

THE INFLUENCE OF BEHAVIOURAL INTENTION ON THE ADOPTION OF ELECTRONIC LEARNING IN UNIVERSITY INSTITUTIONS IN TANZANIA

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ABSTRACT

eLearning systems have been used a lot, especially in universities, as a way to improve teaching and learning, especially because they make teaching and learning easier and more flexible. However, different countries, regions, cultures, and societies have adopted them at different rates. This study aimed at examining the influence of behavioural intention on the adoption of eLearning in university institutions in Tanzania, in which the Open University of Tanzania and the Hubert Kairuki Memorial University were involved, the Theory of Planned Behaviour was utilized in the study. The study employed an electronic web-based survey to obtain data from 371 respondents using simple random, purposive, stratified, and proportional sampling techniques. Academics, students, and ICT staff participated. Using IBM SPSS Version 22 and Amos Version 23 with SEM, data were analyzed using both exploratory factor analysis (EFA), and Confirmatory Factor Analysis (CFA). The findings revealed that Behavioural Intention positively influenced eLearning Adoption in university institutions in Tanzania. Since the behavioural intention only accounted for 5% of the eLearning Adoption, the study therefore recommended for additional studies to investigate other factors that influence university institutions toward adoption, use or continuance of using eLearning. Further, this study included only two university institutions, it is therefore, recommended that more universities be included in further research in order to investigate future prospects of universities to adopt, use, or continue using eLearning systems.

Keyword: University Institutions, eLearning, Adoption, eLearning Adoption, Behavioural Intention, TPB, SEM, EFA, CFA.

1. INTRODUCTION

The term "eLearning" refers to the use of electronic means, such as the Internet, in conjunction with any other learning resources suitable for an open, flexible, and distributed learning environment in order to provide a learner-centered, interactive, flexible, enhanced, and facilitated learning atmosphere to anyone, anywhere, anytime, and at a reduced cost (Al-Qahtani & Higgins; 2013; Ray *et al.*, 2020; Alsaif, 2021). The development of information and communication technologies (ICT) and a call to overcome the limitations of place, time, cost, and other factors that existed in the traditional face-to-face (F2F) mode of teaching and learning led to the creation of eLearning. eLearning was established as a result of both the development of ICT and the call to overcome these limitations (Al-Qahtani & Higgins; 2013; Leong *et al.*, 2020). eLearning had

recorded more advantages than disadvantages, due to the fact that it is less expensive in terms of delivery, time, and affordability; students and teachers (lecturers) could attend T&L anywhere; accessing materials and resources of preferences; self-pacing study; learner centered approaches; flexible, interactive, and conducive learning atmospheres; effective interactions between students and teachers, and among students themselves; easily adopting the latest technology available (Al-Qahtani & Higgins, 2013; Tarhini, 2013; Alsaif *et al.*, 2021).

There has been an increase in the use of eLearning systems, which has led to the assumption that it will be a potent tool for enhancing teaching and learning, especially in university settings. This technology is designed to facilitate easy and flexible teaching and learning, anywhere and at any time, as well as enhanced contact between lecturers and students, as well as between students or lecturers themselves. Therefore, the majority of educational institutions will need to adopt it because it has the potential to meet this requirement (Almaiah & Alyoussef, 2019). The same was witnessed during the COVID-19 pandemic, which affected approximately 192 countries and 91.4% of enrolled learners, whereas most universities and other schools were closed down, disrupting studies for approximately 220 million post-secondary students and thus limiting the use of the traditional face-to-face mode of delivery, making eLearning the most preferred option for teaching and learning processes (Hasani *et al.*, 2020, September; Leong *et al.*, 2020; Tiwari, 2020; Makumbe & Mutsikiwa, 2021). Additionally, there have been a variety of activities and advances that continue to support the acceptance, usage, or continuation of eLearning. The World Wide Web, Web 2.0, cloud computing, the use of social media as an eLearning tool, and massive open online courses are a few examples of these developments (Bagarukayo & Kalema, 2015; Ugwu & Nnaekwe, 2019; Mutarubukwa & Mazana, 2020; Tella *et al.*, 2020; Watjatrakul, 2020; Altalhi, 2021).

The desire to adopt, use, or continue using technology, most specifically eLearning systems, had attracted the development of a variety of theories, models, guidelines, or frameworks, all of which were gearing at facilitating avenues for proper adoption. Some of the more commonly used ones include, but are not limited to: Technology Acceptance Model (TAM); Unified Theory of Acceptance and Use of Technology (UTAUT); Theory of Deferred Action (TDA); Task-Technology Fit Theory (TTFT); DeLone and McLean Information System Success Model (D&D Model); Organizational Information Processing Theory (OIPT); Theory of Planned Behaviour (TPB); Expectation Confirmation Theory (ECT); Theory of Reasoned Action (TRA); Social Shaping of Technology (SST) Theory; User Resistance Theories; Innovation Framework; Technology–Organization–Environment (TOE) Framework; Diffusion of Innovations (DOI); Yield Shift Theory (YST); Social Cognitive Theory (SCT); Technological Pedagogical Content Knowledge (TPACK) framework (Sharda & Voß, 2012; Tarhini *et al.*, 2015; Ajzen, 2020; Saubern *et al.*, 2020).

