

Influence of Covid 19 on E-Learning in University Of Nairobi, Kenya.

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Abstract

Purpose: The study investigated the influence of covid 19 on e-learning in University of Nairobi, Kenya. The paper is based on the following objectives: To determine the influence of student factor, to examine the influence of instructor factor on e-learning. The study was based on Davies Bogozzi and Warshaw intergrated model called Technological Acceptance Model (TAM) theory (Davis, Bogozzi and Warshaw, 1989) to measure the influence of its main latent factors on user acceptance of e-learning system in the University.

Materials and Methods: The study targeted 40 lecturers, 1500 students and 40 ICT officials. a sample of 20% was used on both lecturers, students and ICT officials. 8 lecturers, 300 students and 8 ICT officers were sampled. Questionnaires and were used to collect data.

Findings: The findings show the null hypothesis which states that there is no significant relationship between student factor and e-learning would be accepted if $p < 0.05$. The null hypothesis was therefore rejected. The findings show the null hypothesis which states that there is no significant relationship between instructor factor and e-learning would be accepted if $p < 0.05$. The null hypothesis was therefore rejected.

Conclusion: Both students and instructors are key in the success of e-learning in the University, training is a major contributor in the implementation of e-learning during the Covid Pandemic, students have not holistically embraced e-learning because they feel they are being detached from other key factors like social interaction, the University is a major determinant in terms of financial and academic integration of e-learning and ICT officers are key determinants in ensuring both the lecturer and student are able to use e-learning with ease.

Key terms: Covid 19, E-learning, University

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I. INTRODUCTION

The Corona Virus pandemic is a global phenomenon that has affected all sectors in every country in the world including higher education. Universities and colleges were forced to abruptly close and ongoing teaching of various courses was abandoned midstream. As a result, managers of universities and colleges with thousands of stranded students were left wondering how to fill the gap and at the very least maintain some semblance of normality. According to UNESCO, 1.5 billion learners worldwide (91% of the world's student population) are unable to go to school or university, due to measures to stop the spread of COVID-19.

The COVID-19 response is not the first time that emergency eLearning programs have been considered as appropriate crisis-response measures. A similar strategy was observed in Fall 2009, where 67% of H1N1 contingency plans involved substitution of online classes for face-to-face classes (Allen & Seaman, 2010, p. 9). The comparators for COVID-19 also extend to other forms of natural disasters. Hurricane Katrina's landfall in August 2005 physically damaged 27 colleges in the Gulf region and more in Texas, causing damage that made it impossible for on-campus courses (Meyer & Wilson, 2011). What followed was a rapid-deployment of online learning called the "Sloan Semester," named for the sponsoring Alfred Sloan Foundation; a consortium of 153 colleges and universities reacted quickly to create an online course catalogue of over 1300 courses (Lorenzo, 2008). Then as now there was ample justification for alternative arrangements. Tencent classroom, meanwhile, has been used extensively since mid-February after the Chinese government instructed a quarter of a billion full-time students to resume their studies through online platforms. This resulted in the largest "online movement" in the history of education with approximately 730,000, or 81% of K-12 students, attending classes via the Tencent K-12 Online School in Wuhan. Alibaba's distance learning solution, Ding Talk, had to prepare for a similar

influx: “To support large-scale remote work, the platform tapped Alibaba Cloud to deploy more than 100,000 new cloud servers in just two hours last month – setting a new record for rapid capacity expansion,” according to Ding Talk CEO, Chen Hang. For example, Zhejiang University managed to get more than 5,000 courses online just two weeks into the transition using “Ding Talk ZJU”. The Imperial College London started offering a course on the science of corona virus, which is now the most enrolled class launched in 2020 on Coursera.

Lark, a Singapore-based collaboration suite initially developed by Byte Dance as an internal tool to meet its own exponential growth, began offering teachers and students unlimited video conferencing time, auto-translation capabilities, real-time co-editing of project work, and smart calendar scheduling, amongst other features. To do so quickly and in a time of crisis, Lark ramped up its global server infrastructure and engineering capabilities to ensure reliable connectivity. Some students without reliable internet access and/or technology struggle to participate in digital learning; this gap is seen across countries and between income brackets within countries. For example, whilst 95% of students in Switzerland, Norway, and Austria have a computer to use for their schoolwork, only 34% in Indonesia do, according to OECD data.

