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# Research Article

# Challenges in implementing online assessments at Maldivian higher education institutions: Lessons from the COVID-19 pandemic

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## ABSTRACT

The COVID-19 pandemic forced Higher Education Institutions (HEIs) to abruptly adopt online assessments in place of traditional assessments, posing several challenges especially in the developing countries. The purpose of this study was to explore the challenges experienced by lecturers in implementing online assessments at HEIs in the Maldives, during the time of COVID-19 pandemic. Data was collected using qualitative, semi-structured interviews from a purposefully selected sample of 30 lecturers representing eleven different disciplines and ten HEIs in the country. Data was analyzed using thematic analysis method. Findings revealed seven major themes which include difficulties in keeping up with the fast-changing assessment policies; students lack of awareness on institutional assessment policies and procedures; inadequate infrastructure and work-space to deliver online assessment; lack of technological competency of lecturers and students; issues related to work-load and time management; lecturers' competency in designing online assessments; addressing student diversity; and ensuring academic integrity. In the light of these findings, it is recommended that both students and lecturers need to be made aware of institutional assessment policies, better training needs to be offered for lecturers to enhance their skills in designing and implementing online assessments so that they can offer more authentic online assessments that would enhance academic integrity.

*Keywords:* challenges; higher education; Maldives; online assessment

## 1. Introduction

The unprecedented COVID-19 pandemic led to a global disruption of education across all levels including the higher education sector, forcing a transition of teaching and learning activities to an online environment. This prompt shift of all educational activities posed several challenges for students, educators, higher education institutions and accreditation bodies. Although pre-COVID literature on online assessments suggest several benefits of online assessments such as the ease of marking of online exams and ease of providing immediate feedback[1], most of these studies were done in institutions where this method was executed after careful planning. In addition, most of these HEIs utilized online assessments concurrently with face-to-face assessments to complement each other pre-COVID. However, the fact that online assessment during COVID-19 was more of

an abrupt forced change in the developing countries, this shift happened in institutions which were not properly prepared to deliver programs via this modality. This placed a huge burden on the educators who were not sufficiently trained to execute this mode of assessment[2]. It created problems for HEIs, especially in the developing countries such as Maldives, that were not accustomed to online course offerings, resulting in disparities and numerous difficulties.

Maldives is a geographically dispersed small island nation situated in the Indian Ocean. Almost all of the HEIs in the country are located in the capital city Male'. Prior to the COVID-19 pandemic, the courses offered at the HEIs were fully face-to-face, which forced students to migrate to the capital city to pursue higher education. However, during the COVID-19 pandemic, the disruptions in face-to-face classes led HEIs in the Maldives to adopt modern technologies as a means to continue teaching and learning, transforming the higher education landscape in the country. Modern technologies offered a means to reach out to previously unreachable populations in the dispersed islands of Maldives, improving access to higher education. Although Online courses opened new avenues for many students who were desperately searching for an opportunity to pursue further education at an affordable price in the country, prospective students were no longer expected to relocate to pursue higher education. Hence the number of students enrolled in HEIs skyrocketed during the COVID-19 pandemic as more courses began to be offered online. However, this created novel challenges, particularly related to the quality of programs offered. Many questions were raised regarding the authenticity of assessment conducted via online mode. How are the assessments conducted? Is it reliable and valid? Does it help to achieve students' actual learning outcomes? Are the lecturers trained and knowledgeable in conducting assessments online? These are just a few of the concerns that were raised. Although some areas on online assessment have been explored, such as benefits of online assessments[3] and challenges faced by students in online assessments[4], so far, no study has been conducted that has explored the challenges faced by lecturers in online assessments in the Maldives. Thus, this study aims to explore lecturers' experiences in implementing online assessments, particularly the challenges they faced in conducting assessments online.

Hence, the current study was conducted to explore this area further and to particularly address the following research question:

What were the challenges experienced by lecturers in implementing online assessment at the time of COVID-19 pandemic in Maldivian Higher Education Institutions?

Identifying these challenges will be helpful in devising better plans to enhance assessment of learning outcomes via this mode of study in Maldives and countries with similar context, as online courses play a pivotal role in shaping the future of higher education. Understanding the challenges that lecturers encounter can help identify areas where online assessment practices can be enhanced leading to more effective and meaningful assessments, ultimately improving the quality of education offered via this modality. Furthermore, HEIs can allocate resources more effectively when they have a clear understanding of the challenges that lecturers face, for example, investing in training, technology, or support services to address these challenges proactively. Moreover, it can also inform the development of institutional policies and guidelines related to online assessments, standardize practices, ensure fairness, and promote best practices in online assessment design and administration.

