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Research Article

Adoption level of online learning by students: Evidence from an emerging academic institution in South Africa

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Although online learning has been in practice for many decades, the recent surge in the adoption of online learning is closely related to the COVID-19 pandemic. However, in the post COVID-19 pandemic period, hybrid learning method continue to take the centre stage in various academic institutions in which most activities gravitate towards online teaching and learning. Although many studies have investigated this area, limited information is available regarding the level of adoption of online learning particularly in emerging and still growing academic institutions. Thus, this study attempts to fill in the void. This research paper accentuates on adoption level of online learning with an emerging college in South Africa serving as the case study. In this study, a descriptive research design and quantitative research approach. The key findings of the study revealed that there was still a low level of adoption and use of online tools for teaching and learning at the emerging academic college. In the same vein, the results of this study found that effective learner management systems such as Moodle has not been fully integrated at the institution for online learning. It was evident from the results that poor infrastructure, lack of finance, poor access to internet and incompetent technical support were the key obstacles that hinder effective adoption of online learning. The paper is invaluable as it identified the hindrances to the full adoption of online learning at the college.

Keywords: Online learning, hybrid learning method, physical learning method, students, technical support, educational institution

1. Introduction

Traditionally, education takes place physically in classrooms. However, the idea of remote learning was developed in order to satisfy the needs of students who are unable to attend classes in person (Watt-Watson et al., 2019). Online learning has recently continued to gain popularity due to the demands of the modern world of technology, students' demands to learn from the comfort of their homes, and especially the need for educational institutions to meet the learning needs of their students at the height of the COVID-19 pandemic in 2020 (Roman & Plopeanu, 2021). In the post COVID-19 most institutions adopt hybrid learning in which both classroom and online are used. The growth of communication technology has made it possible for students to learn online in virtual classrooms. Students are given access to the necessary materials for online learning using conventional email systems, online courses, and CD-ROM. Other methods of online education or e-learning include video conferencing and online discussion forums (Mpungose, 2021). To provide an optimal learning environment many universities, colleges, and other educational institutions are modifying their teaching and learning methods to fit the needs of users (Müller et al., 2021).

With the advancement of information communication technology, the daily prominence, and increasing use of the internet and the World Wide Web, the physical classroom as the preferred learning environment is fast losing its dominance (Nguyen, 2015). Like its impact on other areas of our lives such as the global economy, real-time dissemination of news, and professional networking, many researchers and educators are now adapting to the use of e-learning for the enhancement of student learning outcomes (Hermawan, 2021). The need to overcome resource

constraints and the desire of students to study via online platforms are other reasons so far given for the increasing of online learning all over the world. The evaluation of the level of adoption of e-learning vis-a-vis that of a traditional classroom learning environment has therefore become of interest to researchers and educators (Mpungose, 2021). The investigations into the effectiveness of online teaching and learning have also been extended to cover learning outcome estimation and pedagogy of learning (Dhawan, 2020). Hence, some researchers have investigated not only the effectiveness of online learning, but they have also investigated its sustainability. Hence, such researchers have compared long term implication of online learning with that classroom-based face-to-face teaching and learning (Barrot et al., 2021; Haq et al., 2018). The challenges of infrastructural development in the face of ever-changing information technology which is the strength of online learning have been explored.

COVID-19 made changes to operations of various organisations in different sectors (Duma & Utete, 2023). Most higher institutions did not have online learning platforms before the emergence of COVID-19 pandemic in the past three years. With the advent of the Covid-19 pandemic in 2020, the traditional classroom became dangerous, especially at the peak of the pandemic in the year 2020 (Barrot et al., 2021). Since then, academic institutions have been providing online teaching assistance to students. Although institutions of higher learning had platforms that support online learning way before the pandemic started these platforms were not fully developed to support the huge influx of students that began to utilize them as they no longer could use the traditional ways of learning (Mpungose, 2021). Hence, the ICT department of the institutions spent a lot of money upgrading these platforms to increase their capacities to handle the increased use of the platforms, and to make them more user-friendly. Despite all the efforts made so far, online learning still has a lot of challenges, especially for students (Adedoyin & Soykan, 2020; Zalat et al., 2021). Hence, not all the academic institutions adopt it. What was apparent during the pandemic was that online learning is challenging for students who cannot afford adequate gadgets like laptops, cellphones and do not have internet connectivity (Mpungose, 2020). Due to socioeconomic differences in South Africa, some students rely on the computers provided by their colleges and the free internet available on campus (Barrot et al., 2021). This paper, therefore, investigate the adoption of online learning with all the challenges that students face. This is very important as online learning becomes dominant over traditional teaching and learning methods.

