User Experience of Online Examinations and Proctoring: A Case Based Study

Alice M. NJUGUNA

Zetech University, P.O Box 176, Nairobi, City, 00200, Kenya

ABSTRACT: University curriculum all over the world contain a set of learning outcomes to be achieved through different learning and teaching modes. The achievement of the Learning Outcomes is measured using some form of assessment, usually in the form of University examinations. The traditional teaching has been face-to- face, and therefore many examinations have also been conducted in a face to face manner. One of the challenges of any examination setting is cheating amongst University students, which implies that the examinations must be properly invigilated or proctored. Since the introduction of ICT in Education, there have been attempts to introduce Online examinations, although these are yet to gain full traction. In Kenya, the ODEL standards lean more towards blended learning, where each course has to have a face to face element. Many Universities have therefore been conducting their examinations in a traditional setting. The onset of COVID-19 created a different situation as the social distancing and the restricted movement meant that learners could not attend a physical class. The movement to Remote Emergency Teaching created a challenge on how examinations could be conducted and proctored. Several Universities decided to do the teaching but wait for resumption of face to face studies to conduct their exams, and this had a negative impact on the University Almanac. This paper looks at the case of one Private University that decided to complete a whole semester online but also went on to conduct examinations via the Learning Management System. Using a triangulation of Interviews, Observation and Document Reviews, staff and students who had participated in conducting and taking online examinations were interviewed. The online examinations processed was observed and documents and software used in online examinations and proctoring were reviewed. Reorganization of the examination processes, organizational and cultural change management, ICT technical issues, extensive training, software selection and communication were identified as the key requirements for successful online examinations and proctoring to take place. The use of Proctoring Systems that are integrated with the LMS give a shorter learning curve and are easier to learn and use.

KEYWORDS: COVID; Examinations integrity; Online; Proctoring; Technology.

INTRODUCTION

In March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic. On 17th March the same year, Kenya declared the Emergency closure of educational institutions, Universities included. What ensued is what many authors have now referred to as Emergency Remote Teaching. Universities around the world, save for the pure online ones, are used to the traditional education system that emphasizes the physical presence of students and teachers for teaching and learning Although E-learning and blended learning have been sold as the new enabling but also disruptive technologies in education, it was apparent that by the onset of COVID-19 pandemic, many Universities were not fully prepared to migrate online. The Pandemic initiated a series of activities due to travel restrictions and closure to prevent the gathering of students, and they had to quickly consider alternate options of delivery. This led to the cancellation of most academic activities, including exams. The transition from physical to online was unplanned for as human capital, technology, frameworks and budgets were not in place. There was lack of access to ICT infrastructure and resources, lack of technical knowledge and experience amongst faculty and even students and these hampered online teaching [1]. Issues of trust and accountability, managing daily life and human interactions amidst the pandemic as well as the culture of each organization and the existence of standard operating procedures that supported only physical teaching and the ensuing examinations also stood in the way. While teaching was easier to implement using Learning Management Systems (LMS) and even Videoconferencing applications such as ZOOM and Microsoft Teams, examinations were a bit harder to implement, especially due to technical issues emanating from the need to have a clear proctoring guideline [2].

It is internationally agreed that most learners will sit for one form of examination or another in the course of their studies, a move that is planned to help assess the achievement of learning outcomes. There has been a debate in the academy on the need to have

formal examinations, but there has been no consensus to completely eradicate them. The debate has then persisted on the type of examination to give, including take home assignments and project work, open and closed book examinations or the more recent competence-based approach. Many examinations have been done on a face-to-face mode, but technology intervention is now apparent in the modes of E-learning or blended learning, including the Remote Emergency Teaching mode [3]. All these debates also seek to establish whether the examination assessment instrument can be enhanced through the power of technology and also how the learner experience of the final examination might be made more authentic and constructively aligned with expected learning outcomes, and whether the faculty are comfortable that the results reflect the true situation of the learner [3], [4]. Online proctoring systems can use administrative, technical and physical approaches to prevent cheating[5]. Administrative controls include plagiarism policies, examination procedures, practices, rules.