According to UNESCO, 9.8 million African students are experiencing disruption in their studies due to the closure of higher education institutions. The danger of contamination has triggered institutions to move their courses online. However, going online is not that simple on a continent where only 24% of the population has access to the internet, and poor connectivity, exorbitant costs and frequent power interruptions are serious challenges. Increasingly, universities are partnering with internet providers and governments to overcome this critical challenge by negotiating zero-rated access to specific educational and information websites, as in the case of Rwanda, South Africa and Tunisia. At the institutional level, a number of universities, such as the public University of KwaZulu-Natal in South Africa and private universities such as Ashesi University in Ghana, were offering data bundles to their students and staff. Going digital effectively requires substantial coordination with, and swift support from, institutional and national service providers, regional entities, international partners, NGOs, the private sector and ICT providers to rally behind such tools and platforms at little or no cost. It is imperative to seriously seek alternative means and approaches in order not to leave behind students with little or no access to electronic communication. The painful reality of the digital divide on the continent has to be strategically and systematically managed: reaching out to millions of ‘marginalized’ students must become a national priority in this time of crisis. While this is taking shape, institutions need to develop a comprehensive plan and a rigorous follow-up scheme to ensure that academics and students make proper use of digital platforms. This task cannot be left solely to the discretion of individual actors. The continent’s meagre institutional and national capacities, weak healthcare systems and gregarious way of life may prove catastrophic should the virus continue to spread at the same rate and intensity as in other critically affected countries. The impact of such a calamitous scenario is easy to imagine and frightening to predict. The effects of the pandemic on Africa’s nearly 2,000 higher education institutions cannot be overemphasized. If the crisis persists, it may seriously impact the commitment of governments toward higher education in the face of competing demands from the healthcare, business and other priority sectors serving vulnerable segments of society. Further, global support to higher education, research collaborations and partnership schemes, most often directed at critical areas such as strengthening PhD programmes, could be massively scaled back. African higher education institutions are expected to do more in the months ahead while concurrently battling across many fronts. This includes addressing the more immediate challenges of the threat of COVID-19, seeking improved mechanisms for online delivery and planning to address the long-term effects of the pandemic on institutional capacity. In the aftermath of the pandemic, cost recovery through financial contribution from beneficiaries in the form of fees or loan repayments will not be easy, since economies will have seriously declined – if they indeed survive a total collapse. On a positive note, this threat – and the approaches to overcome it – may be catalytic for long-lasting changes in African higher education. Among others, diversified means of educational delivery, in particular a non-residential model, may become more mainstream, more acceptable and more respectable.

Kenyan universities had to close down operations and to send both students and lecturers home between Monday 16th and Friday 20th March 2020. All Kenyan universities closed down, with a large majority terming it ‘indefinite closure’ in their communication to their stakeholders. The January-April 2020 semester that started in the second week of January was in its 10th of a 12-week session, and just a few weeks away from the onset of end of semester examinations. University of Nairobi, Kenyatta and Egerton University graduate school continued to teach masters and PhD students online, which is possible because the students had sponsor support and the equipment needed for online learning and provided masks and sanitizers to their staff and students.

Statement of the problem

At Kenyan universities, online learning is mainly focused on postgraduate students with the larger population, undergraduate learners, left out. Part of the problem is lack of investment in online resources by the institutions,” said the local Daily Nation newspaper in an editorial on 28 March 2020. The major drawback for e-learning is the digital divide where most families have limited or no access to the internet. Moreover successful

electronic-based degree programmes have been dominated by foreign and international qualifications, mostly postgraduate degrees featuring collaborations between local private institutions and foreign institutions. The university of Nairobi responded to the current crisis by tapping into its existing investment in ODeL (open and distance e-learning) of which immediately the closure took effect, the university embarked on a programme to train its staff and students to enable them to move their teaching and learning to online platforms in addition to the training of faculty in the use of e-learning tools, the university said students had been trained in how to navigate the learning management system and interact with the content and tutors. Tutorial support for students was being provided online by staff and WhatsApp groups were facilitating tutor-learner and learner-learner interactions. The university said a schedule to train lecturers to develop more content for the learning management system had been developed. It said the senate had approved a procedure for examining these online which will ensure that there is no delay in graduation. Supervision of students was continuing through online platforms such as email, video conferencing and Zoom but despite the universities effort students argued that online learning could not be inclusive given the circumstances and would exclude those disadvantaged by poor infrastructure and imposing it on students in the most remote areas of the country without good network coverage and electricity is not logical and the science based students were more disadvantaged since some of their units required practical's. Lecturers who preferred anonymity also complained that the move was coming as an afterthought after institutions shut down operations without a plan.

Objective of the study

The study was based on the following objective:

- 1) To determine the influence of student factors on E-learning in university of Nairobi, Kenya.
- 2) To determine the influence of instructor factors on E-learning in university of Nairobi, Kenya.

Research hypotheses

The study was based on the following research hypothesis:

H₀₁: There is no significant relationship between E-learning and student factors in University of Nairobi, Kenya

H₀₂: There is no significant relationship between E-learning and instructor factors in University of Nairobi, Kenya

II. LITERATURE REVIEW

Factors affecting e-learning during Covid-19 pandemic

Al-adwan and Smedley (2012), conducted a study on the factors affecting impact of Implementing e-learning in the Jordanian Higher Education System. The study explored the factors that influenced the development of learning through technology at two Jordanian universities, focusing on full-time staff and students. They noted that the increased involvement of technology in all aspects of our lives places educational institutions under pressure to include these aspects at the heart of their learning. This ensures that they continue to be competitive in a constantly changing market with international and cultural links. The study also considered the general attitude towards engaging in learning through technology with outcomes demonstrating that training and development was required prior to implementation to adequately support the e-learning transition. The organizational infrastructure often presents the greatest barrier to such developments. Informed by the outcomes of the study, a training and development programme was designed, developed and implemented to support the cultural change and increase its impact.

A study conducted in Zimbabwe showed that the majority of the lecturers (97.5%) facilitating open, distance and e-learning (ODeL) had no experience in distance education (Mpofu et al., 2012). Effective use of distance learning technologies demands that teaching staff be properly trained in using distance education as a mode of delivery. To date, few African scholars are familiar with teaching in an online environment. This situation poses a major challenge in introducing distance education on the continent.

Walimbwa (2008) observes that despite e-learning growing rapidly worldwide, East African universities are yet to fully maximize its potential. This research was based on University of Dare salaam (Tanzania), Makerere University (Uganda), and University of Nairobi (Kenya). It was found that lack of skills and sufficient human capacity contributed to low e-learning implementation. Limited Internet bandwidth and no policy harmonization were also significant factors that were hindering e-learning from growing in these universities.