## 2. Literature review

Online assessments have become a revolutionary force in the rapidly evolving landscape of higher education, transforming the way students learn, teachers impart knowledge, and institutions assess students' academic progress. With the proliferation of digital technology and the increasing demand for flexible learning options, online assessments have become a cornerstone of modern education. Online assessments refer to the use of digital

tools, platforms or software to evaluate and measure students' knowledge, skills, and abilities. These assessments can encompass a wide range of formats, including quizzes, proctored exam and alternative to proctored exams, assignments, projects, and discussion forums, all administered through online means. Online assessments leverage technology to provide educators with efficient methods for grading, feedback, and data analysis, while also offering students the convenience of accessing and completing assessments remotely, often at their own pace[5,6]. While this paradigm shift has expanded access to education, it has also posed new challenges for educators.

## Challenges faced by educators in implementing online assessments

Educators encountered numerous challenges when traditional assessment methods shifted to online platforms abruptly during the COVID-19 pandemic. Looking at the challenges faced by educators, existing literature shows that the most prevalent obstacle for educators was related to technology itself. Technical issues such as unstable internet connection, bandwidth issues when using images and videos, and software glitches that disrupt the assessment process have been reported in earlier studies[7]. In addition, longer duration of exams and screen time, limited funds to meet the needs of internet quota/data packages, and limitations in having appropriate and compatible electronic devices to carry out online activities were also found to be major barriers for educators in assessing students using online mediums[8,9].

Apart from the technical issues, educators' technological competency has been shown to have a huge impact on their acceptance of online assessments, as well as assuring the quality and academic integrity of the assessments applied. In a study conducted by Al-Magabali and Hussain[10], they found that educators' limited technological knowledge, confidence and familiarity with technology, and their overall competence in using digital tools acted as a major obstacle in conducting online assessment. This indicates that for online assessment to be effective, it is important to provide sufficient training for educators to enhance their technological competence. Providing carefully designed training on the available technological tools and how to use them effectively to design online assessments is essential to maximize educators productivity. When targeted training is not offered, educators will need to engage in self-exploration to keep abreast with the evolving technologies and self-discover effective tools. Such engagements can however compromise the time that is left for them to do other tasks related to teaching. It has been reported that educators found it challenging to manage time when engaging with online assessments as they needed 'time' to learn and familiarize new technology leading to time management issues[11,12].

Furthermore, formatting limitations of online assessment platforms constrained the use of a variety of test items that can be used[7,9]. For example, in a study conducted by Mirza[13], educators reported difficulty in scoring and correcting questions with open responses such as explaining things. Educators expressed the difficulty of assessing group projects where a range of skills needed to be evaluated, such as communication skills and provide individual as well as group feedback[10,14]. A reason for this difficulty was explained to be due to educators having doubts regarding the actual contribution of each individual member of the group[14].

The issue of system incompatibility with the types of assessments educators wanted to utilize was also found to be cumbersome for educators. Using a new way of assessing via novel assessment systems required more time and effort on the part of educators since they had to experiment with different types of test items, changing from one format to another, hence making this mode of assessment a laborious task for them[2]. These challenges were further exacerbated by the need to comply with institutional requirements to deliver valid, reliable, fair, and effective assessments that assured quality. This placed additional pressure on educators. The reliance on only online assessments meant that there was a need to collect a variety of assessment data using different types of online assessments to make it more valid and reliable[15]. In addition, the limited timeframe that this needed to be

delivered meant that educators had to sacrifice more of their time on designing higher level questions that limited copying, plagiarism and which also reflected students' true learning performance. This demand for additional time, additional commitment and cognitive energy on the part of educators contributed to increased overall workload and stress. Ghanbari and Nowroozi[2], reported that educators had to sit in front of a monitor for long hours to mark online assessments, leading to physical health issues like eye strain and backache as well as mental health issues associated with elevated stress. Similarly, Fitriyah and Jannah[16] also reported that educators experienced anxiety about their students' test mainly because of their concerns over avoiding cheating in online assessments.

