Predictors of Students' Satisfaction in Online Learning

Dr Priscilla Njoki Gachigi[1], Dr Susan Ngunu[2], Emily Okoth[3], Lily Alulu[4]

[1, 3, 4]KCA University

[2]Kenyatta University

DOI: https://dx.doi.org/10.47772/IJRISS.2023.7929

Received: 10 August 2023; Revised: 30 August 2023; Accepted: 05 September 2023; Published: 23 September 2023

ABSTRACT

The entire globe is recovering from the Covid-19 pandemic. The pandemic resulted in the closure of all learning institutions across the world leading to an emphasis of e- learning in order to keep the students engaged and to mediate the effects of the pandemic on the education sector. This brought considerable changes in the pedagogy of teaching and learning as conventional face-to-face classes were converted to online learning. This paradigm shift saw significant changes in education with the use of e-learning where learning took place remotely or through the use of various digital online platforms like zoom, Google meet, Microsoft teams among others. This type of learning has benefits like added flexibility, better time management, improved virtual communication etc. This shift could also have impacted on the students learning. The aim of this study is to interrogate the predictors of students' satisfaction in online learning. The study was guided by the following objectives; to determine the relationship between course delivery and student's satisfaction, to establish the relationship between modes of assessments and students' satisfaction, to assess the relationship between sense of belongingness and students' satisfaction and to evaluate the technological quality and students' satisfaction. The study was grounded on the constructivism theory of learning. The study adopted a correlational study design. The target population were university students but the sample was specifically drawn from 2 private universities. The study sample was 400 students (200 males and 200 females). Data was collected using an online questionnaire. The data was analyzed quantitatively using both descriptive and inferential statistics. Presentations were done through graphs, tables and frequency distributions. The results indicated a statistically significant relationship ($F = 72.618$, $Sig. < 0.05$) between course delivery, modes of assessments, sense of belongingness and technological quality and student satisfaction in higher education.

Key Words: Student satisfaction. Online learning, course delivery, modes of assessment, sense of belongingness, technological quality.

INTRODUCTION

The entire globe is recovering from the Covid-19 pandemic. The pandemic resulted in the closure of all schools across the world leading to an emphasis of online learning in order to keep students in school. Education changed drastically with the use of e-learning where learning took place remotely or through the use of various digital online platforms. The shift in pedagogical and andragogical methodologies forced institutions to rethink. Online learning takes place through the use of the internet through various learning management platforms like zoom, google meet, Microsoft teams among others.

This type of learning has benefits like added flexibility, better time management, improved virtual communication etc. With the engagement in virtual learning, most institutions would wish to establish virtual campuses.

However, online learning has been confronted by concerns about its quality and effectiveness in facilitating

the teaching and learning process. Several studies have reported that students have rated online modules better than the physical ones (Karl & Cappal, 2006). Others have identified quality of lecturers, quality of physical facilities and the quality of technology as the major determinants of student's satisfaction in online learning (Wilkins & Balakrishan, 2013). Students may possess different attitudes towards online learning compared to the traditional face to face learning. These attitudes may lead to unfavorable learning outcomes (Kauffman, 2015).

Student satisfaction during the learning process has been hypothesized as having a positive impact on student learning outcomes. Student satisfaction may be defined as attitude towards the learning experiences and is related to the value for the learning experiences in terms of delivery of learning content, interactions and availability of learning resources. Satisfaction is key in every aspect of human life. This satisfaction may be influenced by several factors like the course delivery, modes of assessment, sense of belongingness, technological quality among others (Gray & DiLoreto, 2016).

The modes of assessment may influence student's satisfaction to online learning. Mohamed, Rehab, Marwa, Nola 7 Elab (2020) cited the internet platform, class time, motivation and use of online exams as factors that significantly affects student's satisfaction in online learning in Egypt. This study alluded students' retention to the aforementioned factors.

Olojo, et al (2012) argues that online learning opens opportunities for students to access learning content, determine the order of learning, determine the pace of learning, and choose appropriate learning medium to meet their learning outcomes. The students are actively engaged during the learning process. The students get to interact with online content and materials, instructors, peers and tools. These interactions increase students' opportunities to construct their knowledge. Students' satisfaction could be a function of the dimensions of content in terms of the appearance of e-learning and the availability of all information on learning activities (Gray & DiLoreto, 2016).

A sense of belongingness may be linked to learner satisfaction. Learners with a strong sense of belongingness portray feelings of being comfortable and are positively engaged in their studies. However, the absence of this may impact on student's retention (Peacock, Cowan, Irvine & Williams, 2020).

The above reports are an indication that there are certain factors that may lead to student satisfaction in online learning. Most of these studies have been conducted in the western world and thus, may not be generalizable in a local context that is Kenya.It is against this background that this study seeks to implore on some factors that may predict student satisfaction in online learning among university students.

