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Moodle Satisfaction Levels during Online Assessments in Selected Public Universities in Kenya

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Abstract: ***Online learning is currently major focus in higher institution of learning which aims to bridge the gap of digital divide. Diverse learning management system are available for actualizing online education and one such platform is Modular Object Oriented Dynamic Learning Environment platform which enables universities and colleges in carrying out teaching and learning including assessment virtually. In Kenya over third of public universities in have adopted Moodle platform for offering online learning which gained momentum during the outbreak of COVID-19 pandemic where all institutions were required to offer online learning. The current study investigates undergraduate satification with Moodle LMS feedback features in public universities in Kenya. The study targeted a population of 546, 699 undergraduate students. A sample of 1, 969 students were randomly drawn from three newly established and three oldest universities in Kenya. This study was based on constructivism theory as expounded by Vygotsky's. The study established that is no significant relationship between Moodle evaluation features and student's satisfaction on online assessment. Approximately 85% of students reckoned they are satisfied with quality of questions found at end of each topic while 62% of students were satisfied with online assignment and discussion marks awarded. The study also found 66% of learners are not satisfied with "my report" generated in MOODLE LMS while 85% were satisfied with confidentiality of their marks through Moodle. The study also found moodle database is the most proffered feedback feature since it provided response almost immediate. Other findings: online examinations cause anxiety and promotes cheating and finally. Not all course units taught should be assessed online. The study recommends majority of public universities in Kenya should provide conducive environment for online assessment including addressing challenges associated with online assessment in order to increase student's satisfaction with MOODLE online assessment.***

Keywords: elearning, MOODLE, online assessment, learning management system, online quizzes, satisfaction

1. Introduction

Online learning and teaching is offered in almost all institutions of higher learning in developing countries in Asia and Africa. United Nations Education Scientific and Cultural Organization (2020) emphasizes that to bridge the gap of digital divide, use of computer applications in education is no longer a luxury, but a mandatory undertaking to enable elearning to take place globally. Sarfo and Yidana (2016) noted that online education is common in universities and other educational institutions to advance education and to promote expansion of the 21st century competencies in learners. Fayanto, Kawuri, Jufriansyah, Setiamukti, Sulisworo (2017) concurs that technology enable learning through collaboration between instructors and students both beyond classroom walls.

Online education in Kenya was adopted in 2005 but at a slow pace due to inadequate infrastructural development and technophobia coupled dwindling capitation in public universities. During that time there was rapid expansion of higher institution from six public universities to the current thirty-seven public universities to in order to meet increasing demand for higher education. Nyerere Graveril and Mse, (2012) observed that Kenya Education Sector Support Program (KESSP), formed in 2005 by the then Ministry of in charge of education, endorsed on mainstreaming information communication technology (ICT) into teaching and learning process in Kenya. A numbers of institution such as Kenyatta University and University of Nairobi set the pace by implementing open and distance learning where students would be given learning resources such as notes and assignments loaded in storage devices such as floppy diskette and compact disc upon registration. Other institution such as Egerton university implemented African virtual universities (AVU) infrastructure to offer eLearning. All these changes necessitated universities in Kenya to establish open and distance learning department or directorate or digital schools for managing eLearning programmes to date in a respective institution of higher learning. It's important to note that innovations and modernization in information communication technology (ICT) globally has slowly revolutionized teaching and learning where online and offline learning reshaped how eLearning activities is being offered. This is supported by Mir (2023) who observed that e- learning in educational and training institutions has made a lot of strides in the last two decades.

2. Literature Review on online learning and MOODLE LMS

In 2005-2006, Kenya launched ICT policy framework which guides the usage of ICT including teaching and learning and as a result all educational institutions in Kenya developed their own policy in alignment with the 2006 ICT policy framework. This action led to researchers in higher institution in Kenya to come up with cost effective solutions to meet the ever increasing demand of eLearning. Some

researchers have recommended use of open sources learning management systems while others have endorsed proprietary sources learning management system to manage online learning. Example of open source learning management systems is the modular objective oriented dynamic learning environment (MOODLE) which has over 352, 295, 200 users distributed in 242 countries (Moodle. org, 2023). This educational software is available at zero cost used in supporting online teaching and learning. According to myelaerningspace. com, n. d.). MOODLE LMS was developed in 1999 by Martin Dougiamas while pursuing his PhD studies. This software is widely used in elearning by numerous institution inconjuction with web infrastructure and is said to be compatible with almost all digital equipment's such as desktops, laptops, smartphones, tablets and IPad.

