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Students' Use of e-Learning Platforms

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ABSTRACT
The subject of this study was students' adoption of e-learning platforms in Uganda and Nigeria. The study's goal was to look at the elements that influence students' adoption of e-learning platforms. The Theory of Planned Behavior (TPB) and Technology-Organization-Environment (TOE) were used to create a questionnaire (T-O-E). In Uganda and Nigeria, data was obtained from 204 university students. When compared to Makerere University students, Kaduna State University students exhibit a higher level of e-Learning adoption. The actual use of e-learning was highly linked with perceived behavioural control and change agents. At the University of Nigeria, Technology development and behavioural intention to utilise systems have a substantial positive relationship with the actual use of e-learning at a Ugandan institution. Both planned behaviour theory and technology-organization-environment theory components are significant predictors of e-Learning adoption in the two universities, with 32.5 percent and 14.4 percent, respectively, according to multiple regression analyses. As a result, colleges should establish a technology environment that encourages students to use e-learning.

Keywords: *theory of planned behavior,e-learning platforms, technology-organization-environment, actual use*

I. INTRODUCTION

Technological breakthroughs are transforming the way higher education institutions fulfil their goals and meet the knowledge demands of learners all around the world. With the emergence of the Internet, many institutions of higher learning are finding it less expensive to reach out to their students all over the world. As a result of the Internet, e-learning platforms have emerged that involve doing all educational activities electronically. In this study, we use the words "e-Learning platforms" and "e-Learning systems" interchangeably. Students were enthralled by the advent of e-Learning platforms (Kituyi&Kyeyune, 2012) [24]. By assisting institutions in meeting the demands of a growing student population through technology-enhanced distance learning (Anderson &Grönlund, 2009), e-learning platforms are thought to have the potential to increase access, lower costs, and improve the quality of education in Africa through technology-enhanced distance learning.E-Learning has also been shown to improve student motivation to learn, raise the value of education, and allow lecturers to cater to individual student needs (Oyediran&Akintola, 2011) [26].

Given these advantages, it's no surprise that several universities in Uganda and Nigeria have developed and implemented e-learning systems to suit the growing demand for higher education in their home countries and beyond. Makerere University, Uganda's largest and oldest university, was the first to launch an e-learning platform, the Makerere University Electronic Learning Environment (MUELE). Muni University acquired and installed the Muni Blended Learning Platform, while Makerere University Business School built the Makerere University Business School Electronic Platform (MUBSEP) (MBELP). Mbarara University of Science and Technology, Uganda Management Institute, Kyambogo University, Gulu University, and Soroti University are among the universities that have followed suit (Guma et al., 2019). Universities in Nigeria, including the University ofUyo (UNIUYO), the National Open University of Nigeria (NOUN), the UsmanuDanfodiyo University of Sokoto (UDUS), the Federal University of Technology Akure (FUTA), and the University of Maiduguri (UNIMAID), have all adopted eLearning (Kyari; Adiuku-Brown; Abechi; Pyochi&Adelakun, 2018).

Unfortunately, despite the enormous benefits of e-learning systems and the massive sums of money spent by institutions of higher learning in Sub-Saharan Africa to install electronic learning platforms in order to improve learning and alleviate space challenges due to increasing demand for education (Mtebe, 2015) [13], e-learning systems have failed to catch up to date, and despite the high maintenance costs, virtually no serious activity takes place on the e-learning platforms. The utilisation rate among students has remained as low as 15%. (Guma et al., 2019). Furthermore, according to the Principal of Makerere University Business School in Kampala, Uganda, student adoption rates appear to be declining from university to university and country to country.

A number of local researchers have looked into the state of the art of e-learning systems in an attempt to remedy the problem. Kituyi and Tusubira (2013) [23] developed a paradigm for integrating e-learning in developing-country higher education institutions in Uganda. Mbabazi and Guma (2016)[16] investigated the level of user satisfaction with e-learning technologies in

Uganda, as well as usability difficulties. Okwoko (2017) investigated ICT in Education: Moodle as a Learning Management System Adoption at Public Universities in Uganda – A Case Study of Gulu University. Mbete (2014) assessed the acceptance and utilisation of e-learning solutions in East African higher education. Guma et al. (2019) conducted a SWOT Analysis of Blended Learning in Uganda's Public Universities: A Case Study of Muni University. Olabode, Fasoranbaku, and Oluwadare were all visited while in Nigeria (2015).

Adoption of e-learning technology in Nigerian Tertiary Institutions of Learning has been investigated. Edemoh and Ogedebe (2014) [19] looked at E-Learning in Nigerian Universities: Prospects and Challenges. In addition, Kyari, Adiuku-Brown, Abechi, Pyochi, and Adelakun (2018) investigated e-learning in Nigerian Tertiary Education: Where Do We Stand? Suleiman (2012) investigated the requirements for e-learning in Nigerian tertiary institutions. It's worth noting, however, that none of this research is comparative in nature, so they can't compare and contrast the rate of adoption of e-learning systems. As a result, this research looks at how students use e-Learning platforms: A comparative study in Uganda and Nigeria using the Theory of Planned Behavior (TPB) and the Technology-Organization-Environment (T-O-E) to examine the factors that influence students' adoption and use of e-learning systems.