LITERATURE SURVEY

2.1 Constructivism Theory

The study was guided by the constructivism theory by Jerome Brunner (1966). The theory asserts that human beings construct their own understanding and knowledge through experiences and reflections of the experiences. The theory is based upon the principles of the cognitive theory which explains that individuals learn and combine new knowledge with what they already know (Akpan, Ijeoma, Igwe, Ikechukwu & Okoro, 2020). The theory further asserts that learning is an active process with the assumption that knowledge is constructed by learners as they make sense of their experiences. The theory also borrows from social constructivism that learning is collaborative and is based on interactions, discussions and knowledge sharing amongst teachers and learners (Bada, 2015).

Applied to this study, student's learning is attributed to the learner experiences and the interactions with the teacher and the other learners. To attain learner satisfaction, the learner should be provided with activities, hands on learning and opportunities that will help him/her understand the world (Stearns, 2017). One needs knowledge in order to learn; the learner should be provided with an opportunity to build up on knowledge

from the previous one and thus content delivery is key(Hailikari, Nina & Sari, 2008). The learning content should be repeatedly exposed to the learner. The above benefits cannot be accrued in a vacuum. Technological resources must be available and the knowledge for use by both the learner and the teacher must be upskilled (Narayan, Rodriguez, Araujo, Shaqlaih, & Moss, 2013).

Online learning has been in existence but its practice escalated after the outbreak of covid 19 due to closures in so many institutions of learning (Aljohani, 2017). Studies have reported several factors that determine the successful practice of online learning. Some of those studies report the benefits of online learning and encourage its continuation while others cite challenges which need to be addressed in order to leave students satisfied (Resee, 2013; Gogus, 2012; Amineh & Asl, 2015). The factors discussed in this study are course delivery, modes of assessments, sense of belongingness and technological quality and how they are likely to predict student's satisfaction in online learning.

2.2 Course Delivery and Student Satisfaction

The mode of deliver during online learning may or may not lead to student satisfaction. In their study of online course delivery, assessment and student delivery, Sonji, Halat, Mehyou & Rahal (2022), a likert scale survey among 34 students engaged remotely in a Lebanon international university, reported that students were extremely satisfied with online learning and that they were able to perform calculations, evaluate errors, precision and accuracy (Kentnor, 2015). Similarly, Gopal, Singh & Aggarwal (2021) reported that the quality of the instructor, the course design, prompt feedback and students' expectations positively influence student's satisfaction. The three carried out a study on the impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19 among 544 university students in an Indian university. The study was conducted using an online survey (Latip, Newaz & Ramasamy, 2020). Further, Seada &Marwa (2017) in their study of Students' Satisfaction and Barriers of E–Learning Course among Nursing Students, Mansoura University reported similar findings. Using a sample of 350 male and female students, a qualitative exploratory descriptive design revealed that 93.4% of the students had high expectations with their e learning experience, 60% preferred e learning because it saved on time and distance while 51.1% felt they had increased their self-responsibility and self-confidence (Kadar, Johan & Abubakar, 2020).

2.3 Modes of Assessment and Students Satisfaction

The shift from face-to-face exams to remote and online exams during the covid-19 period was received with mixed reactions (Maphosa, 2021). Babar, Harif & Qadri (2015) carried out a survey among 21,608 students of a virtual university of Pakistan aged 17-30 years of age. The students reported that their assessments recorded a high mean score of 3.74, an indication that students were quite satisfied by the evaluation of their instructors. Further, assignments and discussions were timely graded and students provided feedback which further enhanced their satisfaction (Soffer & Nachmias, 2018). Similar views were aired by Phuong, Truc & Nguyan (2021) in their study of Students' perception and satisfaction towards online assessment and testing in tertiary Education among 201 students in a Vietnamese university. Correlations of some factors revealed that most students approved the continued use of online assessments and testing after the Covid-19 pandemic. Students also expressed satisfaction in test organization factors. The study also highlighted challenges that online assessment and testing may encounter in future (Yehya, 2020).

2.4 Sense of Belongingness and Student Satisfaction

Learning as described in the constructivism theory is a social activity (Rahman, Uddin & Dey, 2021). Based on this, Susi & Cowan (2019) in their study of promoting sense of belonging in online learning communities of inquiry at accredited courses, asserted that a sense of belongingness is firmly linked with improved student attainment, learner satisfaction and reduced dropout rates. The two reported to have taught an online course of 40 postgraduate students using video and audio. This practice assured learners of their progress and strengthened their sense of belongingness (Agyeiwaah, Baiden, Gamor, & Hsu, 2021).

