

Extending the Unified Theory of Technology Acceptance and Use of Technology to Explain Teachers' Intentions to Sustain Online Teaching Beyond the COVID-19 Pandemic

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Keywords

Unified theory of acceptance and use of technology (UTAUT);

Online teaching.

COVID-19;

Expectancy confirmation model.

Abstract

This study establishes whether the acceptance and use of online teaching will continue in the post-COVID-19 landscape. The study proposes a model to explain the continuance intention to adopt online teaching systems from the standpoint of tertiary education teachers. The model combines constructs from the unified theory of acceptance and use of technology (UTAUT), which comprises performance expectancy; effort expectancy; social influences; facilitating conditions; and a new construct, satisfaction, from the expectation confirmation model. The data were obtained from 133 faculty members from three tertiary institutions in Botswana, Namibia, and Lesotho. The data were analysed using a multiple regression equation model, which explained 63.9% of the variation in intention with respect to R-square value. Performance expectancy, social influence, and satisfaction had a positive and significant impact on intention, while effort expectancy and facilitating conditions had an insignificant impact on intention to

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continue using e-teaching. Satisfaction was the most influential variable in explaining intention. Theoretically, this study extends and applies the UTAUT model to explicate tertiary education teachers' intentions to continue teaching online post-COVID-19. It could be helpful for education policymakers to design proper strategies for online teaching after the pandemic.

1. Introduction

The emergence of the coronavirus, commonly known as COVID-19, in the Wuhan province of China in December 2019 caused a global upheaval, leading to unprecedented chaos and disruption in various sectors, including higher education. Gunasinghe, Hamid, Khatibi and Asam (2020) noted that the use of information technology (IT), especially in higher education institutions (HEIs), is not optimal and is given less attention, particularly in emerging economies. They further opined that there is limited validity of the determinants that influence continuance intention in an educational context, which sets the motivation for this study. Therefore, they concluded that the emergence of internet-based technology has changed how people live, work, and study. Based on the assertion espoused a priori, the study seeks to take a telescopic insight into changing needs as regards the use of technology to explain Teacher's intention to use sustainable online teaching beyond COVID-19 in emerging economies including Botswana, Namibia and Lesotho.

COVID-19 has had profound repercussions on teachers, students, parents, and HEIs, and its duration remains uncertain (Mailisar, Almanthari & Maulina, 2020; Yi & Jang, 2020). Since early 2020, universities worldwide have had to adapt swiftly to the pandemic by transitioning from traditional face-to-face teaching to online platforms to minimise disruptions to student learning. However, this transition has required time and adjustments (Adnan & Anwar, 2020; Mujalli, Khan & Almgrashi, 2022). IT adoption has become essential in facilitating this shift to online education. Osei, Kwateng & Boateng (2022) defined online teaching as involving teaching in synchronous or asynchronous environments using various devices (e.g., laptops and smartphones) connected to the internet.

Existing literature reveals numerous studies that have employed various theories, including the theory of reasoned action, the technology acceptance model, and the theory of planned behaviour, to examine the adoption and use of technology (Alshammari, 2021). However, this research is grounded in the unified theory of acceptance and use of technology (UTAUT) developed by Venkatesh, Morris, Davis and Davis (2003), supplemented with concepts from the expectation confirmation model (ECM). The rationale for using UTAUT lies in its established effectiveness in explaining the use and adoption of diverse technologies, making it widely applicable in various contexts (Alshammari, 2021; Bradley, 2009; Sultana, 2020). Furthermore, information system theories like UTAUT have not been extensively tested and applied in non-Western countries (Alalwan, Dwivedi, Rana, Lal & Williams, 2015; Alshammari, 2021;

El-Masri & Tarhini, 2017; Fagan, 2019), especially in developing countries like Botswana, Namibia, and Lesotho. These countries face significant challenges in transitioning to online platforms due to limited internet access, a scarcity of smartphones and laptops among students, and teachers' limited experience in technology integration strategies (Boer & Asino, 2021; Magogwe, Mokibelo & Karabo, 2021; Mashinini, 2020). Notably, Namibia was among the countries that made a late move to online platforms (Boer & Asino, 2021). Botho University was among the first institutions to successfully transition to online teaching in Botswana and Lesotho, making it an intriguing case for examination.

This paper starts with an overview of the problem being explored, followed by a literature review and the development of the proposed hypotheses for the study. Subsequently, the methodology guiding the study is outlined, followed by the presentation and discussion of the results. Practical implications are then discussed, along with suggestions for further research, before concluding the study.

2. Objectives of the study

The study overarching purpose is to establish nomological web between performance efficiency, effort expectancy, social influence, facilitating conditions, satisfaction and continuance intentions to sustain online teaching beyond COVID-19 pandemic. Based on the aforementioned, this study establishes the extent of the nexus of relationship between performance expectancy, effort expectancy, social influence, facilitating conditions, satisfaction and continuance intentions in Tertiary institutions in Namibia, Botswana and Lesotho.

3. Problem statement

To mitigate the virus's spread, governments globally implemented various measures, such as lockdowns, remote work arrangements, and restrictions on local and international travel. Consequently, educational institutions, including universities, colleges, and schools, were forced to close temporarily (Toquero, 2020). This closure extended to countries like Botswana, Lesotho, and Namibia. Sucu and Çakiroğlu (2022) posited that the emergence of the pandemic has shed light on the true threat of pandemics and their effect on education, as previous studies have focused on face-to-face learning with acute paucity of pedagogical delivery through blended and distance learning. Based on the aforementioned, this study establishes the extent of the nomological web between performance expectancy, effort expectancy, social influence, facilitating conditions, satisfaction, and continuance intentions in tertiary institutions. This sudden need for technological adaptation placed considerable pressure on educators, as they needed to acquire the knowledge and skills required for effective online teaching (Taamneh, Alsaad, Elrehail, Al-Okaily, Lutfi & Sergio, 2023). The utilisation of online teaching management systems like Moodle, Blackboard, and Brightspace has grown exponentially, necessitating successful implementation for effective course material delivery by instructors (Mujalli et al., 2022).