The United Republic of Tanzania (URT) had been promoting the use of technology across sectors, including education. This was highlighted in the Tanzanian Higher Education Development Plan (HEDP) 2010-2015, which included a number of policies, plans, and strategies, as well as in the Vision 2025 (URT, 2005, 2010, 2016). Additionally, the government was able to deploy the SEACOM marine cable, which cut telecommunications expenses by 95% and increased internet speed to 155 Mbps (Mtebe & Raisamo, 2014). Further empirical data showed that the number of mobile users in Tanzania increased from 2 million in 2011 to 23 million in 2017, enabling mobile-based learning (M-learning) for pupils, especially those who are blind (Kamaghe *et al.*, 2020).

The Tanzania Commission for Universities (TCU), which is the regulator of university institutions in Tanzania, had prepared guidelines for online and blended delivery modes of courses for university institutions in Tanzania. The purpose of these guidelines was to harmonize the delivery of both modes in order to meet national, regional, and international labor market requirements (TCU, 2022). In addition, the guidelines intend to set minimum standards for a variety of aspects, such as the following: learning resources; interoperability issues; adherence to previously established policies, acts, laws, standards, and guidelines; students' assessment; the learning management system (LMS) interface and tools; quality and accessibility; human resources; support services; monitoring and evaluation.

There has been empirical evidence about the adoption, use, and continued use of technology or Learning Management Systems (LMS) globally, generally, for instance, the global eLearning market was expected to grow up to 7.5% CAGR (compound annual growth rate) by 2021, and that most students and faculty members had identified LMS as an important means to deliver teaching and learning processes, and that about 87% of tertiary students own personal mobile devices, whereas, about 79.6% of students plan to continue using Bring Your Own Device (BYOD) in the future.

Despite the measures that have been detailed or the opportunities that are currently available to promote the adoption, use, and continued use of technology or eLearning systems by Mahali *et al.*, (2019); Muhisn *et al.*, (2019); Bervell & Arkorful, (2020); Jung & Lee, (2020); Kamaghe *et al.*, (2020); Mutarubukwa & Mazana, (2020); Tella *et al.*, (2020); Watjatrakul, (2020); Altalhi, (2021); Cavus *et al.*, (2021); Chandran & Alammari, (2021), there had been varying levels of adoption based on varying cultures, regions, nations or societies (Indrayani, 2013; Tarhini *et al.*, 2013; Blau & Shamir-inbal, 2017; Mahali *et al.*, 2019; Ngafeeson & Gautam, 2021; Masilo *et al.*, 2021).

For example, the empirical evidence suggested that approximately 99% of the higher education institutions in the United States had adopted LMS and 83% of students had adopted some type of LMS. In comparison, the United Kingdom exhibited a rate of adoption of 95%, and India in particular, the adoption was expected to reach 9.6 million by 2021. Developing countries, on the other hand, recorded as low as 28.8% adoption (Mahali *et al.*, 2019; Ray *et al.*, 2020; Ngafeeson & Gautam, 2021; Masilo *et al.*, 2021). In Tanzania, for example, the adoption rate of eLearning among academicians and students was recorded as being lower than the threshold of 50%. The level of awareness was recorded at 16%, the attitude was recorded at 15%, accessibility was recorded at 17%, and availability was recorded at 26% (Kisanjara *et al.*, (2019). Moreover, there had been a lack of confidence, motivation, or skills toward the use of eLearning systems to both students and lecturers, as witnessed by delays in completion of their studies and the inability of lecturers to harmonize their course materials in Moodle (Ndonje, 2013; Ndibalema, 2014; Olutola, & Olatoye, 2015; Salleh, & Laxman, 2015; Mutisya & Makokha, 2016).

1.1 Definition of university institution

A university institution consists of a university college, university institute, or university school and any centre, directorate, faculty, department, library, or unit inside or as a part or subdivision of a university (URT, 2005).

For the purposes of this study, the Tanzania Commission for Universities (TCU)' regulation applies to university institutions such as colleges, schools, and centers.

1.2 eLearning

eLearning is an innovative approach to delivering an adequately designed learner centered, interactive, flexible, enhanced, and facilitated learning environment to anyone at a lower cost, and using electronic means coupled with any other learning resources suited for open, flexible, and distributed learning environment (AlQahtani & Higgins, 2013; Ray *et al.*, 2020; Alsaif *et al.*, 2021). eLearning can also be defined as applying educational technology, electronic media, and information and communication technology (ICT) to teaching and learning processes, allowing students and teachers to access educational resources at any time and from any location (Al-araibi *et al.*, 2019).

