Computing and Informatics
Makerere University Business School, P.O. Box 1337, Kampala Uganda
Corresponding Author Email: jbada@mubs.ac.ug
ORCID: 0000-0002-6647-1070
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Abstract

The aim of this study was to investigate online teaching and learning using Moodle for teaching Software Engineering in the second-year Business Computing undergraduate class at Makerere University Business School (MUBS). The study was done during the COVID-19 pandemic when most lectures were conducted online with few face-to-face sessions. The Technology Acceptance Model (TAM) and the theory of reasoned action (TRA) theoretical frameworks were used to direct the research. A questionnaire was designed and administered to a group of 145 students selected as a sample from a class 180 students. The data collected was analysed to determine correlations between latent variables and variances of dependable variables explained by independent variables. The correlation between the intention to use and the actual use of the system was high ($r = 0.555$). This implies that students' acceptance of online teaching and learning was high. The results indicate that system accessibility and self-efficacy explain 27% of the variance in the perceived ease of use (adjusted R square = 0.27). The regression model was significant (sig. < 0.05). The results also indicate that perceived usefulness and perceived ease of use explain 41.9% of the variance in intention to use (adjusted R square = 0.419). This regression model was significant (sig. < 0.05). MUBS successfully implemented e-learning platform (MUBSEP) for emergency teaching during the COVID-19 pandemic lockdown. The teaching staff and the students used online educational tools for live classes and end-of-semester assessments. The use blended learning approach post COVID-19 pandemic is recommended for higher education.

Keywords: Moodle; E-learning; MUBSEP; Higher education; Uganda.

Introduction

In March 2020, Uganda had a total of 15,000,000 students and 548,000 teachers at all levels of education. During the same period, there were 600,000 students in refugee camps in 13 hosting districts of Uganda. On 20 March 2020, the President of the Republic of Uganda issued a directive for the closure of all educational institutions in the country as a measure to stop the spread of COVID-19 in the country (Madinah, 2020).

The COVID-19 pandemic affected education systems at all levels worldwide, and this led to the closure of schools and universities in all the affected countries. Over 100 countries implemented a nationwide lockdown and that affected 90% of the world's student population (UNESCO, 2020 & Murphy MPA, 2020). School closures affected many education stakeholders that included students, teachers, families and governments, and it had adverse effects on the economies of countries (Owusu-Fordjour, Koomson, & Hadson, 2020). Closure of schools and universities as a measure to prevent the spread of COVID-19 infections brought into play various social and economic issues that included student debts (Jamerson, Josh, & Joshua, 2020), digital learning (Karp & McGowan, 2020), food security (Cecco, 2022) and homelessness (Ngumbi, 2020), as well as access to child care (Belinda, 2020), health care (Feuer, 2020), housing (Barrett, 2020), the internet (Jordan, 2020) and disability services (Alex, 2022).

E-learning comprises a computer-based learning process for digital content, system-based support and a mentorship environment for students and teachers (Eze et al., 2018; Arghya et al., 2020; Abdulhamid et al., 2019). The COVID-19 pandemic brought several challenges to global education at all levels of learning. To curb the pandemic, new pandemic mitigation measures, such as total and partial lockdown, physical, social distancing, travel bans, closure of public spaces, curfews, working remotely at home, to mention but few, were imposed. These had resulted in adverse effects that largely affected economic development and the teaching and learning curriculum of educational institutions (World Bank, 2020; World Health Organisation, 2020; Ministry of Health, Uganda, 2021). Yakubu and Kah (2020) pointed out the importance of educational administration in understanding the factors that encourage the instructors to use learning management systems and policy formulation for its administration. Basak et al. (2017) acknowledged eight factors that affect e-learning in continuing education in Africa. The authors described these as institutional, technical, resource, training, competency, infrastructural, attitudinal and social integration factors. The institutional, infrastructural, competency and resource factors were emphasised as the leading factors of the eight elements. Research is needed to discover the e-learning approaches and understand factors that promote e-learning initiatives in Africa (Basak et al., 2017).

Most educational institutions around the world are gradually adopting e-learning techniques using a variety of media, including interactive technologies, television, postal linkages and radio. Even though most Ugandan universities now employ e-learning methodologies, many of them are still committed to the conventional teaching methods of in-person lectures in classrooms (Ali et al., 2019). Out of 54 accredited universities, only 37 had been approved to implement open distance learning by the National Council for Higher Education (NCHE) by the end of 2022. However, e-learning still enjoys only limited adoption and utilisation despite the acknowledgement it has received at all levels of education. The existing e-learning strategies have concentrated on setting up ICT infrastructure that supports e-learning with no focus on content development and pedagogical aspects (Ali et al., 2019).

Various scholars have argued that for innovations to be relevant and effective for the poor and the marginalised, these need to apply to a specific problem and context, affordable at low costs, and accessible to all (Pouw, 2020, p.5). Therefore, the government is responsible for building fundamental pillars upon which digital transformation takes place. In addition to digital infrastructure, skills, innovations and policy/regulations, these form the guiding pillars of solidarity, comprehensiveness, inclusiveness, homegrown ……., safety and a new mindset.

Study objective

The research was undertaken by applying the technology acceptance model and the theory of reasoned action to investigate students' acceptance of e-learning platform (MUBSEP) at MUBS.

Literature Review

The COVID-19 pandemic had affected teaching and learning at schools and universities, with two-thirds of higher educational institutions reporting that classroom teaching had been replaced by distance teaching and learning. The shift from face-to-face to online education came with challenges: access to technical infrastructure, competencies and pedagogies for online studies, and the requirements for specific fields of study. At the same time, the same changeover to online teaching and learning offered important opportunities to propose more flexible learning possibilities, explore blended or hybrid learning, and mix synchronous and asynchronous learning (Marinoni, 2020).