The following research questions were addressed as a result of this:
1. To what extent do students use e-learning systems and interact with them?
2. Is there a link between intended behaviour, technology-organization-environment components, and student acceptance of electronic learning systems?
3. Is the rate of adoption of e-learning among Ugandan students comparable to or different from that of Nigerian students?

II. THEORETICAL FOUNDATIONS

2.1The Theory of Premeditated Action (TPB)

With roots in social psychology, the theory of planned behaviour has been widely used and applied to research on information technology adoption and usage. Ajzen (1985) proposed TPB as an extension of the Theory of Reasoned Action. According to the theory, behavioural intention determines actual conduct, which is influenced by an individual's attitude, subjective norm, and perceived behavioural control (Teo&Pok, 2003). TPB, unlike the Technology Acceptance Model, is not limited to the realm of information systems, making it a more generic theory of behaviour explanation. In addition to attitudinal views, TPB adds two more key constructs to the explanation of behaviour: subjective norm and perceived behavioural control.

The impact of others on an individual's adoption and usage of technology is referred to as the "subjective norm." An important component influencing the adoption and use of information systems has been discovered to be subjective norm, which is equivalent to social influence (Al-Somali et al., 2009). Social influence can play a key role in preventing or promoting the adoption and use of eLearning technologies in the context of eLearning. Table 1 defines the theory's fundamental ideas.

Table 1: Definition of core constructs of TPB (Theory of Planned Behavior) used in the study

Theory	Core construct	Definition
TPB	Subjective norms	A person's perception that most people who are important to him think he should or should not performthe behavior in question (Fishbein and Ajzen, 1975, p. 302) [1].
TPB	Perceived behavioral control	People's perception of the ease or difficulty of performing the behavior of interest (Ajzen, 1991)
TPB	Behavioral intensions to use the system	The attitudes toward using the system (Ajzen, 1991)

2.2Technology-Organization-Environment (TOE) 2.2 (T-O-E)

Another prominent model is Tornatzky and Fleischer's (1990) Technology-Organization-Environment framework [28]. To forecast the likelihood of system adoption, the framework assumes a general set of criteria. Technology development (Kauffman & Walden, 2001) [29], sociocultural environment, adopter characteristics, change agents, and leaders all influence adoption, according to the hypothesis.

Adoption, according to technologists, is determined by the company's pool of technologies as well as the application's perceived relative advantage, compatibility complexity, triability, and observability. According to Kwon and Zmud (1987), the relevance of internal technology resources (infrastructure, technical skills, developers, and user time) determines the success of IT adoption; consequently, enterprises with higher levels of technology competency are more likely to adopt e-commerce.

Internet skills, technical know-how, and e-commerce know-how (commercial and administrative abilities) are all related to properly using e-commerce facilities (Zhu & Kraemer, 2002; Zhu, Kraemer, &Xu, 2002).

Technology competency encompasses intangible resources, which may give innovators a competitive edge because skills and know-how complement physical assets and are more difficult to copy by competitors (Metaxiotis, 2009; Scupola, 2009). On the basis of the PU and PEOU postulates, TAM could be compared to the above construct.

User variables such as risk perception, control perception, and Internet experience can all influence eLearning uptake. A number of recent studies (Holland and Baker, 2001 [9]; Wind et al., 2002; Shanker et al., 2003; Wind and Rangaswamy, 2001) have discovered significant interaction effects between certain online methods and specific characteristics of online users (e.g., Internet experience) (e.g., personalization, customization, and community). According to Warkentin et al. (2002), a citizen's trust in e-government is influenced by their previous experiences. Users who have used e-government services before, especially if they were satisfied, are more inclined to do so again. Table 2 lists the model's fundamental constructs.

Table 2: Definition of core constructs of TOE (Technology-organization-environment)

Model	Core construct	Definition
TOE	Technology development	Sound information technology infrastructure and sufficient Internet talents (Tornatzky and Fleischer 1990) [28].
TOE	Sociocultural environment	Norms, superstitions, values and beliefs of the society (Tornatzky and Fleischer 1990) [28].
TOE	Adopter characteristics	Perceived risk, control, IT competence and Internet experience (Tornatzky and Fleischer 1990) [28].
TOE	Change agents	Presence of individuals who act as catalyst; solution giver; process helper and resource linker (Hunsaker, 1982).