Additionally, Bok (2019) in a qualitative survey of 19 undergraduate students of a university in Malaysia reported that lack of belongingness is one of the causes of ineffectiveness in terms of satisfaction, delays, dropout rates and learning outcomes in online learning (Alqurashi, 2019). Fan, Luchok & Dozier (2021) investigated students' satisfaction and sense of belongingness using a survey of 2791 undergraduate students from a south eastern US university. The study reported that students were satisfied and felt they belonged to the campus community. However, underrepresented groups like non-whites, non-Christians and non-heterosexual reported less satisfaction and a lesser sense of belongingness (Rahman, Uddin & Dey, 2021).

2.5 Technological Quality

The quality of technology has a significant effect satisfaction in online learning (Kentnor, 2015). In their study of mature undergraduate students' satisfaction with online teaching during Covid-19, Qureshi, Khawaja & Zia (2020), issues like weak internet connection were cited, incompetency in the use of technology especially on the older students, inadequate technical support from the institution and the anxiety that comes along with change were cited. That notwithstanding, the same students expressed the wish to continue with online learning because of its convenience. This study was carried out in Southern England (Callo & Yazon, 2020). Additionally, Hoang & Dang (2021) investigated theimpact of technology adoption on student satisfaction with higher education among 2472 university students in Vietnam. The results indicated a positive relationship between technology adoption and student satisfaction in higher education. The study also reported that technical adoption, administration, self-ability in adoption and accessibility act as enhancement to make learning more convenient and effective (Yehya, 2020). Further, Mulhem & Yang (2020) reported that the quality of the e learning system had a positive and significant effect on students' satisfaction. The two Investigated the effects of quality factors and organizational factors on university students' satisfaction of e-learning system quality among 250 university students at King Faisal university using structural equation modelling (Mulhems & Yang, 2020). The study recommended that organizations should pay attention to the quality factors during the design and implementation of their systems. The study was guided by the following objectives:

1. To determine the relationship between course delivery and student's satisfaction,
2. To establish the relationship between modes of assessments and students' satisfaction,
3. To assess the relationship between sense of belongingness and students' satisfaction
4. To evaluate the technological quality and students' satisfaction

METHODOLOGY

The study adopted a correlational study design. The target population was university students but the sample was specifically drawn from students in two private university that is Z-tech University and KCA university. The two private universities were purposively selected. The study sample was 400 students, 200 males and 200 females drawn through random sampling from different departments from both universities. Data was collected using a questionnaire for students. The questionnaire was adopted from sun etal (2008) and later modified to suit the study. Cronbach Alpha was used to determine the reliability of the research questionnaire. The analysis was done quantitatively through descriptive statistics and correlations. Presentations were done through graphs, tables and frequency distributions.

RESULTS

As per the determined sample size, a total of 400 questionnaires were evenly administered between two private universities by simple random sampling technique. Out of the 400 questionnaires, 339 were dully responded to and returned, establishing a response rate of 84.8%. Consistent with Creswell (2013), the established return rate was regarded both excellent and adequate for both descriptive and inferential data analysis of data. Having attained a sufficient response rate for analysis, a combination of descriptive and inferential analyses was carried out as presented in this section.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS |Volume VII Issue VIII August 2023

DESCRIPTIVE STATISTICS

In this section, an analysis of the main variables was conducted, with a focus on measures of central tendencies and dispersion. Both means and standard deviations were explored in this regard. This was aimed at determining where a majority of respondents lie against the questions posed. To this end, means were generated from the responses provided based on a 5-point Likert scale. In line with the study objectives, variables explored included course delivery, modes of assessments, sense of belongingness and technological quality as independent variables; and students' satisfaction as the dependent variable.

5.1 Course Delivery

The study sought to determine the relationship between course delivery and student's satisfaction. To achieve this, a set of pertinent statements were posed to which respondents were required to indicate their respective levels of agreement. This was on a "5-point Likert scale", where 'strongly disagree' was denoted by number 1; 'disagree' denoted by number 2; 'neutral' denoted by number 3; 'agree' denoted by number 4; and 'strongly agree' denoted by number 5. Results are as presented in Table 1.

Table 1: Descriptive Statistics for Course Delivery

	Mean	**Std. Dev**
The course is delivered in a clear manner	4.310	0.534
The learning objectives in the online learning are well met	4.345	0.636
The content for online learning has been arranged in a logical sequence and is understandable	4.431	0.568
The content for online learning already covers all the material I need to learn in one subject	4.106	0.722
The content is friendly to interact with	4.375	0.700
The content is availed in a timely manner	3.917	0.619
Overall Mean	4.247	0.630

Source: Survey Data (2022)

As presented in Table 1, an overall mean of 4.247 (SD=0.630) was established, implying that a majority of the respondents highly approve of course delivery in their respective institutions. A majority of respondents were particularly found to highly agree that the content for online learning has been arranged in a logical sequence and is understandable (4.431); the content is friendly to interact with (4.375); the learning objectives in the online learning are well met (4.345); the course is delivered in a clear manner (4.310); the

content for online learning already covers all the material I need to learn in one subject (4.106); and that the content is availed in a timely manner (3.917).