4. A perspective on educator intention to teach online in the higher education realm in emerging markets

This study explores whether the widespread adoption and use of online teaching during the COVID-19 pandemic will persist in the post-pandemic landscape of Botswana, Namibia, and Lesotho. The study presents a model aimed at explaining the intention to continue using online teaching systems from the perspective of tertiary education instructors. Teachers play a pivotal role within HEIs, as the challenges they face in adapting to online platforms can impact the quality of educational delivery (Maatuk, Elberkawi, Aljawarneh, Rashaideh & Alharbi, 2022), thus influencing the learning process. Existing literature acknowledges that teachers encounter difficulties when conducting online classes, regardless of whether they teach vocational, theoretical, or technical subjects (Mokhtar & Karim, 2021). Similar trends in the need for e-Learning can be seen in Higher Educational Institutions (HEIs) in Sri Lanka, however, the growth of these platforms have been hindered as contended by Palagolla & Wickramarachchi (2019). The key challenges discerned are insufficient user skills, misconception on the use of technology and lack of overall policy most especially in emerging economies (Gunasinghe et al, 2020). They further argue that acute paucity of literature indicates a gap in understanding the antecedents which limits academicians in Local HEIs from adopting e-Learning in emerging economies. Given the importance of e-Learning platforms and their implementation, it is essential to determine the level of satisfaction and retention among users in emerging economies.

Therefore, this study offers telescopic lenses to HEIs on strategies to navigate online learning post-COVID-19 and assists teachers in nurturing their satisfaction with online teaching in emerging markets. Moreover, it contributes to the body of knowledge on online teaching, especially during the COVID-19 period, by incorporating constructs like satisfaction and continuance intention into the original UTAUT model. Lastly, the study offers guidance to policymakers in preparing for sustainability in post-pandemic online teaching.

5. A brief orientation towards the different constructs in the study

The theoretical foundation for the study was drawn from Unified Theory of Acceptance and Use of Technology (UTAUT) and Expectations confirmation Model (ECM). Acute paucity of extant literature indicate that the model has not been validated in the applicability of e-Learning adoption by academicians most especially in emerging economies (Gunasinghe et al, 2020). They further posit that the UTAUT model explicate significant factors of previously established theories such as Technological Acceptance Model (TAM), Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB) and Innovation Diffusion Theory (IDT). They concluded that the model establishes 4 key determinants of individual information in system adoption, namely, performance expectancy premised on increasing effectiveness, Effort expectancy associated with ease of use of e-Learning, Social Influence grounded on support from

Influential people, facilitating conditions which explicate use of compatible devices. The ECM proposed by Bhattacharjee (2001) is grounded on expectation-confirmation theory which postulate that user's continuance intention of information system is theoretically dependent on their perceived usefulness or post adoption of performance expectancy, Effort expectancy, Social Influence, facilitating conditions and satisfaction.

6. Conceptual Framework

The COVID-19 pandemic disrupted the field of education, necessitating an unprecedented shift towards online teaching. This study examines whether the widespread adoption of online teaching during the pandemic will persist in the post-COVID-19 era. Specifically, the study proposes a model to explicate the determinants influencing tertiary education teachers' intentions to continue using online teaching systems. This model integrates constructs from the UTAUT and the ECM.

6.1. Unified Theory of Acceptance and Use of Technology

The UTAUT represents a comprehensive integration of eight established theories related to technology acceptance and adoption (Ajzen, 1991; Ajzen & Fishbein, 1975; Compeau & Higgins, 1995; Davis, 1989; Davis, Bagozzi & Warshaw, 1992; Rogers, 1995; Taylor & Todd, 1995; Thompson, Higgins & Howell, 1991). It is considered a robust theoretical framework with high explanatory power in comparison to other technology acceptance models (Venkatesh, Sykes & Shang, 2011). The UTAUT comprises four primary factors that explain technology adoption, namely performance expectancy, effort expectancy, social influence, and facilitating conditions.

According to Tersis and Economides (2011), these factors collectively influence behavioural intention, which determines use behaviour. Stronger intentions are positively associated with a higher likelihood of actual behaviour (Ajzen & Madden, 1986). Consequently, intention is often used as a proxy for behaviour in research studies due to its strong predictive value, as contended by Sucu and Çakiroğlu (2022).

6.2. Expectation Confirmation Model

The ECM is a cognitive theory encompassing four key constructs: expectations, perceived performance, satisfaction, and continuance intention (Bhattacharjee, 2001). Expectations pertain to the attributes individuals anticipate regarding a product, service, or technological artefact. Perceived performance reflects an individual's assessment of the actual performance of the product, service, or technology. Satisfaction arises when a product surpasses expectations, while dissatisfaction occurs when it falls short (Oliver, 1977, 1980). Satisfaction plays a pivotal role in shaping continuance intention, which influences repurchase intention (Dabholkar, Sheperd & Thorpe, 2000). In the realm of information systems and e-teaching, teachers' continuance intention to use online teaching is primarily influenced by their satisfaction with prior use (Bhattacharjee, 2001; Lee, 2010).

6.3. A Model of Online Teaching Continuance Intention

The analytical model, as depicted in Figure 1, integrates concepts from the UTAUT and ECM. It conceptualises online continuance intention as a multifaceted outcome determined by five broad determinants, including performance expectancy, effort expectancy, social influence, facilitating conditions, and satisfaction. This framework provides a comprehensive understanding of the factors influencing teachers' intentions to continue using online teaching platforms. It acknowledges the interplay among these determinants and their collective impact on the decision to persist with online teaching beyond the pandemic.