III. LITERATURE REVIEW

3.1 Conceptualization of e-Learning

Because of the nascent nature of e-learning and the paucity of evidence on its educational effectiveness, a common understanding of what constitutes e-learning is developing. According to Okah (2011) and Turban (2010) [20], e-learning can be described as the online transmission of information for the purpose of education, training, knowledge management, or performance management. It's the merging of learning and technology, with instruction offered solely through digital technologies like CD-ROMs, the internet, and private networks (Landon and Landon, 2010). E-learning, according to Sekakubo (2011) [910], is learning that is facilitated or enhanced by the use of ICT. It has also been defined as a mode of learning aimed at improving the quality of teaching and learning through the use of information and communication technology (Begicevic&Divjak, 2006), with a focus on the learning management system (LMS) as a platform that connects lecturers and students (Begicevic&Divjak, 2006). (Adzharuddin and Ling, 2013). E-learning is defined by the Commission on Technology and Adult Learning (2001) as the electronic delivery of instructional content or learning experiences. Learners must use the internet, collaborate with peers, and interact with the trainer for support when participating in e-learning. Hsbollah and Idris (2009) [98] described e-learning as a web-based educational system that makes use of information technology and computer networks such as the internet and intranet. Similarly, Unwin et al. (2010) [12] defined an eLearning platform as a "software application or web-based technology that is used to plan, deliver, or access a particular learning process," and Dagger et al. (2007) defined e-learning systems as web-based software application platforms that use web technologies and internet services to support online course creation, maintenance, and delivery; student enrolment and management; and education administration.

Tele-education, also known as e-education, distant learning, distributed learning, and online learning, is a type of learning that makes use of technology such as chat rooms, video conferencing, e-mails, and the internet (Hagg et al. 2000). However, the objective of this study is not to establish a universal definition of e-learning; rather, by combining all of these definitions, this paper will help to define e-learning as a web-based technology used for educational purposes. As a result, for such technology to boost productivity in the learning environment, students must accept and use it. Virtual learning environments, course management systems, and collaborative learning environments are examples of eLearning platforms that have been developed and can be classified into applications (Monarch Media, 2010). Commercial systems like BlackBoard and WebCT, as well as free-source e-learning systems like Moodle, Atutor, Sakai, and Kewl, are just a few examples.

3.2 The Status of E-Learning in Africa Today

There are numerous motivations to promote e-learning in Africa. According to a study by Prakash (2003), developing countries have limited access to education, with less than 5% of students enrolled in postsecondary education, compared to the

global average of 16%. The demand for formal education in Africa far exceeds the capacity to supply it, and it is not available to large segments of the population. Many African countries, including Tanzania, Zimbabwe, Nigeria, Ghana, and Kenya, have launched open and remote education programmes, augmenting their campus-based teaching with distance education to relieve demand on institutional amenities. In his research, Tim (2008) discovered that the status of e-learning in Africa is at an all-time low. For Tim he gathered information from 316 (316) individuals who were members of the e-learning Africa database. Tim's research uncovered major roadblocks to implementing and developing e-learning methodologies and practises in Africa. Lack of infrastructure, the requirement for proper training and capacity development, a lack of suitable digital content, and the cost of e-learning implementation are among them. According to the survey, respondents were also enthusiastic about developing the potential of e-learning in their own nations.

Again, there is a wide range of different e-learning practises in Africa; the overwhelming evidence suggests that the majority of those claiming to be using e-learning are instead using basic digital technologies to enhance their learning, with e-learning being interpreted as simply accessing information from the Internet. Tim concluded that e-learning in Africa is still in its early stages in the majority of African countries. Leary and Berge (2006) confirmed Tim's findings. According to Leary and Berge, practically all African countries are significantly increasing their e-learning adoption and usage rates. Senegal, Ghana, Uganda, Cameroon, Kenya, Tanzania, Malawi, Zambia, Botswana, Gabon, and Zimbabwe, to name a few, have populations that are becoming increasingly reliant on the internet. However, there remains a modest rate of e-learning uptake across Africa. As a result, much work needs to be done in order to satisfy international standards. Yusuf, for his part (2006),According to the report, electricity, the internet, computers, telecommunications, and postal services should all be developed to the point that they can support the intended scale of open and distance education in Africa. In conclusion, the current literature indicates that e-learning acceptance and utilisation in African colleges has yet to take hold. There could be a number of reasons for these occurrences. Universities in Africa must identify these elements and assess how they affect the acceptance and utilisation of e-learning in their institutions.

3.3 Prospects for E-Learning with Nigerian Universities

While e-learning is not new, it has only recently attracted the attention of Nigerian educators and the government. Thanks to an internet-based platform, Nigerians have been able to assist and facilitate several traditionally participatory procedures, such as shopping, dating, and banking. Obtaining a university education could be the next step for web-based pragmatism, and there are several reasons for this.

