Predicting students' intention to continue online learning post-Covid-19 pandemic: Extension of the Unified Theory of Acceptance and Usage of Technology

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Abstract

Purpose- The purpose of this study is to predict the intention to continue online learning post the COVID - 19 pandemic among students in the two largest universities of higher learning in Botswana.

Design/Methodology/Approach-The study is based on the descriptive research design, using a structured questionnaire to collect quantitative data from 509 undergraduate and postgraduate students at Botswana's two major Universities using convenience sampling strategy. An online survey was used to gather primary data due to the Covid-19 pandemic. The study employed correlation and regression analysis in testing the five hypothesised relationships.

Findings- Using the extended theory of Unified Theory of Acceptance and Use of Technology (UTAUT) as a theoretical lens, the study found that: Performance Expectancy, Social Influence and Satisfaction predict continuance intention of online learning services. These factors have shown to be good predictors of intention in previous research. Expectancy effort had no influence on intention.

Research Limitations-/implications- The current study covered on only university students from two tertiary institutions; therefore, the results cannot safely be generalized to the entire student population in Botswana.

Practical Implications- The study provides an insight to Higher Education Institutions in terms of the copying strategies that may be employed in online learning during the Covid-19 and post-Covid-19 pandemic. First, the concept of social influence suggests that lecturers can make use of online chat discussion boards and rooms to foster student collaboration and a sense of community. Second, and finally online service providers should foster a close relationship with students to understand their expectations and extend the performance of their applications to satisfy their users.

Originality/Value- This study contributes to literature on online learning during the Covid-19 pandemic period by including satisfaction and continuance intention to the original UTAUT model, thus extending the practical value of the model.

Keywords- Performance expectancy, Social influence, Satisfaction, Online learning, Covid-19

Paper Type- Research paper

Introduction

The advent of the Coronavirus known as Covid-19, in late December 2019 ushered in an era of global chaos and uncertainty. Covid-19 was declared a global pandemic by the World Health Organization (WHO) on 12 March 2020 (WHO, 2020). Covid-19 has greatly altered the traditional teaching methods in higher education institutions (HEIs) which were mainly face- to -face. Statistics from the pandemic indicate that by 7 June 2020, the effects of the virus were severe, with 1.725 billion students in 193 countries being affected (UNESCO 2020). To harness the spread of Covid-19, governments across the globe instituted various response strategies such as total lockdowns, the introduction of quarantines and work from home measures (International Labour Organization, 2020; Lu *et al.,* 2020). Responding to the pandemic, the Government of Botswana closed all schools in March 2020 to curtail the spread of the virus, despite not having any confirmed case of the virus (APA News, 2020), and HEI transitioned to online learning.

The paradigm shift to online learning has become the new norm for HEIs since students are homebound. Ally (2011, p17) defines online learning as "the use of the Internet to access learning materials; to interact with the content, instructor, and other learners; and to obtain support during the learning process and acquire knowledge." Online learning has been found to create opportunities especially during pandemics like the Covid-19 where students and teachers can interact in any space without any constraint, thus providing a new learning environment, making learning easier and supporting students to develop the required skills, abilities, and attitudes (Vlachopoulos, 2020; Wang *et al.,* 2021). On the contrary, with the introduction of online platforms, some universities lacked the capacity and infrastructure to deliver content using the online platform while most students did not have laptops or computers to attend class virtually (OECD, 2020). Learning Management Systems such as Moodle, Blackboard and Brightspace are known to be effective in online learning (Wang *et al.,* 2021).

Previous studies on the continued use of technologies were mainly based on the expectation confirmation theory (ECT) to predict the continuance of usage of technology by learners (Dai *et al.,* 2020; Lu *et al.,* 2019), and user confirmation and expectations are used to predict satisfaction. Wang *et al.,* (2021) conducted studies in China based on the extension of ECT and task-technology fit model to study factors that influence satisfaction and continuance intention in online learning. Furthermore, the Technology Acceptance Model (TAM) has been used in studies related to the acceptance of technologies, that is, users' attitude and intention to adopt technology (Chang *et al.,* 2017; Mailizar *et al.,* 2021).