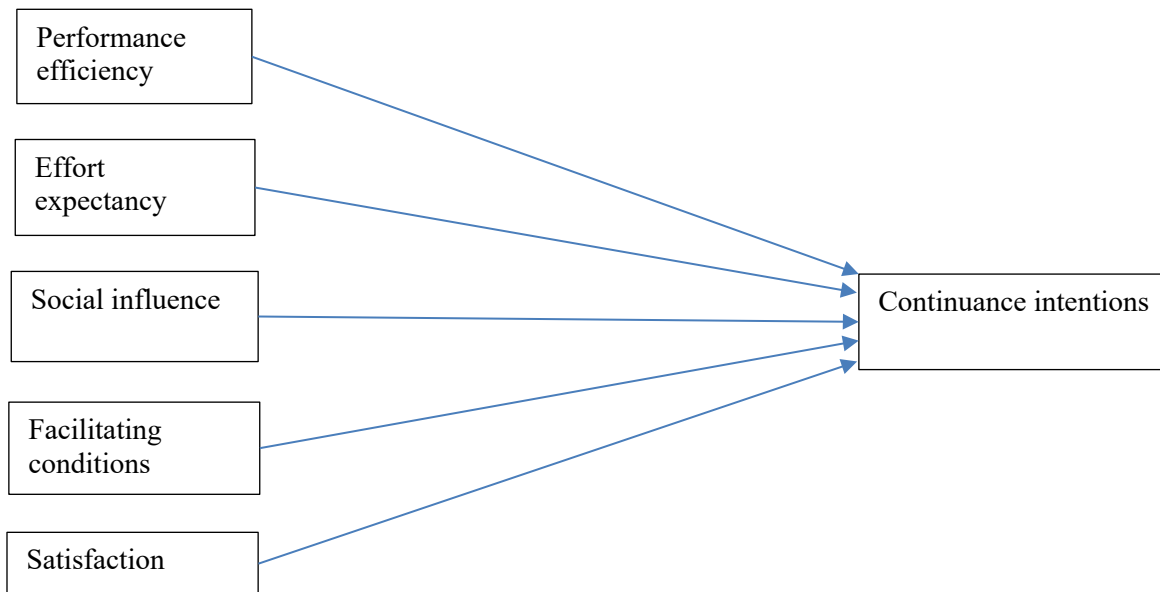


Figure 1: An Extended Unified Theory of Acceptance and Use of Technology

Source: Authors' own construction.

7. Hypotheses Validation

7.1. Relationship between Performance Expectancy and Continuance Intention

The rise of internet-based educational tools, such as virtual learning environments, and the rapid growth of information and communication technology (ICT) have significantly boosted electronic learning platforms, as suggested by Almufarreh and Arshad (2023). Chen, Rashidin, Song, Wang, Javed and Wang (2021) identified a global trend in tertiary institutions, indicating a shift towards integrating online teaching into traditional course delivery methods, resulting in blended teaching environments that benefit students and educational quality. To achieve this goal, dedicated administrators, skilled and engaged educators, and self-disciplined students are required (Vejayaratnam, Paramasivan & Mustakim, 2019). Scholars (e.g., Al-Adwan, Yaseen, Alsoud, Abousweilem & Al-Rahmi, 2022) further highlight that today's internet and mobile technology-driven tertiary institutions offer diverse web-based education and ubiquitous digitalisation platforms. Salimon, Sanuri, Aliyu, Perumal and Yusr (2021) concurred, stating that performance expectancy is significantly associated with behavioural intentions. Yet, Adedoyin,

Enebe, Oyekunle and Balogun (2023) asserted that learning management systems are web-based applications that empower instructors to create and deliver teaching materials, monitor learner participation, and assess learner performance. Villarejo-Ramos, Cabrera-Sánchez, Lara-Rubio and Liébana-Cabanillas (2021) and Marunu et al. (2023) further suggested that performance expectancy, resistance to use, regret avoidance, social influence, overall risk, and privacy risk significantly affect the intention to use contemporary techniques within various enterprise environments. Based on these insights, we hypothesise that:

H1: Performance expectancy is significantly and positively associated with the intention to continue teaching online post the pandemic.

7.2. Relationship between Effort Expectancy and Continuance Intention

Venkatesh, Thong and Xu (2012) described effort expectancy as individuals' belief that their interactions with technology will be trouble-free. Fedorko, Bačik and Gavurova (2021) and Gunasinghe et al. (2020) argued that this belief is crucial for educators who perceive learning management system platforms as easy to use. They further asserted that effort expectancy significantly influences academics' intention to use online teaching. Pham and Ho (2020) contended that effort expectancy is closely linked to online teaching readiness, which has implications for learner satisfaction and performance. Chao (2019) added that effort expectancy measures the extent to which a person believes the system enhances work outcomes, making it a vital factor in behavioural intentions. Additionally, this study contributes to the field of online teaching, especially during the COVID-19 pandemic, by including constructs like satisfaction and continuance intention in the original UTAUT model. Sucu and Çakiroğlu (2022) supported these assertions by indicating that factors such as course content, teaching methods, interaction, course duration, live course systems, and available materials significantly affect effort expectancy. Building on these findings, we propose the following hypothesis:

H2: Effort expectancy is significantly and positively associated with the intention to continue teaching online post the pandemic.