A rapid assessment of the experiences of COVID-19 disruption to education globally exposed many challenges in education systems, including diminished resources for institutions, personal and academic challenges for institutions and students, the demand for improved infrastructure to support the continued distance and blended learning model, and reduced mobility imposing pressures to enhance regional and local tertiary institutions (World Bank Group, 2020). Particular challenges educational institutions faced in Uganda that needed immediate attention by policymakers and practitioners included mass student displacements and loss of education services from schools and universities; use of outdated technology platforms by schools and universities to conduct online studies; challenges in the continuity of instructional operations that include coursework, examinations and the award of degrees; limited technical competencies and training; attitudinal and mindset challenges connected with using technology in learning. Difficulties in maintaining and closing research operations that included campus laboratories and facilities, fieldwork, conferences and external research collaborations had also been observed. Other significant challenges experienced by educational institutions due to the pandemic included increased inequity and inequality in access and retention, as at-risk students returned at lower levels owing to increased financial constraints (World Bank Group, 2020).

To realise digital resilience and promote digital inclusion, there is a need to conduct a rapid technology assessment to establish what it would take in terms of infrastructure and connectivity to sustain continued teaching and learning. Weaknesses in infrastructure that include power and broadband should be identified and addressed. Students are the primary beneficiaries of online studies, and this calls for a survey of students on their capacity to engage in remote learning. We need to understand whether students have the necessary equipment and skills to participate in remote learning. In education, technology has improved the effectiveness of interventions by ensuring that programmes meet their specified goals, such as teacher attendance and learning outcomes.

The idea that online solutions should get more attention is misleading in at least three ways. First, online solutions do not reach nearly as many students as offline solutions do, especially those in urgent need of help. Second, there are several examples where expensive online solutions have not only been ineffective, but they have also reduced student learning. Third, online solutions have a higher likelihood of appearing more effective because they get more investment (Barron et al., 2021). Research is needed to establish what it would take in terms of infrastructure and connectivity to sustain continued teaching and learning.

The emergence of COVID-19 provided a window of opportunity to set up learning systems that enabled universities to begin using e-learning systems in the spirit of ensuring that everyone has access to university education. This was not very common in many universities, with some supporters arguing that the e-learning methodology was for the rich and that a significant financial cost was associated with its implementation. Most universities had no plan of utilising e-learning as an approach to improved and sustainable access to education, both before and during the COVID-19 pandemic. Several universities began using this approach during and after the pandemic. With the fusion of information communication technology (ICT) in higher institutions of learning, new teaching and learning practices have developed, often called blended learning, allowing students and teachers to interact with digital platforms and physically (Ali et al., 2019). A study done at MUBS in an MBA class showed high acceptance of the e-learning approach. Students pointed out that e-learning was associated with eased coursework administration

and the availability of lecture materials in addition to the promotion of an efficient and effective way of teaching and studying in a user-friendly, interactive and flexible learning environment (Bada, 2022). It was also noted that universities need to promote e-learning techniques.

Ali et al. (2019) also noted in his study at Muni University that e-learning contributed to improved communication between students and professors as well as flexibility in line with the time students could learn. This close and real-time interaction was made possible because learning was based on the use of basic devices like smartphones, which could be operated with ease. In the same study, it was also established that the outstanding motivations for blended learning were accessibility, positive attitude and knowledge and skills. A study by Eton and Chance (2020) noted that students considered the cost of access to e-library resources as cheap as a result of universities purchasing and providing access to e-library resources which enabled students to sign in and utilise any electronic resource of interest.

As the adoption of e-learning is progressively picking up, there are several challenges faced by universities, lecturers and students which hinder its optimal implementation, as shown in some studies done in universities in Uganda. These include low bandwidth, unstable internet, lack of a plagiarism tool, insufficient numbers of computers, poor power supply and dependence on internet connectivity (Ali et al., 2019; Bwire et al., 2020). A study by Namirembe (2019) stated that the failure of e-learning information systems is attributed to lack of a structured approach and inadequate empowerment of the faculty staff and students. The cost of the internet and related equipment was also seen as a financial obstacle to e-learning in addition to inadequate digital tools, insufficient information technology knowledge and the rejection of copyright for already created e-learning systems. Furthermore, a study done by Komuhangi et al. (2022) among clinical students in a private university in Uganda showed that, although they were willing to adopt e-learning approaches, some practical programmes, such as clinical courses, as highlighted by Eton and Chance (2022), cannot apply e-learning in totality except for the enhancement of in-person instruction.

As we investigate the significant strides made in e-learning adaptation, there is a need to address the above challenges. Possible approaches include partnering with mobile networks to offer special tariffs and bundle packages for e-learning, exploiting offline mobile phone educational applications and open-source software platforms (Tumwesige, 2020). In addition, financial support and commitment by university management and the adoption of e-learning technology should be encouraged during the early school years of students and the early career years of the academic staff if universities are to be competitive (Namirembe, 2019). Furthermore, improvements in internet connectivity and power supply, addition of plagiarism plugins and steady power supply are also vital for a successful e-learning programme (Ali et al., 2019).