Whether the examinations are via the traditional mode or via a technology mediated platform, and whether they involve sitting in class or taking away, the integrity of the examinations is important. The concept of cheating in University Education is an age-old problem. The concern is that this matter was not resolved in the traditional setup, but has been carried on to online examinations. The online mode is of a higher concern because the Internet avails a lot of reference materials, allows collaboration and interaction and transmission of data in real time. A single search can avail the learner with all the answers they need, especially if the questions were at the lower levels of Blooms Taxonomy of knowledge and comprehension and recall [7]. This is compounded in the Remote Emergency Teaching period where many users (faculty and students) found themselves online without prior technical and psychological preparation for online examinations.

There is therefore a need to establish the experiences of users with online examinations and proctoring in order to establish how they manoeuvred through the new norm, and their perspectives of what can be done to enhance the experience, integrity and validity of the online exams, and also to enhance their acceptance of online since COVID -19 is not yet over. The research questions were:

1. How did the subject University manage Online exams and Proctoring?
2. What was the users experience with the online Examinations and Proctoring?
3. What challenges did the users encounter when sitting for online exams?
4. What can be done to improve migration to online Examinations?

This study sets out to review literature on online examinations and proctoring, review documents, talk to users and observe the examinations setting in a University that conducted online examinations in 2020 and 2021, and identify factors that can make the process of migrating to online examinations to be more successful.

2.0 LITERATURE REVIEW

2.1 University Examinations

The idea that assessment is intrinsic to effective instruction is traced from early experiments in the individualization of learning through the work of Benjamin Bloom to reviews of the impact of feedback on learners in classrooms [4], [7]. Many Universities give continuous and final examinations, which may be summative or formative, but largely summative for grading and graduation purposes: These exams may be Open Book or Closed Book; The learners are given a time limit to complete the tests. The items may include essays, matching items, short answers, or multiple-choice questions or even projects, and may be oral or written. The difference between the two types is that the closed book examinations allow no reference material in the exam room, while the open book ones allow learners to come in with notes and reference or text books [2].

2.2. Online Exams and Academic Integrity

Academic dishonesty is rampant in may Universities, and can be categorized as academic fraud (Reisewitz, 2020) and it amounts to non-conformity to academic integrity [8], [9], as it involves taking an unfair advantage over the others and a misrepresentation of the student's ability to learn, . In the traditional setup, cheating comes in the form of whispering or mouthing the answer, exchanging scripts or small pieces of paper, bringing in answers written on body parts or clothing, sneaking in phones and other digital devices such as smart glasses and watches [7], [8].or even" Girrafing" which is a colloquial term describing the attempt to peek into another student's script. These are managed through physical frisking and checks at the entrance to the exam room for unauthorized materials, use of CCTV as a deterrent where the learners know they are being monitored, random seating of the learners with adequate spacing and use of sufficient and trained invigilators.

These methods may not work in an online exam where the learners are in remote and diverse locations[10]

2.3. Preventing Academic Misconduct in Online Exams

2.3.1 Use of Technology

Irrespective of the mode of examinations administration, it is important to put mechanisms in place to prevent cheating and maintain the integrity of the teaching process. Exams can be invigilated using human intervention, use of Artificial Intelligence, software and video proctoring. A less invasive way of ensuring the integrity of examinations is via the use of an exam design that makes it almost impossible to get answers from other sources.

Online proctoring generally refers to the practice of monitoring an exam over the internet, usually through a webcam. Its main aim is to ensure that identity of the learner, control the learner's activities in real time, and deter any forms of malpractice. This technology has gained relevance during the current COVID-19 pandemic, given that the social distance owing to health reasons has consequently led to the switching of all learning and assessment activities to online platforms, [11],[12].

Reisewitz (2020) carried out a study on the necessity of proctoring online exams. Five exam sessions were carried out and, in each session, the students were in two groups where one was proctored and the other one was not proctored. The mean score would differ with as much as 22 marks for students who were not proctored compared to those who were proctored using ProctorU, a commercial online Proctoring Software, thus providing a case for the use of proctored versus non-proctored online exams as proposed by [13], thus agreeing with [14] and on reliability of invigilated and non-invigilated examinations.