As aforementioned, a common concern of many educators was the validity of online assessments. Educators were uncertain of being able to measure students' true learning abilities through online assessments because of the limited direct contact and interaction with their students[12]. The fact that educators cannot control how students do assessments, whether they are actually able to do it independently or are getting help from someone else made them unreliable in measuring the actual ability and competence of students[8]. In a study by Sharadgah and Sa'di[9], they reported that 75% of educators confirmed that most students cheated in a way or another in online tests. They believe that students got higher scores in their courses due to e-assessments than they would have in the traditional setting[9]. Grade inflation as a result of online assessment was also reported in the study conducted by Ilgaz and Adanir[17]. Research suggests that educators teaching at tertiary level were to some extent unconscious about the equity issues related to taking online assessments[18] .For example, some educators admitted to making jokes about students' screen freezing, constant disconnections, and not knowing the reasons for students' absence to class (i.e., whether it is due to internet access or simply because they did not want to attend)[18].

Hence, based on the literature it was evident that educators needed specific training and professional development when it comes to implementing online assessments. Educators required training on designing online assessments that addressed not only validity, reliability and academic dishonesty[2,10], but also variability[10] and equity[19]. Educators seem to be unaware of the different digital tools or ways to utilize different digital platforms to perform assessment of different skills such as assessment of collaborative group projects and practical skills[14,19]. Additionally, educators admitted that they did not have adequate knowledge to develop tests that avoided the possibility of plagiarism to the extent possible[15]. Hence, it is clear that they need training on using a variety of test types and presentation formats to address these issues. Moreover, and more importantly, in this era of inclusive education, it is important to train educators to cater for the varying diverse needs of students who come from diverse backgrounds.

Therefore, exploring educators' challenges in executing online assessments grants further research in order to effectively utilize what online learning has to offer in the digital age post-COVID, especially in contexts where this approach is rather new.

## 3. Methodology

### 3.1. Research approach

This research adopted the qualitative approach to gather data. According to Creswell[20], the goal of qualitative approaches is to analyze and describe the study object using the participants' subjective interpretation. This study falls within this framework because information was gathered from lecturers in order to describe the challenges faced in implementing the online assessments.

### 3.2. Participants

A total of 30 lecturers from ten different HEIs were chosen for the study using purposive sampling technique. Participants who had completed at least one semester of online assessment met the inclusion criteria. These participants were carefully chosen using the maximum variation technique to represent lecturers from eleven different disciplines.

### 3.3. Data collection

Prior to data collection, ethics approval was obtained from the University Ethics Committee. To collect data, an interview guide was developed based on the existing literature. This interview guide was piloted on three students and three lecturers. Necessary adjustments were made based on the results of the pilot study. In accordance with the revised interview guide, data was collected using face to face semi-structured interviews. These interviews were conducted according to the participants' convenience. Each interview lasted about 45 minutes. With the consent from the participant, all the interviews were audio recorded and subsequently transcribed and anonymised.

### 3.4. Data analysis

The interviews were analysed using qualitative thematic analysis proposed by Braun and Clarke[21]. It is Thematic analysis is frequently employed to analyze qualitative data. ATLAS.ti 8 was used to help the inductive thematic analysis of the data. Each author reviewed the data and contributed to the creation of themes once the initial author coded all of the data. Emerging, recurrent and diverse themes were identified and considered along with supporting quotes.

To ensure the dependability and verifiability of the conclusions, reflective notes and field notes were taken throughout the data gathering and analysis processes. All researchers reviewed the data and contributed to the creation of themes in order to increase the credibility of the findings[22,23].

## 4. Findings

Findings from the interview data revealed eight major themes related to the challenges encountered by lecturers in conducting online assessment in the Maldivian Higher Education Institutions. These include difficulties associated with the evolving nature of assessment policies; students' lack of awareness about institutional assessment policies and procedures; lecturers' competency in designing online assessment; Inadequate infrastructure and work-space to deliver online assessment; issues related to management of time and workload; addressing student diversity and academic integrity.

### 4.1. Evolving online assessment policies

Since the adoption of online assessment was a novel approach in the Maldivian Higher Education context, the policies and guidelines related to this mode of assessment delivery were prepared within a very short duration. All participants revealed that their institutions devised an online assessment policy in response to the change from traditional assessment methods to online platforms during COVID-19. However, it was found that the guidelines were insufficient in meeting the requirement of diverse disciplines and subject areas. The guidelines shared were very general and did not consider specific disciplines at the very beginning of this transformation. Lecturers shared that it was challenging for them to prepare assessments based on a general assessment guideline. As noted by a lecturer,

> *"But there are some modules we cannot incorporate this, like introduction to linguistics and morphology and syntax. It's very practical. Like grammar type questions. How can we give high order within that limited time?" (Lecturer)*

In addition, data revealed that the guidelines changed every semester as policy makers identified the loopholes and areas for improvement. This made it difficult for educators to keep up with the changing guidelines and created confusion among them.