Online teaching of mathematics enhances students' interactions because they display positive engagement with remote learning experiences (Chao et al., 2021). For example, learning mathematics using mobile phones helped students to learn through collaboration and teamwork (Baya'a & Daher, 2009). Meanwhile, students' resilience in mathematics was always high during online learning because it positively influenced their mathematical reasoning and communication skills (Amelia et al., 2020; Dewi, 2021). Furthermore, online mathematics learning activities made students gain more interest, understanding and confidence in the subject (Voon, 2014). The finding was also acknowledged by Tay, Lee and Ramachandran (2021) when they asserted that students' engagement in online learning contexts was paramount to their mathematics learning. Effort expectancy expresses competency in using technology (Alshahri, 2020). This phenomenon has been extensively studied, and different scholars have given its merits and demerits. For instance, Ariyanti and Santoso (2020) found that students' average mathematics learning outcomes and responses towards the subject after online learning proved to be more significant than those before online learning, something the researchers attributed to the ease of use of technology by the students. In contrast, Mensah (2018) found that mathematics tutors used ICT for general applications such as sending emails but rarely used computer-based technology. They hardly integrated ICT into teaching and learning mathematics because they found it challenging.

Online teaching and learning should be devoted predominantly and purposefully to activities that promote student motivation and encouragement and provide opportunities for socialisation (Northcote, 2008). However, Azmat and Ahmad (2022) pointed out that the lack of social interaction was a global

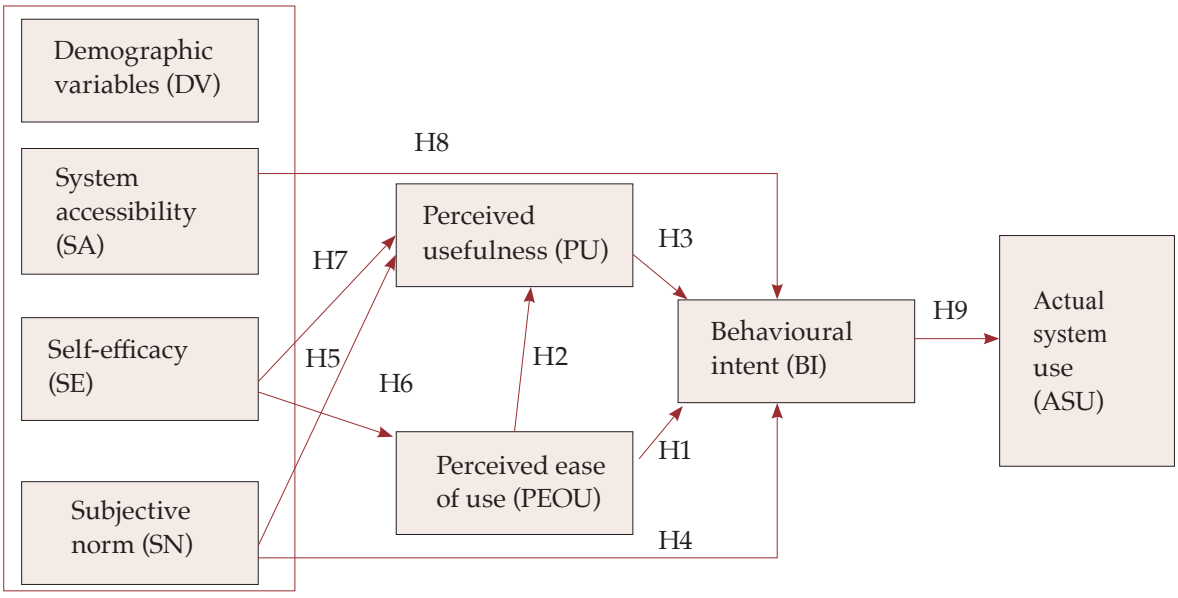
challenge to the effectiveness of online learning. They drew this observation from their study, where they found that lack of social interaction affected learners in many ways. For example, it activated psychological issues such as depression, fear of loneliness and boredom and further affected learners' satisfaction levels. In agreement, Calder, Jafri and Guo (2021) also revealed that the inability to interact directly with other learners for clarification and mediation was the major cause of frustration with online collaborations.

Theoretical framework

The research follows the Technology Acceptance Model (TAM) and theory of reasoned action (TRA). The Technology Acceptance Model (TAM) is an information systems model that explains how users come to accept and use a new technology (Davis, 1989) and it is derived from the TRA. The TRA was conceptualised and developed in the early 1970s (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) as a theory that revealed an explicable relationship between attitudes and behaviour. According to the TRA, an attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour (Eagly & Chaiken, 1993, p. 15). Attitudes are independent expressions that are not merely related to beliefs, but are a function of beliefs as well (Ajzen, 1989, p. 247). According to the TRA, individuals' behaviours are rational responses based on a systematic use of current information. That is, a person's intention is related to a person's attitude towards the behaviour, and this determines the performance of a particular behaviour. The factors that impact this intention are attitudes and subjective norms (Dillon & Morris, 1996, p. 6). The TRA also refers to a subjective norm, which is a "person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Fishbein & Ajzen, 1975, p. 302).

The research model is presented in Figure 1 below.

Figure 1: The research model



Source: Adopted from TAM (Davis, 1989) and TRA (Fishbein & Ajzen, 1975, p. 302)

Davis (1989, pp. 320) acknowledged perceived usefulness (PU) as the degree to which a person believes that using a particular system would enhance his or her job performance. Hence, acceptance of e-learning by the undergraduate degree students is an essential factor in the use of e-learning platform (MUBSEP) for online classes. The perspectives and attitudes of students were explored in several studies. Masrom (2007) and Leem and Lim (2007) acknowledged that perceived usefulness is one of the essential factors that can impact the level of e-learning participation.