Furthermore, Ugwu and Nnaekwe (2019) praised that the urgency of technological changes and globalization had created an avenue for a new global economy fueled by information, powered by technology, and driven by knowledge, resulting in a slew of implications for educational institutions' purpose and nature. Processing, administering, storing, and disseminating assessment data; enabling communication between students and lecturers; broadcasting online facility, materials, or CD-ROM that could be used as sources of information in the acquisition of knowledge, Skills, and general attributes; processing, administering, storing, and disseminating assessment data; delivering a blended learning mode by combining traditional classroom learning and eLearning mode; using collaborative writing and sharing

Furthermore, eLearning can be divided into synchronous and asynchronous online learning. Synchronous online learning is live, scheduled, and in real-time. In contrast, asynchronous online learning allows sharing of information across a network of people regardless of location or time constraints (Twum *et al.*, 2021). Nonetheless, MOODLE (Modular Object-Oriented Dynamic Learning Environment), WebCT, Blackboard, and Desire2Learn are the most widely used LMS (Buabeng-Andoh & Baah, 2020).

eLearning was defined for this study as using computers and other technologies to engage in drills, practice exercises, and sequences that are not constrained by space or time.

1.3 Adoption

Adoption is the acceptance and use of an eLearning technology by an academic institution to deliver learning resources (Lashayo & Johar, 2018).

Furthermore, according to Ugwu and Nnaekwe (2019), adoption shifted the roles of both teachers and learners, with teachers shifting from knowledge transmitters to facilitators or co-learners, and occasionally as knowledge navigators; both teaching and learning processes become more interactive, and the environment becomes more conducive and engaging; teachers develop new ways of understanding and thinking about teaching and learning processes, whereas learners develop new ways of understanding and thinking about teaching and learning processes.

Adoption was defined in this study as the acceptance and use of an eLearning technology in a university institution for teaching or learning purposes.

1.4 Behavioural Intention

Behavioural Intention (BI), is a cognitive representation of an individual's preparedness to exhibit a specific behaviour (Makumbe & Mutsikiwa, 2021). Furthermore, Cheng (2019) defined Behavioural Intention as the conviction that a person will undertake a particular behaviour.

Attitude, Subjective Norms, and PBC are three dimensions that determine Behavioural Intentions;

additionally, Attitude reveals that an intention to execute a given activity is based on a positive or negative desire to exhibit that specific action (Behavioural beliefs);

Subjective Norms imply that an intention to perform a particular behaviour is based on whether or not significant others would approve or disapprove of the behaviour (Normative beliefs) (these are further subdivided into three types of normative influences: moral norms, which address whether the behaviour are right or wrong to perform; injunctive norms, which entail the social approval and disapproval of others' behaviour; and descriptive norms, which entail the social approval or disapproval of others' behaviour.

Additionally, PCB recognizes that for the intention to be satisfied, there are necessary resources or opportunities (for example, abilities, knowledge, time, skills, cooperation from others, money, equipment, and information) that could promote or inhibit individual's intention toward performing a particular behaviour (i.e., Control beliefs) (Sarver, 1983; Ajzen, 1985; Miles, 2012; Ajzen, 2020) Behavioural Intentions, which were used interchangeably with the Intention to Adopt (ITA) in this study, were defined as the assumptions that an individual would do toward adopting eLearning.

2. STUDY OBJECTIVE

As a result of this, the researcher for this study was inspired to conduct an online web-based survey study, aiming at examining the influence of Behavioural Intention on the adoption of eLearning in university institutions in Tanzania.

On the basis of the examined body of research, one hypothesis, was developed and is described in the following manner: “*Behavioural Intention has a significant positive influence to eLearning Adoption in university institutions in Tanzania*”.

3. RESEARCH METHODOLOGY

This study was taken from a larger study that was conducted in Tanzania with the purpose of investigating the determinants of eLearning adoption in university institutions in Tanzania using culture as the moderating variable. There was a total of seven constructs in this study, five of which were independent variables (attitude, subjective norms, perceived behavioral control, and skills), one was a mediating variable (behavioral control), one was a moderating variable (individualism/collectivism), and one was the dependent variable (eLearning Adoption). In the major study, two theories were used: Hofstede's Theory of Cultural Dimensions and the Theory of Planned Behavior, which adopted five variables: attitude, subjective norms, PBC, BI, and adoption of e-learning. In addition, the assessment of the relevant literature led to the determination that the Skills factors should be treated as independent variables.

This larger study comprised of four specific objectives, including the following: the initial specific objective stated, “to examine factors determining Behavioural Intention toward eLearning Adoption in university institutions in Tanzania”. The second specific objective, which is stated as, “to examine the moderating effects of Individualism/Collectivism on the relationship between Behavioural Intention and its determining factors toward eLearning Adoption in university institutions in Tanzania”. The third specific objective read as follows, “to examine the mediating effects of Behavioural Intention on the relationship between its determining factors and eLearning Adoption in university institutions in Tanzania”. And the fourth specific objective is stated as, “to examine the influence of Behavioural Intention on eLearning Adoption in university institutions in Tanzania”.

This study, which was an online web-based survey study, adopted specific objective four that aimed at examining the influence of behavioural intention on the adoption of eLearning in university institutions in Tanzania. The adopted questionnaire in the data collection used a 5-point Likert scale across all scales (1: strongly disagree to 5: strongly agree), and it incorporated the two variables from the TPB model (Ajzen, 1985; Bradley, 2012; Miles, 2012), in which Behavioural Intention, as well as, the actual use, in this case, eLearning Adoption, were adopted. The model was used to collect the data. Table 1 contains the results of the measurements taken of the items or indicators of the variables.