With the adoption of e-learning across the world, higher education institutions and especially universities, are working with information and communication technology providers to develop virtual learning platforms which are suitable for the dissemination of teaching and learning needs of the various programs of their institutions (Mpungose, 2021; Hermawan, 2021). Although considered as being less expensive by educational institutions in comparison to the traditional classroom learning environment, it is bedevilled with several challenges on the part of the end-users (Nguyen, 2015; Zalat et al., 2021). Therefore, learners must acquaint themselves with the online learning platforms of their institutions and learn the necessary skills for them to benefit optimally from online learning. So far, several studies conducted on online learning have focused on the benefits, awareness, and challenges of online learning (Watt-Watson et al., 2019; Zalat et al., 2021). However, there is a paucity of information on the adoption of online learning; hence this sought to fill the gap. The study fills the gap by accomplishing the following objectives: to establish the level of adoption of online learning at the emerging college; to evaluate the factors that influence online learning; and to establish the challenges related to online learning at the emerging college

2. Literature Review

Research has found no single definition for online learning (Mpungose, 2020; Zalat et al., 2021). According to Mpungose (2020), e-learning can be viewed as internet-assisted learning which includes collective efforts and participation of experts, content creators, a networked community of learners, management of learning experiences, and content delivery. Zalat et al. (2021) states that e-learning is an environment in which students receive lectures virtually online learning refers to a

system of learning where the students learn virtually through the use of the internet. Some scholars have simplified online learning as merely the use of gadgets or devices through a well-coordinated and connected network system at any given time and despite of one's location (Dhawan, 2020). The delivery of learning materials through electronic means such as the internet, a broadcast or television has also been emphasized as a potential definition of e-learning by some researchers like Kundu (2018). Mpungose (2021) gives their definition of online learning as learning through synchronized devices like mobile phone and laptops through the internet system. It is the internet system therefore with the assistance of relevant devices that then assists students and their teachers to interact with much ease from different locations of the global world. The various strengths of online provision of educations adaptability have no doubt promoted the adoption of online teaching and learning. Such advantages include ease of interaction and collaboration with scholars from other institutions across the world, making it possible for students to have a choice and a say in the period of day or the location where they would like to learn, and the ease of adjustment in the content of module (Kundu, 2018).

2.1. The Aspect of Online Teaching and Learning

In comparison with physical classroom-based teaching and learning, online learning is generally perceived as being devoid of interactivity due to because it is devoid of social interaction, social presence (Dasopang, 2021; Sattayaraksa et al., 2023). Also, many students have reported lack of satisfaction with online teaching. Despite all mentioned inadequacies, online learning has been reported as a cost-effective method of teaching and learning and learning (Bacher-Hicks et al., 2021; Kauffman, 2015). It is also more convenient than traditional classroom-based face to face teaching and learning. It also provides opportunities for more learners who hitherto would have found it difficult to continue their education, to continue their studies (Barrot et al., 2021; Haq et al., 2018). More recently, investigation into the learning preference of some students reported that there is no significant difference between online and the traditional, and that similar level of academic performance can be obtained from online and non-online learning (Dhawan, 2020). It must however be noted that study discipline affects the perception of student in relation to online learning. For instance, science and engineering students are likely to be less satisfied with online learning when compared with their counterparts in the arts and social sciences. Despite its rapid growth, online learning is still generally at an early stage of development (Hussain et al., 2020). Due to this, developers and lecturers of online teaching must understand or seek to know how students perceive what they are offering as online learning resource people. This may also be a pointer to the need for blended learning methods because, learners' perception is very important to students' motivation to learn and learning effectiveness. Hence, the blended synchronous learning mode has started to gain currency in higher education across the world (Dasopang, 2021; Dhawan, 2020; Petronzi & Petronzi, 2020), although its effects on learners' course developers and lecturer/ instructors largely not fully explored. As more and more institutions join the league of transnational education providers or expand on their reach, of transnational education provider, online learning, and blended learning, will need to be continually developed. The institutions offering those mode of education may also continue to increase (Agung, et al., 2020; Kuama, 2016).