Perceived ease of use

According to Davis et al. (1989, p. 993), perceived ease of use and perceived usefulness are the predictors of the behavioural intentions. The two affect students' attitudes towards using the e-learning system. The continuing use of the e-learning system is also influenced by the students' satisfaction with the system, and this is measured by the perceived usefulness. Davis (1989, p. 320) defined perceived ease of use as the degree to which a person believes that using a particular system would be free from effort. Previous research results indicate that e-learning has proved that perceived ease of use positively and significantly affects the behavioural intention to use e-learning systems (Cheng, 2011; Davis et al., 1989; Hassanzadeh et al., 2012). Lin et al. (2010) defined perceived ease of use as the extent to which users believe that employing an e-learning system will be effortless. Many scholars have confirmed that perceived ease of use significantly influenced perceived usefulness (Abdullah et al., 2016; Binyamin et al., 2019; Joo et al., 2018; Zogheib et al., 2015). Many scholars have also confirmed that perceived ease of use strongly predicted attitude towards using e-learning (Forkides, 2017; Teo, 2012; Wang, 2015; Zogheib et al., 2015). Consequently, this study hypothesises that:

H1: There is a positive association between perceived ease of use and behavioural intent.

H2: There is a positive association between perceived ease of use and perceived usefulness.

Perceived usefulness

Lin, Chen and Fang (2010) defined perceived usefulness in the context of e-learning as the degree to which users believe that e-learning can support them to achieve teaching and learning objectives. Perceived usefulness is influenced by the learning material, the convenience of course delivery and the course content. Perceived usefulness is an indicator of a student's intention to use the e-learning platform for online classes. Many scholars have confirmed that perceived usefulness influences the attitude towards e-learning (Martinho et al., 2018; Ritter, 2017; Tarhini et al., 2015; Teo, 2012; Wong, 2015; Zogheib et al., 2015). Other scholars have also confirmed that perceived usefulness has a significant impact on behavioural intention towards e-learning adoption (Abdullah et al., 2016; Martinho, 2018; Scherer et al., 2019; Wong, 2015). Thus, the following hypothesis is proposed:

H3: There is a positive association between perceived usefulness and behavioural intent.

Subjective norm

The subjective norm is an individual's perception that most people who are important to him or her think he or she should or should not perform the behaviour in question (Venkatesh et al., 2003). Agudo-Peregrina et al. (2014) acknowledged the important people as family members and friends who put social pressure on the person. The subjective norm or social influence refers to the perception that important people assume that one should use the system or not (van Raaij & Schepers, 2008). In an e-learning context, students believe that people who are important think they should use the e-learning system (Li et al., 2012; Dillon & Morris, 1996, p. 6). Abdullah and Ward (2016) affirmed that the subjective norm is a significant predictor of both the perceived ease of use and the perceived usefulness of e-learning among the students. More scholars also affirmed that the subjective norm is a stronger predictor of perceived ease of use and perceived usefulness (Chang, Hajiyev, & Su, 2017; Salazadeh, Moghavvemi, Wan Mohamed Radzi, Babashamsi, & Arashi, 2017; Park, Nam, & Cha, 2012). This led us to formulate the following hypotheses:

H4: There is a positive association between subjective norm and behavioural intent.

H5: There is a positive association between subjective norm and perceived usefulness.

Self-efficacy

According to Bandura (1982), self-efficacy is an individual's evaluation of his or her own ability to perform a certain task. Computer self-efficacy is referred to as an individual's ability to perform tasks effectively by using a computer system (Wu et al., 2010). Computer self-efficacy has been validated by several researchers as the key determinant of computerised system acceptance and continued use. In the case of e-learning, empirical evidence demonstrates that higher computer self-efficacy leads to increased confidence and motivation in an individual's attitude towards adoption and acceptance of use. Social cognitive theory was

developed by Bandura (1991). According to Bandura (1991), self-efficacy is a person's assessment of one's abilities that is adjusted to the results achieved. Self-efficacy is considered a person's success in something. A person's success in using a computer is a form of self-efficacy. Tarhini et al. (2015) acknowledged that computer self-efficacy has long been used as a predictor of computer use behaviour which plays an important role in determining the actual behaviour. In the case of computer usage, Shen and Eder (2009) described self-efficacy as one's conviction in one's ability to execute a given task using a computer. Shen and Eder (2009) reported that computer self-efficacy is a strong predictor of perceived ease of use, followed by computer playfulness. Abdullah (2016) also reported a positive association between self-efficacy and perceived usefulness. Therefore, we propose the following hypotheses:

H6: There is a positive association between self-efficacy and perceived ease of use.
H7: There is a positive association between self-efficacy and perceived usefulness.

System accessibility

System accessibility means that an accessible system is used more conveniently and frequently than a system that is inaccessible owing to some barriers to its use (Park, 2009). Problems such as lack of good ICT infrastructure and slow internet speed hinder system accessibility. Students get frustrated in online learning environments when network connectivity is poor and internet speed is slow (Musa & Othman, 2012; Poon, Lock-Teng Low, & Gun-Fie Yong, 2004). Accessibility determines the usability of e-learning and predicts the behavioural intention to use and adopt it (Part, 2009). Kaisara and Bwalya (2021) reported the challenges students experienced when they attempted to access the e-learning platform. These challenges were due to a high volume of user traffic on the e-learning platform, and poor coverage of internet networks in Namibia (Turuvinga, Chikohora, Jere, & van den Dool, 2020). Thus, we formulate the following hypothesis:

H8: There is a positive association between system accessibility and behavioural intent.