Baytiyeh (2017), opined that open source software is typically free and provides users with source code that is shared via the internet and can be adjusted in line with users' needs. This reason that made MOODLE LMS to be popular in higher institution of learning in Kenya due to its affordability and compatibility with common operating systems. Omar and Mahmud (2015), suggested that MOODLE software provides cybernetic atmosphere to enable eLearning education to take place. According to Lopes (2017), MOODLE LMS is widely adopted in universities globally has unique features for handling online classes.

Sarfo and Yidana (2016) agrees that MOODLE LMS is not limited to the following features: communication, ease of access, feedback, interactivity and evaluation features. Berg and Lu (2014) suggest that moodle offer good quality learning features. This features enables all users not limited to lecturers and students to form opinion, perceptions and experiences during online classes. Waheed (2013) on the other hand cites MOODLE modules features such as communication, assignment module, course content module and course delivery module, motivates students in the eLearning environment. These outstanding features have persuaded majority of institutions to adopt MOODLE LMS in offering online and offline learning.

Studies by Baytiyeh (2017) focused on five MOODLE constructs namely community influence, satisfaction, service quality, learnability and technical quality. His studies indicated that community influence was ranked first by participants, trailed by satisfaction, service quality, learnability and technical quality. On student's experiences Mahajan, Kushwaha, Attri & Misra (2020) found out that although age appears to be moderating factor among groups, has no significant relationship with perception of use of MOODLE web-based platform.

Salhab (2019) observed that MOODLE has the following inbuilt features that support usability: provision of instant feedback, facilitate elearning, tracks students' performance and enhances skill building. Broadly speaking this platform enhances constructivism which aids students to improve multiple talents by giving them opportunity to select their own project, discuss and work collaboratively. This contributes to the student centered approach since they choose topics which suit their interests and needs including partaking in deliberations by probing questions or responding questions posed by peers.

Salhab (2019) carried out a study which focused on faculty members' attitudes towards using MOODLE at Palestine Technical University of Khadoorie (PTUK). The findings recommended among other things that the institution should organize training session to teaching staff so that they fully adopt MOODLE, provide seamless internet services to all users, equip learners on information technology skills for self-directed learning and support the learners to acquire elearning devices.

Contextualization of MOODLE LMS online learning and evaluation

According to Weleschuk, Dyjur and Kelly (2019), online evaluation involves assessing learner's achievement, giving out feedback or allowing the learner to progress in their learning activities in courses offered online. MOODLE. org (2022), documents that there are over 352, 411, 079 users distributed in 242 countries globally. This open source software is used in managing teaching and learning activities including assessment of the learning objectives. Research findings by Gamage, Ayres, Behrend and Smith (2019) revealed that advanced technological application to teaching and learning is not a smooth ride because the content developers and educators are usually confronted with challenge of identifying appropriate methods of assessment in different course units while at the same time ensuring quality is maintained. This is also supported by Weleschuk, etal (2019) who had similar findings by noting that although there are advantages of online learning, teachers have little rooms to maneuver when offering online evaluation.

Gikandi, Morrow and Davis (2011) also observed that instructors and lecturers need to reconsider online teaching in order to achieve effective formative evaluation approaches that synchronize all questions types in line with blooms taxonomy. Westhuizen (2016) observed that to make online assessment a reality three things must happen: supportive institutional policies, availability of compatible elearning gadgets and finally stable and reliable internet infrastructure. These are basic requirements for any learning and assessment to take place virtually. Cigdem and Tirkes (2010) and Rooij (2011) also voiced that MOODLE LMS is a suitable platform that is ready for use in higher institutions of learning. Yassine Kadry and Sicilia (2018) pointed out that MOODLE platform has numerous evaluation tools that can measure students' achievement and performance in the context of learning. These tools include: quizzes, assignments, views, hits, unit participation, engagements, number of logs, discussion contributions, tracking tools among others. Some of the approaches that have been adopted for activating both summative and formative evaluation includes the following: true /false items, essays, short answer questions, online games, ePortfolios, simple calculated, matching, drag and drop, select missing words, numerical, code runners (Westhuizen, 2016; Verdaguer, 2021 and Ally 2022).