This study extends the original Theory of Planned Behaviour (TPB), proposed by Ajzen (1991) which posits that behavior is triggered by the intention to perform a certain behavior, focusing on university undergraduate and postgraduate students at two selected HEIs in Gaborone, Botswana. TPB posits that behavioral intention is directly determined by attitude, subjective norms, and perceived behavioural control with behavioural intention resulting in actual behavior. TPB has been widely employed to examine the acceptance of technology-powered learning in higher education (Chu and Chen, 2016; Gao, 2019; Mailizar *et al.,* 2021). In addition, Lung-Guang (2019) introduced a self -regulated learning model into TPB to explore the intention of Taiwanese undergraduate students to accept massive open online courses, using Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh *et al.,* (2003).

Recently Kim *et al.,* (2021) integrated both TAM and TPB to determine factors influencing Korean hospitality and tourism University students' intentions to use online learning. Further studies by Li *et al.,* (2021) in China used the extended TPB model to investigate the impacts of the attitudes, subjective norms, perceived behavioral control and perceived risk of university students' COVID-19 preventive behaviors from 18 universities in Beijing, China. Furthermore, Liu *et al.,* (2021) developed an extended TPB model in exploring the factors influencing Chinese residents' post-pandemic outbound travel intentions, based on variables such as the perception of COVID-19, risk tolerance and past outbound travel behavior.

Previous studies on the adoption of online learning have been particularly pronounced in developed countries (Fagan, 2019; Yakubu and Dasuki, 2019) with limited studies in developing countries (Gunasinghe *et al.,* 2019; Samsudeen and Mohamed, 2019), such as Botswana, which transitioned to online learning after the emergence of Covid-19. Botswana provides a fertile ground for the current research since online learning has been beset by a multiplicity of challenges, including the lack of availability of technological facilities such as smart phones, and creativity to use online platforms such as Google Classroom and Zoom, coupled with the lack of internet connectivity (Magogwe *et al.,* 2022). Ajzen (2020, p3) contends that "if other variables could capture a certain proportion of variation of intention, after considering existing variables, then the TPB is open to the addition of other predictive variables," hence the justification to extend the variables of TPB to include satisfaction and continuance intention in this study. To the best of our knowledge, no previous study has explored students' intentions in the continued use of online technologies in the Covid-19 era based on the extension of TPB constructs which include satisfaction and continuance intention.

Based on the preceding information, the purposes of this study are to elucidate the nexus between performance expectancy and continuance intention; to establish the effects of efforts expectancy on continuance intention; to investigate the relationship

between social influence and continuance intention; to determine the relationship between facilitating conditions and continuance intention and to examine the relationship between satisfaction and continuance intention using the extended UTAUT model postulated by Venkatesh *et al.,* (2003).

The study provides an insight to HEIs regarding copying strategies they may employ in online learning during, and post-Covid-19 pandemic. Furthermore, the study contributes to literature on online learning during the Covid-19 pandemic period by including satisfaction and continuance intention to the original UTAUT model; as well as aiding policy makers to be better prepared for online learning and teaching post Covid-19 pandemic.

Literature Review

Theories underpinning the study

TPB is among the most widespread theoretical models for predicting behavior, introduced by Ajzen (1988) an extension of the Theory of Reasoned Action (TRA). Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980) attempt to provide an explanation on how attitude**,** and subjective norms come together to predict intention which in turn, predicts behavior. Attitude describes positive or negative feelings toward a behavior, and subjective norms assess the social pressures on an individual to carry out or not carry out a behavior.

The TRA assumes that the behavior being predicted is under complete control; that is, the person believes that he/she can at will implement or not implement the behavior (Ajzen and Fishbein, 1980). When an individual thinks that he has what it takes to succeed, and anticipates fewer hurdles', the greater should be his perceived control over a behavior. Thus, the TRA does not take into consideration situations where users of a technology might lack control over their behavior. In many online learning situations, lack of control often occurs due to lack of necessary resources (such as computers, Wi-Fi availability or stability, smart phones) and lack of skills to operate the rapidly changing technologies (Azzah, 2015). Therefore, the TPB was developed by extending the TRA through incorporating perceived behavioral control (Ajzen, 1988: Ajzen 1991) as a new determinant of intention on a par with attitude and subjective norms.