Table 1: *Measurement of items or indicators of the variables*

Construct	No. of items	Measurement item or indicator	Measurement	Sources
eLearning Adoption (eLADO)	3	eLADO2=Audio/Video player	Five-point scale 1= Strongly Disagree 3= Don't know 5=Strongly Agree	Kituyi & Tusubira (2013); Kihoza (2016)
		eLADO3=web portals		
		eLADO5=Video streaming		
Behavioural Intention (BI)	4	BI3=Future expectation	Five-point scale 1= Strongly Disagree 3= Don't know 5=Strongly Agree	Nyasulu & Dominic (2019); Ndubisi (2004, July); Tarhini (2013)
		BI4=Frequently		
		BI6=Recommending		
		BI7=Learning		

Source: *Literature review, 2022*

This study adopted positivism research philosophy, this was influenced by the nature of the study since aimed at verifying the TPB model and replicate the observable findings as recommended by Antwi & Hamza (2015). In addition to this, positivism is an appropriate epistemology for the deployment and adoption of ICT systems, and it accounts for around 90.4% of (Korpelainen, 2011). Furthermore, the study adopted recommendations from Kothari (2004), Bhattacharjee (2012) and Saunders *et al.* (2012), who postulated that deductive researches that aims at testing theoretical hypotheses, should use quantitative approach in which current empirical data are examined statistically, so as, to determine whether a relationship between variables is significant or insignificant. Moreover, this study employed testing-hypothesis or explanatory research design, in which tools or instruments (such as a questionnaire) developed and tested in other contexts, were utilized in this study, in order to examine the same instruments to determine if they can provide the same findings as recommended by Kothari (2004).

4. AREA OF THE RESEARCH AND ITS JUSTIFICATION

Statistics indicated that there were approximately 43 public and 21 private institutions, institutes, and colleges in the population (TCU, July, 2018). But for this investigation only two university institutions, namely, the Open University of Tanzania (OUT), and the Hubert Kairuki Memorial University (HMKU) constituted the sample.

Justification for choosing of the OUT was based on the fact that the university was founded

expressly for individuals who lacked the time to pursue conventional degrees. In this instance, OUT had real experience operating eLearning study programs; there are a lot of colleges worldwide or in Africa that operate eLearning programs, but this study was conducted exclusively in Tanzania. In addition, OUT was chosen due to its physical presence in all regions of Tanzania and the fact that its students come from diverse backgrounds, reside in different parts of the country, and in most cases continue their daily activities while studying; this was intended to reflect the actual feelings and perceptions of people from different parts of the country regarding ICT usage.

However, the decision to select the regional and coordination centers at the Open University of Tanzania was based first on the decision to include both Tanzania mainland and Tanzania Zanzibar. On the Tanzania mainland, the regional centres were divided into six zones: the eastern zone, which included Dar es Salaam and Morogoro; the central zone, which included Dodoma and Tabora; the southern highlands, which included Mbeya and Iringa; the lake zone, which included Mwanza and Kagera; and in addition, the selection of these centres was made on the basis of the empirical facts that demonstrated these centers recorded a greater number of admitted students and graduates. For instance, in 2021, these centres had a higher number of graduates. Due to the nature of this study, Ilala regional centre, Kinondoni regional centre, and OUT HQ were amalgamated to form the Dar es Salaam region. This is because OUT HQ is usually not included among regional or coordination centres, although respondents were to be drawn from it.

In the case of HKMU, rationale for selecting this institution was based on a number of factors, one of which was the fact that it is a private institution; hence, the researcher intended to obtain a mixed impression of both public and private institutions. In addition, HKMU had operational eLearning methods, which was the primary subject of this study. Considering that HKMU concentrates on medical and associated studies, the researcher wished to extend the study by incorporating eLearning studies on medical subjects.

4.1 The Sample

In this study, information was gathered using an online web-based survey questionnaire from a total of 371 of the 402 respondents who completed it, or 95.4 percent, of the calculated minimum sample of 389 respondents. The respondents were chosen using purposive, simple random, stratified, and proportional sampling techniques. The respondents included students from the two participating institutions, namely the Open University of Tanzania (OUT) and the Hubert Kairuki Memorial University (HKMU), as well as academic staff and ICT technical staff. Data were gathered for the case of OUT from the ten regions and Unguja in Zanzibar. While, the case of HKMU, information was gathered from academic staff, ICT technical staff and students from the diploma of nursing programme.

4.2 Common Method Bias

Common Method Bias or Common Method Variance which is the systematic error variance shared by variables estimated using the same method or source, for this case, the researcher used utilized Harman's Single-Factor Test using SPSS Version 22 and common latent factor using SPSS Amos version 23, and in both cases, there were no common method bias, as recommended by Tehseen *et al.*, (2017).

4.3 SEM assumptions

4.3.1 Normality.

The assumption underlying structural equation modeling (SEM) is that the data be normally distributed, the researcher, therefore, examined normal distribution using skewness and moment of kurtosis, the results fell within the recommended thresholds of greater than or equal to -2 and less than or equal to 2, by Hair *et al.* (2010). Furthermore, histograms were developed using IBM SPSS version 22, and when examined, it was revealed that the data to be approximately normal.