Online proctoring software, which started to gain traction in 2008, has gained momentum due to the COVID-19 pandemic. Some of these software , such as the Safe Exam Browser, work by restricting the number of applications a computer can run during the exam session while more advanced ones utilize machine learning algorithms and Artificial Intelligence to detect suspicious behaviour which can be viewed as a recording after the exam session [10], [15].While such systems are beneficial to the Universities, learners have found them unsuitable due to the feeling of being watched and therefore violating their privacy. Even as the software gets more advanced, learners are always finding ways of cheating. Proctoring can be live, recorded or automated. Live proctoring was introduced in 2006 and has been growing rapidly, and expanded in 2020 and 2021 where Videoconferencing Apps were used to monitor learners during the Pandemic. . Unlike Live Proctoring, Recorded Proctoring Programs do not require a human proctor during the entire exam, but the student behaviours are recorded during the examination for reviewing by the examiners. Automated Proctoring Systems are currently the most advanced programs available as they use some degree of Artificial Intelligence to monitor and review the feedback [15]. Universities have found that even relatively simple technologies can help to significantly reduce cheating [6], [7],[8], and therefore online proctoring is likely to get more popular.

Software such as SafeAssign, Turnitin and Urkund that is used to detect and plagiarism can deal with cases of students copying other peoples work. Videoconferencing applications such as ZOOM can be used to monitor the student's activities during the examination. The more advanced software applications for proctoring detect movement or prevent the student from opening other applications and doing web search during the examination [16]. These include the Respondus Lockdown Browser which can easily be integrated with Learning Management Systems such as MOODLE. There are also other open source and commercial proctoring software such as Examinity and ProctorU that work with webcams. In addition, there are methods for face detection passwords, thumbprints, or cornea scans that ensure the authenticity of the student sitting for the examination [17]. According to [5], the Safe Exam Browser allows the examiner to lock down a Windows device for a specific task, thus preventing other tabs to remain open or the user from browsing other applications for answers by maintaining communication only with the LMS the examinations software running on a server. It also disables unauthorized shortcuts keys (such as Win, Ctrl+P, copy/paste, switching to other applications and surfing of other web sites.

Webcam is mainly used for authentication and monitoring of the and physical space within a proximity to the use, carrying out accurate face recognition but may not allow a profile view. It webcams offers a video scanning functionality that records the user's position, and a human proctor can then remotely freeze the examination screen, flag the learner or even text or send a voice command to alert the learner to adjust their camera.

To further prevent browsing for answers,. Lockdown Browser applications such as Respondus may be used to block all other browsers in the user's computer except for one browser used by the exam application, but this does not stop the user from using other browsers on other devices, so these need to be paired with Webcams for enhanced efficiency [15].

Recently there are Machine Learning and Artificial Intelligence (AI) Applications that are being designed and tested for use in online examinations proctoring. These work by searching for indicators of potential examinations malpractice and include

biometric verification such as fingerprints facial and voice recognition, detection of potential malpractices,, and capturing behavioural indicators of potential fraud using screenshots, audio and video files AI can also help in grading the exam results by assisting in marking unstructured essay items, which is normally labour-intensive and costly to the examiners, and include Nevon and Examus which can learn student's behavioural characteristics such as keystrokes and facial movement during the normal online lectures and provides them to proctoring services for online exams, [11], [12].

2.3.3. Examinations Design

Another way of deterring cheating and ensuring the integrity and validity of examinations is to design the exams in manner such that it would be difficult to copy. Questions that demand creativity, problem solving and higher order reasoning are more difficult to set but also more difficult to copy, especially if coupled with time restriction. Collaboration can be prevented by using a limited time, shuffling questions and not allowing a student to go back to earlier questions. The restriction to copy and paste stops learners from getting answers from say, Google and just pasting. Some examiners demand that you cannot type into the space but can only send an attachment. In extreme cases and small classes, each student can be given their own set of questions, so long as the examiner can confirm that the items are standard, have similar weight and are testing the same thing, [2].