> *"In the first semester we did a 48 hours open book exam. But on the second semester it was changed to 24 hours open book exam" (student)*
> *"last semester we had the audio and video on and there are online invigilators during the exam which was 3-4 hours, before we had to download the question paper and upload it within 4 and half hours…we don't need to be online" (student)*

Participants also highlighted the lack of a national level online learning policy that will guide HEIs. Having a national policy of online learning and assessment was regarded as an important element to assure quality and standards of the programs offered in the county. Hence, the standards of online assessments delivered at different institutions within the country were questioned.

> *"Most important thing is to have a national e-learning policy. That will ensure that it is something accepted. So that we can find ways to ensure that it's done properly, and effectively in all institutions. All institutions should align on what's effective. At the moment all institution is doing their own thing and there is no one at the high-level guiding" (Lecturer)*

Since the institutions followed their own practices and policies created without researching the best practices in this area, it necessitated the need for a national level policy on online assessment.

## 4.2. Students' lack of awareness about institutional policies and procedures related to online assessments

In relation to the challenges of online assessments, some lecturers expressed the lack of students' awareness about online assessment policies and procedures in place at their institutions (University/Colleges). This involved the lack of awareness among some students on how to proceed with the online examinations, whom to contact when technical issues arise, what support services are available in place, and how to solve an issue when needed.

One lecturer revealed that a student lost all of her work as she was not aware of how to proceed with the exam.

> *"Students are not familiar … google form when refreshed all gone…" (Lecturer)*

Lecturers highlighted that some students did not read the exam instructions given. As described by a lecturer,

> *"Some of the students did not read the instructions properly, so once the quiz closed, they were not allowed to re-attempt it. It is explained in the instructions, but students do not read!" (Lecturer)*

In addition, lecturers highlighted the difficulties faced due to students being unaware of how to proceed when technical issues arise, which caused anxiety among students and disturbed lecturers' peace of mind.

## 4.3. Lecturer's competency in designing online assessments

One of the major issues faced by the lecturers in executing online assessment was related to their lack of training and skills required in designing online assessments. This includes the lack of knowledge on online assessment tools, and the designing of online exam papers (for summative assessments) and sufficient knowledge on assessing students formatively during the course using digital medium.

The following lecturer raised concerns regarding the designing of online exam papers.

*"Not easy. Online exams are not easy to prepare. Open book exam questions have application-level questions, and analysis questions are used, such questions are harder to prepare, thus it makes it a bit harder than to prepare physical exam questions" (Lecturer)*

Some participants highlighted the difficulty in identifying and conducting an online exam which is most suitable to evaluate the content and also expressed their desire for professional training in this area.

## 4.4. Inadequate infrastructure and work-space to deliver online assessment

Many lecturers expressed the concern of not having a strong IT infrastructure within the institution. As highlighted by lecturers, the computer systems were outdated, hence, time was wasted on technical issues. In addition, the internet speed provided from the university was weak which led to inefficiency in online assessment. As stated by lecturers,

*"Lot of time is wasted due to poor internet within the college" (Lecturer)*

Referring to technology enabled tools and software, there was no free access to many technology-enabled assessments from the institutes, which led the lecturers not to use such modern tools or software. As stated,

*"We use zoom. There are limitations. I think we can't use all the functions in it... due to financial constraints. For example, I heard from other contacts we can detect if they are browsing other things. But we can't use those functions" (Lecturer)*

*"I used a 'Socrative' to give quizzes, which was very effective. But we can only prepare limited quizzes for free. Could have been better if there is a premium package available from college login" (Lecturer)*

Overall, it was found that Maldivian higher education institutes have a long way to go for an exemplary infrastructure to cater for online assessment. In addition, it was found that there is no online exam proctoring software used in any institute in the Maldives. As concluded by a participant,

*"I would say there should be a lot of investment in improving the infrastructure ensuring that there is a sustainable approach to e-learning and assessment development. Rather than in the moment changes. Shifts should be more strategic. (Lecturer)*

Since the institutes moved to online mode of assessment delivery all of a sudden, an appropriate workspace setup was also not provided for the lecturers, creating difficulties in conducting oral examinations. Lecturers had to conduct oral exams in the spaces they shared with other lecturers, which not only affected their privacy and their students' privacy, but also affected the work of other lecturers. When a lecturer is conducting an oral exam, other lecturers who share the same work–space have to be extremely quiet. It also affected other lecturers' concentration on their own work-related activities, affecting their work productivity as well. In addition, during COVID-19 complete lock down, lecturers conducted their exams at home which further made the examination process disruptive with other family responsibilities and distractions. As explained by a lecturer,