4.3.2 Linearity.

Linearity which is the existence of linear correlations between observed variables and the constructs with which they are associated, as well as between the constructs themselves (Tabachnick and Fidell, 2007), in this study, the researcher applied graphical method and it revealed that the relationship between independent (i.e., Behavioural Intention) and dependent variables (i.e., eLearning Adoption) was linear.

4.3.3 Homoscedasticity

Homoscedasticity which among of the pre-requisite for SEM, refers to the condition in which the statistical variance of the dependent variable is equivalent to the range of the independent variable, (Hair *et al.*, 2010). In this study, the researcher employed two techniques to determine whether the data exhibited homoscedasticity. The first technique involved the use of scatter plots, the second method involved the use of correlation analysis. Through the correlation analysis, it indicated that the relationship between dependent (i.e., eLearning adoption) and independent variable (i.e., Behavioural Intention) was statistically significant with a P-Value<0.05. Furthermore, the scatter plots also indicated that the data met assumptions for homoscedasticity. The results, therefore, in both of the two cases, it demonstrated that the assumption of homoscedasticity was satisfied as recommended by Aljandali (2017).

5. ANALYSIS AND HYPOTHESIS TESTING

5. 1 Data preparation

Before data analysis exercise was undertaken, the researcher employed various methods to ensure that data were ready for analysis. Among the methods involved was the pilot study that was conducted, and it involved a total of twenty-one of the sample of 35 participants in the pilot study completed the online web-based survey questionnaire prior to the start of the actual data collection. This was completed prior to the main data collection process. Saunders *et al.* (2012) recommended conducting questionnaire pre-tests with members of the respondent's immediate family and social circle when there is a limited amount of time available.

Prior to data analysis, the researcher checked the response rate because low response rates could lead to sample bias, which would lead to inaccurate results and conclusions about the study population. It was simpler for the researcher to continuously check the web to monitor the trend of responses on a time-basis because data were gathered using an online survey.

Furthermore, the researcher, missing data was not an issue in this study because the data were gathered using an online web-based survey and the tool was designed so that you had to make sure the previous field was filled in before moving on to the next question.

Additionally, there were there were both coding and data preparation that were involved.

Identifying missing data that causes inaccuracy, removing duplicate data, and checking for errors are all components of data cleansing (Tabachnick and Fidell, 2013). During data preparation, the researcher looked for inconsistencies and gaps in the information.

Also, the researcher checked for outliers before the data analysis. Outliers are values in a data set that deviate from the norm. Outliers are unusually low or high values on a variable. Outliers should be examined and handled properly to ensure SEM accuracy (Tabachnick and Fidell, 2013). The researcher scrutinized the data to eliminate all outliers and finally using IBM SPSS 22 the researcher was able to produce the box plots for all the constructs or variables

So as to test the hypothesis that stated that, “*Behavioural Intention has positive significant influence to eLearning Adoption in university institutions in Tanzania*” the researcher utilized IBM SPSS version 22 to run the exploration factor analysis (EFA), and also used SPSS Amos version 23 to undertake, Descriptive Statistics and inferential statistics in which both the Confirmatory Factor Analysis (CFA) were established as explained in the proceeding subsections.

5.2 Descriptive statistics

5.2.1 Respondents profile

The characteristic of the respondents was so interesting since it comprised of individuals from varying levels of academic qualification that were certificate, diploma, bachelor, master’s and PhD, with, bachelor’s respondents leading (i.e., 40.7%) as indicated in Table 2.

Table 2: *Distribution of respondents’ age, marital status, sex and academic qualification*

Category	Sub-category	Frequency	Percent (%)
Sex (N=371)	Male	262	70.6
	Female	109	29.4
Age (N=371)	20 – 30 Years	79	21.3
	31 – 40 Years	204	55
	41 – 50 Years	65	17.5
	51 – 60 Years	21	5.7
	61 + Years	2	0.5
Marital status (N=371)	Single	86	23.2
	Married	276	74.4
	Widow/Widower	6	1.6
	Divorces	3	0.8
Academic qualification (N=371)	Certificate	35	9.4
	Diploma	82	22.1
	Bachelor	151	40.7
	Masters	88	23.7
	PhD	15	4

Source: *Field data, 2022.*

This study’s respondents involved three sampling frames, which were students (88.4%); academic staff (10%) and ICT technical staff (1.6%). Further characteristics indicated that most students’ respondents were drawn from education, business and arts which constituted about 80.2%, whereas, for the case of both academic staff and ICT technical staff, they were mainly drawn from the science and business field of study (i.e., 67.9%). For the case of respondents from OUT which constituted about 94.9%, it was revealed that about a half of the respondents (i.e., 48%) were drawn from four regions (i.e., Dar es Salaam, Dodoma, Mbeya and Mwanza) as indicated in Table 3.

