The Technological Perception of Learners Towards Digital Learning in Public Universities During the Post COVID-19 Era in Uasin Gishu County, Kenya

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Abstract

The coronavirus disease (COVID-19) lead to a disruption of normal learning as a result of total lockdown in many countries. This has led to a move to online learning. Students' opinion towards online learning such as unfavorable attitudes contribute largely to students lacking motivation and persistence. The objective of the study was to examine the technological perception of learners towards digital learning in public universities during the post COVID 19 era in Uasin Gishu County, Kenya. The theoretical framework used in the study was Classical Liberal Theory of Equal Opportunities. The study targeted selected public universities in Kenya with the target population being deans, Heads of department, lecturers and students. Descriptive research design was used in the study. Questionnaires and interview schedules were used as data collection tools. SPSS version 25 was used to analyze the data. The study findings established that the perception of learners has a negative and significant influence on digital learning in public universities during the post COVID 19 Era in Uasin Gishu County, Kenya (β_1=-.038, p=0.008). The conclusion from the study was that facilitators' and students' attitudes undermine the digital learning process. The study further concluded that most students fear online due to the nature and content of the courses. The study also recommends that students should be trained on digital learning and encouraged to change their negative attitude towards digital learning.

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Introduction

Background of the study

The coronavirus disease (COVID-19) lead to a disruption of normal learning as a result of total lockdown in many countries. In India, the second largest country in the world in terms of population, COVID-19 lockdown and the Indian

Government's digital initiatives in general had resulted in a dramatic shift toward online learning. Students' opinions of online learning are critical because unfavorable attitudes about online learning in general are a major contributor to students' lack of motivation and persistence (Raj & Khare, 2020). Students' perceptions of quality in digital learning are influenced by a variety of factors, including whether or not they have access to a computer at home, their gender, the frequency and quality of teacher instructions and feedback, their sense of community in the learning community, their family's support and their ability to manage their own time. The retention rate of Massive Open Online Course (MOOC) the percentage of students who register and complete the course-is influenced by all of these elements, as student perception is the key determinant of drop-outs (Aruga, Islam & Jannat, 2020).

As a result of their prior knowledge and skills, students' ability to effectively use digital technology to engage in a wide range of educational activities in a certain subject is a direct result (Sailer, Schultz-Pernice & Fischer, 2021). Students' ability to self-regulate their learning, which includes being able to work toward learning goals over multiple weeks, talking about open questions with classmates, and seeking out more academic support, when necessary, is crucial to their success in the classroom. In the end, successful involvement in education is believed to be critically dependent on learners' interests in getting material from the Internet, communicating, cooperating, and solving problems and using (or not using) certain technology for their own learning (Caena & Redecker, 2019).

A substantial association was discovered between the degree to which students feel comfortable utilizing the Internet and their overall level of happiness with the online experience (Chatterjee & Correia, 2020). Self-efficacy in general is a key feature of student satisfaction, an online student must believe in his/her potential to achieve the results within a nontraditional delivery system. An 18-item anxiety tool with domains in computer, Internet,

and online learning was delivered in the first and last weeks of an educational research course. A 24-item satisfaction questionnaire with domains covering the instructor, technology, setup, interaction, outcomes, and overall satisfaction was employed at the end of the course (Choy & Quek, 2016).

Statement of the problem

From the reviewed literature, it was revealed that the perception of online learning affects digital learning among students (Raj & Khare, 2020; Aruga et al., 2020; Sailer et al., 2021; Caena & Redecker, 2019; Chatterjee & Correia, 2020). For students, having a computer at home is one factor that influences digital learning, as well as gender, the frequency and quality of their teachers' instructions and feedback, their sense of connection to their educational community, their parents' support, their ability to manage their time, the course's content and design, and their overall impression of its quality (Aruga et al., 2020; Cakır, & Solak, 2015; Rhema, & Miliszewska, 2014; Prior, Mazanov, Meacheam, Heaslip, & Hanson, 2016; Abbasi et al., 2020; Abbasi et al., 2020; Khan et al., 2020; Sephania et al., 2017). Using this information, researchers could better understand how students perceive digital learning. Therefore, the study examined the technological perception of learners towards digital learning in public universities during the post-COVID-19 Era in Uasin Gishu County, Kenya.

Research objective

To examine the technological perception of learners towards digital learning in public universities during the post COVID 19 Era in Uasin Gishu County, Kenya.