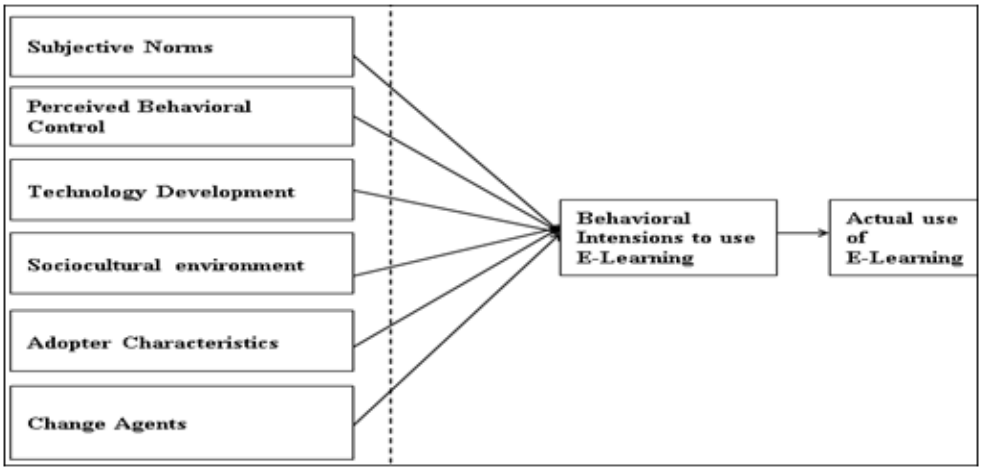
1. Convenience*:* E-learning systems are more convenient than their in-person equivalents because they allow students to complete courses at their own time and pace. According to Turban et al. (2010) [20], students can even go back to earlier lectures without influencing the learning rates of other students. The usability of these e-learning tools is enhanced by forums and communities developed around huge online open courses (UNESCO and COL, 2012) [6].

2. Accessibility: For profit, some universities in developed countries were early adopters of e-learning, particularly within the PITAD framework, as long as there is a learning management system that supports e-learning (Landon and Landon, 2010), especially with delivery, because it allowed them to attract students who would not otherwise attend higher education. Students from various origins, geographies, experiences, and motives are attracted to and retained by e-learning platforms.

3. Flexibility*:* With e-learning, students can choose when, where, and what they learn, as well as how much they learn.After examining certain Havard working papers (2013), including eight hundred and forty-one thousand, six hundred and eighty-seven registrants in seventeen open online courses, it was concluded that learners are in charge. According to the findings, students used e-Learning platforms for a variety of reasons. Some wanted to learn, others were looking for tools to help them in other classes, and yet others were teachers looking for guidance on how to teach their own classes.

3.3 Problems with e-Learning in Nigerian Universities

According to the Nacetem report, the most common challenges in implementing e-learning in Nigerian universities are management's attitude, erratic electricity supply in most parts of the country, and the lack of inclusion of ICT programmes in teacher training curricula at the basic levels of education. The advancement of innovation in an era of budget expense was noted as a difficulty by Liverpool et al. (2009) [21]. Even in industrialised countries, e-learning technologies have had mixed results in terms of acceptance and course completion rates. Yet, proponents of the technology claim that the traditional classroom is about to undergo a significant transformation.



Source: Fishbein and Ajzen (1985), Tornatzky and Fleischer (1990) [28] adapted and modified
Figure 1: A Conceptual Framework Showing Factors Influencing Electronic Learning Adoption and Use

Under the lens of the Theory of Planned Behavior (TPB) and the Technology-Organization-Environment (TOE), the framework explains how factors such as technology development, perceived usefulness, and behavioural intentions to use (BIU) connect to students' adoption of e-learning (TOE).

Detailed Model Description

The fundamental ideas of this research are Tornatzky and Fleischer's (1990) [28] Theory of Planned Behavior (TPB) and the Technology-Organization-Environment (TOE) framework. TPB proponents argue that attitudes toward using the system determine a behavioural intention to use the system. As a result, behavioural intentions to use (BIU) are used to predict actual system usage (Fishbein and Ajzen, 1985).

Tornatzky and Fleischer (1990) proposed the Technology-Organization-Environment (TOE) framework, which posits a general collection of characteristics to predict the likelihood of system adoption. As indicated by the conceptual framework above, the theory proposes that adoption is influenced by technology support infrastructure, socio-cultural environment, adopter characteristics, and change agents (Kauffman & Walden, 2001) [29].

3.4 Research Hypotheses and Models

The fundamental ideas of this research are Tornatzky and Fleischer's (1990) [28] Theory of Planned Behavior (TPB) and the Technology-Organization-Environment (TOE) framework. TPB, unlike TAM, is not limited to the IS field, making it a more generic theory of behaviour explanation. In addition to attitudinal views, TPB adds two more key constructs to the explanation of behaviour: subjective norm and perceived behavioural control. The Tornatzky and Fleischer (1990) [28] Technology-Organization-Environment (TOE) framework proposes a general set of criteria to predict the likelihood of system adoption. Technology development (Kauffman & Walden, 2001) [29], sociocultural environment, adopter characteristics, change agents, and leaders all influence adoption, according to the hypothesis.