Nyerere et al. (2012) investigated the status of and the various challenges that hinder realization of the full potential of open distance and e-learning (ODeL) in Kenya. Using the case of Kenyatta University and University of Nairobi, the study established that provision of ODeL in the two universities faced various challenges that hindered its effective implementation. The identified challenges included non optimal utilization of program facilities, delays in production of study materials, inadequate funding and low teaching staff levels. The other key problem was that efforts of the ODeL providers in Kenya were not guided by national policies, posing a challenge in resource mobilization and program quality issues.

Personal factors are those features that are unique to the individual and which occur as a result of personal characteristics. Motivated participants are crucial for successful e-learning (Paulsen, 2009). Levels of procrastination have been shown to play a significant role in student online learning experiences (Michinov et al., 2011), with many students reporting issues with time allocation and balancing work commitments with the online course requirements (Blackmon and Major, 2012). Tuckman (2002) suggests that reliance on learner initiative, which is often the case with online learning, can lead to procrastination and poor performance.

Interpersonal factors impacting on learning success revolve around peer support. This comes in many forms, from practical support involving feedback and ideas, to emotional support, including working in a supportive environment and being motivated by peers (Dabbagh and Kitsantas, 2012). Social connection between peers has been highlighted as important for participants' satisfaction, their perceptions of learning outcomes, levels of interaction and motivation (Kolb et al., 2009; Kuong, 2015).

Process and contextual factors have an impact on online learning. The pedagogical content of the programme must be appropriate not only to the topic but also to the online learning platform. Morgan and Adams (2009) warn of the dangers of becoming excited by technological possibilities at the risk of losing sight of the importance of the purpose of the programme. Technical delivery is vital in the context of online learning (Peltier et al., 2003). Ease of use facilitates engagement, while technical issues create frustration and hinder motivation and progress (Khanlarian and Singh, 2013). In the context of corporate training, there is suggestion that the culture of the organization offering the programme can also impact on the overall success of the learning. The extent to which employees are willing to learn is largely dependent on the commitment and social connection individuals feel towards their organization (Paulsen, 2009). The next section will outline the methodology used to identify the factors which influence online learning in this study.

Elsewhere, Odhiambo (2009) compared the perception of e-learning in Jomo Kenyatta University of Agriculture and Technology (JKUAT) and the United States International University (USIU). The aim of the study was to establish reasons for the low rate of acceptance and usage of e-learning by students in the two universities. The study focused on interactivity and usability of the Moodle and WebCT learning management systems (LMSs) used by the two universities. The findings of their study showed that audio-visual forms of content delivery, which have the potential of enhancing effective learning, are not being exploited fully in the universities. Instead, lecturers place too much emphasis on the uploading of reading material to the LMS. Similar observations were made by Han and Lex,(2010) who noted that developing modern e-learning programs is much more than digitizing books and lecture notes. They further noted that the starting point in the development of any e-learning program is the individual (lecturer and student) and not the computer as appears to be the case in most universities. This implies that creating a learning culture is a social process and entails changing behavior and improving performance. As a result, students are not actively engaged in learning and most of them don't use e-learning as much.

Mahdizadeh, Biemans, Mulder (2007), conducted a study on determining factors of the use of e-learning environments by university teachers. This study was designed to identify factors that can explain teachers' use of e-learning environments in higher education. A questionnaire was completed by 178 teachers from a wide variety of departments at Wageningen University in the Netherlands. The authors found that 43% of the total variance in teacher use of e-learning environments could be explained by their opinions about web-based activities and their opinions about computer-assisted learning(predictors) and the perceived added value of e-learning environments (mediating variable). In other words, teachers' use of e-learning environments could be explained to a high extent by their perceptions of the added value of these environments, which in turn were substantially influenced by their opinions about web-based activities and computer assisted learning.

Wong (2007), argues that e-learning limitations can be categorized as technological limitations, limitations compared to traditional campus, and personal issues. Limitations that do not fit into these categories are considered as other limitations. Students need necessary hardware for e-learning such as desktop or notebook computers and printers (Kathawala, Abdou, Elmulti, 2002; Hiltz,1997). Therefore, one of the major technological limitations of e-learning is the necessity of computer hardware and relevant resources.

Theoretical framework

Davies Bogozzi and Warshaw created an integrated model called Technological Acceptance Model (TAM) theory(Davis, Bogozzi and Warshaw, 1989) to measure the influence of its main latent factors on user acceptance of e-learning system in the University. This model design includes four additional constructs i.e. training, self-efficacy, compatibility and facilitating conditions adopted from different research studies and literature.TAM has been applied as the most successful and common theory than any other theories in e-learning acceptance (Sumark, 2011). In figure 1, the proposed research framework supposed to be tested and analyzed that shows the constructs grouped into three categories to investigate the factors influencing students', lecturers' and managerial behavior towards successful implementation of eLearning system. The existing research studies statistics e 2 shows that TAM is the most utilized as a part of existing investigation is student group, trailed by teachers, and management (Sumark, 2011).

Student Factors

Self-Efficacy: The first factor is the student self-efficacy. Confidence of student from eLearning or web-based education is based on the student’s personal capability to use information and communication technologies within the eLearning system. Self-efficacy is the self-belief of the students about their capacities that they work out to reach the assigned level of accomplishments in eLearning system (Venkatesh *et al.*, 2000). If the student has positive perspective about eLearning then he would definitely participate in online course environment effectively. If the students’ self-efficacy ranks high in information and communication technologies, his/her participation would be dynamic and positive towards use of the eLearning system courses.