*"And then even in university we don't have technology friendly spaces. Normally you will find many lecturers in one room, and they are taking an oral assessment where oral feedback is given. It disturbs the other people in the room" (Lecturer)*

## 4.5. Time management and workload

Almost all lecturers perceived online assessments increased their workload as it added an additional technological and pedagogical layer to what they have been doing in the past. As expressed,

*"It's more workload than physically preparing 1 question paper or 2. When it comes to online, we should have a question bank... have a standard way for uploading the questions. It's much more work than otherwise…" (Lecturer)*

Hence, technological and pedagogical difficulties related to online assessment faced by students and lecturers increased the workload for lecturers and made it difficult to manage their time.

## 4.6. Addressing student diversity

Interview data from participants revealed that the student's diversity, such as their age, disciplines, geographical location, social economic status, and their proficiency in basic technology was a major challenge in creating online assessment and its implementation. Participants indicated,

> *"...to prepare the students well for the exams by bearing in mind that not all of them are very familiar with internet or computer skills" (Lecturer)*

The lecturers highlighted that even if lecturers were aware of different online assessment tools which will be effective, they were reluctant to give exams since they had to consider the diverse students, their competency and affordability.

> *"We have students from different age groups…the older ones are not as familiar compared to younger students. So, there were issues with paper uploading and such…" (Lecturer)*
> *"Even if I want to give an assessment with an interactive video, or if we want all students to put their video on during an oral assessment, I have to think of the internet connections… especially for the students in the islands" (Lecturer)*

'The most cumbersome challenge faced by lecturers were concerns related to the academic integrity of online assessments. Within a span of three semesters, colleges and universities brought policy level changes to their practice of online assessments due to suspicions related to the validity and reliability of online exams. A lecturer shared that,

> *"They (students) discuss. They have their own viber groups. They have group meetings about the test paper and come up with the answers so everyone has the idea of the basics…" (Lecturer)*
> *"Depends how mature the students are... as adults we expect them not to cheat and to have integrity... but sometimes I feel we are giving them a way to cheat…" (Lecturer).*

From the interviews with lecturers, it was found that they are aware of copying issues among students and are very much worried about it. They have taken action to prevent this to the best of their knowledge by trying to incorporate various strategies like jumbling the questions in quizzes and using application-based questions rather than knowledge level questions.

> *"The questions are jumbled…the quiz automatically closes… it's on real time, but the copying worry is still there in all online exams" (Lecturer)*

However, they expressed that this is still not adequate to prevent copying and to ensure reliability of exam results because of the way some online exams were carried out since they believed that online exams are not suitable for some disciplines like Mathematics and Accounting for example. One lecturer recalled an incident that was shared by a student,

> *"There was this exam with a 2 hour duration to complete and submit the paper...students were given the flexibility to access the paper anytime between 2-6 pm, but once they accessed the paper, they had to finish and submit it within 2 hours. So, what the class did was one student accessed and downloaded the paper when the exam link opened at 2pm, and shared the paper with the rest of the class in a viber group. Others were working on it offline, and only accessed the paper themselves at 4pm so they still can get the extra 2 hours to attempt it." (Lecturer)*

A similar incident was also shared by another lecturer,

*"A student (from another institute) told me that her close batch-mates got together in one place to do the online exam. There were like five people doing the exam in one room. It was their accounting exam. They did the exam like a group project and submitted it as individual work. For subjects like this how can you identify even if students copied?" (Lecturer)*

# 5. Discussion

The findings indicated lecturers face various challenges related to online assessment. Lecturers reported students not being aware of the policies, guidelines articulated by the HEIs or the instructions given on online assessment procedures. As a result of this, the students had to face consequences, such as exam re-sit. Additionally, the lecturers echoed the difficulty they experienced when technical issues were faced by the students and reaching out for the lecturers while guidelines provide the procedures to follow in such circumstances. Thus, revealing the importance of being well versed with the changes in the policies and procedures by both lecturers and students. The issue of assessment policies and procedures have not been highlighted in other studies, hence, making this a unique finding of this study. This may be due to the fact that Maldives being at a very early stage on establishing online assessment while other contexts have well established mechanism for online assessment.