TPB is now one of the well-established theories among researchers in explaining and predicting adoption general behaviors (Al-Lozi and Papazafeiropoulou, 2012; Al-Debei *et al.,* 2013; Koloseni and Mandari, 2017). Despite the popularity of the TPB, limited studies have employed it in explaining and predicting continuance behavior of online learning. Furthermore, Alkhwadi and Abdulmuhsin (2021) posit that the Unified Theory of Acceptance and Use of Technology Model (UTAUT) is the latest model which consist of four core antecedents of Performance Expectancy, Effort Expectancy, Social

Influence and Facilitating conditions, all of which influence behavioural intentions and actual behaviour to understand technology adoption and acceptance behaviour. The authors assert that the comprehensiveness and the high explanatory power parsimony and robustness compared to other acceptance theories cum models offer UTAUT model as the most up to date model in predicting the intention to use online learning in the post COVID-19 era in Botswana. The assertion espoused apriori thus provides motivation for the adoption of the UTAUT model which aims to explain users' intent to use information systems and evaluate subsequent usage behaviour for this study in Botswana.

The Technology Acceptance Model and Its Extensions

One of the well-known theories that are specific for investigating intention to accept or resist new technology is the TAM. TAM was conceived in the late 1980's, amidst concern that employees were not making use of technologies made available to them to facilitate their work (Davis 1989; Bagozzi and Warshaw, 1989). As expected, the initial TAM has undergone several extensions aimed to enhance the understanding of technology adoption. First, some formulations (Kimathi and Zhang, 2019) put forward what has come to be known as a General Extended Technology Acceptance Model for online learning (GETAMEL) by incorporating an external factor called subjective norms. By introducing social norms GETAMEL essentially made full use of TRA constructs and adapted them for technology adoption. Second, an attempt has been made to integrate several models called the UTAUT. The model (Venkatesh *et al.,* 2003) contains four main explanatory factors behind technology adoption, namely: Performance expectancy; Effort expectancy; Social influence and Facilitating conditions. These explanatory factors are essentially constructs of the TPB adapted for technology adoption analysis.

Expectation Confirmation Theory

The ECT is a theory which seeks to explain post-purchase or post-adoption (dis)satisfaction as the difference between expected performance and perceived performance. When perceived performance exceeds expectations, a customer is satisfied. One of the initial researchers using ECT in the setting of information system continuance is (Bhattacherjee, 2001), who utilised a sample of online banking users and found that satisfaction is the most prominent antecedent of continuance intention.

UTAUT is the most comprehensive of them all. It incorporates, though not fully, ideas from most of the other theories except ECM. The main conclusion is that the UTAUT provides a good starting point in the construction of a model of online learning. The UTAUT appears to have a unifying power in the sense that it fits well with existing

knowledge and integrates it into a few meaningful constructs. It can easily be extended to accommodate specific situations such as continuance intentions. We believe that the UTAUT may be one of the best available theories in the study of technology adoption behavior and may be achieving the status of a paradigm, since several studies show that intentions are good predictors of behaviour (Sheeran and Webb, 2016).

*A Model of Online Learning Continuance Intentio*n

An analytical model which provides a framework for the study was constructed as shown in Figure I. The model borrows its concepts from the various theories discussed here in an eclectic way. In the model, online continuance intention is conceptualized as a joint function of five broad predictors, namely: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, and Satisfaction.