2.2. The Factors Affecting Online Learning

Millions of students around the world engage in online learning. It is on record that the number of students participating in online learning has skyrocketed with the advent of covid-19 pandemic (Kauffman, 2015). Online modules are developed instructional designer who work hand in hand with modules instructors or lecturers, media developers, and computer programmers (Roddy et al., 2017). In developing the online learning materials, the fundamental differences between the classroom based learning, and online leaning must be recognised to develop a functional material that will be of benefit to students who are engaged in online learning. Effectiveness of online teaching needs distinct approach (Roddy et al., 2017). Such approach includes strategies to guide online discussion. Students' engagement with the online platform, and the lecturer must

constantly be gauged. All these are very important because of the lack of some usual classroom interactions that are the norms during face-to-face teaching. Hence, the modules lecturer must assess students' engagement during online teaching and learning and develop the proper norms without the usual visual and auditory cues associated with classroom-based teaching. All these are extremely important due to rapid changes in information technology which are the backbone of online teaching and learning. It is also very important because of the personalised nature of online learning (Mart, 2017). A common misconception is that online learning is an easy way to learn and acquire qualifications (Coomey & Stephenson, 2018). However, the reality is that due to the 'isolated' nature of online learning, the learners are confronted with several challenges such as time management, lack of assistance as at when needed, motivation from colleagues and digital literacy which are ingredients needed for educational learning success. Orientation courses are often used in online teaching and learning process to set learning outcome and explain the point of departure between face-to-face and online teaching and learning (Dasopang, 2021; Ortagus, 2017). Consequently, such institutions have the past 3 years increased their budget for the development of online teaching which primarily a technology is based educational method (Bacher-Hicks et al., 2021; Strong & Hutchins, 2009).

Effective communication between study mates is essential for the fostering of a constructive learning environment (Haq et al., 2018). In other words, good Communication is needed to effective and mutually beneficial peer interactions, which will inadvertently lead to successful online learning. Hence, good, and regular communication must be encouraged between students. Regular communication must also be encouraged between learners and their lecturers. All these will develop a good sense of community relationship, and ultimately improve the chances of student success in online learning (Roman & Plopeanu, 2021). Some online tools which are not available in classroom based face-to-face teaching and learning provide essential data that can be used to improve learning outcomes (Roddy et al., 2017). Insight from such tools include data on student engagement with the online platform e.g., the number of times or number of students who have viewed the course materials, number of attempts at resolving or answering a particular question. Such data can serve as clue on improvement needed in the design of the course material and online approach needed for teaching and learning. A great advantage of the online teaching and learning is that it can be personalized to meet the need of special needs of learners (Shahzad et al., 2020).

2.3. Theoretical Framework

This study was guided by Technology Acceptance Model (TAM). The model argues that digital transformation has been influenced much by the acceptance from the users (Zalat et al., 2021). The way people accepted and embraced technological advancement had a positive impact on the growth of e-learning ideas into practice. Behavior and attitude play a pivotal role in the acceptance of technology as it relates to the usefulness of the technology. Camargo et al. (2020) has it that people consider how easy the systems for them to quickly embrace and use a particular system or technology. In this regard it's this notion that also drives either the need to use or the challenges still faced by the tertiary institutions of higher education in trying to go digital.

3. Method

3.1. Research Design

In this study, a quantitative research approach was used. In terms of research design, a descriptive research design was utilised. By way of emphasis and clarity, the quantitative research approach has to do with numbers and testing of hypotheses (Hewage, 2021). Hence, this research involved measuring and synthesizing relationships between the adoption of online learning and the factors that affect online learning. In terms of research philosophy, the study used positivism which works perfectly in quantitative studies. The reason for choosing positivism is that it believes in the use of objective and verifiable facts to explain a adoption of online learning.