Table 3: *Distribution of respondents’ status, education background and their distribution across institutions or centres*

Category	Sub-category	Frequency	Percent
University institution (N=371)	OUT	352	94.9
	HKMU	19	5.1
Respondents' distributions within OUT centres (N=352)	Arusha	20	5.4
	Dodoma	47	12.7
	DSM	53	14.3
	Iringa	34	9.2
	Kagera	26	7
	Kilimanjaro	19	5.1
	Mbeya	40	10.8
	Morogoro	21	5.7
	Mwanza	38	10.2
	Tabora	32	8.6
Zanzibar	22	5.9	
Respondents' status (N=371)	Student	328	88.4
	Academic Staff	37	10
	ICT Technical Staff	6	1.6
Students' courses distribution (N=328)	Arts	65	19.8
	Business	72	22
	Education	126	38.4
	Law	13	4
	Science	35	10.6
	Health	17	5.2
Staff's specialization (N=43)	Arts	6	14
	Business	10	23.2
	Education	6	14

Science	20	46.5
Others	1	2.3

Source: *Field data, 2022.*

5.2.2 ICT Training attended by respondents and weekly spent online

The researcher was interested to investigate whether the respondents attended any training and when was that training delivered, further, the researcher was inquisitive to know how many hours per week respondents spend online, and so, their experience in using the internet. The findings, it revealed that most respondents (i.e., 72%) attended ICT training and about 44.7% of the respondents acquired their pieces of training more than one year ago. Further results indicated that about 72.5% of the respondents spent more than 3 hours online, whereas, 87.3% revealed to have experience of more than 3 years the in using internet, as indicated in Table 4.

Table 4: *ICT training and time spent on the internet*

Item	Descriptions	Frequency	Percent
Experience with internet use (N=371)	Within 1 year	22	5.9
	1 -2 years	25	6.7
	3 + years	324	87.3
Weekly time online (N=371)	Within 1 hour	49	13.2
	1 – 2 hours	53	14.3
	More than 3 hours	269	72.5
Attended ICT training previously (N=371)	Yes	267	72.0
	No	104	28.0
Time attended ICT training (N=371)	Within 1-year time	105	28.3
	1-3 years back	49	13.2
	More than 3 years ago	117	31.5
	Never attended	100	27.0

Source: *Field Data, 2022.*

5.2.3 Electronic devices owned by respondents

The researcher was interested to investigate the types of electronic devices and gadgets owned by the respondents thought out their studies, with the thinking that those were the tools most probably used during their studies. The findings, therefore, indicated that most respondents, i.e., about 87.6% and 66% own smartphones and laptops respectively, whereas, only a few (i.e., 20.8%) own desktop computers, with very few (11.1%) could afford an iPads or tablet gadgets, this is as indicated in Table 5.

Table 5: *Electronic devices owned by respondents*

Item owned	Descriptions	Frequency	Percent
<i>Smartphone</i> (N=371)	Yes	325	87.6
	No	46	12.4
<i>Laptop</i> (N=371)	Yes	245	66
	No	126	34
<i>Desktop computer</i> (N=371)	Yes	77	20.8
	No	294	79.2
<i>iPad or tablet</i> (N=371)	Yes	41	11.1
	No	330	88.9

Source: *Field Data, 2022.*

5.3 Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA)

During EFA using SPSS version 22, a number of indicators were eliminated for a variety of reasons, such as double loading, loading in the wrong factor, and having a factor loading below a threshold of 0.4 as proposed by Hair *et al.* (2010) and Yong and Pearce (2013). Two indicators or measured variables—BI1 and BI2—loaded in the wrong factor, whereas, one indicator or measured variable—eLADO1—showed double loadings; and one indicator—eLADO4—loaded in the wrong factor. For these reasons, these two indicators were all removed.

The model was then re-run until the required model fit indices, shown in Figure 4.10 and Table 4.26, were obtained.

The Behavioural Intention and eLearning Adoption constructs were then run in the Confirmatory Factor Analysis (CFA) using SPSS Amos version 23. Despite the degree of freedom having an over identified status for the case of eLearning Adoption, the CFA did not fit because some of the indices deviated from the suggested threshold, as shown in Table 4.20. The Behavioural Intention and eLearning Adoption constructs were then run in the Confirmatory Factor Analysis (CFA) using SPSS Amos version 23 until the required model fit indices, shown in Figure 1; Figure 2; Table 7; and Table 8 were obtained.

Table 6: Construct list of the retained indicators after both the exploratory and confirmatory factor analyses

Construct	Indicators' acronym	Items/indicator descriptions
Behavioural Intention (BI)	BI3	Future expectation
	BI4	Frequently
	BI6	Recommending
	BI7	Learning
eLearning Adoption (eLADO)	eLADO2	Audio/Video player
	eLADO3	web portals
	eLADO5	Video streaming

Source: Literature review, 2022.

5.4 CFA Measurement model

Further, Confirmatory Factor Analysis was conducted in SEM using SPSS Amos version 23 to determine the influence of behavioural intention on the adoption of eLearning in university institutions in Tanzania; the results are shown in both Figure 1 and Table 7.