7.3. Relationship between Social Influence and Behavioural Intention

Social influence, as described by Botero, Questier and Shu (2019), is vital in contemporary teaching methods. It highlights the degree to which social metrics influence individuals' decisions regarding virtual learning. Scholars (e.g., Mahmood, Imran & Adil, 2023; Venkatesh et al., 2012) note that social influence measures the extent to which individuals believe that society expects them to use technology. Gunasinghe et al. (2020) concurred that social influence includes external pressures, such as peer or supervisory pressure and faculty encouragement, which influence perceptions of e-teaching. As such, Marikyan Papagiannidis and Stewart (2023) and Saleh, Saleh and Saleh (2020) emphasised the importance of social influence and personal innovativeness in IT acceptance. Lakhal, Khechine and Mukamurera (2021) concluded that social influence indirectly impacts user perceptions of technology in

voluntary usage settings, rather than directly influencing usage intention. Based on these insights, we hypothesise that:

H3: Social influence is significantly and positively associated with the intention to continue teaching online post the pandemic.

7.4. Relationship between Facilitating Conditions and Continuance Intentions

During the COVID-19 outbreak, uncertainties surrounded the virus and its impact on education (Sohrabi & Iraj, 2016). With the assistance of digital tools and online teaching approaches, educators shifted the curriculum to an online environment (Mohammed, Rashid., Salih & Budur, 2020). Sucu and Çakiroğlu (2022) argued that facilitating conditions significantly and positively influence behavioural intentions, as observed in their study on ICT teachers' adaptations to online instruction during the pandemic. They concluded that teachers' ability to conduct courses online relies on the support they receive, which provides crucial insights into online instruction practices. As such, Shaya, Baroudi and Mohebi (2023) and Tan, Choong and Chen (2022) posited that users' perceptions of support levels positively influence behavioural intentions. Based on these assertions, we propose the following hypothesis:

H4: Facilitating conditions are significantly and positively associated with the intention to continue teaching online post the pandemic.

7.5. Relationship between Satisfaction and Continuance Intentions

Teachers' satisfaction with the e-teaching system can influence their intentions to continue using it (C. Chen, Landa, Padilla & Yur-Austin, 2021; Wickramaarachchi, Karunarathne & Gunawardhana, 2021). C. Chen et al. (2021) and Jo (2022) indicated that satisfaction is a precursor to continuance intention, as users are more likely to use cloud computing services when they find them satisfactory. Borup, Graham, West, Archambault and Spring (2020) highlighted concerns related to the lack of physical control, unsupervised learning, social media, and internet distractions, even when teachers and students are prepared for organised learning. Gunasinghe et al. (2020) emphasised that technological platforms like e-teaching enhance the educational experience for teachers and educators in many ways. Furthermore, Pham and Ho (2020) noted that learning management systems bring changes to pedagogical strategies and improve teaching and learning effectiveness. Sucu and Çakiroğlu (2022) concluded that teachers' efforts to conduct courses online have implications for online instruction practices and teacher adaptation. Based on these findings, we hypothesise that:

H5: Satisfaction is significantly and positively associated with the intention to continue teaching online post the pandemic.

8. Methodology

8.1. Research Design and Context

This study employed a quantitative and descriptive research design. The study followed a positivistic paradigm, since it tested hypothetical propositions. The target population comprised 180 academics surveyed using a Google survey, which is an increasingly accepted method for conducting large-scale global surveys, especially in the COVID-19 pandemic era. The study used a structured questionnaire to gather data from academic colleagues at the Namibia University of Science and Technology and the Botho University campuses in Maseru, Lesotho, and Gaborone, Botswana. The study employed a convenience sampling technique, as postulated by Malhotra (2019), who argued that convenience sampling is used when a population is homogenous as it prioritises generalisability. In this empirical study, 133 fully completed online questionnaires were received, accounting for a 74% response rate. The research instrument was adapted from the UTAUT model developed by Venkatesh et al. (2003) to explain academic intentions in the COVID-19 era using 5 Point Likert scale with 1 designated as strongly agree and 5 designated Strongly disagree. Ethical considerations were clearly followed in the execution of the research process. Survey participants were drawn from faculties encompassing business and accounting, IT, education, engineering, health, hospitality and tourism, natural resources, and spatial and core sciences across Botswana, Lesotho, and Namibia. These disciplines represent the multidisciplinary programmes within the two institutions selected for this empirical study. Data analysis was conducted using SPSS version 27 to elucidate academics' intentions to continue online teaching post-COVID-19.

Table 1: Constructs and Items

<i>Performance expectancy:</i>
X ₁ Online teaching is effective in achieving my teaching goals.
X ₂ Teaching online makes me more efficient.
X ₃ Using online teaching improves my teaching performance.
X ₄ Using online teaching saves the teaching time.
X ₅ Using online lecturing assists learners to achieve the desired learning outcomes.
X ₆ Using online teaching improves students' pass rates.
X ₇ Online teaching prepares students with the necessary employability skills for the future world.
<i>Effort expectancy:</i>

X ₈ I am comfortable with the various technologies that can be used for online teaching.
X ₉ The effort to do online teaching is less than face-to-face teaching.
X ₁₀ I am familiar with online teaching technologies.
X ₁₁ There are enough opportunities for me to promote interaction in my online teaching environment.
X ₁₂ I am satisfied with the use of online teaching technology for my course delivery.
X ₁₃ It is easy for me to develop the required technological skills to effectively deliver my course.
X ₁₄ My university provides the necessary support to conduct online classes effectively.
<i>Social influences:</i>
X ₁₅ I think my colleagues and peers would like me to use online teaching.
X ₁₆ My university expects me to use online platforms to teach.
X ₁₇ My students believe that I should use online platforms to teach.
X ₁₈ Adopting online teaching would increase my social status.
<i>Facilitating conditions:</i>
X ₁₉ I have suitable resources to implement online teaching.
X ₂₀ People around me can help me to use online lecturing tools.
X ₂₁ I have sufficient knowledge to use a wide range of tools for online teaching.
X ₂₂ If I face difficulties about online lecturing, there are people who can help me solve the problem.
X ₂₃ The institution provides training on the use of online teaching.
<i>Satisfaction:</i>
X ₂₄ I am pleased with the experience of using online teaching.
X ₂₅ I am satisfied with my quality of delivery during online teaching.