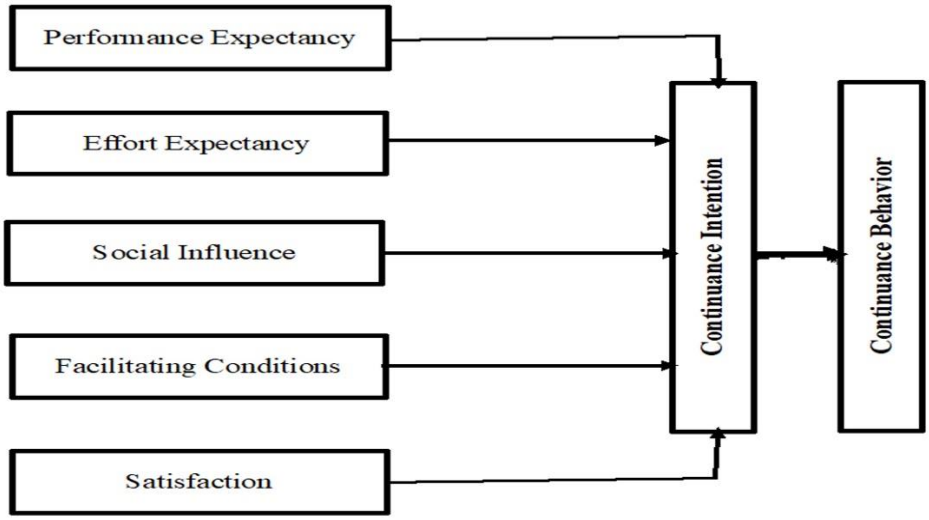

Figure I: An Extended Unified Theory of Acceptance and Usage of Technology
Source: Authors' elaboration

Hypotheses Development

Relationship between performance expectancy and continuance intention

Rizana *et al.,* (2020) posit that online learning platforms are vital especially during the COVID-19 pandemic as students are home, which makes online learning the only option in the era of uncertainty. Robinson *et al.,* (2020) further asserted that exploring pedagogical metrics in virtual learning will help bridge the gap and provide a telescopic insight into the role of a myriad of emotions and cognitive dynamics in virtual learning. Adedoyin and Soykan (2020) further indicated that the COVID-19 pandemic has forced global physical closure of businesses, sport activities and schools by pushing all

institutions to migrate to online platforms. Based on the assertion espoused above we hypothesize that:

H1: Performance expectancy is significantly and positively related to continuance intention of online learning in Botswana.

Relationship between effort expectancy and continuance intention

Choi-Meng Leong (2020) asserted that an online learning system has implications on effort expectancy and continuance intention. Zabidi *et al.,* (2017) contend that the success and effectiveness of distance education systems depend heavily on the study material with implication on effort expectancy and continuance intention. Salimon *et al.,* (2017) postulate that the extended UTAUT model has been reasonably established as proven potent at predicting behavioural intention and user behaviour, which set the basis for the juxtapositions for the envisaged parsimonious model for this study on online learning in Botswana. Sandkuhl and Lehman (2017) posit that digital transformation of HEIs is a topical issue that several stakeholders of education must feel concerned about to adjust to the modifications enforced by novel technologies adoption in the COVID-19 era. Based on the assertion espoused apriori, we hypothesize that:

H2: Effort expectancy is significantly and positively related to continuance intentions of online learning in Botswana.

Relationship between social influence and continuance intention

Choi-Meng Leong (2020) contend that online learning continuance intention knowledge include subjective norms, perceived usefulness, and perceived ease of use to explain behavioural intention. Panigrahi *et al.,* (2018) pinpointed the impact of social influence and environmental factors on behaviorial intention. Wekerle *et al.,* (2020) posited that the online learning platform/systems is a novel paradigm for students' engagement which is aligned with the realities of COVID-19 pandemic. Humida *et al.,* (2021) concurs that in the educational settings, the subjective norm may influence students' decision-making process in the context of adopting online learning system by the attitudes from friends, family, educators and institutional policies. Adedoyin and Soykan (2020) conclude that the crisis response migration process of students and faculty members can also be viewed from the level of their digital competence and availability of information on online Learning. Ebaid (2020) in the study of Accounting students' perceptions on online learning during the COVID-19 pandemic, noted that the students did not benefit from online learning and increased flexibility with respect to Accounting courses during the COVID-19 era, due to lack of human contact, technical problems and too much reliance on computers. Based on the aforementioned, we hypothesize that:

H3: Social influence is significantly and positively related to continuance intention of online learning in Botswana.