Compatibility: “The degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters” (Rogers, 1995). In proposed research framework compatibility factor states the previous learning practice and knowledge of students and lecturers in comparable learning system. Educational compatibility can viably encourage the learning events of students and enhance the learning accomplishments (XU *et al.*, 2006). Hence, compatibility factor may support to implement an eLearning system successfully in JCIS.

Instructor Factor

In any learning condition, instructors are primary performers to make successful lesson delivery (Webster & Hackley, 1997). Learning efficiency is reflected by self-efficacy of instructors as well [18]. The Instructor's uplifting performance, interactive pedagogies, and self-confidence toward utilization of innovation results learning adequacy (Webster & Hackley, 1997).

Facilitating Conditions: ensure the convenience and accessibility of infrastructure supporting the utilization of proposed system(Davis and Venkatesh 2004). Thus, facilitating conditions may support to measure the availability of technical and infrastructure support that provides smooth opportunity to students and teachers to successfully adopt the e-learning system at CIS Royal Commission Jubail. According to Davis and Venkatesh (2004)facilitating conditions sprightly influence the perceived ease of use and perceived usefulness that impacts positively on use behavior.

Training: defines the profile of the teacher. This factor may help to measure access to technology, confidence, and attitudes of teachers (Doculan 2016). Training factor may be utilized to know technical efficiency and experience of teachers in utilization of Internet in learning process, conducting online trainings, seminars/workshops, course administration and use of course management systems.

Conceptual Framework

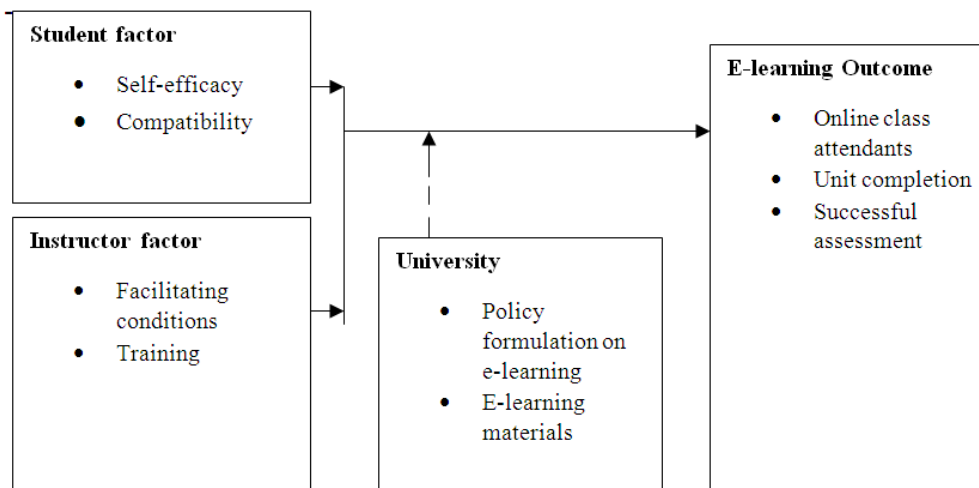


Figure 1:Relationship between Covid 19 and E-learning in University of Nairobi

III. MATERIALS AND METHODS

Descriptive survey research design was used as it allows the researcher to describe characteristics of an individual or group as they really are. (Kothari, 2011). Descriptive survey are only concerned with conditions or relationships that exist, opinions that are held and process that are ongoing. The study targeted 40 lecturers, 1500 students and 20 ICT officials. a sample of 20% was used on both lecturers, students and ICT officials and considered a large sample (Best & Kahn, 2011) and large enough to detect a significant effect (Kerlinger & Lee, 2000). Simple random sampling was used and Questionnaires were used to collect data from the lecturers, ICT official and students because of their ability to contend alot of information from respondents over a short period of time. They are also free from biasness of the researcher. They contained close ended questions. Orodho

(2009) further explains that questionnaires capture information on people's attitudes, opinions and habits. The questionnaires had two sections; Section A captured the background information which contained the gender, age, level of education; Section B contained the factors influencing e-learning which on a likert scale ranging from Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree seeking information on teachers' job satisfaction. To enhance the content validity of the instruments a pretest of the instruments was carried out. Piloting aimed at testing the clarity of test items, suitability of language used and the feasibility of the study. The reliability of the instruments was determined using test-retest technique. The Pearson's product-moment correlation (r) coefficient formula was used to compute the reliability coefficient (Best & Kahn, 2011). Pearson correlation coefficient was used in this study as being the most appropriate for determining relationship (Kothari 2004). Both correlation and regression analysis fitted a line to describe the said relationship. The hypothesis test was at 5% level of significance. The null hypothesis was rejected and accepted if the p-value is greater than 0.05 ($P \geq 0.05$) or 0.01 ($P \geq 0.01$). It was rejected if the p-value is less than or equal to 0.05 ($P \leq 0.05$) and 1% level of significance if the p-value was less than or equal to 0.01 ($P \leq 0.01$).

IV. FINDINGS AND COMMENTS

Student Factor and E-learning

Table 1 shows how Covid-19 influenced e-learning positively

Table 1: Covid-19 influenced e-learning positively

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	53	17.7	35	11.7	56	18.6	92	30.7	64	21.3	3.26	1.386
Lecturers	0	0.0	0	0.0	1	5.0	7	35.0	12	60.0	4.55	0.605
ICT officers	0	0.0	0	0.0	4	50.0	2	25.0	2	25.0	3.75	0.886

Table 1 shows that majority 92 (30.7%) of the students Agreed that Covid-19 influenced e-learning positively while 64 (21.3%) Strongly Agreed and 56 (18.6%) were Neutral respectively. (Mean=3.26, Sd=1.386).