Several Authors have identified some challenges of remotely proctored examinations: 1. They are more stressful than the traditional ones and may affect the final performance.2. They require an existing and mature infrastructure setup, software, and hardware, for both staff and students. . 3. There can be a failure of software, hardware, or internet connection could be experienced and a backup plan is mandatory 4. Students may feel that their privacy is interfered with as they sit for exams under a camera 5. Supporting a student facing challenges with the exams technology remotely may be difficult, [1].

When selecting Proctoring Systems, it is important to review the Universities requirements and select one that offers multiple features and characteristics. Some Systems are open source while others are commercial, and this has an implication on cost and licensing. Some require a specific browser such as Chrome to be installed as a plugin. . A good system should be compatible to multiple platforms such as Windows, Linux, Android and Apple, and should offer live chat support. Desirable features include monitoring, authentication, and lockdown functions. Scalability is also important as number of users can grow. Perhaps the most important characteristic, other than cost as all of them require internet accessibility, is the LMS integration which allows the Proctoring System to be quickly and easily integrated with common LMS such as MOODLE and CANVAS. Not only is this a cost-effective way of managing exams, but it allows a seamless integration of teaching and assessment. If learners are comfortable learning using a certain system, then doing an exam on the same platform reduces the stress and the Learning Curve, [12], [18].

3.0 METHODOLOGY

This study used a qualitative and quantitate approach to do a case study of a private University in Kenya. Using a triangulation of Interviews, Observation and Document Reviews, staff and students who had participated in conducting and taking online examinations were interviewed. The online examinations processed was observed and documents and software used in online proctoring were reviewed. Semi-structure interviews were used to extract data, and questionnaire was designed for the same purpose. To ensure complete coverage of the target teams, Faculty, students and staff involved in setting, marking, conducting and sitting for the examinations in 2020 and 2021 were interviewed. 30 lecturers, 2 heads of departments, 8 administrative staff and 153 students were selected randomly from the Business, ICT and Education schools of the University. A questionnaire designed and shared via Google forms focused on the user experience of conducting and sitting for online examinations. The main focus was on what the users perceived to the main issues of concern in the management, conduct and proctoring of the examinations. Users were allowed to respond to areas where they felt involved, such as setting, invigilating and sitting for the examinations. The questionnaire was 3 pages long and comprised of 23 questions with a mix of open ended and multiple response questions, with some asking for further explanations to allow drilling down. The original tool was piloted with 2 heads of departments and 2 teaching staff and then fine-tuned to remove ambiguity, then finalized for distribution. Participants were given 3 days to complete and return the survey. There was a total of 133 responses out of the 193 sent out. Out of the 40 staff participants approached via email, 31 responded, amounting to 77.5% response rate. Out of the 153 students approached, 102 responded giving a response rate of 66.7%. A total of 133 responses were received giving a total response rate of 68.9%. 56 of the 133 responses were female representing 42%. The data was then

cleaned and analysed. Of the 133 responses, 5 were eliminated as the respondents had not indicated when they sat for the examinations, leaving a total of 128 valid responses.

There was a set of follow-up questions for those who participated in the study. The study also involved observation of the live proctoring, and review of all internal memos and policies that were circulated concerning online examinations during the pandemic.
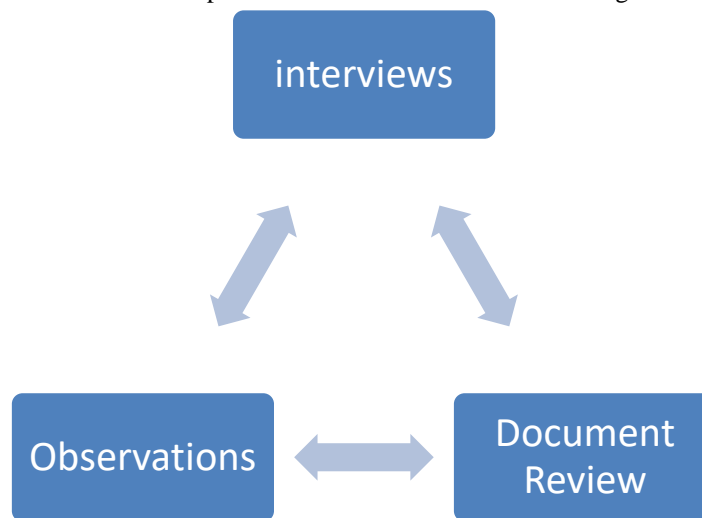

Fig. 1. Triangulation of Data sources.