5.2 Modes of Assessments

The study sought to establish the relationship between modes of assessments and students' satisfaction. To achieve this, a set of pertinent statements were posed to which respondents were required to indicate their respective levels of agreement. This was on a "5-point Likert scale", where 'strongly disagree' was denoted by number 1; 'disagree' denoted by number 2; 'neutral' denoted by number 3; 'agree' denoted by number 4; and 'strongly agree' denoted by number 5. Results are as presented in Table 2.

Table 2: Descriptive Statistics for Modes of Assessments

	Mean	**Std. Dev**
Online assessments are lesser stressful compared to face-to-face ones	4.112	0.737
Online exams are of good quality	4.186	0.642
I am able to do all calculations remotely	4.221	0.854
I have no limitations in submitting my paper upon completion	4.183	0.641
I can access an online exam anytime as long as it is timed	4.201	0.847
I get prompt feedback in online exams	4.319	0.521
Overall Mean	**4.204**	**0.707**

Source: Survey Data (2022)

An overall mean of 4.204 (SD=0.707) was established, as presented in Table 2. This is of the implication that a majority of the respondents highly approve of modes of assessments in their respective institutions. A majority of respondents were particularly found to highly agree that that they get prompt feedback in online exams (4.319); they are able to do all calculations remotely (4.221); they can access an online exam anytime as long as it is timed (4.201); online exams are of good quality (4.186); they have no limitations in submitting my paper upon completion (4.183); and that online assessments are lesser stressful compared to face-to-face ones (4.112).

5.3 Sense of Belongingness

The study sought to assess the relationship between sense of belongingness and students' satisfaction. To achieve this, a set of pertinent statements were posed to which respondents were required to indicate their respective levels of agreement. This was on a "5-point Likert scale", where 'strongly disagree' was denoted by number 1; 'disagree' denoted by number 2; 'neutral' denoted by number 3; 'agree' denoted by number 4; and 'strongly agree' denoted by number 5. Results are as presented in Table 3.

Table 3: Descriptive Statistics for Sense of Belongingness

	Mean	**Std. Dev**
As an online student, I feel a real sense of belonging in my classes	4.083	0.729
As an online student, I feel like I really matter	4.145	0.601
As an online student, I feel a close connection to other students	4.009	0.944
As an online student, I feel like my instructors really care about me as a person	4.319	0.521
As an online student, I feel like other staff are there for me	4.083	0.729
As an online student, I feel that in case of anything, everybody would be concerned	4.145	0.601

Overall Mean	**4.130**	**0.687**

Source: Survey Data (2022)

As presented in Table 3, an overall mean of 4.130 (SD=0.687) was established, implying that a majority of the respondents were highly satisfied with their sense of belongingness in their respective institutions. A majority of respondents were particularly found to highly agree that they feel like their instructors really care about them as persons (4.319); they feel like they really matter (4.145); they feel that in case of anything, everybody would be concerned (4.145); as online students, they feel a real sense of belonging in my classes (4.083); they feel like other staff are there for them (4.083); and that they feel a close connection to other students (4.009).

5.4 Technological Quality

The study sought to evaluate the technological quality and students' satisfaction. To achieve this, a set of pertinent statements were posed to which respondents were required to indicate their respective levels of agreement. This was on a "5-point Likert scale", where 'strongly disagree' was denoted by number 1; 'disagree' denoted by number 2; 'neutral' denoted by number 3; 'agree' denoted by number 4; and 'strongly agree' denoted by number 5. Results are as presented in Table 4.

Table 4: Descriptive Statistics for Technological Quality

	Mean	**Std. Dev**
I can access online learning anywhere	4.056	0.887
The cost of internet bundles is not a problem to me	3.471	0.776
I do not encounter any difficulty in responding to online discussions	3.835	0.865
My smart phone makes learning easier for me	4.069	1.016
I have no problems uploading tasks for online learning	4.296	0.664
Overall Mean	**3.945**	**0.842**

Source: Survey Data (2022)

As presented in Table 4, an overall mean of 3.945 (SD=0.842) was established, implying that a majority of the respondents highly approve of technological quality in their respective institutions. A majority of respondents were particularly found to highly agree that they can access online learning anywhere (4.056); they do not encounter any difficulty in responding to online discussions (3.835); their smart phone makes learning easier for them (4.069); and that they have no problems uploading tasks for online learning (4.296). A majority however only moderately agreed that the cost of internet bundles is not a problem to them (3.471).