Intention towards e-learning

Behavioural intention is a cognitive process of an individual's readiness to perform a specific behaviour and is an immediate outcome of usage behaviour (Abbasi et al., 2011). In the initial TAM (Davis, 1989), attitude, perceived usefulness and perceived ease of use have an impact on behavioural intention.

E-learning has become popular in higher education (Abdel-Wahab, 2008) and because of the COVID-19 pandemic, it is now a necessity for higher educational institutions to foster blended learning. Many scholars (de Souza Rodrigues et al., 2021; Sidik & Syafar, 2020; Xu & Wang, 2017) have studied students' intention in e-learning and considered it to be high. Thus, we propose the following hypothesis:

H9: There is a positive association between behavioural intent and actual system use.

Attitude towards e-learning

Attitude to use in TAM is conceptualised as an attitude towards the use of a system in the form of acceptance or rejection as an impact when someone uses technology in their work (Chinomona, 2013). The output of the evaluation process takes the form of acceptance or rejection of technology. In TAM, attitudes towards use are referred to as evaluative effects of individual positive or negative feelings in performing certain behaviours (Matikiti et al., 2019; Silva & Aristiano, 2019). An individual's intention to adopt the e-learning system is influenced by his or her attitude based on the experience he or she acquired from an e-learning environment. The TRA establishes the link between attitude and behaviour (Ajzen & Fishbein, 1977). Researchers have examined the role of attitude as a mediating variable in the adoption of the e-learning system (Alenezi & Karim, 2010; Ndubisi, 2004; Yasin et al., 2020). Many scholars, basing on the recent studies of e-learning acceptance, have reported that attitude is a determinant factor of behavioural intention towards e-learning usage (Cheung & Vogel, 2013; Tosuntas et al., 2015; Chu & Chen, 2016; Teo et al., 2017). Actual system usage is real behaviour in adopting a system. According to Davis (1989), actual system usage is a form of external psychomotor response that is measured by someone with real use. May et al. (2014) also acknowledged that actual system usage is measured based on repeated use and more frequent usage by the amount of time spent interacting with the technology or the frequency of use of the technology.

Research Methodology

The quantitative method was used for this study. Quantitative research is directed at analysing the relationships and regularities that appear between selected factors (Merriam, 1998). This type of research generates measurable changes and produces data that is more generalisable than data from qualitative research (Cohen, Manion, & Marrison, 2000).

The study was conducted in an undergraduate Business Computing class at MUBS. The study population was a class of 180 students that took a Business Software Engineering course. The cross-section design with the stratified random sampling method was used. In accordance with Krejcie and Morgan (1970), a study population of 180 students gave a sample of 145. Paper-based questionnaires were printed and physically distributed to students. This was done to ensure the inclusiveness of the selected participants in data collection. COVID-19 standard operating procedures (SOPs) were strictly observed during the administration of the questionnaires. The data was collected within a period of one week.

The dependent variables included actual system use, intention to use and perceived usefulness. Independent variables included demographic characteristics (gender and age), subjective norm, self-efficacy, perceived ease of use, perceived usefulness, system accessibility and attitude to MUBSEP. SPSS version 21 was used for data entry and analysis. The option for handling missing data for this study was "the exclude cases pairwise" option from the SPSS version 21 software; this excluded the case(s) (person(s)) only if they were missing the data required for the specific analysis. Demographic data was analysed using descriptive statistics. Correlation analysis was done between latent variables that included perceived usefulness and behavioural intent, perceived ease of use and behavioural intent and behavioural intent and actual system use. Regression analysis was done to determine the contribution of independent variables to dependent variables. Regression analysis was done to determine the variance of behavioural intent as explained by perceived usefulness and perceived ease of use.

Results

For demographic information, 52 male students and 81 female students participated in the research. Of these, 118 were within the age range of 20 to 24 years, 12 within the age range of 25 to 29 years and three were 29 years and above.

The reliability of the research instrument was tested by computing Cronbach's alpha values as shown in Table 1. In our research, the values of Cronbach's alpha were well above 0.70. The research instrument was highly reliable.

Table 1: Cronbach alpha values

Item	Cronbach's Alpha
Perceived ease of use	.864
Perceived usefulness	.853
Attitude to MUBSEP	.853
Intention to use	.843
System accessibility	.861
Subjective norm	.864
Self-efficacy	.859
Actual system use	.854

The results of the correlation analysis are presented in the next section.

Correlation analysis results

The relationships between latent variables were computed using Pearson product-moment correlation coefficients. The results are presented in the table below:

Table 2: Correlation analysis results

Correlations									
		1	2	3	4	5	6	7	8
Perceived ease of use	Pearson correlation	1							
	Sig. (2-tailed)								
	N	127							
Perceived usefulness	Pearson correlation	.543**	1						
	Sig. (2-tailed)	.000							
	N	122	125						
Attitude to MUBSEP	Pearson correlation	.516**	.688**	1					
	Sig. (2-tailed)	.000	.000						
	N	124	122	130					
Intention to use	Pearson correlation	.523**	.609**	.652**	1				
	Sig. (2-tailed)	.000	.000	.000					
	N	120	119	124	126				
System accessibility	Pearson correlation	.469**	.472**	.389**	.453**	1			
	Sig. (2-tailed)	.000	.000	.000	.000				
	N	126	124	129	126	132			
Subjective norm	Pearson correlation	.329**	.457**	.428**	.534**	.450**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000			
	N	126	124	129	126	131	132		
Self-efficacy	Pearson correlation	.437**	.390**	.469**	.532**	.398**	.365**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		
	N	124	122	127	124	129	130	130	
Actual system use	Pearson correlation	.503**	.415**	.475**	.555**	.485**	.460**	.572**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	125	124	128	125	130	130	128	131
***. Correlation is significant at the 0.05 level (2-tailed).**									
****. Correlation is significant at the 0.01 level (2-tailed).**									