X ₂₆ I am satisfied with the student contribution during online teaching.
X ₂₇ Online teaching provides the right solution to a pandemic environment.
X ₂₈ Online teaching promotes innovation in teaching.
X ₂₉ My decision to use online teaching is a wise one.
<i>Continuance intention:</i>
X ₃₀ I intend to continue online teaching even after COVID-19 is over.
X ₃₁ I intend to adopt a wide range of tools to improve the effectiveness of my online teaching.
X ₃₂ I intend to recommend online teaching to other lecturers whenever the nature of the course allows.
X ₃₃ There is a high probability that my university will adopt online teaching after the pandemic.
X ₃₄ I believe at least some elements of online teaching will remain even after the pandemic.

Source: Adapted from Venkatesh et al. (2003).

9. Results and Discussion

Table 2 outlines the demographic information gathered from the respondents. Among the sampled participants, 39% fell within the 35-44 age bracket, while 41% were aged 45 years old and above. Notably, 20% of the respondents from Botswana, Lesotho, and Namibia were 35 years old or younger. Furthermore, the data showed that 59% of the respondents were male, while 41% were female. In terms of academic qualifications, 60% had master's degrees, and 33% had earned a doctorate within the sampled contexts. The areas of specialisation and teaching in Botswana, Namibia, and Lesotho encompassed a broad spectrum, including business and accounting, IT, education, engineering, health, hospitality and tourism, natural resources, spatial sciences, and science.

Table 2: Demographics

		Number	Percentage
Age	34 years old and below	26	20
	35-44 years old	52	39

	45 years old and above	55	41
Gender	Male	79	59
	Female	54	41
Qualifications	Bachelor's	9	7
	Master's	80	60
	Doctoral	44	33
N = 133			

Source: Authors own construct

9.1. Descriptive Statistics

Table 3 presents the mean values for various variables. The performance expectancy variables ranged from 3.22 to 3.67, while the effort expectancy, social influence, facilitating conditions, satisfaction, and continuance intention scale items ranges were 2.86-4.17, 3.15-3.98, 3.84-4.25, 2.80-4.32, and 3.74-4.26 respectively. These data support the idea that the learning management system is a web-based application enabling instructors to create and deliver teaching materials, monitor learner participation, and assess learner performance. Additionally, Sucu and Çakiroğlu (2022) suggested that teachers are increasingly conducting their courses online, as their support during activities can enhance online instruction practices.

Table 3: Descriptive Statistics

	Mean	Standard Deviation
<i>Performance expectancy:</i>		
1. Online teaching is effective in achieving my teaching goals.	3.67	0.975
2. Teaching online makes me more efficient.	3.55	1.090
3. Using online teaching improves my teaching performance.	3.53	0.958
4. Using online teaching saves the teaching time.	3.62	1.105
5. Using online lecturing assists learners to achieve the desired learning outcomes.	3.38	0.997
6. Using online teaching improves students' pass rates.	3.22	0.972
7. Online teaching prepares students with the necessary employability skills for the future world.	3.27	1.009
<i>Effort expectancy:</i>		
1. I am comfortable with the various technologies that can be used for online teaching.	4.17	0.761
2. The effort to do online teaching is less than face-to-face teaching.	2.86	1.268

	Mean	Standard Deviation
3. I am familiar with online teaching technologies.	4.01	0.875
4. There are enough opportunities for me to promote interaction in my online teaching environment.	3.68	0.942
5. I am satisfied with the use of online teaching technology for my course delivery.	3.62	0.934
6. It is easy for me to develop the required technological skills to effectively deliver my course.	3.83	0.906
7. My university provides the necessary support to conduct online classes effectively.	4.05	0.968
<i>Social influences:</i>		
1. I think my colleagues and peers would like me to use online teaching.	3.29	0.936
2. My university expects me to use online platforms to teach.	3.98	0.883
3. My students believe that I should use online platforms to teach.	3.37	1.004
4. Adopting online teaching would increase my social status.	3.15	1.011
<i>Facilitating conditions:</i>		
1. I have suitable resources to implement online teaching.	3.92	0.966
2. People around me can help me to use online lecturing tools.	3.84	0.737
3. I have sufficient knowledge to use a wide range of tools for online teaching.	3.95	0.843
4. If I face difficulties about online lecturing, there are people who can help me solve the problem.	3.94	0.834
5. The institution provides training on the use of online teaching.	4.25	0.773
<i>Satisfaction:</i>		
1. I am pleased with the experience of using online teaching.	3.78	0.948
2. I am satisfied with my quality of delivery during online teaching.	3.73	0.863
3. I am satisfied with the student contribution during online teaching.	2.80	1.092
4. Online teaching provides the right solution to a pandemic environment.	4.32	0.793
5. Online teaching promotes innovation in teaching.	4.09	0.862
6. My decision to use online teaching is a wise one.	3.90	0.824
<i>Continuance intention:</i>		
1. I intend to continue online teaching even after COVID-19 is over.	3.74	0.984
2. I intend to adopt a wide range of tools to improve the effectiveness of my online teaching.	4.09	0.793
3. I intend to recommend online teaching to other lecturers whenever the nature of the course allows.	3.98	0.826
4. There is a high probability that my university will adopt online teaching after the pandemic.	3.78	0.916
5. I believe at least some elements of online teaching will remain even after the pandemic.	4.26	0.706

Source: Authors own construct

9.2. Psychometric Analysis of Academic Online Teaching Metrics

Table 4 presents the reliability metrics for various constructs used in the study. With values ranging from 0.688 to 0.861, these metrics meet the reliability threshold established in the literature for the scale items used in this empirical study. Furthermore, indicators like the Kaiser-Meyer-Olkin (KMO), Bartlett's test of sphericity, and average variance extracted (AVE), as shown in Table 4, confirm the psychometric competence of the study's subconstructs. These findings align with the notion that teachers are increasingly adopting online teaching practices (Sucu & Çakiroğlu, 2022) and the positive impact of support on behavioural intentions (Yakubu & Dasuki, 2018). Moreover, Pham and Ho (2020) noted that learning management systems bring changes to pedagogical strategies and enhance teaching and learning effectiveness.