Normative Subjectivity (SN)

A "person's opinion that most people who are important to him think he should or should not execute the conduct at issue" is defined as a "person's perception that most people who are important to him think he should or should not perform the activity in question" (Fishbein and Ajzen, 1975, p. 302) [1]. Users of online services frequently refer to other users in virtual communities as key referents in cyberspace (Smith, 2005; Gounaris and Dimitriadis, 2003; Szmigin et al., 2005). Many investigations using TRA and TPB have shown that SN has a direct effect on behavioural intention (Ajzen, 1991; Ajzen and Fishbein, 1980; Pavlou, 2003). However, in TAM research, its contribution to BI is not consistently considerable. Online consumer behaviour, technological acceptability, and system use have all benefited from TRA (e.g., Fishbein and Ajzen, 1975 [1]; Ajzen and Fishbein, 1980; Pavlou, 2003).

H1: Subjective norms concerning online learning will impact online learning behaviour in a positive way.

Behavioral control as perceived (PBC)

Perceived behavioural control refers to people's perceptions of how easy or difficult it is to accomplish the activity of interest. Perceived behavioural control is influenced by a variety of factors, including skills, resources, and opportunities to achieve outcomes.According to Ajzen (1991), it is closely tied to the efficacy belief idea. This topic has to do with people's beliefs and their ability to create effects (Bandura, 1986). The theory of planned behaviour (TPB) adds perceived behavioural control to the theory of reasoned action (TRA). This takes into account the users' adaptability, which is shaped by the related

resources required to fully realise the potential of intended applications (Yi, Jackson, Park, &Probsf, 2005). Before the systems are adopted, the skills, opportunities, and resources required to operate them must be strategically assessed. As a result, perceived behavioural control is theorised as a determinant of behaviour, despite the fact that past research suggests it may influence perceived ease of use. Reported behavioural control was found to be a key driver of perceived ease of use and the intention to utilise an invention by Venkatesh (2000) [5].

H2: Students' perceived behavioural control is a crucial determinant of their e-learning adoption.

Intentions to employ eLearning on a behaviouralleve

According to Fishbein and Ajzen, behavioural intentions to use the system are determined by attitudes towards using the system. As a result, behavioural intentions to use (BIU) govern how the system is used. In a variety of research scenarios, a positive association between "attitude" and "intention to adopt" has been largely established (Sheppard et al., 1988; Yousafzai et al., 2007). This link suggests that a decision-maker with a positive attitude toward system adoption is more likely to develop the intention to adopt and utilise the system.

H3: The Behavioral Intentions to Use (BIU) eLearning system will have a major positive impact on students' adoption and use of the e-learning platform.

The advancement of technolog

Clearly, a country's IT infrastructure and Internet talent pool can have a significant impact on an institution's e-commerce adoption (Hsu et al., 2006). Singapore's government, being one of the first in Asia to see IT as a critical industry for economic development, has invested heavily in IT infrastructure, encouraging students to be early adopters (Wong, 2003). Furthermore, a lack of widely accepted technical standards (Davila et al., 2003) and internet security measures (for example, reputable payment mechanisms, Oxley and Yeung, 2001) may deter students from using eLearning.

H4: Students in a good macro-technology environment are more likely to use e-learning than those in a bad one.

The social and cultural setting

National culture influences not just whether or not social entities in a certain country adopt a particular technology, but also the degree to which technological innovation is accepted and how it is employed (Thatcher et al., 2006). The wider the usage of e-commerce in business, the more compatible the sociocultural environment is (Zhu and Thatcher, 2010). In China, the personal network "Guanxi," which is important in business, is preventing businesses from adopting e-commerce (Tan et al., 2007). Singapore's openness to cultural influences from both the West and the East, on the other hand, looks to be particularly beneficial to e-commerce adoption. (Wong, 2003).

In the country, an open sociocultural environment encourages students to use e-learning.

Adopter Personalities

Internet adoption is influenced by user attributes such as perceived danger, perceived control, and Internet experience. Several studies have identified significant interaction effects between certain features of online users and certain online methods (Holland and Baker, 2001; Wind et al., 2002; Shanker et al., 2003; Wind and Rangaswamy, 2001). According to Warkentin et al. (2002), a citizen's trust in e-systems is influenced by their previous experiences. Users with prior expertise would be more likely to use eLearning systems, especially if they were satisfied. The factors used to quantify Internet experience (2004) are duration of experience (Miyazaki and Fernandez, 2001; Cho, 2004; Kolsaker et al., 2004), frequency of use (Miyazaki and Fernandez, 2001; Cho, 2004; Kolsaker et al., 2004), and usage style (Cho, 2004; Kolsaker et al., 2004).The risk of disclosing and losing personal information through online engagement is known as "perceived risk." As empirically investigated by various authors (Pires et al., 2004, Ueltschy et al., 2004), the dimensions of perceived risk are financial risk, performance risk, psychological risk, social danger, convenience risk, and overall risk. Perceived risk is the source of security. Also, there are privacy concerns that may deter people from using internet services.

H6: Student acceptance of e-learning will be influenced by adopter characteristics.