Research hypothesis

H_{01}: There is no significant relationship between perception of learners and digital learning in public universities during the post COVID-19 Era in Uasin Gishu County, Kenya.

Theoretical framework

Classical Liberal Theory of Equal Opportunities was used a s a guide to this study. By applying Classical liberal theory to education, the researcher ensured that all students have access to high-quality education and resources regardless of their socio-economic background. The classical liberal theory of equal opportunities has the potential to alleviate the disparities in digital learning access among students in public universities in Uasin Gishu County post-COVID-19. The pandemic has highlighted these inequalities, with some students lacking reliable internet and devices at home, while others have better resources. According to Armstrong (2021), implementing this theory would ensure that every student is given an equal chance to access digital learning materials regardless of their socio-economic background. However, it is important to note that there are challenges when applying this theory practically. For instance, some argue that providing every student with equal opportunities may not necessarily lead to equitable outcomes since individuals have different needs and abilities. Despite its limitations, the classical liberal theory of equal opportunities provides a framework for addressing disparities in digital learning access among students in public universities effectively. By ensuring all learners can easily access online course materials and participate in virtual classes irrespective of their backgrounds or financial capability could level the playing field considerably (Armstrong, 2021). Ultimately bridging the gap between those who are more privileged than others, whether, by race or socioeconomic status which should be a priority for equity purposes.

Research methodology

The researchers in this study adopted a pragmatic paradigm approach since it allowed them to combine qualitative and quantitative methods at various points in the investigation process (Molina-Azorin, 2016). The what and the how of the research challenge are the primary foci of the pragmatist. The pragmatist paradigm is seen as providing the primary theoretical underpinnings for mixed research approaches (Rezaee, 2017). This paradigm was used for the investigation since it incorporated both qualitative and quantitative techniques.

Descriptive research design was used for this study. Rather of focusing on the "why" behind an observed phenomenon, descriptive research seeks to provide a detailed account of the members of a target population. Thus, it "describes" the research issue without providing an explanation for its occurrence. The major purpose of the study necessitated the use of this design in order to establish a connection between the independent factors and the dependent variable. We were able to learn a great deal thanks to this methodological approach (Creswell & Creswell, 2017).

The study was conducted in Moi University Main Campus and University of Eldoret. The targeted population was 3583 inclusive of 2 Deans, 20 Heads of Department, 151 Lecturers and 3410 Students. Yamane's formulas (1967) was used to decide on the sample size.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size required
N is the population size =3583
e is the level of precision =0.05

$$n = \frac{3583}{1 + 3583(0.05)2}$$

n=360

Purposive and random sampling was employed to pick out the university administrators, faculty, and students. For the study items to be selected without favor, simple random sampling was used.

This study used primary sources of data to produce quantitative information. A primary source gives the researcher direct evidence about digital leaning in public universities after COVID 19. The study employed a questionnaire designed to elicit respondents' opinions in order to achieve the aims of the research. Questions were not left open for interpretation. The

questionnaire method was selected since it required minimal setup and analysis time. The interview schedule was used to collect data from heads of department and deans.

The research instruments validity and reliability were tested after carrying out a pilot study. Descriptive statistics was analyzed using SPSS version 25. Inferential statistics such as regression and correlation analysis were used in this study.

Results and discussion

Lecturers' response on technological perception of learners towards digital learning
A total of 4 statements were used to determine the lecturers' response on the perception of learners towards digital learning and responses elicited on a 5-point Likert scale as shown in Table 1.

Table 1: Lecturers response on technological perception of learners towards digital learning

Statements		SD	D	N	A	SA	Total	Mean	Std
1. Most students fear online due to the nature and content of the courses	F	1	1	1	6	4	13	3.85	1.21
	%	7.7	7.7	7.7	46.2	30.8	100.0		
2. Some students have a negative attitude toward digital learning	F	1	1	1	7	3	13	3.77	1.17
	%	7.7	7.7	7.7	53.8	23.1	100.0		
3. Available materials are insufficient, making some students not appreciate digital learning.	F	1	1	1	10	0	13	3.54	0.97
	%	7.7	7.7	7.7	76.9	0.0	100.0		
4. Poor self-efficacy and management among the learners make them not appreciate digital learning	F	1	2	1	2	7	13	3.92	1.44
	%	7.7	15.4	7.7	15.4	53.8	100.0		