Gamage etal (2019) reiterates that MOODLE online quizzes provide immediate response to learners once choices have

been submitted. This normally increases their motivation and advances their understanding in knowledge acquisition. Lenton (2019) also echoed that MOODLE can be used to create learning opportunities for eLearners to interact with geography algebra (Geo-Gebra) content and get immediate feedback on their individual learning progress. Nurdiani, Rustaman, Setiawan and Priyandoko (2019) on the other hand demonstrated how embryology could be taught by interactive media resources and be examined using MOODLE tools. Studies by Rajan and Manyala (2021) also demonstrated the effectiveness of MOODLE in teaching and examining introductory physics in university of Zambia.

Verdaguer (2021) observes that MOODLE LMS is capable of carrying out both formative and summative assessment and a good example is the assignment activity which enable learners to submit their responses to their instructors for grading purposes in line with summative assessment objectives. These responses can be informed of text or uploaded files or links as demanded by instructors. There is a variety of MOODLE assignment as expounded by Verdaguer (2021): assignments with no submission required, assignments with online text submission, assignments with file submission, group assignments in MOODLE among others. The above are graded through use of marking guides, rubrics and marking workflow.

Westhuizen (2016) highlighted the following ten (10) online assessment principles: should provide high quality feedback, should allow longitudinal reflection, should have readymade tools, should be technology-supported authentic learning, should incorporate collaboration, should have diversity of assessment techniques, should address diversity of learners, should mould all users towards ICT, have a system for monitoring and remediate, should employ best practices and compatible web design. MOODLE LMS is a seamless platform that addresses the above principles and that why is popular among the leading LMS used globally.
Online assessment has its own challenges such encouraging examination cheating and numerous designer's and software engineers developed extra softwares which ensures examination integrity is maintained. All these examination softwares are compatible with MOODLE LMS. Such solution softwares include: Witwiser, Safe Exam browser, iSpringSuite Quiz Maker, Plagiarism Check (Turntin), and Video Assistant Invigilator (Ally, 2022)

Statement of the problem

Online evaluation and assessment is gaining momentum in developing countries due to rapid expansion of ICT and innovation in teaching, learning and research in higher institution of learning. MOODLE learning management system used widely in public universities in Kenya is currently used in online assessment. After the spread of COVID-19 majority all public institution in Kenya was closed and were required to offer online learning where possible in all the academic programmes. This brought new paradigm shift in the way teaching, learning and assessment was being conducted. Majority of higher institution of learning were not prepared technologically to teach and more so to carry out online assessment. Through training, resilience, dedication and commitment of all education stakeholders to eLearning and ICT skills, online teaching and assessment gained a lot of ground while meandering challenges along the way. Although there are substantial findings in relation to moodle aspects such as: usage, attitudes, perception, experiences and challenges, there is limited studies focusing on Moodle evaluation features especially in Kenya. Therefore, there is need to investigate learner's experiences on use of MOODLE platform on online learning assessment for continued growth and improvement purposes.

3. Objectives of the study

The general objective of current study seeks to establish undergraduate experiences on MOODLE online assessment. The specific objectives were:

1) To establish student's experiences on variety of online assessment activities
2) To assess if MOODLE practice quizzes boost academic performance
3) To find out if MOODLE LMS ensures confidentiality in student's grades

4. Methodology

The current study employed mixed research methodology. Creswell (2012) suggested that, mixed research methodology design encompasses both qualitative and quantitative data collection regarding a research problem. George (2021) on the other hand observed that this approach triangulates both quantitative and qualitative data collection method giving a clear picture of the research problem thereby providing benefits of both methods. Kothari (2004) also echoed integrating qualitative and quantitative methods in studies that involves collecting data in form of opinions and attitudes ensures reliability and generalizability of the results.

The above methodology chosen, aims to establish undergraduate experiences on MOOODLE online assessment in public universities in Kenya. The study used open and close ended questionnaires and focused group discussions for data collection exercise. The quantitative data obtained from closed ended questions while qualitative information originated from open ended responses from the participants.

4.1 Population and sample size

The study targeted a population of 546, 700 undergraduate students enrolled in 2020/21 academic year in Kenyan universities (Kamer, 2022). According to CUE report 2019/20 academic year, there are 31 fully fledged public universities and 6 constituent colleges in Kenya. A further investigation onto individual university websites, the researcher was able to establish 17 institutions are using MOODLE LMS in delivering online education.