On Lecturers majority 12 (60.0%) Strongly Agreed that Covid-19 influenced e-learning positively while 7 (35.0%) Agreed. (Mean=4.55, Sd=0.605).

On ICT officers majority 4 (50.0%) were Neutral while 2 (25.0%) Agreed and Strongly Agreed respectively. (Mean=3.75, Sd=0.886).

This implied that Covid-19 had influenced e-learning positively.

Table 2 shows whether the Students were computer literate

Table 2: Students are Computer Literate

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	26	8.7	23	7.6	26	8.7	132	44.0	93	31.0	3.81	1.205
Lecturers	0	0.0	0	0.0	0	0.0	8	40.0	12	60.0	4.60	0.502
ICT officers	0	0.0	0	0.0	0	0.0	0	0.0	8	100.0	5.00	0.000

Table 2 shows that majority 132 (44.0%) of the students Agreed that they were Computer Literate while 93 (31.0) Strongly Agreed and 26(8.7%) were Neutral and Strongly Disagreed respectively. (Mean=3.81, Sd=1.205)

On Lecturers majority 12 (60.0%) Strongly Agreed that they were Computer Literate while 8 (40.0%) Agreed. (Mean=4.60, Sd=0.502).

On ICT officers 8 (100.0%) all the respondents Strongly Agreed that they were Computer Literate. (Mean=3.75, Sd=0.886).

This implied that many people who did e-learning were computer literate.

Table 3 shows whether the student has a computer or laptop that he uses for e-learning

Table 3: I have a computer or laptop that I use for e-learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	99	33.0	79	26.4	16	5.3	58	19.3	48	16.0	2.59	1.502
Lecturers	0	0.0	0	0.0	0	0.0	7	35.0	13	65.0	4.65	0.489
ICT officers	0	0.0	0	0.0	0	0.0	4	50.0	4	50.0	4.50	0.534

Table 3 shows majority 99 (33.0% of the students Strongly Disagreed that they have a computer or laptop that they use for e-learning while 79 (26.4%) Disagreed and 58 (19.3%) Agreed respectively.

On Lecturers majority 13 (65.0%) Strongly Agreed that they have a computer or laptop that they use for e-learning while 7 (35.0%) Agreed. (Mean=4.65, Sd=0.489).

On ICT officers majority 4 (50.0%) Agreed and Strongly Agreed that they have a computer or laptop that they use for e-learning respectively. (Mean=4.50, Sd=0.534).

This implied that Both lecturers and ICT officers had a computer or a laptop because they have the financial ability to access one while students lack a computer or laptop because of financial constraints.

Table 4 shows whether students find it easy to use the computer during online courses

Table 4: I find it easy to use the computer during online courses

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	66	22.0	71	23.7	52	17.3	68	22.7	43	14.3	2.84	1.377
Lecturers	0	0.0	0	0.0	2	10.0	5	25.0	13	65.0	4.55	0.686
ICT officers	0	0.0	0	0.0	2	25.0	2	25.0	4	50.0	4.25	0.886

On Students Table 4 shows majority 71(23.7%) of the students Disagreed that they find it easy to use the computer during online courses while 68 (22.7%) Agreed and 66 (22.0%) Strongly Disagreed respectively.(Mean=2.84, Sd=1.377)

On Lecturers majority 13 (65.0%) Strongly Agreed they find it easy to use the computer during online courses while 2 (25.0%) Agreed. (Mean=4.55, Sd=0.686).

On ICT officers majority 4 (50.0%) Strongly Agreed they find it easy to use the computer during online courses while 2 (25.0%) Agreed and were Neutral respectively. (Mean=4.50, Sd=0.534).

This implied that students have difficulties on using the computer during online courses while lecturers and ICT officers find it easy to use the computer and this can be attributed on their skills.

Table 5 shows whether students experienced some difficulties in terms of power shortages

Table 5: I experienced some difficulties in terms of power shortages

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	29	9.7	34	11.3	38	12.7	105	35.0	94	31.3	3.67	1.288
Lecturers	2	10.0	3	15.0	3	15.0	5	25.0	7	35.0	2.40	1.392
ICT officers	0	0.0	0	0.0	0	0.0	4	50.0	4	50.0	4.50	0.535

Table 5 shows majority 105 (35.0%) of the students Agreed that they experienced some difficulties in terms of power shortages while 94 (31.3%) Strongly Agreed and 38 (12.7%) were Neutral respectively.(Mean=3.67, Sd=1.288)

On Lecturers majority 7 (35.0%) Strongly Agreed that they experienced some difficulties in terms of power shortages while 5 (25.0%) Agreed and 3 (15.0%) were Neutral and Disagreed respectively. (Mean=2.40, Sd=1.392).

On ICT officers majority 4 (50.0%) Strongly Agreed and Agreed respectively that they experienced some difficulties in terms of power shortages. (Mean=4.50, Sd=0.534).

This implied that power shortages has been a major problem as far as e-learning is concerned.