Moreover, the lecturers raised the concern of inconsistency among HEIs in conducting online assessments highlighting absence of a national e-learning policy, a much needed one for the quality of higher education.

In order to administer an effective online assessment certain resources need to be put in place, infrastructure, more specifically for HEIs. The findings revealed that limitations in certain online tools limited the efficient and effective delivery of online assessment for students[7,9]. The challenge with what is required by the lecturers and what HEIs offered were not compatible, elevating the difficulty in executing the new mode of assessment in HEIs. This finding supports the results of the study conducted by Ghanbari and Nowroozi[2]. Thus, making a crucial call for HEIs in terms of allocating budget on the development of infrastructure so that adequate resources are provided for lecturers to run the online assessment effectively and efficiently.

The pandemic allowed new learning and opportunities for all HEIs. However, these were taken on board by the lecturers as investing more time and energy to get equipped with the new learning. This finding corroborates with other similar studies[11,12]. Furthermore, the findings of this study revealed that the lecturers grappled with the 'new workload' spending more time with 'more workload' than physically preparing exam papers. This finding complements Ghanbari and Nowroozi's[2] research which found that developing online assessments required more effort and time. This could be due to the fact that the lectures were not ready for the drastic change and for the complex new learning involving technology. Therefore, innovative and collaborative ways need to be adopted by HEIs to decrease the load as well as equip them with adequate knowledge and skills which will reflect on effective management of online assessment.

One of the major challenges faced by the lecturers was designing online assessments, in particular, exam papers and the types of questions for online assessment. In addition, identifying the most suitable online exam to evaluate content, especially in mathematics, language, accounting and science subjects. Thus, indicating the lack of knowledge on the varieties and tools of online assessment while the lecturers are expected to collect a variety of assessment data using different types of online assessments. These findings reflect the findings of the study conducted by Rahmani[15]. However, the present study did not reveal any difficulties faced by lecturers in terms of assessing group projects in which students skills need to be evaluated although these were found as challenges in studies by Al-Maqbali and Hussain[10] and Alruwais et al.,[14].Therefore, it is evident that lecturers should be provided with specific training and professional development for the implementation of online assessments.

Academic integrity was the biggest concern in online assessment. Thus, addressing plagiarism has been a major issue, however, this issue was escalated during online assessment. This study revealed that copying, dishonesty and cheating were witnessed by the lecturers, complementing the findings of the study by Sharadgah and Sa'di[9]. Additionally, it highlights the validity and reliability of the student's performance in online assessment as described by Al-Maqbali and Hussain[10] and Rahmani[15]. The diversity of students needs to be considered when it comes to online assessment. Thus, this study showed that student diversity, in terms of age, location and knowledge on basic technology was a challenge to conduct online assessment and lecturers were unable to cater for their needs. This implies that the lecturers lack the knowledge to perform assessment of varied levels of students. This finding is similar to the results revealed in Cutri et al.'s[18] study. Therefore, the capacity of lecturers needs to be developed to cater for the demands of online assessment so that the equational outcomes of the students could be measured effectively.

## 6. Conclusion

The goal of the current study was to investigate the challenges that lecturers and students at higher education institutions in the Maldives encountered when implementing online assessment. The lack of training and skills needed to design online assessments, a heavy workload that causes poor time management, and the absence of a formalized online assessment policy were highlighted among the challenges faced by lecturers. Moreover, among the challenges faced by the institutions were issues with academic integrity, student diversity, including age, discipline, geographical location, social economic level, and basic technology proficiency, as well as problems with plagiarism, cheating, and dishonesty. Academic integrity was identified as the main challenge with online assessment.

It is evident from the findings that there are significant issues that require immediate attention. In order to prevent plagiarism and cheating, the study recommends decision-makers to ensure the inclusion of technology-based proctoring software, make pedagogical and technical competence available, and re-evaluate online assessment policies and methods appropriate for various disciplines. The institutions could also assist with student-focused awareness campaigns on issues pertaining to academic integrity.

This research can be expanded in various directions in the future. Firstly, since the study's findings and discussion were based on qualitative findings, future research could look into the challenges using a quantitative approach to help generalize the findings and provide a more holistic picture of the situation. Secondly, as academic integrity was revealed to be the study's main concern, future research could also focus on studying the problems associated with academic integrity and find out possible ways to address these problems. Finally, many of the issues discovered in this study are related to technological issues, hence it would be worthwhile to explore this aspect further.

## Author contributions

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# Conflict of interest

The authors declare no conflict of interest.

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