5.5 Student Satisfaction

The study sought to assess students' satisfaction in their respective institutions. To achieve this, a set of pertinent statements were posed to which respondents were required to indicate their respective levels of agreement. This was on a "5-point Likert scale", where 'strongly disagree' was denoted by number 1; 'disagree' denoted by number 2; 'neutral' denoted by number 3; 'agree' denoted by number 4; and 'strongly agree' denoted by number 5. Results are as presented in Table 5.

Table 5: Descriptive Statistics for Student Satisfaction

	Mean	**Std. Dev**
I am satisfied with the whole system of online learning	4.121	0.626

Online learning has been successful	4.145	0.601
Online learning has enabled me to learn independently	4.062	0.888
Online learning should be a continuous process	4.169	0.821
My institution has been successful in the transition to online learning	4.275	0.554
All students have been trained in navigating the virtual space	3.965	0.705
Overall Mean	**4.123**	**0.699**

Source: Survey Data (2022)

As presented in Table 5, an overall mean of 4.123 (SD=0.699) was established, implying that a majority of the respondents are highly satisfied in their respective institutions. A majority of respondents were particularly found to highly agree that their institution has been successful in the transition to online learning (4.275); online learning should be a continuous process (4.169); they are satisfied with the whole system of online learning (4.121); online learning has been successful (4.145); online learning has enabled me to learn independently (4.062); and that all students have been trained in navigating the virtual space (3.965).

INFERENTIAL STATISTICS

Inferential analyses including Pearson correlation and multiple regression were conducted in order to determine the extent to which each independent variable influences the outcome variable. These were conducted, having satisfied all the preliminary diagnostic tests including tests for outliers, normality, multicollinearity, homogeneity of variance and linearity.

6.1 Correlation Analysis

Pearson correlation analysis was conducted, to check the direction, strength and significance of linear associations between the independent and dependent variables. This was conducted against the rule of thumb that a weak correlation is indicated by a correlation values (r) of 0.3 and below; a medium correlation indicated by values between 0.3 and 0.5; while a strong correlation is indicated by values above 0.5. Table 6 presents the results.

Table 6: Pearson Correlation Matrix

Correlations						
		Satisfaction	Course Delivery	Modes of Assessment	Sense of Belongingness	Technological Quality
Satisfaction	Pearson Correlation	1	.471**	.509**	.644**	.535**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	338	338	338	338	338
Course Delivery	Pearson Correlation	.471**	1	.694**	.710**	.428**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	338	339	339	339	338

Modes of Assessment	Pearson Correlation	.509**	.694**	1	.781**	.338**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	338	339	339	339	338
Sense of Belongingness	Pearson Correlation	.644**	.710**	.781**	1	.545**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	338	339	339	339	338
Technological Quality	Pearson Correlation	.535**	.428**	.338**	.545**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	338	338	338	338	338
**. Correlation is significant at the 0.01 level (2-tailed).						

Results in Table 6 depict moderate, significant and positive correlations between course delivery and students' satisfaction (r =.471; Sig. = .000<.05); between modes of assessments and students' satisfaction (r =.509; Sig. = .000<.05); between sense of belongingness and students' satisfaction (r = .644; Sig. = .000<.05); and between technological quality and students' satisfaction (r = .535; Sig. = .000<.05). Owing to the significant correlations, it is concluded that there is linearity in the dataset, and therefore data was amenable to regression analysis.

6.2 Regression Analysis

To depict the significance of each independent variable on the dependent variable and hence test the hypotheses, a regression analysis was performed with all other factors held at constant. As a result of the regression analysis, 3 outputs were produced that is summary of the model, coefficients and Analysis of Variance (ANOVA). To test the advanced hypotheses, the outcomes of the regression coefficients were interpreted based on their statistical significance. Tables 7, 8 and 9 below present the findings.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.683[a]	.466	.459	1.90961
a. Predictors: (Constant), Course Delivery, Modes of Assessments, Sense of Belongingness and Technological Quality				

A 0.683 correlation value (R) was observed from the output in Table 7, modelling a linear linkage that is strong, between students' satisfaction and course delivery, modes of assessments, sense of belongingness and technological quality. An R^2 value of .466 was also observed, implying that course delivery, modes of assessments, sense of belongingness and technological quality jointly account for 46.6% of students' satisfaction, and the balance of 53.4% ascribed by other factors which the regression model in this research did not include. From the depiction in Table 8, an ANOVA test was also produced from the regression analysis.