The above correlation results are interpreted in the Table 3 below:

Table 3: Correlation analysis interpretation

Hypotheses	Results	Status
H1	There was a high positive correlation between perceived ease of use and the behavioural intention to use the system, r = 0.523, n = 120, p<0.001, implying the ability of the students to easily use the MUBSEP relates to their behavioural intention to use the e-learning platform in the future.	Supported
H2	There was a high positive correlation between perceived ease of use and the perceived usefulness of the system, r = 0.543, n = 122, p<0.001, implying the ability of the students to easily use the MUBSEP relates to perceived usefulness to use the e-learning platform in the future.	Supported
H3	There was a high positive correlation between perceived usefulness and the behavioural intention to use the system, r = 0.609, n = 119, p<0.001, implying the perceived usefulness of the MUBSEP by the students relates to their behavioural intention to use the e-learning platform in the future.	Supported
H4	There was a moderate positive correlation between the subjective norm and the behavioural intention to use the system, r = 0.450, n = 131, p<0.001, implying other people who encourage students to use the system relate to their behavioural intention to use the system in the future.	Supported

H5	There was a moderate positive correlation between the subjective norm and the perceived usefulness of use of MUBSEP, r = 0.428, n = 129, p<0.001, implying the ability of the students to easily access the system relates to students' ability to see the perceived usefulness of MUBSEP for the future lessons/lectures.	Supported
H6	There was a moderate positive correlation between self-efficacy and the perceived ease of use of the system, r = 0.437, n = 126, p<0.001, implying the ability and competence of the students to use the system relates to perceived ease of use of the system.	Supported
H7	There was a moderate positive correlation between self-efficacy and the perceived usefulness of the system, r = 0.390, n = 122, p<0.001, implying the ability of the students to easily access the system relates to students' ability to see the perceived usefulness of MUBSEP for the future lessons/lectures.	Supported
H8	There was a moderate positive correlation between system accessibility and the behavioural intention to use the system, r = 0.453, n = 126, p<0.001, implying the ability of the students to easily access the system relates to their behavioural intention to use the system in the future.	Supported
H9	There was a high positive correlation between the behavioural intention to use the system and the actual system use, r = 0.555, n = 125, p<0.001, implying the high intention of the students to use e-learning platform (MUBSEP) is actual translated into online lecture attendance.	Supported

Statistical regression analysis was done to determine the variance of *perceived usefulness* as explained by *self-efficacy* and *subjective norm* with results presented in Table 4 below:

Table 4: Regression analysis

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. error	Beta			Lower bound	Upper bound
1	(Constant)	7.926	1.124		7.053	.000	5.700	10.151
	Subjective norm	.343	.079	.365	4.357	.000	.187	.499
	Self-efficacy	.267	.086	.261	3.113	.002	.097	.436
Dependent variable: Perceived usefulness								
	R	0.518						
	R square	0.268						
	Adjusted R square	0.256						
	F statistics	21.828						
	Sig.	0.000						

The above results show that self-efficacy and subjective norm explain 25.6% of the variance in perceived usefulness (adjusted R square = 0.256). This regression model was significant (sig. < .05). Another statistical regression analysis was done to determine the variance of *intention to use* as explained by *perceived usefulness* and *perceived ease of use*, with results presented in Table 5 below:

Table 5: Regression analysis

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. error	Beta			Lower bound	Upper bound
1	(Constant)	2.656	1.264		2.101	.038	.151	5.161
	Perceived ease of use	.206	.068	.254	3.011	.003	.071	.342
	Perceived usefulness	.537	.094	.482	5.704	.000	.351	.724

Dependent variable: Behavioural intent	
R	0.655
R Square	0.429
Adjusted R square	0.419
F Statistics	42.434
Sig.	0.000

The above results show that perceived usefulness and perceived ease of use explain 41.9% of the variance in intention to use MUBSEP (adjusted R square = 0.419). This regression model was significant (sig. < .05).