Relationship between facilitating conditions and continuance intention

Meskhi (2018) noted that the development and perception of online learning in HEIs depends on the level of development of social and information interrelation cum facilitating conditions in the society. Wang *et al.,* (2021) further indicated that E-Learning system can support students and institutions to build distinctive opportunities under the pandemic situation. Qiao *et al.,* (2021) assert that the COVID-19 fear moderates the connection between the external factors and behavioural intentions among students in adopting an online learning system. Alkhwaldi and Abdulmuhsin (2021) in the study of the Jordanian higher education sector indicate that performance expectancy, facilitating conditions, trust and autonomy are significant predictors of distance learning acceptance in selected public and private Universities during the crisis time of COVID-19 pandemic. Based on the foregoing, it is hypothesized that:

H4: Facilitating condition is significantly and positively related to continuance intention of online learning in Botswana.

Relationship between satisfaction and continuance intention

Humida *et al.,* (2021) posit that despite having many advantages, the online learning system has not been fully adopted in the developing countries for many reasons. Hamidi and Chavoshi (2018) argued that positive interest is seen among students from the perspective of acceptance and adoption of online based online learning, using mobile services and student inquisitiveness. Choi-Meng (2020) concludes that satisfaction is inextricably associated with continuance intention as the prior concern will be to enhance the usefulness of online learning system to promote continuance intention. Alkhwaldi and Abdulmuhsin (2021) assert that the distance learning platform should be measured at local and national level within the context of technology acceptance and efficiency of the use of zoom, Microsoft teams, and Google classroom in the COVID-19 era. Raza and Khan (2021) further argued that Cloud Computing Accounting adoption could be used to bolster students' academic performance within the context of perceived ease of use and perceived usefulness in the COVID-19 era. Based on the aforementioned, we hypothesize that:

H5: Satisfaction is significantly and positively related to continuance intention of online learning in Botswana.

Methodology

Research design and context

This study is based on the descriptive research design, using a structured questionnaire to collect data from 509 undergraduate and postgraduate students at Botswana's two major universities, based on a convenience sampling strategy. The survey instrument was adapted from UTAUT model of Venkatesh *et al.,* (2003). Furthermore, the survey instrument had seven sections which solicited the following information: Section A: Demographic information; Section B: Performance expectancy; Section C: Effort expectancy; Section D: Social influence; Section E: Facilitating conditions; Section E: Satisfaction with online learning and Section F: Continuance intention. The targeted population was 620 students, from which 509 questionnaires were fully completed, representing an 82.10% response rate. For each institution, 310 students were sampled from all the faculties. Due to the Covid-19 pandemic, an online survey was administered using Survey monkey. The analysis of data was carried out to predict the intention to continue online learning by the students post COVID – 19, using SPSS version 26.

Results and Discussion

Results in Table 1 show that 68.2% of the sampled respondents are within the 20-25 age bracket, with 59.5% of the sampled respondents being female, while the remainder is male. It should also be noted that 59.5% of the respondents were from the University of Botswana (UB), with the remainder from Botho University (BU). Furthermore, 97.8% of the respondents indicated that they are conversant with various virtual platforms usage.

Table 1: Demographic data

Age (years)	Less Than 20	87	17.1
	20-25	347	68.2
	26-30	33	6.5
	Above 30	42	8.3
Gender	Male	206	40.5
	Female	303	59.5
University	Botho University	206	40.5
	University of Botswana	303	59.5
Level of Study	Year 1	83	16.3
	Year 2	113	22.2

	Year 3	131	25.7
	Year 4	143	28.1
	Year 5	5	1.0
	Post-Graduate	34	6.7
Virtual Platform Usage	No	10	2.0
	Yes	498	97.8

Table II shows that most of the sampled respondents are of the view that online learning is a very useful platform in education in achieving their academic goals, with family, friends and tertiary institutions supporting their online learning aspirations despite the issues of internet connectivity in some locations. The mean values indicated in Table II lend credence to Althunibat (2015) findings contending that online learning application allows students to carry on their academic activities and access information at any time from any place without any restriction. This is also supported by Islam and Azad (2015) and Tarhini *et al.,* (2017) who assert that online learning platforms are meant to augment the traditional system of learning in an internet-enabled environment. Alkhwaldi and Abdulmuhsin (2021) assert that the distance learning platform should be measured at local and national level within the context of technology acceptance and efficiency of the use of zoom, Microsoft teams, and Google classroom in the COVID-19 era.