Since the researcher could not have obtained data from all undergraduate students distributed in 17 public universities due similarity among them, resource constraints, inadequate time and location constraints, three oldest and three newly established public universities in Kenya were randomly picked in order to obtain a representative sample of the

study. Individual population was then subjected to online sample size calculator (calculator. net, n. d.) at 95% confidence level and a sample was obtained automatically as represented in table 1

Table 1: Sample size

Participants	Newly[1] established Universities			Old[2] established universities			Sample
	A	B	C	E	F	G	
2nd students population	1303	1064	1449	4731	2632	3143	
Students sample size	296	284	305	357	338	341	**1921**
Focused group discussion	8	8	8	8	8	8	**48**
	Participants						**1969**

[1] Universities with five to ten years since establishment
[2] Universities more than thirty years since establishment

4.2 Data analysis and discussion

Out of 1921 questionnaire issued, 1342 was filled and collected. Therefore, the return rate of questionnaire was approximately 70%. Nutly (2008) observed that minimum threshold of questionnaire return responses for a study should be 65%. Since the responses from participants met minimum threshold, the researcher proceeded to the next phase of data analysis.

4.3 Demographic information about participants.

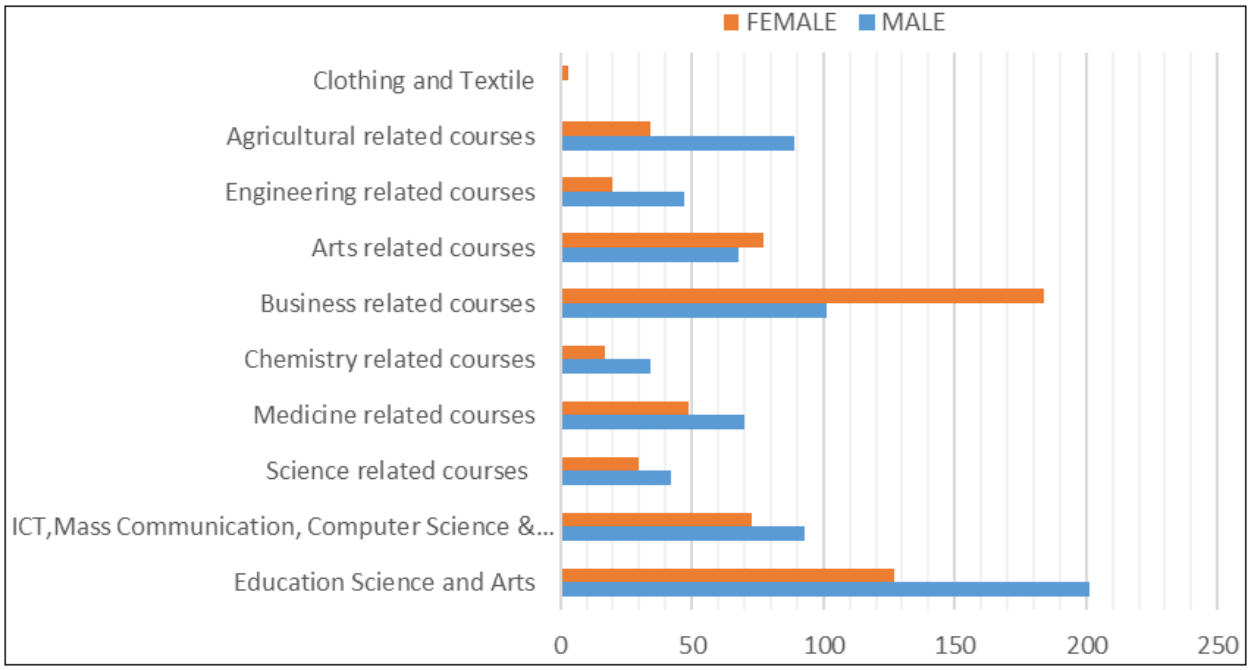

Figure 1: Graph showing degree course cluster and gender.