Table 6 shows students underwent training on how to use e-learning

Table 6: Students underwent training on how to use e-learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	45	15.0	23	7.7	26	8.7	126	42.0	80	26.7	3.58	1.355
Lecturers	0	0.0	0	0.0	1	5.0	7	35.0	12	60.0	4.55	0.605
ICT officers	0	0.0	0	0.0	0	0.0	4	50.0	4	50.0	4.50	0.535

Table 6 shows majority 126 (42.0%) of the students Agreed that students underwent training on how to use e-learning while 80 (26.7%) Strongly Agreed and 45 (15.0%) Strongly Disagreed respectively. (Mean=3.58, Sd=1.355)

On Lecturers majority 12 (60.0%) Strongly Agreed that students underwent training on how to use e-learning while 7 (35.0%) Agreed. (Mean=4.55, Sd=0.605).

On ICT officers majority 4 (50.0%) Strongly Agreed and Agreed respectively that students underwent training on how to use e-learning respectively. (Mean=4.50, Sd=0.534).

This implied that for e-learning to be effective training was mandatory for its success.

Table 7 shows students have adequate internet to facilitate e-learning

Table 7: Students have adequate internet to facilitate e-learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	105	35.0	93	31.0	43	14.3	45	15.0	14	4.7	2.23	1.210
Lecturers	0	0.0	0	0.0	5	25.0	3	15.0	12	60.0	4.35	0.875
ICT officers	0	0.0	0	0.0	0	0.0	4	50.0	4	50.0	4.50	0.534

Table 7 shows majority 105 (35.0%) of the students Strongly Disagreed that they have adequate internet to facilitate e-learning while 93 (31.0%) Disagreed and 45 (15.0%) Agreed respectively. (Mean=2.23, Sd=1.210)

On Lecturers majority 12 (60.0%) Strongly Agreed that students have adequate internet to facilitate e-learning while 3 (15.0%) Agreed. (Mean=4.35, Sd=0.875).

On ICT officers majority 4 (50.0%) Strongly Agreed and Agreed respectively that students have adequate internet to facilitate e-learning while. (Mean=4.50, Sd=0.534).

This implied that both the lecturers and ICT officers were sure that the students have adequate internet since the university gives the students free daily bundles while the students disagree because they want to use the bundles not for academic purposes but for social purposes like Instagram, Tiktok, Facebook, Twitter e.t.c.

Table 8 shows whether students did miss some classes online

Table 8: Students did miss some classes online

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	58	19.3	43	14.3	35	11.7	104	34.7	60	20.0	3.22	1.422
Lecturers	0	0.0	3	15.0	1	5.0	4	20.0	12	60.0	1.75	1.118
ICT officers	0	0.0	0	0.0	0	0.0	4	50.0	4	50.0	3.50	0.535

Table 8 shows majority 104 (34.7%) of the students Agreed that they did miss some online classes while 60 (20.0%) Strongly Agreed and 58 (19.3%) Strongly Disagreed respectively. (Mean=3.22, Sd=1.422)

On Lecturers majority 12 (60.0%) Strongly Agreed that students did miss some online classes while 4 (20.0%) Agreed and 3 (15.0%) Disagreed. (Mean=1.75, Sd=1.118).

On ICT officers majority 4 (50.0%) Strongly Agreed and Agreed respectively that students did miss some online classes. (Mean=3.50, Sd=0.535).

This implied that students missed online classes either due to power shortages, bundles or some did not intentionally attend classes.

Table 9 shows whether students prefer e-learning to face to face learning

Table 9: Students prefer e-learning to face to face learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	131	43.7	53	17.6	45	15.0	45	15.0	26	8.7	2.27	1.378
Lecturers	1	5.0	0	0.0	0	0.0	6	30.0	13	35.0	4.55	0.759
ICT officers	0	0.0	0	0.0	0	0.0	0	0.0	8	100.0	5.00	0.00

Table 9 shows majority 131 (43.7%) Strongly Disagreed that students prefer e-learning to face to face learning while 53 (17.6%) Disagreed and 45 (15.0%) were Neutral and Agreed respectively. (Mean=2.27, Sd=1.378)

On Lecturers majority 13 (35.0%) Strongly Agreed that students prefer e-learning to face to face learning while 6 (30.0%) Agreed. (Mean=4.55, Sd=0.759).

On ICT officers all 8 (100.0%) Strongly Agreed and Agreed respectively that students prefer e-learning to face to face learning. (Mean=5.00, Sd=0.000).

This implied that students do not prefer e-learning to face to face learning because it has distanced them from their friends and colleagues and majority are at home. On the other hand lecturers and ICT officers think that students prefer e-learning to face to face because of their attendance in class.

Table 10 shows whether students were assessed effectively on their units

Table 10: Students were assessed effectively on their units

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	40	13.3	76	25.3	77	25.7	81	27.0	26	8.7	2.92	1.184
Lecturers	0	0.0	2	10.0	1	5.0	5	25.0	12	60.0	4.35	0.988
ICT officers	0	0.0	2	0.0	2	25.0	2	25.0	4	50.0	1.75	0.886

Table 10 shows majority 81 (27.0%) of the students Agreed that they were assessed effectively on their units while 77 (25.7%) were Neutral and 76 (25.3%) Disagreed respectively.(Mean=2.92, Sd=1.184)

On Lecturers majority 12 (60.0%) Strongly Agreed that students were assessed effectively on their units while 5 (25.0%) Agreed and 2 (10.0%) Disagreed. (Mean=4.35, Sd=0.988).

On ICT officers majority 4 (50.0%) Strongly Agreed that students were assessed effectively on their units while 2 (25.0%) Agreed and were Neutral respectively.(Mean=1.75, Sd=0.886).

This implied that the Lecturers did assess the students according to the content delivered.