Table 11: Constructs' descriptive statistics

Constructs/Scale Items	**Mean**	**Standard Deviation**
Using Online Learning is a very useful platform in education	3.91	1.16
Using Online Learning is very effective platform in achieving academic goals	3.62	1.16
Using Online Learning improves Students Pass rate	3.39	1.27
Operating Online Learning is easy to me	4.09	1.08
Operating Online Learning Technology is a clear procedure	3.89	1.07
It is easy for me to develop skills needed to operate online Learning Technology	4.06	0.997
I think my family supports my use of Online Learning Technology	3.71	1.16
I think my family supports my use of Online Learning	3.65	1.20
I think my friends supports the use of Online Learning	4.04	1.05

I think my University supports use of Online Learning	3.59	1.29
I think my Fellow students support the use of Online Learning	3.51	1.31
I have the necessary Technology resources for Online Learning	4.07	0.97
I have adequate skills for operating online Technology.	3.74	1.10
I can independently run Online Learning without the need for assistance	3.94	1.12
I am satisfied with the performance of online earning service	3.46	1.22
I am pleased with the experience of using online learning service	3.62	1.22
My decision to use online earning service is a wise one as it gives me prompt service	3.61	1.17
Online earning provides the right solution to my request	3.50	1.17
I intend to continue to use online earning after the pandemic	3.79	1.28
I intend to recommend others to use online earning even after COVID-19 is over	3.77	1.29

As shown in Table III, the Cronbach alpha for the five constructs meet the minimum threshold as postulated in extant literature (Segars, 1997). The Keiser Meyer Olkin (KMO), Bartletts values and Average Variance extraction (AVE) also confirm the validity of the construct scale items and meet the minimum threshold as explicated in extant literature (Saunders *et al.,* 2012). The communalities range for the constructs scale items also validate the psychometric nomenclature of scale items in Table III. The mean values of the scale items further indicate meaningful contribution in explaining the constructs dynamics.

Table 111: Psychometric analysis of online learning metrics

Constructs	**Cronbach Alpha**	**KMO**	**Bartletts**	**AVE**	**Factor Metrics/Communalities**	**Mean**	**Standard Deviation**
Performance Expectancy	0.885	0.744	817.123	81.33	0.763-0.878	3.38-3.92	1.14-1.27
Effort Expectancy	0.886	0.728	812.87	81.39	0.792-0.831	3.90-4.10	0.998-1.07
Social Influence	0.819	0.816	835.039	65.35	0.440-0.805	3.54-4.03	1.05-1.28
Facilitating Conditions	0.853	0.834	1868.15	69.43	0.614-0.756	3.50-4.06	0.973-1.31
Satisfaction	0.944	0.500	638.62	85.64	0.845-0.864	3.44-3.60	1.17-1.23

Continuance Intention	0.924	0.543	632.57	92.92	0.927-0.929	3.77-3.79	1.21-1.29

As established in Table IV, performance expectancy r=0.721 is significantly associated with continuance intention; effort expectancy r= 0.586 is significantly associated with continuance intention; social influence r=0.709 is significantly associated with continuance intention; while facilitating conditions r=0.596 is significantly associated with continuance intention and satisfaction r=0.827 is significantly associated with continuance intention, all at $p<0.01$. Hamidi and Chavoshi (2018) postulated that positive interest is seen among students from the perspective of acceptance and adoption of online based online learning, using mobile services and student inquisitiveness. The findings thus resonate with Alkhwaldi and Abdulmuhsin (2021) findings in the study in the Jordanian higher education sector which indicate that performance expectancy, facilitating conditions, trust and autonomy are significant predictors of distance learning acceptance in selected public and private Universities during the crisis time of COVID-19 pandemic.