Table 2: Descriptive statistics of MOODLE evaluation features on student's satisfaction

	Statement on MOODLE evaluation features	N	Mean	S. Error	Std. D	Var.
a)	Am satisfied with the quality of questions that appear at the end of each topic.	1349	1.9518	0.02167	0.79589	0.633
b)	Am satisfied with assignment on course units online because they are challenging.	1349	4.7739	0.02165	0.79503	0.632
c)	Am satisfied how lecturers assigned marks for participating in discussion.	1349	2.209	0.02411	0.88553	0.784
d)	Am satisfied on report being generated on my grade book.	1349	1.8769	0.02237	0.82144	0.675
e)	MOODLE quizzes help me to boost my academic performance.	1349	2.0304	0.02278	0.83673	0.7
f)	MOODLE quizzes provided are adequate.	1349	4.7835	0.02176	0.79911	0.639
g)	Since no other students can view my marks am satisfied with confidentiality.	1349	2.7368	0.02292	0.84195	0.709
h)	Overall am satisfied with MOODLE LMS evaluation features.	1349	2.0949	0.02129	0.78177	0.611

From above table, students seem to be satisfied with assignment given on course units since they are challenging. Equally students also prefer MOODLE quizzes as evidenced by higher means of 4.7739 and 4.7835 respectively. The reason for this might be the questions and assignment assist them to understand the content learnt. It is also very strange to note that the learners are not satisfied report generated on their grade book probably marks are allocated subjectively.

Table 2: Frequency table on student's satisfaction with quality of questions at the end of each topic

	Threshold	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	374	27.86	27.86	27.86
	Agree	778	57.93	57.93	85.79
	Disagree	118	8.79	8.79	94.58
	Strongly Disagree	72	5.36	5.36	99.94
	Total	1342	99.9	100	

From above, over 85% of student's recons they are satisfied with quality of question found at end of each topic**.** Tocón (2021), found out thematic quizzes were more reliable than elementary quizzes and that Moodle tests and quizzes are reliable approach for learning scientific content. This is in agreement with findings by Gamage et al (2019) that over 65% of learners are satisfied with formative assessment as they were able to access eResources on MOODLE LMS platform and therefore gave them confidence to attempt all question asked in examination.

Table 4: Frequency table on student's satisfaction with assignment given.

	Threshold	Frequency	Percent	Valid %	Cumulative Percent
Valid	Strongly Agree	316	23.55	23.55	23.55
	Agree	656	48.88	48.88	72.43
	Disagree	274	20.42	20.42	92.85
	Strongly Disagree	96	7.15	7.15	100
Total		1342	100	100	

The table 4. overwhelmly asserts that over 62% of students are satisfied with online assignment loaded at MOODLE LMS platform. While 38% have contrary opinion. According to university of Massachusetts, MOODLE LMS enable paperless learner's records organization, grading learners, alerting learners the last date to hand in assignment, manage assignment format before submission including checking of originality status of the student's work. Berkshire community college (n. d.) highlight simple steps for learners to use when submitting an assignment. This is in agreement with students in public universities in Kenya who opined, MOODLE assignment tools are easy to use and upload an assignment but where instructors have limit the format, they have some challenges.

Table 5: Frequency table on student's satisfaction with discussion marks

Threshold		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	322	23.99	23.99	23.99
	Agree	632	47.09	47.09	71.09
	Disagree	281	20.94	20.94	92.02
	Strongly Disagree	107	7.97	7.97	100
Total		1342	100	100	100

Table 4.6 indicate 61% of students are satisfied with discussion marks awarded by their lecturer based on contribution they put forth. Although majority of students are satisfied with their MOODLE LMS discussion marks, some student with issues on accessibility of portal suggest that online discussion should be open for at least three days for everyone to participate. Reeds, Robert and Heritage (2016) noted some students are not happy with discussion marks awarded by their tutors because social loafing among the group member tend to make then not to achieve much.

Table 6: Frequency table on student's satisfaction with "my report".

Threshold		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	125	9.31	9.31	9.31
	Agree	323	24.07	24.07	33.38
	Disagree	681	50.75	50.75	84.13
	Strongly Disagree	213	15.87	15.87	100
	Total	1342	100	100	100

Table 6 suggests that over 66% of learners are not satisfied with report generated in MOODLE LMS. Some argue, they are not given equal opportunity to participate due to internet related issues, MOODLE LMS permit cheating and genuine students end up not doing well, sometimes marks allocated are subjective.

Table 7: Frequency table on student's opinions that Quiz Boost my academic performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	360	26.6	26.7	26.7
	Agree	752	55.7	55.7	82.4
	Disagree	158	11.7	11.7	94.1
	Strongly Agree	78	5.8	5.8	99.9
Total		1349	99.9	100	99.9

The above table indicates that majority of learners approximately 82.4% are in the opinion that quizzes administered through MOODLE LMS boost their academic performance. Berrais (2014) and Gamage et al (2019) also found arrived to similar findings.