Leaders and Change Agents

Persistence, timeliness, acknowledgment of others' efforts, strong communication and analysis abilities, and the pursuit of win-win methods are all important qualities. With these abilities, the internal change agent may effectively identify and address the needs of the company and the adopting unit without putting either side at risk. To do so, they must switch between four different change agent roles: catalyst, solution giver, process helper, and resource linker (Hunsaker, 1982).

H7: The role of change agents is linked to e-learning uptake and usage.

IV. RESEARCH METHODOLOGY

A descriptive research design was adopted in this study. The target audience consisted of university students from Uganda's two universities and Nigeria's two institutions. Our research unit in Uganda was Makerere University, the country's largest and oldest university and the first to adopt an e-learning platform named Makerere University Electronic Learning Environment (MUELE). In Nigeria, Kaduna State University was utilised. The target population consisted of around 500

master's students from both universities. The sample size was calculated using Krejicie and Morgan's (1970) table for determining sample size. Continuing students who have been duly registered by the institution and are deemed to be using the e-Learning platform and have knowledge of the subject area were among the respondents.

With close-ended items, data was collected using a self-administered questionnaire based on a five-point Likertscale ranging from strongly disagree to strongly agree. Based on the two theories, seven basic constructs of e-Learning adoption were chosen. Subjective Norms, Perceived Behavioral Control, Behavioral Intentions, Technology Development, Sociocultural Environment, Adopter Characteristics, and Change Agents were among the constructs studied.

The Statistical Package for Social Sciences was used to analyse the quantitative data (SPSS version 16). The study goals were covered by the descriptive analysis. The variables' mean (M) and standard deviations (SD) are provided as cross-tabulations to highlight the comparative elements of the study in order to determine statistically significant differences between Makerere University and Kaduna State University. In addition, inferential statistics were used, notably correlation and multiple regression analysis, to determine the influence and predictive capacity of planned behaviour and technology-organization-environment components on actual e-Learning system use.

V. FINDINGS

5.1 Test for Validity and Reliability

Cronbach's coefficient was used to assess the reliability of the surveys. The generally accepted lower limit for Cronbach's is 0.70, according to Hair, Anderson, Tatham, and Black (1998). Cronbach's alpha values for this study were all greater than 0.7, indicating that the instrument was trustworthy.

Makerere University, Uganda

According to descriptive statistics, the majority of pupils are males (68 percent), with females making up the minority (32 percent). The majority of students (54%) are between the ages of 20 and 30, and 92 percent are seeking a bachelor's degree. Only 8% are pursuing a postgraduate diploma or master's degree, while 71 percent are in their second and third years, respectively, indicating that they have used the university's e-Learning platform.

Table 3 and Table 4 show the means and standard deviations of students' adoption of e-Learning platform constructs, as well as the correlation matrix and regression results for Makerere University. On a scale of 1 to 5, the mean of each core construct ranged from 2.97 to 3.83. The constructs' standard deviations varied from 0.54 to 0.75.

Planned behaviour, technology-organization-environment constructs, and actual use of e-learning were all found to have significant connections. The results revealed a significant positive relationship between technological development and actual e-learning use (r =.17**) as well as behavioural intention to use and actual e-learning use (r =.27**).Furthermore, subjective norms and actual e-learning use (r =.22*), as well as perceived behavioural control (r =.18*), sociocultural environment (r =.13*), adopter traits (r =.11), and change agents (r =.15), were all positively connected.

The researchers employed multiple regression analysis to see if planned behaviour, technology-organization-environment components, and actual use of an e-Learning system could be predicted. According to the findings, the model fits 14.4% of the time (R2 =.144).This suggests that planned behaviour and the technology-organization-environment account for 14.4 percent of actual e-Learning platform utilisation. The data also show that the model predicted 14.4% of actual e-Learning system use correctly (F = 2.722, p =.008).This finding backs up all of the hypotheses (H1, H2, H3, H4, H5, H6 and H7).

5.2 Nigeria's Kaduna State University

According to descriptive statistics, male students account for 52% of the total, while female students account for 48%. The majority of students are between the ages of 20 and 25, and 82 percent are seeking a bachelor's degree. 18 percent are enrolled in postgraduate programmes, while 55.9% and 55.9% are in their second and third years of study, respectively, indicating that they have used the university's e-Learning platform.

Tables 5 and 6 show the means and standard deviations of students' adoption of e-Learning platform constructs, as well as the correlation matrix and regression results for Kaduna State University. On a scale of 1 to 5, the mean of each core construct ranged from 3.73 to 4.33. The constructs' standard deviations varied from 0.46 to 0.91.

Planned behaviour, technology-organization-environment constructs, and actual use of e-learning were all found to have significant connections. The findings revealed a significant positive relationship (r =.38**) between perceived behavioural control and actual use of e-learning, as well as a significant positive relationship (r =.24**) between change agents and actual use of e-learning.Furthermore, behavioural intention to use (r =.33*), adopter traits (r =.26*), subjective norms (r =.19), and sociocultural environment (r =.15) were all positively connected with actual usage of e-learning (r =.30*).