Table IV: Correlation analysis of predictive intention to continue online learning

		Continuance Intention	Performance Expectancy	Effort Expectancy	Social influence	Facilitating Conditions	Satisfaction
Continuance Intention	Pearson Correlation	1	.721**	.586**	.709**	.596**	.827**
Performance Expectancy	Pearson Correlation	.721**	1	.617**	.743**	.620**	.767**
Effort Expectancy	Pearson Correlation	.586**	.617**	1	.649**	.785**	.618**
Social Influence	Pearson Correlation	.709**	.743**	.649**	1	.674**	.733**
Facilitating Conditions	Pearson Correlation	.596**	.620**	.785**	.674**	1	.663**
Satisfaction	Pearson Correlation	.827**	.767**	.618**	.733**	.663**	1

**. Correlation is significant at the 0.01 level (2-tailed).

As indicated in Table V, Performance Expectancy, (β=0.126, t=2.826) is significantly and positively related to continuance intention. Effort expectancy (β=0.063, t=1.439) is significantly positively related to continuance intention. Social influence (β= 0.164, t=3.737) is also significantly and positively related to continuance intention. Facilitating conditions (β=-0.034, t=-0.749) is however significantly and partially related to continuance intention of E-Learning platform amongst learners in Botswana. Furthermore, satisfaction (β=0.593, t=13.475) is significantly and positively related to continuance intention of online learning. Therefore, hypotheses H1, H2, H3, H4 and H5 are supported in this empirical study in Botswana. Wang *et al.,* (2021) further indicated

that online learning systems can support students and institutions to build distinctive opportunities under the pandemic situation. Adedoyin and Soykan (2020) conclude that the crisis response migration process of students and faculty members can also be viewed from the level of their digital competence and availability of information on online Learning. Sandkuhl and Lehman (2017) posited that digital transformation of HEIs is a topical issue that several stakeholders of education must feel concerned about to adjust to the modifications enforced by novel technologies adoption in the COVID-19 era.

Table V: Regression analysis of predicting intention to continue online learning

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.105	.294		-.359	.720	-.682	.471					
	Performance Expectancy	.097	.034	.126	2.826	.005	.030	.164	.720	.134	.072	.330	3.027
	Effort Expectancy	.054	.038	.063	1.439	.151	-.020	.128	.587	.069	.037	.343	2.917
	Social Influence	.106	.028	.164	3.737	<.001	.050	.162	.707	.176	.096	.340	2.944

	Facilitating Conditions	-.022	.030	-.034	-.749	.454	-.080	.036	.589	-.036	-.019	.323	3.092
	Satisfaction	.331	.025	.593	13.475	<.001	.282	.379	.825	.541	.345	.338	2.955
a. Dependent Variable: Continuance Intentions													

SUMMARY, IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH

Summary of results

This study sought to test five hypotheses relating to the UTAUT and the ECT, which are presented in Table VI, summarising the results of testing the five hypotheses, including their statistical significance. Results support that Performance Expectancy (p value = 0.005), Social Influence (p value = 0.001), and Satisfaction (p value = 0.001) have significant regression weights, indicating that hypotheses H1, H3 and H5 are accepted. This goes to support the hypotheses that Performance Expectancy, Social Influence, and Satisfaction influence students' Intention to use online learning after the pandemic.

Table VI: Summary of research results

Hypothesis	Path Relationship		Beta	P Value	Significance	Remarks
H1	Performance Expectancy	→ Intention	0.097	0.005	Significant	H1 Accepted
H2	Effort Expectancy	→ Intention	0.054	0.151	Not Sig.	H2 Rejected
H3	Social Influence	→ Intention	0.106	0.001	Significant	H3 Accepted
H4	Facilitating Conditions	→ Intention	-0.022	0.454	Not Sig.	H4 Rejected
H5	Satisfaction	→ Intention	0.331	0.001	Significant	H5 Accepted

Implication for theory:

This study extends knowledge on the factors that determine continuance intention by incorporating satisfaction in addition to the four factors of the traditional UTAUT. The study provides evidence for the predominance of satisfaction over the four traditional factors in predicting intention to continue online learning among students. Therefore, any study purporting to predict continuance intention that omits the contribution of

satisfaction, or a similar construct may be distorted because of under-specification of the causal factors.