Table 11 shows whether lecturers were effective in delivering the course unit using e-learning

Table 11: Lecturers were effective in delivering the course unit using e-learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	68	22.7	77	25.7	67	22.3	62	20.7	26	8.7	1.67	1.270
Lecturers	0	0.0	2	10.0	0	0.0	5	25.0	13	65.0	4.45	0.945
ICT officers	0	0.0	0	0.0	2	25.0	2	25.0	4	50.0	4.25	0.886

Table 11 shows majority 77 (25.7%) of the students Disagreed that lecturers were effective in delivering the course unit using e-learning while 68 (22.7%) Strongly Disagreed and 67 (22.3%) were Neutral respectively. (Mean=1.67, Sd=1.270)

On Lecturers majority 13 (65.0%) Strongly Agreed that lecturers were effective in delivering the course unit using e-learning while 5 (25.0%) Agreed. (Mean=4.45, Sd=0.945).

On ICT officers majority 4 (50.0%) Strongly Agreed that lecturers were effective in delivering the course unit using e-learning while 2 (25.0%) Agreed and were Neutral respectively.(Mean=1.75, Sd=0.886).

This implied that the lecturers did effectively deliver the course unit using e-learning.

Table 12 shows Majority of students embraced e-learning

Table 12: Majority of students embraced e-learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	108	36.0	91	30.3	64	21.3	26	8.7	11	3.7	2.14	1.112
Lecturers	2	10.0	0	0.0	1	5.0	4	20.0	13	65.0	4.30	1.261
ICT officers	0	0.0	0	0.0	2	25.0	4	50.0	2	25.0	4.00	0.756

Table 12 shows majority 108 (36.0%) of the students Strongly Disagreed that majority of students embraced e-learning while 91 (30.3%) Disagreed and 64 (21.3%) were Neutral respectively.

On Lecturers majority 13 (65.0%) Strongly Agreed that students embraced e-learning while 4 (20.0%) Agreed and 2(10.0%) respectively. (Mean=4.45, Sd=0.945).

On ICT officers majority 4 (50.0%) Agreed that students embraced e-learning while 2 (25.0%) Strongly Agreed and were Neutral respectively.(Mean=4.00, Sd=0.756).

This implied that students did not embrace e-learning but since they have to go on with their studies they had to accept it.

H_{0j}: There is no significant relationship between E-learning and student factors in University of Nairobi, Kenya

In order to test whether there was a relationship between E-learning and student factors Chi square test(χ^2) was used to test the hypothesis. The null hypothesis states that there is no significant relationship between E-learning and student factors in University of Nairobi, Kenya.

Table 13 shows chi square test between student factors and E-learning

Table 13: Chi square test between student factors and E-learning

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	47.126 ^a	16	.000
Likelihood Ratio	53.262	16	.000
Linear-by-Linear Association	13.438	1	.000
N of Valid Cases	300		

a. 6 cells (24.0%) have expected count less than 5. The minimum expected count is 1.52.

The Chi square table 13 confirms that there is a relationship between student factor and E-learning in University of Nairobi. The null hypothesis(H_0) was tested using Chi square (df=16, Pearson Chi square(χ^2)=47.126 and p=0.000 at 0.05 level of significance. The null hypothesis(H_0) there is no significant relationship between E-learning and student factors in University of Nairobi, Kenya was therefore rejected hence there is a strong significant relationship between the student factor and e-learning. This means that students determine whether e-learning is effective or not.

Instructor Factor and E-learning

Table 14 shows Majority of students attended the e-learning class

Table 14: Lecturers attended the e-learning class

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	105	35.0	76	25.4	66	22.0	40	13.3	13	4.3	2.27	1.195
Lecturers	2	10.0	0	0.0	0	0.0	1	5.0	17	85.0	4.55	1.234
ICT officers	0	0.0	0	0.0	4	50.0	2	25.0	2	25.0	3.75	0.886

Table 14 shows majority 105 (35.0%) of the students Strongly Disagreed that Lecturers attended the e-learning class while 76 (25.4%) Disagreed and 66 (22.0%) were Neutral respectively. (Mean=2.27, Sd=1.195)

On Lecturers majority 17 (85.0%) Strongly Agreed that Lecturers attended the e-learning class 2 (20.0%) Agreed. (Mean=4.55, Sd=1.234).

On ICT officers majority 4 (50.0%) were Neutral that Lecturers attended the e-learning class 2 (25.0%) Strongly Agreed and Agreed respectively. (Mean=3.75, Sd=0.886).

This implied that the Lectures did attend e-learning class and delivered the content to students.

Table 15 shows students have access to a qualified instructor

Table 15: Students have access to a qualified instructor

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	101	33.7	97	32.3	52	17.3	40	13.3	10	3.3	2.20	1.142
Lecturers	0	0.0	2	10.0	1	5.0	13	65.0	4	20.0	3.95	0.826
ICT officers	2	25.0	2	25.0	2	25.0	2	25.0	0	0.0	2.50	1.195

Table 15 shows majority 101 (33.7%) of the students Strongly Disagreed that they have access to a qualified instructor while 97 (32.2%) Disagreed and 52 (17.3%) were Neutral respectively. (Mean=2.20, Sd=1.142).

On Lecturers majority 15 (65.0%) Agreed that students have access to a qualified instructor while 4 (20.0%) Strongly Agreed and 2 (10.0%) Disagreed. (Mean=3.95, Sd=0.826).

On ICT officers majority 2(25.0%) Strongly Disagreed, Disagreed and Agreed respectively that students have access to a qualified instructor. (Mean=2.50, Sd=1.195).