Table 4: Psychometric Analysis of Academics Online Teaching Metrics

	Cronbach's Alpha	KMO	Bartlett's	AVE	Factor Metrics	Mean	Standard Deviation
Performance expectancy	0.851	0.855	408.381	54.107	0.560-0.875	3.22-3.67	0.972-1.105
Effort expectancy	0.802	0.811	296.555	47.737	0.500-0.835	2.86-4.17	0.761-1.268
Social influence	0.688	0.674	92.199	52.021	0.635-0.824	3.15-3.98	0.883-1.011
Facilitating conditions	0.761	0.750	158.820	51.358	0.627-0.794	3.84-4.25	0.737-0.966
Satisfaction	0.861	0.844	356.473	59.532	0.634-0.863	2.80-4.32	0.793-1.092
Continuance intentions	0.819	0.805	215.359	58.074	0.703-0.807	3.74-4.26	0.706-0.916

Source: Authors own construct

9.3. Pearson Correlation Analysis of Intention to Continue Online Teaching

Table 5 illustrates the results of correlation analysis, highlighting the association of performance expectancy ($r = 0.715$), effort expectancy ($r = 0.606$), social influence ($r = 0.697$), facilitating conditions ($r = 0.586$), and satisfaction ($r = 0.755$) with the intention to continue online teaching. These findings

support the claim that factors like lack of physical control and unsupervised learning perspectives, as noted by Alam (2021) and Borup et al. (2020), can lead to concerns in online teaching. However, Gunasinghe et al. (2020) and Salat, Hamed and Bolbol (2021) argued that technological platforms, such as e-teaching, have improved the overall learning experience and benefit educators.

Table 5: Pearson Correlation Analysis of Intention to Continue Online Teaching

Correlations						
	Continuance intention	Performance expectancy	Effort expectancy	Social influence	Facilitating conditions	Satisfaction
Continuance intention	1					
Performance expectancy	0.715**	1				
Effort expectancy	0.606**	0.611**	1			
Social influence	0.697**	0.705**	0.586**	1		
Facilitating conditions	0.586**	0.476**	0.738**	0.564**	1	
Satisfaction	0.755**	0.775**	0.698**	0.697**	0.642**	1

Notes: ** Correlation is significant at the 0.01 level (two-tailed)/Source: Authors own construct

9.4. Regression Analysis of Intention to Continue Online Teaching

Table 6 presents the results of multiple linear regression analysis, which evaluates the influence of constructs in the extended UTAUT model on intention. From the regression analysis, it was established that all five independent variables exhibit positive beta values, indicating their positive influence on intention, that performance expectancy, social influence, and satisfaction reached statistical significance, suggesting a significant relationship with intention. However, effort expectancy and facilitating conditions were not deemed significant in the context of the study. Findings indicate the need for investment in resources with respect to Information management systems in Namibia, Botswana and Lesotho. In addition, the regression equation explained 63.9% of the variation in intention, indicating good explanatory power. Finally, multicollinearity was not deemed a critical issue in this study, since tolerance levels were less than 1 and variance inflation factors (VIFs) were less than 5, as postulated by Pallant (2007).

These findings align with the idea that modern educational institutions are increasingly embracing web-based education, as discussed by Honal and Ifenthaler (2018), with committed administrators, skilled academics, and self-disciplined students playing crucial roles in achieving this goal. Furthermore, Pham and Ho (2020) emphasised the positive impact of learning management systems on pedagogical strategies and teaching effectiveness.

Table 6: Regression Analysis of Intention to Continue Online Teaching

Coefficients ^a													
Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	Sig.	95.0% Confidence Interval for <i>B</i>		Correlations			Collinearity Statistics	
		<i>B</i>	Std. error	Beta			Lower Bound	Upper Bound	Sero-order	Partial	Part	Tolerance	VIF
1	(Constant)	3.827	1.194		3.204	0.002	1.46	6.19					
	Performance expectancy	0.150	0.057	0.240	2.628	0.010	0.037	0.263	0.715	0.227	0.137	0.328	3.052
	Effort expectancy	0.001	0.064	0.001	0.010	0.992	-0.127	0.128	0.606	0.001	0.001	0.353	2.830
	Social influence	0.264	0.095	0.225	2.786	0.006	0.077	0.452	0.697	0.240	0.146	0.419	2.386
	Facilitating conditions	0.148	0.090	0.136	1.636	0.104	-0.031	0.326	0.586	0.144	0.086	0.398	2.513
	Satisfaction	0.256	0.078	0.324	3.285	0.001	0.102	0.410	0.755	0.280	0.172	0.281	3.563

Notes: ^a Dependent variable = continuance intention. Adjusted root mean square error of approximation = 0.639/ Source: Authors own construct