3.2. Research Design

The total number of students at the selected emerging academic college which constitutes the study population in this study was 177 students. From the population size of 177, a sample size of 123 participants were used. Under the ambit of probability, simple random sampling technique was utilised. A total of 50 participants returned the completed questionnaire. Yamane (1967, as cited in Scheuren 2005) developed a simplified method that was used to calculate the sample size at a 95% confidence level and 5% degree of variability.

3.3. Data Collection Tool

In this study, closed-ended questionnaires were used for data collection. The 5-point Likert scale were employed, with responses ranging from 1-strongly agree to 2-agree to 3-neutral to 4-disagree to 5-strongly disagree. For ethical purposes, the respondents were informed by the researcher that participation is completely optional and that withdrawing from the study will not have any negative effects on them. In terms reliability, the three main constructs were measured namely online skills, adoption level and factors affecting adoption of online learning. The 'online skills' scored 0.75, adoption level scored 0.73 and 'factors affecting adoption of online learning' had a reliability of 0.78. The values of the Cronbach's alpha (α) coefficients of the research variables of this study are all greater than 70% (0.7), which indicates that the data collection instrument of this study is reliable.

3.4. Data Analysis

Both descriptive and inferential statistics were used to analyse the quantitative data. Statistical Package for the Social Sciences (SPSS) was used to compute the statistics. Under descriptive statistics, the mean values were calculated. In terms of inferential statistics, Pearson correlation analysis and linear regression analysis were utilised to measure the relationship between online learning skills and the factors affecting the effectiveness of online learning adoption.

4. Results

In terms of gender, majority (68%) of the participants are male. In relation to age group, bulk of the participants were between 21-30 years. In terms of computer ownership distribution of the participants, the results showed that the majority (74%) of the participants do not have computers at home. In accordance with the department of the participants, most of participants were from sciences and administrative departments (68%).

4.1. Descriptive Results

Table 1 shows the mean values and distributions for the adoption and effectiveness variable in line with the first research objective of this study.

Table 1
Adoption of online learning descriptive statistics

Construct	*Mean*	*SD*
Internet experience eg Ms Teams, WebCT, Zoom etc	3.97	.724
System interactivity -interaction faculty and students	3.27	1.119
Self-efficacy -the student's belief to perform the task successfully.	3.65	.832
Technical support- the availability of technical support	3.92	.708
We use Moodle	2.66	.922
We use Ms Teams	2.69	.968
We use Zoom	3.56	.861
Valid N (listwise)		

According to these mean values, the levels of adoption in terms of the use of online tools such as "MSTEAMS, ZOOM, WEBCT" item was rated the highest by the participants (3.97 out of 5).

This study indicates that the participants felt their institution has moderately adopted internet tools as effective tools for learning. Majority of the participants indicated that they had a moderate level of interactivity between students and faculty staff in their schools. Most participants believed they can use perform their academic work effectively using internet tools hence had high self-efficacy. An overwhelming majority of the participants indicated that they have a moderate level of technical support available to effectively adopt and use online tools at their college. Bulk of participants indicated that most of the time they were using Zoom while MsTeams and Moodle moderately utilised. This indicates that there is still a low level of adoption and use of online tools for teaching and learning at the college.

Table 2 shows the mean values and distributions for the online learning skills variable in line with the first research objective of this study.

Table 2
Online learning skills descriptive statistics

Constructs	*Mean*	*SD*
Self-discipline and motivation	3.92	.635
Time management	3.92	.635
Space to study	3.31	.968
Ask for help	3.71	.687
Digital literacy	3.11	1.010
Valid N (listwise)		

According to these mean values, the importance of self-discipline and motivation as well as time management item were rated the highest by the participants (3.92 out of 5). This indicates that the participants feel that self-discipline and motivation as well as time management are the most important aspects of online learning. Most participants (3.92) of the participants agreed that self-discipline and motivation were required for effective online learning at their college. Majority of the participants (3.92) agreed that time management skills were required for effective online learning at their college. However, the participants were not sure (3.11) if proper study space is required for online learning. An overwhelming majority (3.71) of the participants agreed that asking for help is needed for online learning at the emerging college. However, participants were uncertain (3.11) about the necessity of digital literacy for online learning at the college.