Discussion

The study investigated students' acceptance and use of the e-learning platform (MUBSEP) during the COVID-19 pandemic when Uganda was under lockdown. Based on the data collected from 145 students and analysed quantitatively, students accepted the e-learning platform for course delivery in the university. TAM and the TRA were the underlying theories that were used to direct the research. It was found that students' perceived ease of use and perceived usefulness of MUBSEP influenced their intention to use the e-learning platform, and this is in line with Davis' (1989) finding. Many scholars have also confirmed that perceived ease of use significantly influenced perceived usefulness (Abdullah et al., 2016; Binyamin et al., 2019; Joo et al., 2018; Zogheib et al., 2015). From the investigation, we established a high positive correlation between the behavioural intention to use the e-learning system and the actual system use with a correlation value of 0.555, n = 125, p<0.001. This implies that the students have high intention to use the e-learning platform (MUBSEP) for online lectures. E-learning has become popular in higher education (Abdel-Wahab, 2008) and because of the COVID-19 pandemic, it is now a necessity for higher education institutions to foster blended learning. Many scholars (de Souza Rodrigues et al., 2021; Sidik & Syafar, 2020; Xu & Wang, 2017) have studied students' intention to use e-learning and considered it to be high. This is also in line with findings from research done by Ali et al. (2019) at Muni University, where the researchers established that e-learning contributed to improved communication between students and professors and the flexibility in line with the time students could learn. This close and real-time interaction was made possible because learning was based on the use of basic devices like smartphones, which could be operated with ease. The study results also indicate a high positive correlation between perceived ease of use and the behavioural intention to use MUBSEP with a correlation value of 0.523, n = 122, p<0.001, implying that the ability of the students to easily use MUBSEP influences their behavioural intention to use the e-learning platform for future courses. Previous research results indicate that e-learning has proved that perceived ease of use positively and significantly affects behavioural intention to use e-learning systems (Cheng, 2011; Davis et al., 1989; Hassanzadeh et al., 2012). This is also in line with findings of the research done by Eton and Chance (2020), in which the researchers established that the cost of access to e-library resources was noted as cheap by students, which enabled them to sign in and utilise any electronic resource of interest from the e-library. Online education can be strengthened by providing e-library services to students and lecturers to complement online teaching. There is a need for institutions to plan, budget and acquire online library services for the provision of reference materials for students and teaching staff members. There was a high positive correlation between perceived usefulness and the behavioural intention to use the MUBSEP with a correlation value of 0.609, n = 119, p<0.001, implying that the perceived usefulness of the MUBSEP by the students influences their behavioural intention to use the e-learning platform in the future. Other scholars have also confirmed that perceived usefulness has a significant impact on behavioural intention to adopt e-learning (Abdullah et al., 2016; Martinho, 2018; Scherer et al., 2019; Wong, 2015). This is in line with the study done at MUBS that reported high acceptance of e-learning in a postgraduate class. Students pointed out that e-learning was associated with eased coursework administration and the availability of lecture materials in addition to the promotion of an efficient and effective way of teaching and studying in a user-friendly, interactive and flexible learning environment (Bada, 2022).

Another finding of this study is that self-efficacy influenced perceived ease of use of MUBSEP. The ability of the students to successfully use online educational tools in MUBSEP implies ease of use of the

system and a positive attitude of continuing to use the same system in the future. Shen and Eder (2009) reported that computer self-efficacy is a strong predictor of perceived ease of use, followed by computer playfulness. This is in line with the view presented by Tarhini et al. (2015), who acknowledged that computer self-efficacy had long been used as a predictor of computer use behavior, which played an important role in determining actual behaviour.

The COVID-19 pandemic posed challenges to education systems at all levels. During the pandemic institutions of higher education adopted synchronous online lectures using Zoom software platform. This transformed teaching and learning from traditional face-to-face classes – which are teacher-centred – to live online classes that are student-centred. The mix of the two learning approaches gives better results and balances teaching and learning, especially with regard to social aspects of face-to-face education and students' engagement in research that contributes to learning. The onset of the COVID-19 pandemic occurred when students and lecturers had very little or no skills in online education. Course instructors and students had to learn new skills in online education before participating in live classes and online examinations. The institutions should not ignore new developments in educational technologies but should rather learn and adopt them as important tools for survival when catastrophic pandemics, wars or natural disasters such as earthquakes and floods affect schools or universities. The institutions should promote organisational learning to gain new ICT skills and become resilient during any pandemic, natural disaster or war.

Conclusion

The ability of the students to easily access the system related to their behavioural intention to use the system in the future. The institution has continued to use MUBSEP after the pandemic. This happens practically through the adoption of blended learning, which students and the teaching staff highly appreciate. Educational stakeholders such as the NCHE and the Ugandan Ministry of Education and Sports have also encouraged all institutions of higher learning to use blended learning for course delivery. The high intention of students to use e-learning is now reflected in regular attendance of online classes. Most students prefer online assessments for examination papers that are not quantitative or practical. The ability of the students to easily use MUBSEP related to their behavioural intention to continue using the e-learning platform. During the pandemic, the students demanded online examinations, especially in postgraduate classes, and the demand extended to undergraduate classes, and that confirmed the positive attitude of students towards using MUBSEP for online assessments.

Before the COVID-19 pandemic, e-learning was not popular in the institution, and most teaching staff and students preferred face-to-face lectures. That attitude changed during the pandemic when the country was on lockdown with all educational institutions closed. The only approach that could ensure continuity of education was online teaching and learning, radio and television teaching and printouts of educational materials for students to use for home study. This influenced the behavioural intention of students to continue using technology for studies post-COVID-19.

Students gained experience in online studies. They were able to access and download online lecture notes, do online assignments, participate in online discussions, do online group assignments, and take online final examinations. The system usability became easy after the students had built the mental model of the system for online education. The university leadership also recommended that students joining the first year report with personal laptops for ease of accessing online lessons and assessments.

One advantage of online education is that students access the MUBSEP e-learning system from any country in the world; the international students participated in all course-related activities such as attending live classes and sitting the final examinations online. The fact that system accessibility was easy increased the popularity of the system for online education. Many lecturers recorded their lectures and uploaded them online at MUBSEP for students to access at their convenience and this enabled learning to take place regardless of the geographical location of the students. The institution continuously trains staff and students in online learning to update their skills.

The use of the e-learning platform for course delivery in universities and other higher educational institutions in Uganda is now a necessity. Most universities use the blended approach for teaching and

learning. This modern approach to teaching and learning should be encouraged since it exposes students to online learning objects that include live classes, discussion forums, group work tools such as wiki, and online assessment tools for live examinations, assignments and tests. When used well, the rich educational tools on an e-learning platform enable effective learning and the acquisition of knowledge and skills by students. On the side of course instructors, there is need to motivate students to learn in an online environment. This can be achieved through active online classes, where students are engaged in online class activities that include live discussion sessions with course instructors, quick feedback on assignments from course instructors, and teamwork by students' groups in group assignments. There should also be interactive lectures where students ask questions and raise points of clarification in ongoing live lectures.