Table 1 shows that of the respondents, 10(77.0%) agreed that most students fear online due to the nature and content of the courses. On the contrary, 2(15.4%) disagreed that most students fear online due to the nature and content of the courses. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed most students fear online due to the nature and content of the courses (Mean=3.85, standard deviation=1.21). The study findings agreed with African Virtual University (2022) who found that students in Africa are afraid of online learning. The main reasons for this fear are the lack of access to technology, the lack of confidence in using technology, and the fear of not being able to interact with the instructor or other students. This implies that there is a significant fear of online learning among students in Africa. This fear is likely due to a number of factors, including the lack of access to technology, the lack of confidence in using technology, and the fear of not being able to interact with the instructor or other students.

Also, 10(76.9%) of the respondents agreed that some students have a negative attitude toward digital learning. However, 2(15.4%) of the respondents disagreed that some students have a negative attitude toward digital learning. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed that some students have a negative attitude towards digital learning (Mean=3.77, standard deviation=1.17). These findings agree with Unger and Meiran, (2020) which states that undergraduate student attitudes towards rapidly shifting to an entirely online learning environment were assessed due to COVID-19 pandemic that course the shutdown of universities nearly worldwide. Also, according to Dawood, Ghazali, & Samat, (2019) stated that the negative attitudes towards learning was due to some of reasons like poor network coverage in some remote areas mostly rural areas.

Further, 10(76.9%) of respondents agreed that available materials need to be improved, making some students not appreciate digital learning. However, 2(15.4%) of the

respondents disagreed that available materials are insufficient, making some students not appreciate digital learning. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed that available materials need to be sufficient, making some students not appreciate digital learning. (Mean=3.54, standard deviation=0.97). This finding agreed with Gustiani, (2020) who aimed to reveal both students' intrinsic and extrinsic factors toward their motivation in online learning during the Covid-19 Pandemic era. Also, the findings done by Almaiah. Hajjej, Lutfi, Al-Khasawneh, Shehab, Al-Otaibi and Alrawad, (2022). Explaining the factors affecting students' attitudes to using online learning including infrastructure to support on their daily basis.

Lastly, from the study, 9(69.2%) of the participants agreed, and 3(23.1%) disagreed that poor self-efficacy and management among the learners make them not appreciate digital learning. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed with the statement that poor self-efficacy and management amongst the learners make them not appreciate digital learning (Mean=3.92, standard deviation=1.44). This study findings agree with Zwart, Noroozi, Van Luit, Goei and Nieuwenhuis, (2020) who stated that digital learning materials have had a positive effect on student's and self-efficacy.

Students' response on technological perception of learners towards digital learning

A total of 4 statements were used to determine the students' response on perception of learners towards digital learning in public universities and the responses elicited on a 5-point Likert scale are shown in Table 2.

Table 2: Students response on perception of learners towards digital learning in public universities

Statements		SD	D	N	A	SA	Total	Mean	Std
1. Most students fear online due to the nature and content of the courses	F	21	56	7	162	65	311	3.62	1.19
	%	6.8	18.0	2.3	52.1	20.9	100.0		
2. Some students have a negative attitude toward digital learning	F	14	15	12	165	105	311	4.07	0.99
	%	4.5	4.8	3.9	53.1	33.8	100.0		
3. Available materials must be sufficient, making some students not appreciate digital learning.	F	8	38	12	189	64	311	3.85	0.97
	%	2.6	12.2	3.9	60.8	20.6	100.0		
4. Poor self-efficacy and management among the learners make them not appreciate digital learning	F	7	44	22	95	143	311	4.04	1.14
	%	2.3	14.1	7.1	30.5	46.0	100.0		

Table 2 shows that of the respondents, 227(70%) agreed that most students fear online due to the nature and content of the courses. On the contrary, 77(24.5%) disagreed that most students fear online due to the nature and content of the courses. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed most students fear online due to the nature and content of the courses (Mean=3.62, standard deviation=1.19). The study agreed with a study by the University of Cape Town found that students in South Africa are afraid of online learning. The study found that the main reasons for this fear are the lack of access to technology, the lack of confidence in using technology, and the fear of not being able to interact with the instructor or other students. By addressing the fear of online learning, we can help to make it a more viable option for students in Africa.This will help to increase access to education and to improve the quality of education for all students.