Table 3 shows the mean values and distributions for the factors affecting online learning variable in line with the first research objective of this study.

Table 3
Factors affecting online learning descriptive statistics

Constructs	Mean	SD
Availability of skills and training	2.69	.968
Availability of infrastructure	3.56	.861
Availability finance	3.92	.635
Accessibility to internet	3.92	.635
Friendliness of the applications	3.31	.968
Availability of learning devices	3.71	.687
Presence of support from ICT department	3.11	1.010
Valid N (listwise)		

According to these mean values, the impact of availability finance as well as accessibility to internet were rated the highest by the participants (3.92 out of 5). This indicates that the participants felt that availability finance and accessibility to internet were the main factors affecting the adoption and use of online learning by students at the emerging college. The participants were unsure (2.69) if lack of skills and training are the main factors influencing online learning at their college. However, majority (3.56) of the participants agreed that inadequate

infrastructure is one of the main factors influencing online learning at their college. Overwhelming majority (3.92) of the participants agreed that lack of finance is one of the main factors influencing online learning at their college. An overwhelming majority (3.92) of the participants agreed that lack of access to internet is one of the main factors influencing online learning at the college. The participants were not sure (3.31) that unfriendly application is one of the main factors influencing online learning at the college. An overwhelming majority (3.71) of the participants agreed that lack of devices is one of the main factors influencing online learning at the college. The participants were uncertain (3.11) that poor IT support is one of the main factors influencing online learning at their college. The results indicated that availability of infrastructure, availability of finance, accessibility to internet and availability of devices as the key factors that influenced the effective adoption of online learning.

4.2. Inferential Results

This section presents the results of the inferential tests conducted by this study, namely, the Pearson correlation tests, regression analysis, and the Analysis of variance (ANOVA) tests in line with the first and second research objectives of this study.

Table 4 shows the Pearson correlation results of each research variable of this study with significant correlation indicated by *. In fact, Table 4 shows that there is a significant correlation between online learning skills and the factors affecting the effectiveness of online learning adoption.

Table 4
Pearson correlation analysis results (N=62)

	OLS	*FA*	*AE*
OLS	1		
FA	.800**	1	
AE	.457**	.266*	1

Note. OLS: Online learning skills; FA: Factors adoption; AE: Adopt effective; **: $p < .01$; *: $p < .05$.

Table 5 also shows that online learning skills are significant predictors ($p < .05$) of the online learning adoption.

Table 5
Regression analysis results

Model	*R*	*R square*	*Adjusted R square*	*Std. Error of the Estimate*
1	.281[a]	.079	.048	2.067

As shown by the regression equation in Table 5, the learning skills has a significant relationship with adoption of online learning. This was indicated by the correlation value of 0.281, which reflects that 28.1% (0.281) of the adoption of online learning could be explained by the learning skills. Table 6 shows an analysis of value test outcomes.

Table 6
Regression analysis test of significance results

ANOVA[a]

Model		*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
1	Regression	21.685	2	10.842	2.539	.048[b]
	Residual	251.993	59	4.271		
	Total	273.677	61			

Note. a. Dependent Variable: Adoption of online learning; b. Predictors: (Constant), availability of infrastructure, availability of finance, accessibility to internet and availability of devices

The test in Table 6 shows a statistically significant F calculated value of 2.539, which is above the minimum critical F value 2.51304. This means that the generated regression equation by this study perfectly and significantly predicts the dependent variable. The results of the test show that

the adopted regression equation in this study is of good fit, hence it is suitable to utilise to predict the adoption of online learning based on the availability of infrastructure, availability of finance, accessibility to internet and availability of devices reviewed in this study.