Table 8: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1059.243	4	264.811	72.618	.000[b]

Residual	1214.322	333	3.647			
Total	2273.565	337				
a. Dependent Variable: Students' Satisfaction						
b. Predictors: (Constant), Course Delivery, Modes of Assessments, Sense of Belongingness and Technological Quality						

Outcomes of the ANOVA test as per the depiction in Table 8 show that the regression model adopted in the study was significant (F = 72.618, Sig. < 0.05). The outcomes also depicted that based on the total squares sum (2273.565), the regression squares sum was 1059.243, carried out at 95% level of confidence. This means that the model of regression accounts for approximately 46.6% of the dataset's variability, while the residual squares sum is 1214.322meaning that 53.4% of the dataset's variability is unaccounted for. Regression analysis also produced a regression coefficients table presented in Table 9.

Table 9: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.839	1.120		7.891	.000
	Course Delivery	.207	.062	.242	3.339	.011
	Modes of Assessments	.219	.053	.263	4.132	.001
	Sense of Belongingness	.374	.064	.440	5.843	.000
	Tech	.228	.041	.274	5.613	.000
a. Dependent Variable: Satisfaction						

Table 9 reveals that course delivery (β = .263, Sig.=.011<.05), modes of assessments (β = .275, Sig.= .001<.05), sense of belongingness (β = .440, Sig.=.000<.05) and technological quality (β =.274, Sig.= .000<.05) significantly influence students' satisfaction at 95% confidence level. The findings imply that keeping other factors constant, a unit increase in course delivery leads to a .263% increase in students' satisfaction. A unit increase in modes of assessments leads to a .275% increase in students' satisfaction; while a unit increase in sense of belongingness would lead to a .440% increase in students' satisfaction. Further, a unit increase in technological quality would lead to a .274% increase in students' satisfaction.

DISCUSSION

Findings indicated that a majority of the respondents highly approved of course delivery in their respective institutions (4.247). This can be attributed to the overall structuring, content, clarity and effectiveness of the courses in terms of the learning outcomes. Accordingly, results indicate that course delivery is significantly associated with student's satisfaction (? = .263, Sig.=.011<.05), implying that there exists a statistically significant relationship between course delivery and student's satisfaction. The findings agree with Sonji et al. (2022) who found that students were extremely satisfied with online learning and that they were able to perform calculations, evaluate errors, precision and accuracy. Similarly, Gopal, Singh & Aggarwal (2021) reported that the quality of the instructor, the course design, prompt feedback and students' expectations positively influence student's satisfaction.

It is also revealed from the findings that a majority of the respondents highly approved of modes of assessments in their respective institutions (4.204). This can be attributed to the less stressful nature of online learning as compared with the traditional face-to-face classes. Online learning is also found to be more convenient. Results also indicate that modes of assessments are significantly associated with student's

satisfaction (β = .275, Sig.= .001<.05), implying that there exists a statistically significant relationship between modes of assessments and student's satisfaction. Similar results were reported by Phuong et al. (2021) in their study of students' perception and satisfaction towards online assessment and testing in tertiary Education among 201 students in a Vietnamese university. The findings are also in tandem with Babar et al. (2015) who found that students were quite satisfied by the evaluation of their instructors.

Findings also indicated that a majority of the respondents are highly satisfied with their sense of belongingness in their respective institutions (4.130). This may be ascribed to level of engagement between instructors and students; as well as responsiveness on the part of the instructors and other staff. Results further indicated that sense of belongingness is significantly associated with student's satisfaction (β = .440, Sig.=.000<.05), implying that there exists a statistically significant relationship between sense of belongingness and student's satisfaction. The findings are in line Susi and Cowan (2019) who reported that online courses assure learners of their progress and strengthened their sense of belongingness. Similarly, Bok (2019) reported that lack of belongingness is one of the causes of ineffectiveness in terms of satisfaction, delays, dropout rates and learning outcomes in online learning.

A majority of the respondents were also found to highly approve of technological quality in their respective institutions (3.945). This owes to the ease and convenience with which students can access online learning and navigate the content. Results also indicated that technological quality is significantly associated with student's satisfaction (β =.274, Sig.= .000<.05), implying that there exists a statistically significant relationship between technological quality and student's satisfaction. This is consistent with Qureshi et al. (2020) who found that notwithstanding its challenges, the same students expressed the wish to continue with online learning because of its convenience. Additionally, Hoang & Dang (2021) investigated the impact of technology adoption on student satisfaction with higher education among 2472 university students in Vietnam. The results indicated a positive relationship between technology adoption and student satisfaction in higher education.

CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing findings, the study concluded there exists a statistically significant relationship between course delivery and student's satisfaction. It is thus imperative that online courses be delivered in a manner that is clear, timely, understandable, friendly and arranged in a logical sequence. It is also important that the courses feature adequate learning objectives. Observing the foregoing will increase the likelihood that students will register high levels of satisfaction in the respective institutions.