Table 8: Frequency table on student's satisfaction with marks confidentiality

Threshold		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	515	38.38	38.38	38.38
	Agree	620	46.2	46.2	84.58
	Disagree	145	10.8	10.8	95.38
	Strongly Disagree	62	4.62	4.62	100
Total		1342	100	100	

The above table indicate over 85% of students are either extremely satisfied or satisfied with confidentiality of their marks though MOODLE LMS platform. Martinez, Encinas, Encinas and Dios (2014) pointed out important student's data such as assignment marks, profiles, grades, discussion contents, wikis announcement and assessment questions in MOODLE LMS are vulnerable to illegal data infiltration compromising security and confidentiality, therefore elearning administrators are required to constantly update their installations. This means confidentiality is only assured if the system becomes tamper proof.

Table 9: Cross tabulation on student's responses with MOODLE evaluation features indicators

	Statements of MOODLE evaluation features	Strongly agree %	Agree %	No opinion%	Disagree %.	Strongly disagree%
1.	Am satisfied with the quality of questions that appear at the end of each topic	27.3	56.4	0.6	10.7	5.0
2.	Am satisfied with assignment on course units online because they are challenging.	1.2	4.7	92.0	19.0	0.1
3.	Am satisfied how lecturers assigned marks for participating in discussion.	19.9	49.0	1.1	23.1	6.5
4.	Am satisfied on report being generated on my grade book.	6.9	28.6	1.1	49.6	13.7
5.	MOODLE quizzes help me to boost my academic performance	24.4	55.8	1.6	13.9	4.4
6.	MOODLE quizzes provided are adequate	0.1	1.2	92.8	4.7	1.1
7.	Since no other students can view my marks am satisfied with confidentiality	34.7	49.3	1.3	11.7	3.6
8.	Overall am satisfied with MOODLE LMS evaluation features	18.40	60.3	1.1	15.7	4.4

From above table, students seem to be satisfied with quality of questions set at the end of each topic, how lecturers assign marks, MOODLE quizzes as it helps them to boost academic performance, confidentiality of their marks more so overall MOODLE LMS evaluation features. Confidentiality of marks is one of the issues learners appears to be are satisfied with in relation MOODLE LMS evaluation feature. It can also be noted over 60% of students indicated they are not satisfied on reports being generated on their grade book. This might be subjective marks allocated by instructors which could have been informed by many factors which learners might not be conversant with for example quantity of words expressed by learners including attendance.

The above analysis also shows approximately 78.7% of students are either extremely satisfied or satisfied with Moodle evaluation features. The above finding is supported by studies carried out Horvat, Cudanov, Dobrota and Mladen (2013) found out learners who use MOODLE LMS just before sitting for their examinations end up having lower satisfaction compared to those who interact with Moodle frequently.

Focused group discussions findings

Participants were also required to share experiences they encountered in relation to MOODLE examination**.** And the following comprises of their experiences**:**

"There are some course units that should not be examined online for example mathematics, statistics, accounting and economics". On probing further students noted "you *have to do calculations elsewhere and then attach to the examination portal page and sometimes the attachment refuses to be uploaded. This is very frustrating*".

"*Time usually not enough for calculation and the portal may close when you are in the middle of the response unlike for the physical examination, the invigilator may add extra five or ten minutes*"

"Although *description questions are good, they consume a lot of time"*

"*I hate online examination due to cheating which is rampant*. On probing further, they revealed that one usually come with more than one smart phone with class notes which is easy to open and refer during examination

The researcher wanted to know the extent of cheating in an online examination and these were the responses "*It is easy to cheat"*. Another participant noted that *"*3 *out of 5 of my close friends have admitted to have cheated at least once in an online examination since the university lacks capacity to use webcam to check all students during examination session.* "

The researcher wanted to know what improvement can be done to increase satisfaction with MOODLE evaluation features and these were their responses. "*increase time*".

"*Do away with multiple questions*". "*Introduce more expression questions*". "*For discussion questions, more space should be provided for answering the question instead of typing elsewhere and drag to space provided since it's too much tedious, time consuming and some phone cannot allow you to drag the answer into the space provided*"

Testing hypothesis

$H0_1$: There is no significant relationship between modular object oriented dynamic learning environment learning management system evaluation tools and student's satisfaction on online assessment.

HA_2: There is significant relationship between modular object oriented dynamic learning environment learning management system evaluation tools and student's satisfaction on online assessment.