The researchers employed multiple regression analysis to see if planned behaviour, technology-organization-environment components, and actual use of an e-Learning system could be predicted. According to the findings, the model fits 32.5 percent of the time (R2 =.325).This suggests that planned behaviour and the technology-organization-environment

account for 32.5 percent of actual e-Learning platform utilisation. The model also correctly predicted 32.5 percent of actual e-Learning system utilisation (F = 2.388, p =.012).This finding backs up all of the hypotheses (H1, H2, H3, H4, H5, H6 and H7).

Table 3: Makerere University's e-Learning adoption constructs mean and standard deviations and a correlation matrix.

	Mean	Standard Deviation	NSM	PBC	TDV	SCE	ADC	CHA	BIU	AUE
SNM	3.53	0.75	1.00							
PBC	2.97	0.56	0.15	1.00						
TDV	3.17	0.67	0.03	0.02	1.00					
SCE	3.29	0.54	0.09	0.01	0.22	1.00				
ADC	3.24	0.63	0.11*	0.23**	0.04	0.09	1.00			
CHA	3.40	0.75	0.28	0.30	0.05	0.34	0.03	1.00		
BIU	3.83	0.74	0.83	0.15	0.22	0.79	0.75	0.25	1.00	
AUE	3.23	0.63	0.22 *	0.18	0.17**	0.13*	0.11	0.15	0.27**	1.00

* Correlation is significant at the 0.05 level ($p < 0.05$).
* ** Correlation is significant at the 0.01 level ($p < 0.01$).

Table 4: Multiple regression results of e-Learning adoptionconstructs and actual use of e-Learning for Makerere University

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.584	0 .255		2.722	0.008		
Subjective norms	0.504	0.605	0.091	0.834	0.150	0.835	1.197
Perceived behavioral control	0.337	0.766	0.182	1.746	0.011	0.912	1.097
Behavioral intention to use the system	0.614	0.081	0.637	2.104	0.000	0.9/26	1.080
Technology development	0.623	0.645	0.100	0.965	0.337	0.912	1.097
Sociocultural environment	0.159	0.811	0.150	1.430	0.156	0.889	1.125
Adopter characteristics	0.066	0.681	0.010	0.097	0.923	0.942	1.062
Change agents	0.008	0.585	0.002	0.014	0.989	0.898	1.113
R Square = 0.178, Adjusted R Square = 0.144, F= 2.722, sig.=0.008							
Dependent Variable: Actual use of e-Learning							

Table 5: Means and standard deviations of students' e-Learning adoption constructs and correlation matrix for Kaduna State University

	Mean	Standard Deviation	NSM	PBC	TDV	SCE	ADC	CHA	BIU	AUE
SNM	4.33	0.46	1.00							
PBC	3.91	0.65	0.46**	1.00						
TDV	3.78	0.76	0.25**	0.23*	1.00					
SCE	3.99	0.66	0.52**	0.51**	0.33**	1.00				
ADC	3.85	0.69	0.24*	0.31**	0.54**	0.41*	1.00			
CHA	3.73	0.78	0.29**	0.47**	0.15*	0.83**	0.43*	1.00		
BIU	4.17	0.91	0.34*	0.29	0.42	0.15*	0.78	0.53**	1.00	
AUE	4.21	0.56	0.19	0.38**	0.30*	0.15	0.26*	0.24**	0.33*	1.00

* Correlation is significant at the 0.05 level ($p < 0.05$), ** Correlation is significant at the 0.01 level ($p < 0.01$).

Table 6: Multiple regression results of e-Learning adoption constructs and actual use of e-Learning for Kaduna State University**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.297	0.896		2.565	0.012		
Subjective norms	0.429	0.232	0.217	1.853	0.067	0.667	1.499
Perceived behavioral control	0.408	0.170	0.292	2.403	0.018	0.619	1.616
Behavioral intention to use the system	0.067	0.145	0.056	0.464	0.644	0.619	1.616
Technology development	0.047	0.200	0.034	0.235	0.815	0.430	2.326
Sociocultural environment	0.109	0.142	0.083	0.771	0.442	0.789	1.268
Adopter characteristics	0.336	0.147	0.288	2.286	0.024	0.578	1.730
Change agents	0.497	0.222	0.321	2.111	0.033	0.412	1.565
R Square = 0.359, Adjusted R Square = 0.325, F= 2.388, sig.=0.012							
Dependent Variable: Actual use of e-Learning							

VI. DISCUSSION AND ANALYSIS

The adoption of e-Learning platforms by students varies between the two universities. The following are some of the differences between Kaduna State University in Nigeria and Makerere University in Uganda.Table 8 shows the results. When compared to Makerere University students, Kaduna State University students exhibit a higher level of e-Learning adoption. Similarly, the key constructs of e-Learning adoption are rated in a variety of ways.

