

BENEFITS OF ONLINE ASSESSMENTS IN HIGHER EDUCATION INSTITUTIONS: LESSONS FROM COVID-19 PANDEMIC

Aishath Waheeda¹, Fathimath Muna², Aishath Shina³, Fathimath Shaheeda⁴

¹Examinations Office, Islamic University Maldives, Violet Magu, 20037, Male', Maldives

²Kulliyah of Education, Islamic University Maldives, Violet Magu, 20037, Male', Maldives

³Local and International Relations, Islamic University Maldives, Violet Magu, 20037, Male', Maldives

⁴Centre for Postgraduate Studies, Villa College QI Campus, Rahdhebai Hingun, 20373, Male', Maldives

Email: Aishath.waheeda@ium.edu.mv

Abstract

The unprecedented wake of COVID-19 pandemic in 2020 forced Higher Education Institutions (HEIs) to move teaching and learning processes to online platforms. Although several studies have investigated aspects of online assessments, the benefits of online assessments have been a scarce area. Thus, the purpose of the current study is to explore the benefits of online assessment in HEIs in the Maldives from the lecturers' and students' perspective. This study used mixed methods with triangulation of qualitative and quantitative data. Purposive sampling was used to collect qualitative interview data from full time lecturers (N=30) and students (N=30) from 10 different HEIs and from 11 different disciplines. Data was analyzed using a thematic analysis approach. Simple random sampling was used to collect survey data from 85 lecturers and 312 students. SPSS version 23 was used to analyze the survey data using descriptive statistics. The findings of the study revealed that both lecturers and students found online assessments as an opportunity for self-growth. The data revealed that the lecturers learnt the very basics of technology and pedagogy, a variety of assessment methods and efficient ways of marking test papers and providing feedback to students. Students reported they got more acquainted with ICT basics and research skills. The study showed that online assessments were flexible, convenient and economical. In addition, the psychological issues faced in online assessments were less compared to physical examinations. However, some lecturers highlighted that physical exam answer scripts were easier to mark than online exam answer scripts. In light of the findings, it is recommended to incorporate technology driven pedagogy and assessments in the continuing professional development programs in HEIs so that lecturers are competent and well versed with the contemporary online assessments. In addition, the study implies the room for future programs on online modalities in a more structured manner for the access to higher education across the nation.

Submission: 16 January 2023; **Acceptance:** 31 May 2023



Copyright: © 2023. All the authors listed in this paper. The distribution, reproduction, and any other usage of the content of this paper is permitted, with credit given to all the author(s) and copyright owner(s) in accordance to common academic practice. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license, as stated in the website: <https://creativecommons.org/licenses/by/4.0/>

Keywords

Benefits, Online Assessment, Higher Education, COVID-19

Introduction

The unprecedented COVID-19 pandemic obliged many HEIs to re-think face-to-face teaching and learning and shift to the online-teaching and learning sphere. This not only ensured continuation of lectures during the outbreak but also opened doors for many students seeking distant or remote learning pathways, especially in the developing countries. More and more HEIs across the world are adopting online learning, increasing access to a diverse group of prospective students, such as those living in remote locations and who find it difficult to relocate, those with disabilities, parents with children, and students working full time amongst others (Renes, 2015).

As online-learning environments for higher education expand, online assessments are also gaining momentum. Assessment is defined as the action of measuring student learning and other human characteristics such as motivation and aptitude (Reeves, 2000). Similar to traditional assessment methods, assessments in online platforms also use both formative and summative assessments to support learning. Formative assessments aim to monitor students' progress in a low or no stakes setting, while summative assessments are designed to grade students against a standard or criterion (Dixon & Worrell, 2016). Hence, for the purpose of this study, we define online assessments as any means of evaluating student achievement, providing feedback, or moving the students forward in their learning process in fully online credit courses through means of both formative and summative assessment methods.

Whatever the mode of assessment, i.e whether it is conducted in-person at specified location or online, all assessments serve three key functions in higher education: (1) to enhance learning, (2) to achieve accountability, and (3) to provide certification, progress, and transfer (Archer, 2017). Hence, as Vlachopoulos (2016) asserts, online assessments must have the same academic rigor as face-to-face assessments; it must correspond with learning outcomes of the programs, provide valuable learning opportunities for students, and have a standard of excellence for students to strive for. More importantly, it must align with the standards, quality assurance and accountability frameworks set by professional accrediting bodies.