It is also concluded that that there exists a statistically significant relationship between modes of assessments and student's satisfaction. The study therefore recommends that online learning is designed in such a way that its assessments are lesser stressful compared to face-to-face ones. The mode of submission ought to particularly bear no limitations. Online exams ought to also be easily accessible; of good quality with prompt feedback and have the ability to do all calculations remotely.

The study further concluded that there exists a statistically significant relationship between sense of belongingness and student's satisfaction. Is thus recommended that online learning be designed to make students feel a real sense of belonging in classes and that they really matter. Courses in online learning need to be also fashioned for students to feel a close connection to other students; that other staff are there for them; and that they feel that in case of anything, everybody would be concerned.

It is further concluded that there exists a statistically significant relationship between technological quality and student's satisfaction. As such online learning ought to be accessible anywhere and at any time. The interface should be designed to make it easy for students to respond to online discussions and uploading tasks for online learning. It should also be in such a way that students can easily learn using their smart

phone. The cost of accessing the internet for online writing should be revised to make it affordable to learners.

There is need for further research as a comparison between private and public universities because the two learning environments may be different in relevant aspects.

REFERENCES

1. Agyeiwaah, E., Baiden F. B, Gamor E, & Hsu F. C. (2021). Determining the attributes that influence students' online learning satisfaction during COVID-19 pandemic. J Hosp Leis Sport Tour Educ. doi: 10.1016/j.jhlste.2021.
2. Akpan, V., Igwe, W., Ikechukwu, B. & Onyinyechi , C. (2020). constructivism: Implications on Teaching and Learning. British Journal of Education Vol.8, Issue 8, pp.49-56.
3. Aljohani, M. (2017). Principles of "Constructivism" in Foreign Language Teaching. Journal of Literature and Art Studies, 27(1) 97-107/2018.02.01
4. Almusharraf, N. & Khahro, S. (2020). Students satisfaction with online learning experiences during the Covid-19 pandemic. International Journal of Emerging Technology in Learning. 15(21), 246-267.
5. Alqurashi, E. (2019). Predicting student satisfaction and perceived learning within online learning environments. Distance Educ. 40(1), 133–148.
6. Amineh, R.J & Asl, H.D. (2015). Review of Constructivism and Social Constructivism. Journal of Social Sciences, Literature and Languages, 1(1), 9-16, 30
7. Babar, E., Harrif, U. & Qadri, M. (2015). E learning and Student Satisfaction. Conference Paper.9th Annual Conference of Asian Association of Open Universities AAOU at Kuala Lumpur, Malysia.
8. Bada, S. O. (2015). Constructivism Learning Theory: A Paradigm for Teaching and Learning. Journal of Research & Method in Education, 5, 66-70.
9. Bok, G. I. (2019). Belonging in distance learning: a preliminary review of student's perspectives., 8th International Conference on Multidisciplinary Research. DOI: 10.15405/epsbs.2020.03.03.64
10. Bruner, J. S. (1966). Toward a Theory of Instruction. Cambridge: Harvard University Press.
11. Callo, E. C., & Yazon, A. D. (2020). Exploring the factors influencing the readiness of faculty and students on online teaching and learning as an alternative delivery mode for the new normal. Universal Journal of Educational Research, 8(8), 3509–3518
12. Carmen, J. & Angel, A. (2021). Student's Satisfaction of the Quality of Online Learning in Higher Education: An Empirical Study. Sustainability, 13(21). DOI:10.3390/su132111960
13. Gogus, A. (2012). Constructivist Learning. In: Seel, N.M. (eds) Encyclopedia of the Sciences of Learning. Springer, Boston, MA.
14. Gopal, R.,[1] Varsha Singh, V., & Aggarwal, A. (2021). Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. Education information technology, 26(6): 6923–6947.
15. Gray, J.A. & DiLoreto, M. (2016). The effects of Student Engagement, Student Satisfaction and Perceived Learning in Online Learning Environment. NCPEA International Journal of Educational Leadership Preparation, 11(1), ISSN: 2155-9635.
16. Hailikari, T, Nina, K. & Sari, L.Y. (2008). The Relevance of Prior Knowledge in Learning and Instructional Design. American Journal of Pharmaceutical Education. 72(5): doi:10.5688/aj7205113.
17. Hoang, L. & Dang, H. (2021). The Impact of Technology Adoption on Student Satisfaction with Higher Education: An Empirical Study from Vietnam. Journal of Asian Finance, Economics and Business, 8(12) 0241–0251.
18. Kadar, R., Johan, E. J., & Abubakar, M. S. (2020). E-content development and delivery for virtual classroom. e-learning, 1, 59 – 65.
19. Kauffman, H. (2015). A review of predictive factors of student success in and satisfaction with online learning. Research in Learning Technology, 23.
20. Kentnor, H. E. (2015). Distance education and the evolution of online learning in the United States.