Implications for practice

Implications for online technology selection: These findings suggest that although most universities temporarily adopted online teaching as an emergency solution, students appear to have felt that the outcomes delivered by the system improved their performance. This implies that academic institutions need to consider adjusting the curriculum to promote online learning in the future, whether there is pandemic or no pandemic.

Implications for teaching and learning: First, the concept of social influence suggests that lecturers can make use of online chat discussion boards and rooms to foster student collaboration and a sense of community. Second, and finally online service providers should foster a close relationship with students to understand their expectations and extend the performance of their applications to satisfy their users.

Although the efficacy of online learning has long been recognised by the education community (Barrot, 2021; Kebritchi, Lipschuetz, and Santiague, 2017; Wallace, 2003), its continuation after the pandemic must be treated with caution. There is growing evidence of challenges in its implementation (Boelens et al., 2017) as shown in the following examples. First in a systematic review of students' experience in an online learning environment, Rasheed et al.'s (2020) developed a typology of challenges, grouped into five clusters as follows: Self-Regulation, Technological Literacy, Student Isolation, Technological Sufficiency, and Technological Complexity.

Second, Khalil et al. (2020) explored the efficacy of synchronized online learning in a medical school in Saudi Arabia. The findings showed that students perceived synchronous online learning positively, particularly in terms of efficacy and time management. However, they also mentioned internet connectivity problems and failure to address the needs of courses that require hands-on practice despite efforts to adopt virtual laboratories. Third, in another study in Ghana, Adarkwah (2021) studied students' online learning experience during the pandemic using a qualitative method. The results indicated that students viewed online learning as ineffective due to several challenges including poor learning space at home, lack of social interaction among students and lack of Information and Communication Technologies (ICTs).

Limitations and Future Research

The current study covered on only university students from two tertiary institutions; therefore, results cannot safely be generalized to the student population in the country.

Therefore, future research should consider enlisting more universities to be more representative, focusing on lecturers, which is an important group in fostering online teaching, that could have a spill-over effect on the students' continued online learning.

Conclusion

Using the extended theory of UTAUT as a theoretical lens, the study found that: Performance Expectancy, Social Influence and Satisfaction predict continuance intention of online learning services. These factors have shown to be good predictors of intention in previous research (Ashrafi *et al.,* 2020; Osang *et al.,* 2015; Huang and Teo, 2019). Results regarding Social Influence are also significant, which suggests that perceived social pressure (subjective norms) has significant impact on intention to continue online learning. This implies that when referents such as peers, lecturers or family members think that the learners should continue using the e-learning system, the learners get motivated to meet the expectations of their referents. Students are more likely to develop intention to continue using online learning if their immediate people recommend or say some positive things about the service. This is consistent with findings of previous studies (Ajzen, 1991; Venkatesh, Davis, & Davis, 2003).

Based on the empirical results, performance expectancy had a significant impact on intention, which is consistent with the results of previous online learning studies (Lu *et al.,* 2019; Zhou, 2017; Cheng, 2019). The findings relating to the role of the new variable satisfaction (Hypothesis 5) that was used to extend the UTAUT was interesting in two ways. First, the positive beta coefficient suggests that those with high satisfaction also have high continuance intention: Hence satisfaction with online learning demonstrated significant determination of students' intention to continue use of online learning. Second, satisfaction was the most powerful factor in explaining intention. For example, compared to Performance Expectancy (t =2.826) Satisfaction (t =13.475) contributed more than 4.8 times to the explanation of continuance intention. These conclusions are consistent with previous studies (Lu *et al.,* 2019; Gupta *et al.,* 2020).

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