Recommendations

There was a high positive correlation between the perceived ease of use and the behavioural intention to use the system, implying the ability of the students to easily use the MUBSEP relates to their behavioural intention to use the e-learning platform in the future. Universities should provide good security of the online learning environment for conducting safe online lectures and safe examinations. Universities should subscribe to online libraries for staff and students to access online literature for research. There was a highly positive correlation between the perceived ease of use and the perceived usefulness of the system, implying that the ability of the students to easily use the MUBSEP relates to perceived usefulness to use the e-learning platform in the future. The government should also ensure that there is a national e-learning policy for higher education institutions to implement online education with an approved online assessment approach. There was a high positive correlation between perceived usefulness and the behavioural intention to use the system, implying that the perceived usefulness of the MUBSEP by the students relates to their behavioural intention to use the e-learning platform in the future. Universities should support e-learning by encouraging students to buy laptops to supplement traditional textbooks for online education and research. There was a moderate positive correlation between the subjective norm and the behavioural intention to use the system, implying that other people who encourage students to use the system relates to their behavioural intention to use the system in the future. Success in online teaching can be fully achieved when all stakeholders in an online education ecosystem fulfil their individual obligations. These stakeholders may include the government, universities, student communities and telecommunication service providers. There was a moderate positive correlation between the subjective norm and the perceived usefulness of use of MUBSEP, implying that the ability of the students to easily access the system relates to students' ability to see the perceived usefulness of MUBSEP for future lessons/lectures. The government should ensure that the telecommunication infrastructure in the country is well developed and covers the entire nation. This would enable all educational institutions to access the internet with sufficient bandwidth for e-learning course delivery. There was a moderate positive correlation between self-efficacy and the perceived ease of use of the system, implying that the ability and competence of the students to use the system relates to perceived ease of use of the system. Universities should encourage organisational learning by organising regular training for staff and students in e-learning for knowledge and skills updates. There was a moderate positive correlation between self-efficacy and the perceived usefulness of the system, implying that the ability of the students to easily access the system relates to students' ability to see the perceived usefulness of MUBSEP for future lessons/lectures. Students should utilise e-learning resources for all courses they take in a semester. Every student should have a student account for online classes and students' access to the e-learning platform should be audited to ascertain the effective use of online learning resources. There was a moderate positive correlation between system accessibility and the behavioural intention to use the system, implying that the ability of the students to easily access the system relates to their behavioural intention to use the system in future. Universities should liaise with telecommunication service providers and negotiate data packages at competitive prices for students and course instructors to access internet services for e-learning. There was a highly positive correlation between the behavioural intention to use the system and actual system use, implying that the high intention of the students to use e-learning platform (MUBSEP) is actual translated into online lecture attendance. Universities should invest in ICT infrastructure in e-learning labs to enable teaching staff to produce video lectures for students to access at any time for learning. A blended learning

approach is recommended so that practical courses are done physically in labs and parts of lectures are also face-to-face.

Limitations to the Study

The study participants were Business Computing students who are skilled in using computer applications and hence MUBSEP. Another study is needed that involves a class of humanity or business students to find if the results can be similar. As the study sample was 145 students, we need a bigger sample of 300 or more students to generalise results.

Future Research

Research is needed to find the effect of online education on the mental health of university students. Online education is characterised by loneliness and lack of technological resources for students.

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Research Instrument - Questionnaire

Gender: Male Female (circle one)

Age: 20 – 24 years 25 – 29 years 30 – 34 years Above 34 years (Circle one)

1 – Strongly disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 – Strongly agree

No.	Scales for measuring various Constructs	1	2	3	4	5
Perceived ease of use						
1	Learning to use MUBSEP is easy for me					
2	I find it easy to download lecture handouts from MUBSEP					
3	I find MOODLE easy to use					
4	I find it easy to do assignments using MUBSEP					
5	It is easy for me to build my skills in using MUBSEP					
Perceived usefulness						
1	Using MUBSEP would improve my skills in e-learning					
2	Using MOODLE during my postgraduate studies would enable me to accomplish tasks quickly					
3	I find MUBSEP useful in my studies					
4	Using MUBSEP increases my effectiveness in the course					
Attitude towards MUBSEP use						
1	I look forward to those aspects of my course that require me to use MUBSEP					
2	MUBSEP makes learning more interesting					
3	Learning with MUBSEP is innovative approach to learning					
Intention to use						
1	I will use MUBSEP in the future					
2	I will continue to use MUBSEP in the other course units					
3	I plan to use MOODLE in my own classes					
4	MUBSEP should be used to complement face to face lectures					
System accessibility						
1	MUBSEP is flexible and I can use it any time of my convenience					
2	I can access MUBSEP using my mobile phone					
3	MUBSEP is on all the time and fast to open					
Subjective norm						
1	I miss personal interaction with students when using MUBSEP					
2	I miss face-to-face interaction with my lecturer when using MUBSEP					
3	MUBSEP environment is interesting to me					
4	MUBSEP interface is attractive					
Self-efficacy						
1	My lecturer demonstrates MUBSEP to me for better understanding of the system.					
2	I have e-learning experience to use MUBSEP					
3	I have e-learning skills to use MUBSEP					
Actual system use						
1	I can use MUBSEP very well					
2	I have time to use MUBSEP					
3	I am satisfied with the design of MUBSEP interface					
4	I am satisfied overall with MUBSEP					