Curriculum and Teaching Dialogue, 17(1 & 2), 21–000
21. Latip, M. S. A., Newaz, F. T., & Ramasamy, R. (2020). Students' perception of lecturers' competency and the effect on institution loyalty: The mediating role of students' satisfaction, Asian Journal of University Education, 16(2), 183-195.
22. Luchok , K. & Dozie, J. (2020). College students' satisfaction and sense of belonging: di?erences between underrepresented groups and the majority groups. DOI:10.1007/s43545-020-00026-0
23. Maphosa V. (2021). Factors influencing student's perceptions towards e-learning adoption during COVID-19 pandemic: a developing country context. Euro J Interact Multimed Educ. 2(2), e02109.
24. Mohamed A, Rehab, B., Marwa F.,, Noha E. & Ehab K. (2021). The factors affecting student satisfaction with online education during the COVID-19 pandemic: an empirical study of an emerging Muslim country. Journal of Islamic Marketing. https://www.emerald.com/ insight/1759-0833.htm
25. Mulhem. A. & Wang. S. (2020) Investigating the effects of quality factors and organizational factors on university students' satisfaction of e-learning system quality, Cogent Education, 7:1, DOI: 10.1080/2331186X.2020.1787004.
26. Narayan, R., Rodriguez, C., Araujo, J., Shaqlaih, A., & Moss, G. (2013). Constructivism—Constructivist learning theory. In B. J. Irby, G. Brown, R. Lara-Alecio, & S. Jackson (Eds.), The handbook of educational theories (pp. 169–183). IAP Information Age Publishing.
27. Olojo, J. B. (2000). Virtual classroom characteristics and student satisfaction with internet-based MBA courses. Journal of Management Education, 24(1), 32–54. doi:10.1177/105256290002400104
28. Oludare Jethro, A. Moradeke Grace, and A. Kolawole Thomas, "E-Learning and Its Effects on Teaching and Learning in a Global Age," Int. J. Acad. Res. Bus. Soc. Sci., vol. 2, no. 1, pp. 2222–6990, 2012.
29. Peacock, S. & Cowan, J. (2019). Promoting sense of belonging in online learning communities of inquiry at accredited courses. Online Learning, 23(2), 67-81. doi:10.24059/olj.v23i2.1488.
30. **Peacock. S., Cowan,** J., Irvine**, L. & Williams**, J. (2020). An Exploration Into the Importance of a Sense of Belonging for Online Learners. International Review of Research in Open and Distributed Learning. 21 (2).
31. Prasetya, T. A. & Harjanto, C. T. (2020). Improving Learning Activities and Learning Outcomes the Discovery Learning Method," VANOS J. Mech. Eng. Educ., 5(1), 59–66.
32. Qureshi, F., Khawaja, S. & Zia, T. (2020). Mature Undergraduate Students Satisfaction with Online teaching during Covid-19. European Journal of Education Studies, 7(12), 456-474.
33. Rahman, M. H. A., Uddin, M.S, & Dey A. (2021). Investigating the mediating role of online learning motivation in the COVID-19 pandemic situation in Bangladesh. J Comput Assist Learn. 37(6), 1513–1527.
34. Reese, W.J. (2013). In search of American progressives and teachers. History of Education: Journal of History of Education Society, 42(3), 320-334.
35. Smart, K.L. & Cappel, J.J. (2006). Students' Perceptions of Online Learning: A Comparative Study. Journal of Information Technology Education: Research, 5(1), 201-219.
36. Soffer T, & Nachmias R. (2018). Effectiveness of learning in online academic courses compared with face-to-face courses in higher education. J Comput Assist Learn, 34(5):534–543.
37. Sonji, G.,Halat, H. ., Mehyou, Z. ., & Rahal, M. . (2022). Online course delivery, assessment, and student satisfaction: The case of Quantitative Chemical Analysis course in the time of COVID-19 pandemic. Pharmacy Education, 22(1), p. 172–182.
38. Stearns, S. (2017). What is the Place of Lecture in Learning Today?. Communication Education, 66(2), 243-245.
39. Tran1 , Phuong L.. Nguyen , Ngan H.. Nguyen 3, Du, T. & Tran. (2019). An Empirical Study on Students' Perception and Satisfaction towards Online Assessment and Testing in Tertiary Education . Advances in Social Science, Education and Humanities Research, volume 621
40. Wang, C. & Wang,S. (2021). Students' characteristics, self-regulated learning, technology self-ef?cacy, and course outcomes in online learning. Distance Educ. ,34, 302–323
41. Yehya F. (2020). Promoting technology implementation learning paradigm for online learning in secondary education. Global J Info Technol Emerg Technol, 10(1), 12–21.