The study sought to establish if there is a relationship between modular object oriented dynamic learning environment evaluation features and students satisfaction on online assessments in public universities in Kenya. Ordinal regression statistics was used to test if such relationship exits at alpha 0.05. Any value less that 0.05 ($p \leq 0.05$) indicate the result in not statistically significant which means the null hypothesis was rejected. A p value more that 0.05 ($p \geq 0.05$) means the result is statistically significant and the null hypothesis is not rejected (Degu and Yigzaw, 2006; Cohen et al, 2007; Chian, Rajiv and Price 2015). The outcome is represented in table 4.22.

The MOODLE LMS evaluation indicators highlighted in table 4.10 indicate, learner's satisfaction threshold seems to be similar with little variations, majority of learners' opinion and experiences indicate they are satisfied with overall MOODLE LMS features.

MOODLE evaluation features and students satisfaction

Table 10: Ordinal regression of student's satisfaction with MOODLE evaluation features

Parameter Estimates										
			95% Wald Confi. Interval		Hypothesis Test				95% Wald Confi. Interval for Exp (B)	
Parameter Threshold	B	Std. Error	Lower	Upper	Wald X^2	df	Sig.	Exp (B)	Lower	Upper
Extremely Satisfied	-1.094	1.6072	-4.244	2.056	0.463	1	0.496	0.335	0.014	7.818
Very Satisfied	0.709	1.5721	-2.372	3.79	0.204	1	0.652	2.033	0.093	44.278
Moderately Satisfied	2.393	1.6115	-0.765	5.551	2.205	1	0.138	10.946	0.465	257.6
Slightly satisfied	3.554	1.6521	0.316	6.792	4.627	1	0.031	34.942	1.371	890.509
MOODLE Evaluation Features	0.511	0.5557	-0.578	1.6	0.847	1	0.357	1.668	0.561	4.955
(Scale)	27.394[a]									
Dependent Variable: OVERT: Overall MOODLE features students' satisfaction										
Model: (Threshold) MOODLE evaluation features (MEV1, MEV2…. . MEV8)										
a. Computed based on the Pearson chi-square.										

Table 11: Test of model effects on MOODLE evaluation features

Tests of Model Effects			
	Type III		
Source	Wald Chi-Square	DF	Significance.
MEV	0.847	1	0.357
Dependent Variable: OVERT Overall MOODLE students' satisfaction			
Model: (Threshold), MEV-MOODLE evaluation feature			

The ordinal regression tests in Table 4.18a) above shows the parameters of influence of MOODLE evaluation features on students' satisfaction in in public universities in Kenya. The significant value for all the parameter was always greater that P= 0.05. This implies the null hypothesis was not rejected therefore the study concluded the no significant relationship between MOODLE evaluation features and student's satisfaction on online assessment.

Student in public universities in were not satisfied with MOODLE evaluation features citing following reasons: Online exam creates anxiety and raises tension among students, some examination takes a lot of time that the scheduled period, slow and non-responsive system issues is very common, sometimes it's difficult to edit answers once selected and therefore in efficient, over 70% of students possess smart phones but some brands are bound to hang and therefore inefficient in handling examination questions especially those that demand drag and drop items.

Students also observed that sometimes the system refuses to upload their responses either due to type of format the response demand for example word document and the student gadget is missing but have the alternative of another format such as word pad or the maximum specified size of the response is 2MB while student have exceeded the limit by using alternative format available in their smart phone. In my opinion, examination responses formats should be made compatible with all softwares that are available in the smartphone to avoid disappointment on the part of the learners. This will reduce anxiety and increase their satisfaction in online assessment.

Sentiments from focused group discussion indicate that over 75% of students are requesting the universities to do away with online assessment completely as it encourages cheating, infrastructural challenges, lack of enough technical skills to handle online examination, poor customization of examination interface pages among other reasons. On further probing students revealed that more male learners compared to female learners are involved in online examination malpractices which involves smuggling extra smart phone which they use to communicate with their collaborators through short message services, sharing images and photos through WhatsApp, Instagram and hangout icons.

Although majority of students suggest the want online semester exams to scrapped altogether but a cross section of students said they prefer online quizzes to be up scaled at it assist them in understanding the taught content since a student can resubmit the responses without limit until they are satisfied with a given score. This finding is closely related with studies done by Essel and Osafo (2017) and established 77.7% of students in university of Ghana prefers taking quizzes and test in MOODLE platform.