3.1. The Case Study Institution

The case study institution was a private university in Kenya located in in Kiambu County which had started implementing blended learning in January 2020 just before COVID struck, and had to accelerate the adoption in March 2020 to deal with the emergency closure of the Universities occasioned by the Pandemic. The University is now using blended learning and has just recently gotten all its programmes accredited by the local regulator, the Commission for University Education (CUE) to offer OdeL and blended courses. The university has a fully-fledged digital school and offers 12 undergraduate degree programmes, one Masters programme and a number of diploma and certificate programmes. There is a main campus and 2 learning centres where learners may take their classes and sit for examinations. With a student population of over 6000 and a staff complement of 230 administrative and teaching staff, the main programmes include ICT, business, media studies, education, hospitality and international relations. Before the implementation of the Blended learning, the university was using technology to teach but at a much lower scale, focusing on common courses only.

3.2 Online Examinations Proctoring at the Case Study Institution

The University moved to Emergency Remote Teaching on 21st March 2020. Many classes had only a few contact hours left before the examinations, which were scheduled for end of March. The movement involved migrating all the learners and the resources to the LMS. Fortunately, the University had introduced a mandatory online course as all learners had been studying the Communications Skills online. All accounts were active on MOODLE 3.8 and both lecturers and students were trained via Videoconferencing. This was done through the BigBlueButton, which was acquired as a plugin to the LMS. The University also subscribed to commercial licences for ZOOM to allow adequate resources. As the teaching was going on, the faculty were trained on how to convert their exams to a mode that could be used online. This began with a review of the academic policy and procedures to allow for online exams,

The traditional exams, which had been set a month earlier, consisted of 5 essay questions. Question 1 was compulsory and consisted of short questions carrying a total of 30 marks. There were 4 other essay type questions carrying 20 marks each, of which the learner was to select any 2 such that the final exam would contribute 70% of the marks as per the examination policy.

A short survey was done to establish which kind of devices the students were using to access their courses. The results indicated that a whopping 70% were using smart phones to access the content, and only 30% had access to laptops; this meant that the exam

had to be tailored for android and mobile phone use. The learners were given additional internet bundles to allow them remain online.

The exams were modified to allow flexible questions and support multiple devices while taking care of costs and technical issues. The redesign involved changing the nature of examination items to include Multiple Choice Questions and other items such as matching items for question 1, and also allow students to type the essay type questions and send them as an attachment within a specified time period. The University also settled on safe exam browser and Respondus Lock down Browser as well as Proctoring based on Zoom, in addition to the examinations redesign. The Safe Exam Browser (https://safeexambrowser.org/about_overview_en.html)] was integrated with the LMS (MOODLE) and it worked by preventing the students from accessing other websites when in the virtual exam room. Students were also expected to log into a ZOOM meeting using a link shared via the LMS by the subject lecturer, and the lecturer would ask them to keep their video on during the exam duration. The session was monitored and also recorded to be reviewed by the technical staff in case there was suspicion of cheating. Online exams were given to all active students in May, August and December 2020, the height of COVID. All learners were able to progress with heir academic plan as scheduled and graduated as expected. In 2021, there was full resumption of face-to-face learning and both faculty and students started requesting for some examinations, especially those involving quantitative and practical subjects to be given on a face-to-face mode. Up-to-date, the University offers both types of exams, with each student doing at least one online exam per sitting,

4. FINDINGS AND ANALYSIS

4.1. The Respondents

There was a total of 133 responses out of the 193 sent out. Out of the 40 staff participants approached via email, 31 responded, amounting to 77.5% response rate. Out of the 153 students approached, 102 responded giving a response rate of 66.7%. A total of 133 responses were received giving a total response rate of 68.9%. 56 of the 133 responses were female representing 42%. The data was then cleaned and analysed. Of the 133 responses, 5 were eliminated as the respondents had not indicated when they sat for the examinations, leaving a total of 128 valid responses. The demographics of the respondents are indicated in Table 1 below.