This implied that a student accessing a qualified instructor in the university is really a big challenge since they don't pick calls especially during the Covid 19 pandemic.

Table 16 shows whether the university really supported the students with the e-learning program

Table 16: The university really supported the students with the e-learning program

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	39	13.0	42	14.0	78	26.0	96	32.0	45	15.0	3.22	1.240
Lecturers	0	0.0	0	0.0	2	10.0	7	35.0	11	55.0	4.45	0.686
ICT officers	0	0.0	0	0.0	4	50.0	4	50.0	0	0.0	3.50	0.535

Table 16 shows majority 96 (32.0%) of the students Agree that the university really supported the students with the e-learning program while 78 (26.0%) were Neutral and 45 (15.0%) Strongly Agreed respectively. (Mean=3.22, Sd=1.240)

On Lecturers majority 11 (55.0%) Strongly Agreed that the university really supported the students with the e-learning program while 7 (35.0%) Strongly Agreed. (Mean=4.45, Sd=0.686).

On ICT officers majority 4(50.0%) Agreed and were Neutral respectively that the university really supported the students with the e-learning program while. (Mean=2.50, Sd=1.195).

This implied that the university really supported the students especially through ensuring students underwent training and providing free data bundles.

Table 17 shows whether All units were covered during e-learning

Table 17: All units were covered during e-learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	96	32.0	80	26.7	49	16.3	58	19.3	17	5.7	2.40	1.250
Lecturers	0	0.0	3	15.0	2	10.0	4	20.0	11	55.0	4.15	1.137
ICT officers	0	0.0	0	0.0	4	50.0	2	25.0	2	50.0	3.75	0.886

Table 17 shows majority 96 (32.0%) of the students Strongly Disagreed that All units were covered during e-learning while 80 (26,7%) Disagreed and 58 (19.3%) Agreed respectively. (Mean=2.40, Sd=1.250)

On Lecturers majority 11 (55.0%) Strongly Agreed that All units were covered during e-learning while 7 (35.0%) Strongly Agreed. (Mean=4.15, Sd=1.137).

On ICT officers majority 4(50.0%) were Neutral that All units were covered during e-learning while 2 (25.0%) Strongly Agreed and Agreed respectively. (Mean=3.75, Sd=0.886).

This implied that some units were not covered effectively.

Table 18 shows Lecturers underwent training on how to use e-learning

Table 18: Lecturers underwent training on how to use e-learning

Statement	SD		D		N		A		SA		Mean	Sd
	f	%	f	%	f	%	f	%	f	%		
Students	45	15.0	23	7.7	26	8.7	126	42.0	80	26.7	3.58	1.355
Lecturers	0	0.0	0	0.0	1	5.0	7	35.0	12	60.0	4.55	0.605
ICT officers	0	0.0	0	0.0	0	0.0	4	50.0	4	50.0	4.50	0.535

Table 18 shows majority 126 (42.0%) of the students Agreed that Lecturers underwent training on how to use e-learning while 80 (26.7%) Strongly Agreed and 45 (15.0%) Strongly Disagreed respectively. (Mean=3.58, Sd=1.355)

On Lecturers majority 12 (60.0%) Strongly Agreed that Lecturers underwent training on how to use e-learning while 7 (35.0%) Agreed. (Mean=4.55, Sd=0.605).

On ICT officers majority 4 (50.0%) Strongly Agreed and Agreed respectively that Lecturers underwent training on how to use e-learning respectively. (Mean=4.50, Sd=0.534).

This implied that for e-learning to be effective lecturers had to be trained for effective delivery.

H0₂: There is no significant relationship between instructor factors and E-learning in University of Nairobi, Kenya

In order to test whether there was a relationship between instructor factors and E-learning Chi square test(χ^2) was used to test the hypothesis. The null hypothesis states that there is no significant relationship between instructor factors and E-learning in University of Nairobi, Kenya.

Table 19 shows chi square test between instructor factors and E-learning

Table 19: Chi square test between instructor factors and E-learning

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.073 ^a	16	.000
Likelihood Ratio	37.542	16	.000
Linear-by-Linear Association	10.596	1	.000
N of Valid Cases	300		

a. 6 cells (24.0%) have expected count less than 5. The minimum expected count is 1.52.

The Chi square table 19 confirms that there is a relationship between instructor factor and E-learning in University of Nairobi. The null hypothesis (H_{01}) was tested using Chi square (df=16, Pearson Chi square (χ^2)=38.073 and p=0.000 at 0.05 level of significance. The null hypothesis (H_{01}) there is no significant relationship between instructor factors and E-learning in University of Nairobi, Kenya. The null hypothesis was therefore rejected hence there is a strong significant relationship between the instructor factor and E-learning in University of Nairobi. This means that instructors have a great impact in determining whether e-learning is effective or not.

V. CONCLUSION

Both students and instructors are key in the success of e-learning in the University
Training is a major contributor in the implementation of e-learning during the Covid-19 Pandemic
Students have not holistically embraced e-learning because they feel they are being detached from other key factors like social interaction.
The University is a major determinant in terms of financial and academic integration of e-learning.
ICT officers are key determinants in ensuring both the lecturer and student are able to use e-learning with ease.

VI. RECOMMENDATION

The University should create awareness on the importance of e-learning during the Covid 19 pandemic.
Lecturers should be trained more on various effective method to use on content delivery
Students should be motivated in terms of using e-learning platforms and how it can enhance their innovation in learning.
ICT officers should undergo inservice course on modern ways to implement e-learning in the Universities.

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