5. Discussion

The key finding of the study revealed that the was still a low level of adoption and use of online tools for teaching and learning at the emerging college. Basilaia and Kvavadze (2020) conducted a study on transition to online education in schools during a COVID-19 pandemic in Georgia and the results showed that the quick transition to the online form of education is achievable. In the same vein, the results of this study found that effective learner management systems such as Moodle have not been fully integrated at the institution for online learning. In line with the findings of this study, a study conducted by Hermawan (2021) on the rise of e-learning in COVID-19 pandemic in private university using mixed methods approach found that e-learning still needs improvements in terms of absorption of knowledge, comfort and infrastructure. Kauffman (2015) conducted a study on predictive factors of student success in and satisfaction with online learning and found that online learning may not be appropriate for every student. From the findings, it was observed that most students indicated that self-discipline and motivation as well as time management were the most important aspects of online learning. Hussain et al. (2020) carried out a study on the effectiveness of online learning system during COVID-19 and found that online learning is an effective and efficient system of learning to fulfil the educational needs of learners at distant locations. It was evident from the results that availability infrastructure, availability finance, accessibility to internet and availability of technical support as the key factors that influenced the effective adoption of online learning. The findings revealed that there is a significant correlation between adoption of online learning and the factors affecting the effectiveness of online learning adoption. The study also found that learning skills are significant predictors of the adoption of online learning. A study conducted by Kuama (2016) investigating if online learning suitable for all English Language students and the findings indicated that low English proficiency students lacked online learning skills and experiences in self-directed learning.

The findings of this study found that the main challenges faced by students is lack of finance and internet. A study carried out by Dasopang (2021) on online learning during the covid-19 pandemic and found that high cost of infrastructure and network disruption are the major key challenges they faced with. In addition, the results also indicated that students did not have adequate devices. These obstacles deterred the adoption and use of online learning at the college. In addition, the results showed that there was poor information technology support at the college thus making it impossible for online learning to be fully adopted. Infrastructure included internet, lack of devices, unfriendly applications and poor IT support. A study carried out by Adedoyin and Soykan (2020) on COVID-19 pandemic and online learning revealed that online learning is different from emergency remote teaching hence the challenges each of them differ. A study conducted by Agung, Surtikanti and Quinones (2020) on students' perception of online learning during COVID-19 pandemic and the results revealed that the obstacles of online learning include poor compatibility of digital tools, poor sustainability and availability of internet connection. Bacher-Hicks et al. (2021) carried out a study on inequality in household adaptation to schooling shocks and found that most tertiary institutions in rural areas have poor internet connections.

This study found that there was consensus amongst students about the factors that affect online learning. One may conclude that little adoption of online learning is because some practical modules or courses were less likely to be effective with online learning than non-practical modules. For instance, science and engineering students are likely to be less satisfied with online learning when compared with their counterparts in the arts and social sciences. Roddy et al. (2017) conducted a study on applying best practice online learning and results indicated that an accelerated nature of learning in intensive settings may place additional demands on support mechanisms, students and instructors. Roman and Plopeanu (2021) carried out a study the effectiveness of the emergency eLearning during COVID-19 pandemic and results indicated that

poor infrastructure for online activities increase the likelihood that students perceive online studies as less effective. Results from this study indicated that students from emerging College were benefiting from online learning as they were learning discipline, motivation and time management skills. Nguyen (2015) carried out a study on the effectiveness of online learning and found that online learning is generally at least as effective as the traditional format.

6. Conclusion

Since the level of adoption of online learning teaching and learning by the students at the Emerging College was established hence the primary objective was achieved. The study found that online learning has not been fully embraced and students need to be provided with tools and technical support to allow the adoption of online learning. There is need to look at how management can assist to bring online learning in practical learning programmes. This study is of paramount importance to establish the level of online teaching and learning adoption at the emerging college. The study shed light on the areas that need to be revised or upgraded for the online learning method to be fully adopted as part of learning. This study helps to solve problems, as well as increasing the adoption levels of online learning in institutions. The institution should increase the digital tools for teaching and learning to increase the level of adoption of online learning. They also need to create proper study space for online learning. The college also needs to consider proper technical support towards online learning for students to fully adopt it.

7. Limitations

The main limitation of this study is that it focused on one emerging academic institution, therefore, the results may not be generalised to other academic institution because their setting may differ. Thus, future researchers should replicate this study of online learning in other emerging colleges to find the similarities and differences.

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