Table 1. Respondents Demographics

Demographic Variables	Frequency (n)	Percentage (%)
Gender		
Male	72	56
Female	56	44
	128	**100**
Category		
Staff	38	30
Student	90	70
	128	**100**

Since the study was interested in the experience of all users, the same tool was used on all of them. Furthermore, 10 staff and 15 students were selected randomly for follow-up interviews

4.2. Experience with Online Exams

Both staff (faculty and administrative staff) and students given a set of 15 questions on their experience with online exams. Table 2 below shows their experiences. 61% of the students and 56% of the staff found the quality of the exams to be as good as the traditional ones. On further probing, the redesign to introduce multiple choice questions did not augur well with most of them. There was a general agreement at 80 and 74% respectively for students and staff that online exams improved their technical skills. From the interviews and review of documents, it was obvious that quite a bit of training on use of the internet and Webcam had taken place and this brought up the technical skills. While 17% of the students felt that online exams enhanced self-learning, 73% of the staff were happy with this element.91% of the leaners appreciated the immediate feedback, while only 50% of the staff thought that

online exams gave faster feedback. On further probing, the staff said that they still had to mark the essay questions, which was more difficult with soft copies of the answers.

Table 2. User Experience with Online Exams

Items	Statements	Students		Staff	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	Online exams had the same quality as traditional ones	55	61	17	56
2	Online exams improved my technical skills.	72	80	23	74
3	Online exams enhanced self-learning	16	17	22	73
4	Online assessment provided immediate feedback on performance.	82	91	15	50
5	Online exams were fair	76	84	24	80
6	Online exams did not facilitate cheating.	65	72	16	53
7	Online exams were suitable for all students	53	59	17	57
8	Online exams were applicable for all subjects.	30	33	12	40
9	Online exams reduced exam stress.	19	21	10	33
10	Online exams were convenient and flexible	59	66	20	67
12	Online exams were easier than the face-to-face ones	22	24	18	60
13	Online exams were faster than the paper-based ones	76	84	25	83
14	I prefer online tests, exams, and presentations.	62	69	14	47
15	I prefer online assessment than the traditional assessment.	39	43	12	40

There was consensus on the fairness of the exams at 84% of students and 80% of staff. 72% of the students thought that online exams did not facilitate cheating, compared to 53% of staff who later said that the students were still able to beat the safe exam browser by using other devices, and thought that the exam redesign to open book questions would have done a better job. Both staff and students agreed that online exams did not reduce stress at 33 and 21% respectively. 43% of students and 40% of staff prefer online exams, perhaps explaining why they later requested to go back to traditional modes on resumption of face to face teaching as explained in the case study scenario.

4.3. Experience with Online Proctoring Systems

70% of the staff and 50% of the students found the Safe Exam Browser easy to use as shown in Table 3 below. Generally, staff were happy with the online proctoring at percentages ranging up to 100%, but students were unhappy with the compatibility of devices

(20%), interference with concentration (69%) and the affordability of the proctoring system at 87%. On further probing, the students said that although they had been given free data, most of them had to but laptops for ease of use.

Table 3. User Experience with Online Proctoring.

Items	Statements	Students		Staff	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	The Online Proctoring Software was easy to use	45	50	21	70
2	The Online Proctoring Software was compatible with my devices	18	20	23	77
3	The Online Proctoring Software interfered with my concentration	62	69	12	40
4	The Online Proctoring Software and requirements was affordable	78	87	16	53
5	The online Proctoring Software did not interfere with my privacy	35	39	28	93
6	The Online Proctoring Software prevented cheating	87	97	26	87
7	The Online Proctoring Software was compatible with the MOODLE	88	98	30	100
8	The Online Proctoring Software was friendly to use	54	60	17	57

Both staff and students agreed that the online proctoring reduced on the cheating.