Studies by Osabwa (2022) on the other hand exposed weakness in public universities in terms of teaching and assessment preparedness covid-19 pandemic period session. He observed that about 60% of universities in Kenya opted for online learning but not all students were brought on board due issues such as: limitation of internet coverage, incompatible devices, low uptake of ICT skills, unstable electricity connectivity among other challenges (Ssekakubo, Suleman and Marsden 2011; Nyerere, Gravenil and Mse, 2012; Tarus, Gachoya and Muumbo, 2015; Kibuku, Ochieng and Wausi 2020). Online evaluation had myriad of challenges and majority of learners especially from rural areas with challenges of 3G and 4G network were totally unable to register to attend online classes. Some who managed had rough time during examinations; some students were also unable to access the MOODLE LMS portal and therefore did not upload their responses. Major reasons pointed out include poor network connectivity, expensive mobile data bundles and a lack of stable power supply to facilitate online classes and assessment.

Hölbl, Welzer, Nemec and Sevčnika (2011), found out that 92% of learners were satisfied with MOODLE evaluation features because it guaranteed privacy of individual grades and marks. Awandu (2021) also reiterated online examination supervision provided opportunity for rampant cheating in examinations. It was also reported some institution with poor infrastructure suspended online assessment and resorted to physical examinations. Few public universities were prepared to manage online examination by either resorting to use webcam, non-browser

software, monitoring exam session in computer labs/rooms among other strategies.

Sonia, Bouziane and Alvarez (2014) observed at The Paris Descartes University the MOODLE LMS has link to question banks and activities which learners can use digital devices to responds to variety of questions when learning session is ongoing enabling tutors to pick learners learning progress and prompt feedback.

Peiping (2016) did a study of interactive evaluation on MOODLE platform in distance education at Kunming University in China and established that MOODLE evaluation interactive feature enable learners to partake in classroom teaching with passion provided that so long as there is: adequate internet connectivity, savvy skills for all users, tutors regulate quantity of evaluation activities, instructors able to provide comprehensive evaluation criteria among others. Alvarez and Villamañe (2022) on the other hand conducted a study involving 26 tutors at University of the Basque Country Spain using MOODLE evaluation features and analyzed the MOODLE gradebook in their courses and the study revealed that it was challenging to use MOODLE gradebook in evaluating different courses.

Studies by Waheed, Kaur, Noor and Qazi (2013) at university of Malasiya in Kuala Lumpur, Malasiya observed that majority of students concurred that MOODLE evaluation tool for submitting assignment and to view individual grade is stress-free. This is also echoed by Ssekakubo, Suleman and Marsden (2011), who noted that students enjoy to use variety of MOODLE features and are mostly satisfied. Manuel, Maria and Juan (2010) found out female's students were more active in using wikis and uploading assessment documents compared to male students at University of Valencia, Spain. Sharma and Holbali (2022) observed that challenges associated with language assessment include: security, time limitation, internet accessibility, ethical aspects, digital literacy and expertise, technological failures and learning outcomes

Studies by Hongjiang and Mahenthira (2016) established that one of the determinant of student's satisfaction with MOODLE evaluation features is the ease of completing assignment online. Hasan (2019) on the other hand observed that MOODLE learning management system operated through a mobile phone interphase does not allow students to view previous examination, material display before registering for the course such as books, presentations and course outlines. This lowers motivation and by extension their satisfaction in the MOODLE features.

5. Conclusions

a) There is no significant relationship between MOODLE evaluation features and student's satisfaction with online assessment.
b) Students in public universities have mixed reaction on MOODLE online assessment.
   - 85% of student's recons they are satisfied with quality of question found at end of each topic
   - over 62% of students are satisfied with online assignment loaded at MOODLE LMS platform
   - 61% of students are satisfied with discussion marks awarded by their lecturer based on contribution they put forth.
   - 66% of learners are not satisfied with report generated in MOODLE LMS.
   - 85% of students are satisfied with confidentiality of their marks though MOODLE LMS platform.
c) Online examinations cause anxiety and promote cheating.
d) Not all course units should be assessed online

6. Recommendations

- Majority of public universities in Kenya should provide stable internet infrastructure to make MOODLE online assessment reality.
- Public universities in Kenya to address challenges associated with online assessment such as examination cheating, incompatible eLearning gadgets, unresponsive assignment MOODLE features, limited eLearning skills in all users order to increase student's satisfaction with MOODLE online assessment.

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