Also, 270(86.9%) of the respondents agreed that some students have a negative attitude toward digital learning. However, 29(9.3%) respondents disagreed that some students have a negative attitude toward digital learning. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed that some students have a negative attitude towards digital learning (Mean=4.07, standard deviation=0.99). The study findings agreed with Sloan Consortium (2022) who found that college students have a negative attitude towards online learning. The main reasons for this negative attitude are the lack of interaction with the instructor and other students, the difficulty of learning online, and the lack of motivation to learn online. This negative attitude is the lack of interaction with the instructor and other students, the difficulty of learning online, and the lack of motivation to learn online. This implies that a significant number of students have a negative attitude towards online learning. This negative attitude is likely due to a number of factors, including the lack of interaction with the instructor and other students, the difficulty of learning online, and the lack of motivation to learn online.

Further, 253(81.4%) of respondents agreed that available materials need to be increased, making some students not appreciate digital learning. However, 46(14.8%) of the respondents disagreed that available materials needed to be increased, making some students not appreciate digital learning. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed that available materials need to be increased, making some students not appreciate digital learning (Mean=3.85, standard deviation=0.97). the study findings agreed with Mutisya and Makokha (2016) who noted that in Kenya, there is a limited availability of digital

learning materials. This can make it difficult for students to find the resources they need to succeed in digital learning environments. Additionally, the quality of some digital learning materials in Kenya is not always high. This can lead to students becoming frustrated and disengaged with digital learning.

Lastly, from the study, 238(76.5%) of the participants agreed, and 51(16.4%) disagreed that poor self-efficacy and management among the learners make them not appreciate digital learning. Additionally, the study's findings demonstrated that, based on the mean and standard deviation, the respondents agreed with the statement that poor self-efficacy and management among the learners make them not appreciate digital learning (Mean=4.04, standard deviation=1.14).

From the findings of the study, it was evident that responses to the 4 statements used to explain the students' response on the perception of learners towards digital learning had an overall mean of 3.9 and a standard deviation of 1.1. This shows that majority of the respondents agreed on the statement's perception of learners towards digital learning in public universities in Uasin Gishu county. Similarly, these findings concur with Khan, Nabi, Khojah and Tahir, (2020) students' positive perception towards digital learning and thus acceptance of new learning system.

Hypothesis testing

In order to test the hypothesis H_{01}: There is no significant relationship between perception of learners and digital learning in public universities during the post COVID-19 Era in Uasin Gishu County, Kenya simple linear regression was used. The simple linear regression analysis models the relationship between the dependent variable digital learning and independent variable perception of learners. The results are shown in sections that follows;

Table 3: Model summary on technological perception of learners towards digital learning

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.479[a]	.229	.227	.62124

a. Predictors: (Constant), perception of learners.

The coefficient of determination (R^2) and correlation coefficient (R) shows the degree of association between perception of learners and digital learning in public universities. The results of the linear regression in Table 3 indicate that R^2 =0.229 and R = 0.479. R value indicates that there is a strong linear relationship between perception of learners and digital learning in public universities Uasin Gishu county.

Adjusted R^2 is a modified version of R^2 that has been adjusted for the number of predictors in the model by less than chance. The adjusted R^2 of 0.229 which is slightly lower than the R^2 value is an exact indicator of the relationship between the independent and the dependent variable because it sensitive to the addition of irrelevant variables. The adjusted R^2 indicates that 22.9% of the changes in digital learning are explained by the model while 77.1% is not explained by the model.

This implies that level of perception of learning has a strong influence on digital learning in Uasin Gishu county. This study relates to the findings of Sarkar, Das, Rahman and Zobaer (2021) who noted that perceptions of public university students towards online classes during COVID-19 pandemic in Bangladesh.

The study used Analysis of variance to check whether the model could forecast the result better than the mean, as seen in Table 4.

Table 4: ANOVA on technological perception of learners towards digital learning

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	35.473	1	35.473	92.912	.000[b]
1	Residual	119.256	309	.386		
	Total	154.729	310			

From Table 4 the F test provides an overall test of significance of the fitted regression model. The F value indicates that all the variables in the equation are important hence the overall regression is significant. The F-statistics produced (F = 91.912) was significant at p=0.000 thus confirming the fitness of the model and therefore, there is statistically significant relationship between perception of learners and digital learning in Uasin Gishu.