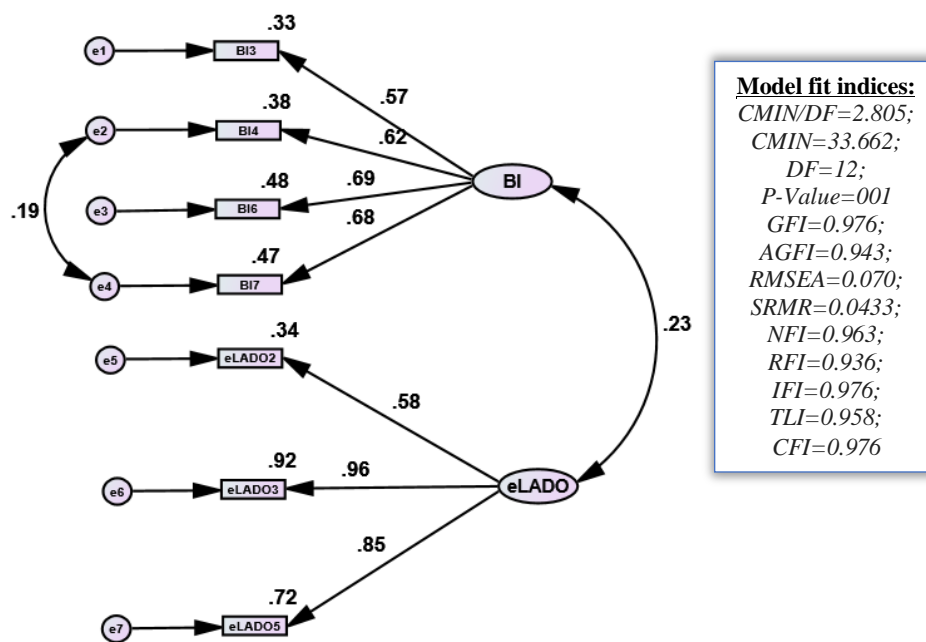


Figure 1: Standardized CFA measurement model

Key: BI3=Future expectation; BI4=Frequently; BI6=Recommending; BI7=Learning; eLADO2=Audio/Video player; eLADO3=Web portals; and eLADO5=Video streaming.

After the model was executed, assessment on whether the collected data matched the developed

model, the researcher analyzed the model fit indices. Furthermore, the researcher examined whether the observed indices met the threshold value criteria for the goodness-of-fit indices, as recommended by Awang (2011). The fit indices for the developed model depicted in Figure 4.21 were within the acceptable range with CMIN/DF=2.857; CMIN=37.137; DF=13; GFI=0.973; AGFI=0.941; RMSEA=0.071; SRMR=0.0488; NFI=0.960; RFI=0.935; IFI=0.973; TLI=0.957; and CFI=0.973.

Furthermore, the path coefficients were also examined using maximum likelihood estimates, specifically the standardized estimates, the P-Value, the C.R and the R², as shown in Table 7.

Table 7: Regression estimates of the CFA measurement model

Path	Unstandardized				Standardized Estimate
	Estimate	S.E.	C.R.	P	
BI3 <— BI	1.000				.550
BI4 <— BI	1.182	.139	8.535	***	.685
BI6 <— BI	1.087	.131	8.297	***	.645
BI7 <— BI	1.290	.147	8.750	***	.745
eLADO2 <— eLADO	1.000				.583
eLADO3 <— eLADO	.822	.071	11.514	***	.963
eLADO5 <— eLADO	.721	.060	12.093	***	.845

Source: Field Data, 2022.

Because the regression weights of every path in the influence of Behavioural Intention on eLearning Adoption fell within the range suggested by Hox and Bechger (2014), that the relationship or path with a $-1.96 > C.R. > 1.96$ and a P-Value < 0.05 were deemed statistically significant. Table 7 displays the summary of path regression weights for the influence of Behavioural Intention on eLearning Adoption.

5.5 CFA structure or path model

In addition, in order to test the hypothesis H41, the researcher created a CFA structure model (See Figure 2), analyzed the standardized regression coefficients, P-Value, C.R, and R² values, and then concluded whether or not the data supported the hypothesis.