Driven by the need to assure quality, academic integrity, and accountability, several concerns have been raised regarding the trustworthiness, credibility and security of online assessments. Scholars of online assessments are concerned about the validation of learning and the verification of students' assessments (Pedersen, White & Smith, 2012). However, the advancement in Information Communications Technology (ICT) has now enabled secure online assessment a reality. Advancement in ICT has brought in innovations that allow security-enhanced online assessment systems to prevent cheating and fraud. Such online assessment systems use a variety of techniques to prevent and/or detect cheating such as authentication methods, restriction methods, monitoring methods and other data analysis methods amongst others. For example, some online assessment systems utilize recognition methods like multimodal biometric system that uses face recognition and keystrokes dynamics for continuous authentication; restriction methods that

disable various features on a user's device in order to prevent cheating (such as disabling copy/paste, blocking exit from full screen, turning off print-screen function, deactivating right click, preventing additional software from being run, disabling printing, disabling control keys of browser and function keys); and also monitoring and surveillance methods that allow machine and human proctoring (Topuz, Saka, Fatsa & Kursun, 2022). Hence, such convincing security features of online assessment systems has made this modality a viable option for assessing students' learning outcomes and performance summatively (through online examinations).

In parallel, a growing body of research has also evidenced the opportunities and benefits that online assessment modality offers. Research suggests that carefully designed online-assessments provide several benefits over traditional methods of assessments (Ilgaz & Adanır, 2020; Mate & Weidenhofer, 2022; Shraim, 2019). There are both practical and pedagogical reasons that support the use of technology in higher education to make assessments more authentic, accessible, secure, efficient, and effective (Gipps*, 2005; Mate & Weidenhofer, 2022).

Looking at the practical implications of online assessments, the most commonly cited benefit of this mode is the significant reduction in cost for things like printing, renting examination space, hiring of invigilators, traveling cost of examination organizers, transport of exam papers, and overall paper usage (Betlej, 2013; Spivey, 2014; Tuah & Naing, 2021). In addition, since most HEIs use freely available online tools and software such as Canvas, Google forms, SurveyMonkey, and HubSpot forms, this makes it a desirable mode to utilize in assessing students as it is cost effective (Tuah & Naing, 2021).

Moreover, the flexibility in time and space also makes this mode a convenient method for both educators and students (Annamalai, Ramírez García, Mažeikien, Alqaryouti, Rashid & Uthayakumaran, 2022; Fitriyah & Jannah, 2021; Spivery & McMillan, 2014). Studies show that online assessments allow adjustable testing times and date during which the test may be conducted (Spivery & McMillan, 2014). It allows direct storage of data, which can be accessed at any time anywhere, allowing educators to look back into student's work in case it needs to be reviewed, or to see how students' performance have improved or changed over time (Fitriyah & Jannah, 2021). Fitriyah and Jannah (2021) also reveal that online assessments offer enhanced transparency of learning of students compared to traditional methods. In addition, freedom to take online exams in the comfort of their homes provided a calmer environment to take the exam and also saved students time in commuting to exam halls, giving them more time to revise (Annamalai et al, 2022). Online assessments also make it easy to manage increasing class sizes and staff workload. For example, the widely adopted digital LMSs (such as Blackboard, Moodle, and Canvas) can be used to automatically mark and provide immediate feedback for large numbers of students in a short period of time, with little cost and effort, and with enhanced reliability of grading, evidencing its practical efficiency (Shraim, 2019).

Apart from the practical advantages of online assessments, it also offers several pedagogical benefits, directly and indirectly. Online assessments use technology features that offer automated marking and provide instant feedback to students, contributing to improved academic performance of the students in summative assessments (Mitra & Barua, 2015). Online assessment provides the additional advantage of allowing for quick and precise feedback to large student cohorts on individual performance, allowing students to focus on their weakest areas for improvement (Mate & Weidenhofer, 2022). It was found that such tools used in online assessments significantly enhanced learner engagement and contributed to the creation of a learning community, especially when used for formative assessment purposes (Gikandi, Morrow and Davis,

2011). Enhanced learner engagement in online platforms in turn positively contributed to student achievement (Elzainy, Sadik & Abdulmonem, 2020).