9.5. Summary of Results

This study sought to test five hypotheses regarding teachers' intentions to use online teaching post the COVID-19 pandemic, utilising an extended version of the UTAUT model. The summarised results, along with their statistical significance, are presented in Table 7. The results supported the hypotheses that performance expectancy, social influence, and satisfaction have significant regression weights, indicating the acceptance of *H1*, *H3*, and *H5*. The results supported the idea that performance expectancy, social influence, and satisfaction influence the intention to use online teaching after the pandemic. The study further indicates the importance of perception cum increasing effectiveness, support from influential people cum vicarious influence as well as the quality of delivery importance in the use of e-Learning in Namibia, Botswana and Lesotho. Effort expectancy and Facilitating conditions were however found not to be supported with respect to continuance intentions. Results further indicate that more needs to be done with respect to ease of use of e-Learning in order to establish credence attributes and also the need for investment in compatible devices to drive sustainable online adoption post COVID-19 pandemic. The results of the study aligned with research by Bahari, Arpaci, Asmi and Shuib (2023) and Sewandono, Thoyib, Hadiwidjojo and Rofiq (2023), emphasising the importance of online teaching as a value-adding tool that is embraced by social influence due to its versatility and geographical reach. Nevertheless, these authors neglected to emphasise the critical role of satisfaction in driving continuous intention, and therefore impair coherent understanding of the role of satisfaction in stimulating future intentions. Interestingly, Piramanayagam, Alanvijay and Seal (2024) confirmed the role of satisfaction in driving future intention, aligning with the outcome of this study in terms of the importance of satisfaction as a precursor to intention.

Table 6: Summary of Hypotheses Testing

Hypothesis	Effects	Direction	Coefficients	<i>p</i> -value	Conclusion
H1	Performance expectancy → Intention	Positive	0.150	0.010	Accepted
H2	Effort expectancy → Intention	Positive	0.001	0.992	Not supported
H3	Social influence → Intention	Positive	0.264	0.006	Accepted
H4	Facilitating conditions → Intention	Positive	0.148	0.104	Not supported
H5	Satisfaction → Intention	Positive	0.256	0.001	Accepted

Source: Authors own construct

Against the background provided above, the model in Figure 2 is proposed:

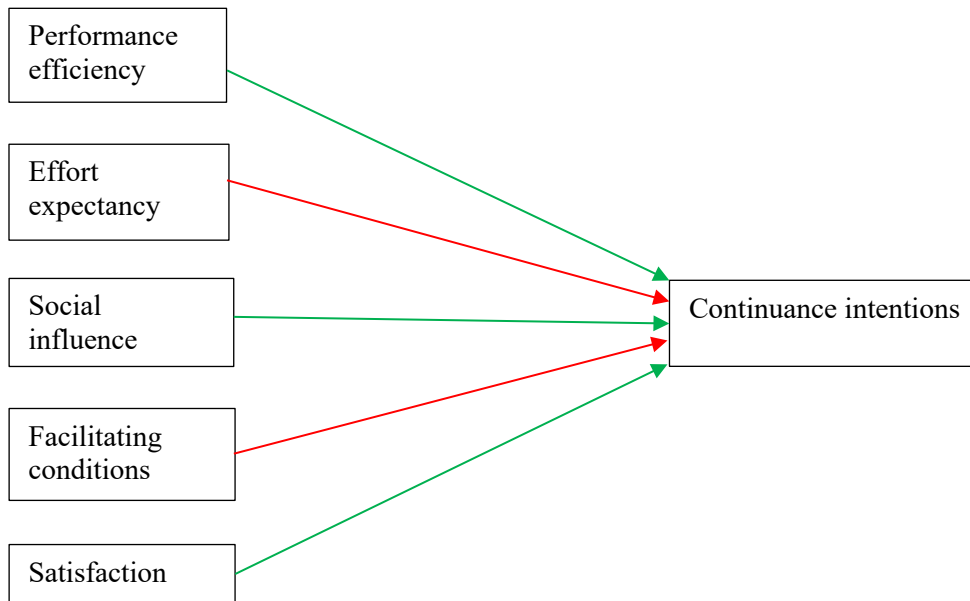


Figure 2: Proposed Model

Source: Authors' own construction.

10. Managerial and Theoretical Implications

The results of the study clearly illustrate that performance efficiency, social influence and satisfaction has a significant and positive influence on continuous intention. Previous research (Ayyoub et al., 2023; Sewandono et al., 2023) confirms that when users find online teaching as being effective in driving teaching goals, stimulate teaching efficiency and improves teaching performance, there is a greater intent to continue using online teaching methods. Furthermore, when social influence positively impacts the decision to use online teaching methods, and an overall level of satisfaction is experienced from using an online teaching approach, continuous intention is stimulated (Guo, Seng & Shang, 2023; Piramanayagam, Alanvijay & Seal, 2024). Considering this, the following theoretical and practical implications are provided.

10.1. Implications for Theory

This research contributes to a deeper comprehension of the determinants affecting the intention to continue engaging in an activity by introducing the concept of satisfaction alongside the established factors outlined in the Unified Theory of Acceptance and Use of Technology (UTAUT) model. It compellingly illustrates that satisfaction exerts a predominant influence over the traditional UTAUT factors in elucidating the intention to persist in teaching roles among academic professionals. These findings hold significant theoretical implications. Firstly, any investigation seeking to elucidate continuance intention without considering the influence of satisfaction, or a related construct, may yield incomplete or misleading results due to the inadequate specification of contributing factors. Secondly, these findings suggest a potential universality in the factors impacting continuance intention.

The amalgamation of three theoretical frameworks utilised in this study - namely UTAUT, Expectation-Confirmation Model (ECM), and the model of online teaching continuance intention - underscores the necessity of adopting a comprehensive perspective to explore the interrelations among performance expectancy, effort expectancy, social influence, facilitating conditions, satisfaction, and continuance intentions within the domain of online learning. Notably, the integration of these theories has not been previously examined within the context of an emerging African market, thus presenting an opportunity to assess the applicability of these theoretical constructs in a novel setting (Alalwan et al., 2015; Alshammari, 2021; El-Masri & Tarhini, 2017; Fagan, 2019).