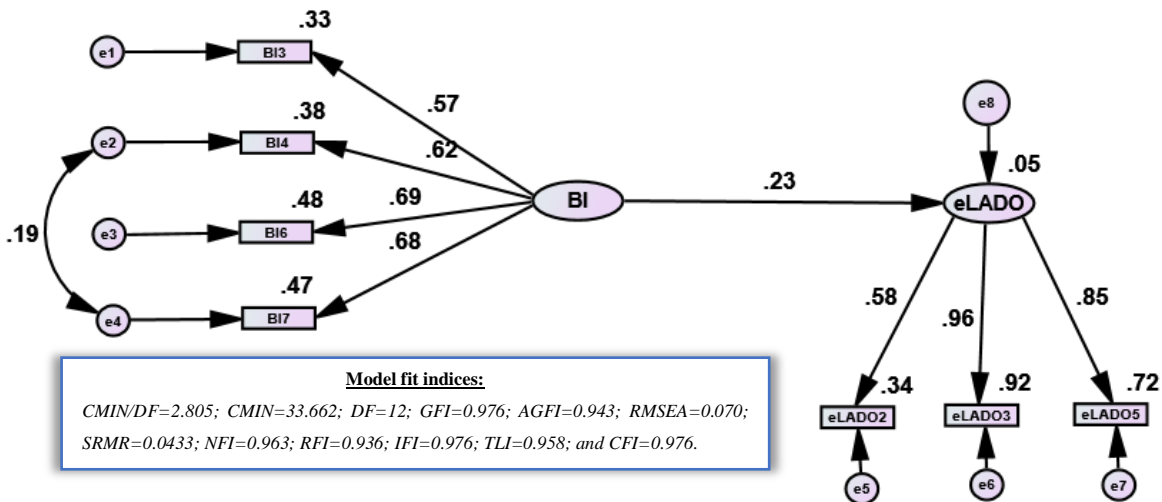


Figure 2: Standardized CFA hypothesized model on the influence of Behavioural Intention on eLearning Adoption.

Source: Field Data, 2022.

As shown in Table 8, the path from Behavioural Intention to eLADO was used to determine the influence of behavioural intention on the adoption of eLearning in university institutions in Tanzania. A positive standardized regression weight of 0.201 indicates that Behavioural Intention exhibited positive and significant influence to eLearning Adoption in university institutions in Tanzania, this is due to the fact that the regression weight corresponded to the recommended paths coefficient (γ) of at least 0.2, in order for the path to be statistically significant and be considered significant and meaningful for discussion (Hoe, 2008). Therefore, in this study, the standardized path coefficient of 0.201 was within the recommended range.

Table 8: Regression estimates for the influence of Behavioural Intention on eLearning Adoption

Path	Unstandardized					Standardized Estimate	Results
	Estimate	S.E.	C.R.	P	Label		
eLADO ← BI	.356	.115	3.094	.002	H41	.201	Supported
BI3 ← BI	1.000					.517	Significant
BI4 ← BI	1.182	.139	8.535	***	par_1	.635	Significant
BI6 ← BI	1.087	.131	8.297	***	Par_2	.736	Significant
BI7 ← BI	1.290	.147	8.750	***	par_3	.649	Significant

Source: Field Data, 2022.

More analysis was done in a study based on fundamental principles to determine the Behavioural

Intention's major impact on the adoption of eLearning. As shown in Table 8, the study produced a critical ratio (C. R) value of 3.094; and P-Value= 0.002. Because the results fell within the range suggested by Hox and Bechger (2014), that the relationship with a $-1.96 > C.R. > 1.96$ and a P-Value < 0.05 was considered to be significant. Further results showed that only 4% of the variance could be accounted (or explained) by the Behavioural Intention for the eLearning Adoption.

5.6 Hypothesis testing

Only one specific research objective was covered in this investigation. The objective was to examine the influence of behavioural intention on the adoption of eLearning in university institutions in Tanzania. As part of this research objective, only one hypothesized relationship had to be tested, which states, "Behavioural Intention has positive significant influence to eLearning Adoption in university institutions in Tanzania".

6. DISCUSSION OF THE MAIN FINDINGS

The findings of this study supported the hypothesis, and demonstrated that, Behavioural Intention had positive and statistically significant influence on eLearning Adoption in university institutions in Tanzania.

The results of this study agreed with those of Lwoga & Komba (2015); Massoro & Othman (2017); Ameen et al. (2019); Odegbesan et al. (2019); Tiwari (2020); and Matarirano et al. (2021), all of which found that the usage or continue usage intention significantly influenced the actual usage of eLearning system.

This study demonstrated that a person's desire to use an eLearning system, such as in the upcoming semester, frequently, consistently, or whenever necessary, can have a significant influence on his or her actual utilization of an eLearning system. This is backed up by the empirical evidence that about 72.5% of the respondents spent at least three hours on the internet on weekly basis in favour of teaching or leaning.

However, this study's results did not back up those of Agudo-Peregrina et al. (2014); Miles (2014); Zhang et al. (2022); all of whom revealed that the usage or continued usage intention exhibits insignificant influence on the actual usage of eLearning system.

7. CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Since the findings indicated that Behavioural Intention had positive and statistically significant influence on eLearning Adoption in university institutions in Tanzania, therefore, the study concluded that having more positive intention is a significant predictor of individuals' decision to adopt, use, or continue using an eLearning system.

7.1 Recommendations for further studies.

The findings of this study revealed that behavioural intention only accounted for 4 percent of the eLearning Adoption as revealed in Figure 2. As a result, there is a need for additional studies to investigate other factors that influence university institutions toward adopt, use or continuance of use eLearning.

In addition, the scope of this study included university institutions that are regulated by the Tanzania Commission for Universities (TCU). This study recommends for additional research of a similar nature be conducted in order to determine the factors that will determine whether or not

higher education institutions regulated by The National Council for Technical and Vocational Education and Training (NACTVET) will adopt, use, or continue to use an eLearning system. In addition, because the study only used two universities as its sample, namely OUT and HKMU, it suggests that similar studies be expanded to include other universities in order to investigate prospects of universities to adopt, use, or continue using an eLearning system based on the same model.

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