Although Makerere University students gave the system a high evaluation (rating 1) for their behavioural intention to use it, this did not translate into actual use of the e-Learning platform. This suggests that there are variables other than behavioural intention that motivate people to use the system. Furthermore, just because different colleges have equal ratings for technology development and adopter characteristics does not suggest that students' rates of adoption are the same. This suggests that external factors such as the sociocultural milieu may play a role in e-learning uptake.

Table 7: Between Kaduna State University (KSU) and Makerere University, there are differences in the means and ratings of core constructs of e-Learning adoption (MU)

Core constructs	Mean KSU (rating)	Mean MU (rating)	Difference
Subjective norms	4.33 (1)	3.53 (2)	0.80
Perceived behavioral control	3.91 (4)	2.97 (7)	0.94
Technology development	3.78 (6)	3.17 (6)	0.61
Sociocultural environment	3.99 (3)	3.29 (4)	0.70
Adopter characteristics	3.85 (5)	3.24 (5)	0.61
Change agents	3.73 (7)	3.40 (3)	0.33
Behavioral intention to use the system	4.17 (2)	3.83 (1)	0.34

Different patterns appear when the links between the constructs are examined at the two colleges. Perceived behavioural control and change agents were highly linked with actual e-learning use in Nigeria. Technology development, behavioural intention to use, adopter traits, and actual usage of e-learning, as well as subjective norms and sociocultural context, were all positively correlated. Technology development and behavioural intention to utilise systems have a substantial positive relationship with actual use of e-learning at a Ugandan institution. Subjective norms, perceived behavioural control, sociocultural context, adopter traits, and change agents were all positively connected with actual use of e-learning.

In terms of the study variables' predictive ability, multiple regression results suggest that intended behaviour and technology-organization-environment (Tables 5 and 7) are predictors of e-Learning adoption (Tables 5 and 7). Planned behaviour and the technology-organization environment account for 32.5 percent of actual use of the e-Learning platform at Nigeria's Kaduna state university. This means that if a unit changes both plannedbehaviour and the technology-organization-environment, students' usage of e-Learning platforms will increase by 32.5 percent. Planned behaviour and technology-

organization-environment predict only 14.4 percent of actual use of e-Learning systems at Makerere University of Uganda, implying that a unit change in both planned behaviour and technology-organization-environment will result in a 14.4 percent change in students' adoption of e-Learning platforms. This research supports the findings of Venkatesh, Fishbein, and Ajzen (2000) [5], who showed that perceived behavioural control and behavioural intentions are important drivers of actual system use. Furthermore, the findings support the findings of Hsu et al. (2006) and Davila et al. (2003), who claim that a country's IT infrastructure and Internet talent are important factors in an institution's e-commerce adoption and that a lack of widely accepted technical standards and internet experience may prevent students from adopting eLearning. In terms of hypotheses, the study accepted all H1, H2, H3, H4, H5, H6, and H7 theories (Table 9). In explaining student e-Learning system acceptance, the study supports both planned behaviour theory (Fishbein and Ajzen 1985) and technology-organization-environment theory (Tornatzky and Fleischer 1990) [28].

Table 8: The following is a summary of the hypotheses testing outcomes.

	Research Hypotheses	**Decision**
H1	Subjective norms about electronic learning will positively influence online learning behavior.	Accepted
H2	Perceived behavioral control is a significant determinant of students' adoption of e-learning.	Accepted
H3	Behavioral Intentions to Use (BIU) eLearning system will have a significant positive effect on the adoption and actual use of e-learning platform by students.	Accepted
H4	Students in a favorable macro technology environment are more likely to adopt e-learning than those in poor technology environment.	Accepted
H5	Open sociocultural environment favors students' adoption of e-learning in the country.	Accepted
H6	Adopter characteristics will influence the adoption of e-learning by students.	Accepted
H7	The role of change agents correlates with adoption and use of e-learning	Accepted

VII. CONCLUSION

This study sought to establish the level of student e-Learning adoption in two universities, and whether students' adoption of e-Learning is influenced by planned behavior theory and technology-organization-environment theory constructs. The presentstudy implies the following conditions:

The level of students' e-Learning adoption varied between the two universities. The Nigerian students displayed a higher degree of e-Learning adoption than the Ugandan students, Although Makerere University students have rated behavioral intention to use the system highly (rating 1).

Perceived behavioral control, change agents significantly correlated with actual use of e-learning at the Kaduna State University. Whereas, at the Ugandan university, technology development, behavioral intention to use system have significant positive association with Actual use of e-learning, hence different constructs influence e-Learning adoption in the two universities. Planned behavior theory and technology-organization-environment theory constructs are significant predictors of e-Learning adoption in the two universities at 32.5% and 14.4% respectively. Therefore, universities should create an enabling technology environment so as to boost student e-learning adoption. The results from this study should be viewed as a contribution to the knowledge on e-Learning adoption.

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