Moreover, this study contends that the sustainability of online teaching beyond the COVID-19 pandemic is contingent upon a multifaceted influence rather than a singular factor. Through this triangular influence paradigm, the study underscores the significance of adopting a triadic perspective on continuance intention. In contrast to prior research by Almaiah et al. (2022) and M. Chen et al. (2021), which emphasises the importance of performance expectancy, social influence, and satisfaction as primary drivers of continuance intention, this study posits that through their adeptness and utilisation of online teaching methods, educators develop a heightened appreciation for its efficacy as a supportive pedagogical approach, its capacity to enhance distance learning outcomes to reach a broader audience, and its role in fostering students' technological proficiency. Furthermore, the study validates the pivotal role of social influence in shaping educators' intentions to persist. It posits that continuance intention is influenced collectively, with the perceptions of others playing a crucial role in motivating future actions. Consequently, group support, institutional expectations, and individual willingness to embrace novel teaching methodologies drive continuance intention. This underscores the multifaceted nature of social influence, which is shaped by various elements in its capacity to stimulate continuance intentions.

In conclusion, the study underscores the critical role of satisfaction in driving educators' intentions to persist. Accordingly, satisfaction emerges as a significant driving force behind continuance intention. In light of this, satisfaction with the experience of employing online teaching methodologies, as well as the

utility of such methodologies in fostering innovation and creativity, emerges as pivotal factors in stimulating continuance intention. Through satisfaction, educators' propensity for engagement is positively influenced, thereby reinforcing the theoretical argument that fulfilment and enjoyment serve as foundational elements for future intent.

10.2. Implications for Practice

This study underscores several practical strategies essential for enhancing the effectiveness and efficiency of online teaching while fostering a conducive environment for continuous engagement and intention among educators and students alike.

- **Focus on Teaching Goals and Performance Efficiency:** Emphasise the alignment between online teaching methods and specific teaching objectives. Ensure that online teaching not only achieves desired learning outcomes but also enhances teaching performance and efficiency, ultimately saving valuable teaching time. Practical strategies may include regular assessments of teaching effectiveness, feedback mechanisms to gauge student progress, and streamlined instructional design to optimise time management.
- **Leverage Institutional Support and Peer Influence:** Encourage collaboration and knowledge-sharing among colleagues and peers in utilising online teaching platforms effectively. Institutions should provide adequate resources and training to support educators in navigating online teaching tools and methodologies. Peer mentorship programs and communities of practice can foster a culture of continuous improvement and innovation in online teaching practices.
- **Emphasise Student Engagement and Perceived Value:** Recognise the importance of student perceptions and beliefs regarding the value of online teaching in enhancing their learning experiences and future employability. Implement strategies to enhance student engagement through interactive learning activities, real-world applications, and opportunities for collaborative learning. Highlight the tangible benefits of online learning, such as increased pass rates and the acquisition of essential skills for the evolving landscape of education and employment.
- **Promote Interactive and Enjoyable Learning Environments:** Design online teaching environments that prioritise accessibility, inclusion, and interactive engagement. Utilise innovative online tools and technologies, such as digital mind maps, visual thinking tools, and infographics, to facilitate dynamic and stimulating teaching interactions. Encourage active participation from both educators and students through interactive exercises, discussions, and multimedia presentations.
- **Cultivate Lifelong Learning and Continuous Improvement:** Foster a culture of continuous engagement and intention among educators and students by emphasising the lifelong nature of teaching and learning. Promote social support networks and communities of practice to sustain motivation and

enthusiasm for online teaching. Recognise and celebrate previous successful experiences with online teaching and learning as valuable stimuli for future engagement and intention.

- **Harness Technology and Innovative Pedagogical Approaches:** Embrace emerging technologies and innovative pedagogical approaches to enhance the efficacy and appeal of online teaching. Incorporate visual content, gamification elements, and webinar-style formats to create engaging and immersive learning experiences. Encourage experimentation and exploration of new teaching tools and methodologies to adapt to evolving educational needs and preferences.
- **Take Ownership of Teaching Roles and Responsibilities:** Empower educators to take ownership of their roles in facilitating online learning by providing clear guidance, support, and resources. Develop action plans outlining specific duties, responsibilities, and deadlines to promote accountability and efficiency. Foster collaborative partnerships with colleagues and students through networking, engagement activities, and tailored tuition sessions to enhance satisfaction and drive continuous intention towards online teaching endeavours.

11. Conclusions, limitations, and areas for future research

This study investigated factors explaining tertiary education teachers' intentions to continue using online teaching when the COVID-19 pandemic concludes. The study extended the basic UTAUT model by adding satisfaction as an independent variable, placing it on par with performance expectancy, effort expectancy, social influence, and facilitating conditions. Using this extended model as a theoretical framework, two main conclusions emerged. First, three of the five factors (i.e., performance expectancy, social influence, and satisfaction) had a positive and significant impact on intention, and second, satisfaction with online teaching exerted the most powerful influence on explaining intention. Based on the aforementioned, more needs to be done in terms of creating an enabling environment for ease of use of e-Learning and investment in innovative and compatible devices for market driven information management delivery services in Botswana, Namibia and Lesotho.

These findings are notable for two reasons. First, in a recent study of students (Marandu et al., 2023), the same set of factors emerged as significant antecedents of the intention to continue student online learning post-pandemic. Second, as in the Marandu et al. (2023) study, satisfaction proved to be the most influential factor in explaining intention. These findings suggest that the factors influencing teachers' and students' intentions to continue online education may be similar across both groups. The study further contends that ease of getting information, assistance in the use of e-Learning and quality of delivery are vital for sustainable use of e-Learning in Namibia, Botswana and Lesotho.

Several limitations of this study should be considered when interpreting its findings and conclusions. The study was conducted at two institutions across three countries, namely Botho University (Botswana and Lesotho) and Namibia University of Science and Technology. Therefore, the results cannot be generalised to other universities with confidence. Future research should include more universities for

greater representativeness. Additionally, this study found that effort expectancy and facilitating conditions do not significantly affect the intention to continue using online teaching. Consequently, further research is needed to validate the model.

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