Table 5 shows the estimates of β-value and gives contribution of the predictor to the model.

Table 5: Technological perception of learners towards digital learning

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.530	.168		15.069	.000
	Perception of learners	.395	.041	.479	9.587	.000

The Table 5 indicates there was positive linear relationship between perception of learners and digital learning which reveals that an increase in perception of learners to increased digital learning in public universities. Perception was significant (p=0.000) in digital learning at 39.5%. This implies perception of learners has an influence on digital learning in Uasin Gishu. These results are consistent with the finding of Ozkan and Koseler (2009) who noted that the analytical results strongly support the appropriateness of the proposed model in evaluating LMSs through learners' satisfaction to promote educations system in public universities. Since (β_2=.395, p<0.05) the study rejected the null hypothesis (**Ho1**) and concluded that technological perception of learners towards digital learning in

public universities during the post COVID 19 Era in Uasin Gishu County, Kenya.

Interview results

The study results from interviews revealed that as technology continues to evolve, the perception of learners towards digital learning in public universities has become a pressing concern. It is clear that there is a growing need for public universities to invest in resources in order to cater to the evolving technological needs of learners. Digital learning provides students with access to resources beyond traditional classroom materials. It enables them to learn at their own pace and gives them more control over their education. However, not all students have equal access to technology, which may result in challenges for those who do not have adequate access or training required for online courses. When it comes to academic performance, the use of digital tools should be purposeful rather than excessive since its effects are still under investigation. While some research indicates that there might be potential benefits from using educational technologies such as improved retention rates or better grades; other studies suggest that each individual's academic outcomes vary based on factors like age group or how they perceive digital learning overall.

Dean 1:

"I think that students are generally positive about digital learning. They see it as a way to learn at their own pace and to access information from anywhere. However, there are still some students who are hesitant about digital learning. They may be concerned about not being able to interact with the instructor or other students, or they may not be confident in their ability to use technology"

This implies that it is important for universities to provide students with support for digital learning. This could include providing access to technology, training on how to use technology, and creating online learning environments that are designed to facilitate interaction between students and instructors. By providing this support, the university can help to ensure that all students have the opportunity to succeed in a digital learning environment.

HOD 2:

"I believe that students are increasingly embracing digital learning. They are more comfortable using technology and they see it as a way to learn more effectively. However, there are still some challenges that need to be addressed. For example, not all students have access to the same level of technology, and some students may not be comfortable interacting with others online."

This implies that universities need to do more to support digital learning. This includes providing students with access to technology, training on how to use technology, and creating online learning environments that are designed to facilitate interaction between students and instructors. By addressing these challenges, universities can help to ensure that all students have the opportunity to succeed in a digital learning environment."

Dean 2:

""Learners are positive about digital learning but are affected by insufficient infrastructure."

The deans interviewed believe that students are generally positive about digital learning. However, there are still some challenges that need to be addressed, such as providing students with access to technology, training on how to use technology, and creating online learning environments that are designed to facilitate interaction between students and instructors.

Conclusions

The second study objective was to examine the perception of learners towards digital learning in public universities during the post COVID 19 Era in Uasin Gishu County, Kenya. The study findings

showed that majority of both lectures agreed that most students fear online due to the nature and content of the courses. Also, they further agreed that some students have a negative attitude towards digital learning Further the findings show that majority of lectures and students agreed that available materials need to be sufficient, making some students not appreciate digital learning. Lastly, majority of both the lectures and students agreed that poor self-efficacy and management amongst the learners make them not appreciate digital learning. It was further concluded that, most students fear online due to the nature and content of the courses. Also, some students have a negative attitude towards digital learning. Further students agreed that available materials need to be sufficient, making some students not appreciate digital learning. Poor self-efficacy and management amongst the learners make them not appreciate digital learning.

Recommendations

The study recommended on how to improve the technological perception of learners towards digital learning in public universities during the post COVID-19 Era in Uasin Gishu County, Kenya: Provide support for students who do not have access to digital devices or internet access: This could include providing laptops or tablets to students who need them, or subsidizing internet access for students who cannot afford it. Make sure that the digital learning materials are engaging and relevant to the students' needs: This means using a variety of formats, such as videos, interactive exercises, and quizzes. By taking these steps, public universities in Uasin Gishu County can improve the technological perception of learners towards digital learning and ensure that all students have access to a high-quality education.

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