4.4. Experience with the Content and Format of Online Examinations.

82% of the students found the redesigned examinations to be a little unfamiliar. Student 17 said "*the last time I sat for MCQs was 5 years ago. I did not know how to revise and worse still, the questions were complicated and confusing*" 91% of the faculty expressed concerns on the difficulty in covering the content in the new form of exams, and indicated that although MCQs and short answer questions are easy to mark, they are also difficult to set. The student felt that the time set and the limit was not sufficient as they had to complete one section before moving to the next as going back to a previous section was not allowed. Typing the answers and then attaching them was not an easy process, as learners would have preferred to type directly into the system.

4.5 Organizational and Technical Issues.

In the open-ended section of the questionnaire, all the 128 respondents were asked to state the challenges that they would like to see addressed in future online examinations. Lack of Internet access, cost of internet bundles, lack of technical knowhow lack of a suitable examination's environment as the students and staff had to conduct and sit for the exams from their homes, lack of technical knowhow, the stress emanating from online exams, poor communication, difficult exam design, lack of support from superiors and lack of general guidance all scored over 70% as shown in Table 4 below.

Table 4. Organizational and technical issues.

Items	Statements	Responses	
		Frequency	Percentage (%)
1	Lack of appropriate devices	93	75
2	Lack of Internet Access	104	81
3	Lack of Electricity Supply	29	23

4	Cost of Internet Bundles	110	86
5	Lack of Technical knowhow of the Internet	87	68
6	Lack of technical knowhow of the exam system	109	85
8	Lack of a suitable exams' environment	98	76
9	Stress caused by online monitoring	106	83
10	Lack of data privacy	68	53
12	Poor communication on the exams systems	100	78
13	Difficult online exams design	120	94
14	Time Constraint	68	53
15	Lack of support from my lecturer or my supervisor	108	84
16	Lack of guidance on the software to use	89	70
17	Lack of confidence in online exams	57	45

Many faculty and staff felt that the online exams did not reflect the age-old tradition of face to face exams invigilated by a human being, and many were of the opinion that exams should be held in an environment where the student and the staff feel comfortable. Emotional issues such as fear and the resultant resistant were detected on the students.

On ICT technical issues, many of the learners were using mobile phones and these were not compatible with some of the remote proctoring systems such as the safe exams browser. On observing the said proctoring system, it was obvious that the phone screen was too small for live proctoring and the videos were not clear. The issue of internet connectivity came up as learners would be interrupted midway or would be unable to start the exam on time, leading to many of them asking for special examinations.

Both staff and students indicated that they were hardly familiar with online teaching and now had to quickly learn how to do the examinations on unfamiliar platforms, and they felt that the training was not sufficient and did not explain all the Frequently asked questions. On observing the training videos, it was apparent that the training did not reach all the intended users.

A review of the documents, memos and policies indicated an attempt to communicate, but sometimes the communication came in too late and did dot come from the highest office but from support departments, and thus users complained that they did not have sufficient support from the top. The users felt that they should have been involved in the original decision to move exams online, redesign them and proctor them using the selected system. This pointed to change management issues which perhaps challenged the organizational culture. It also showed that there was not much consideration of the system to use and not much benchmarking had been done, and this was explained by the fact that this was an emergency migration.

5.0 CONCLUSION

The study involved a private university that had managed to carry out Emergency Remote Teaching during COVID-19 and still go ahead to conduct examinations. There was a methodical way of migrating the examinations that even afforded to survey the technologies that users had access to. Given that this this involved the use of technology but also challenged the organizational factors, it is apparent that the Online Examination and Proctoring Systems should be aligned to the University, and the University should be aligned to the Systems. Reorganization of the examination processes, organizational and cultural change management, ICT technical issues, extensive training, software selection and communication are the key requirements for successful online examinations and proctoring to take place. The use of Proctoring Systems that are integrated with the LMS give a shorter learning curve and are easier to learn and use.

This study has a few limitations. The results of traditional and online exams were not compared, and so the study can not conclude that the quality of exams was sufficient. The study only encountered the use of Live monitoring systems, and perhaps there is need to explore exams that use Artificial and Machine Learning Systems.

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