Online assessment has also shown to support learning that is transferable to 21st century professional essentials. For example, several studies show that the use of online assessments improved students' technological skills as the frequent exposure to technology during online assessments transformed students' digital norms and transformed their mindsets by creating a digital culture (Baleni, 2015; Elzainy et al, 2020; Ndibalema, 2021). It also improved students' confidence in dealing with technical challenges (Ndibalema, 2021), which is frequently cited as a major drawback of using online assessments. Furthermore, students benefited from online assessments by enabling them to be engaged in self-directed learning, which improved their divergent thinking and self-reflection (Ndibalema, 2021). According to Fitriyah & Jannah (2021) it also helped to cultivate students' autonomous learning abilities.

Given that there is a lot of potential for use of online assessments in the future it is important that this area be further explored, especially in a developing country such as the Maldives where a significant majority of the population migrate to the capital city Male' for further education. Though online assessments have been in use in well-established universities in the developed countries, this modality is generally new to educators and students in the developing regions. Online assessment only gained popularity during the COVID-19 pandemic in this part of the world. Therefore, this study aims to explore the benefits of online assessments in the context of Maldivian Higher Education from both the educators' and students' perspective. Understanding this through the perspectives of educators and students will tell us a lot about their readiness to adopt and continue this method as a viable option for assessing students' learning outcomes. Hence, the research question to address the aim of this study is "What are the educators and students' perception about the benefits of online assessments in Maldivian HEIs?".

Methodology

This study adopted a mixed method concurrent approach as suggested by Creswell (2014). It is a useful method for gathering both quantitative and qualitative data and combining the results to better comprehend a new phenomenon (Creswell & Plano, 2018). As the focus of the study was to explore the benefits of online assessment in HEIs in the Maldives from the lecturers' and students' perspective, this design helped the researchers in gaining a qualitative grasp of the phenomenon and identifying relevant components statistically, allowing researchers to draw a conclusion. Face-to-face interviews for the qualitative data and an online survey for the quantitative were the two approaches utilized to acquire the information.

Krejcie and Morgan's (1970) table was used to establish the study's population. The total number of students was 4581, with a sample size of 354. These participants provided an 88% response rate. The lecturer population, on the other hand, was 157, with a sample size of 113. This group provided 75% of the responses. The participants were chosen based on the requirement that they have completed at least one semester of online assessments (six months).

A total of 312 students and 85 lecturers from 10 higher education institutions took part in the survey. A simple random sample method was utilized to choose these participants. Furthermore, purposive sampling was used to collect qualitative interview data from full time lecturers (N=30) and students (N=30) from 10 different HEIs and from 11 different disciplines.

Two questionnaires were used to collect data. For the survey, the instrument used was adapted from Student Perception of E-Assessment Questionnaire- SPEAD (Dermo, 2009) and created in both Dhivehi (Maldivian native language) and English. The survey was divided into four sections including demographics information. Surveys on separate links were produced for lecturers and students, but most questions were common to facilitate a cross-sectional analysis on the type of respondents. The survey instrument was pre-tested on 25 academics and 29 students before large scale distribution. Minor rephrasing of the questions was undertaken as a result of the pre-testing. An interview guide was used to collect qualitative data. The questions were developed based on the existing literature. The guide was pre tested on 3 academics and 3 students and necessary changes were made before the main data collection. Each participant's interview lasted around 45 minutes each. The interviews were conducted at the convenience of the participants.

The quantitative data were analyzed using IBM SPSS Statistics (version 23), and Atlas ti. 7 was used to analyze qualitative data. Data obtained from the various sources were analyzed by using the descriptive statistics for quantitative data. and thematic analysis proposed by Braun and Clarke (2006) for qualitative data. Data were organized around each research question to cross reference similarities and differences among participants. The study was approved by the Ethical Clearance Committee of the Islamic University of Maldives.

Results and Discussion

A total of 9 themes emerged from the analysis of the data collected to explore the perceived benefits of online assessments. The findings surrounding these themes are presented below.

1. An opportunity for self-growth

The most significant finding of this study was that all the participants, both lecturers and students, highlighted that their engagement in online assessment process offered them an opportunity for self-growth. It enabled lecturers to learn to design and develop various contemporary online assessment tasks and try out new types of online assessment strategies. IN addition, both lecturers and students mentioned that they got well acquainted with the variety of current assessment tools which they were not aware of before. This helped them professionally to stay in touch with the rapidly changing technologies in the field and to keep their technological skills fresh and up to date. As mentioned below;

"...Online assessments contributed to my self-development. It came with a challenge, so we had to use different tools, different methods and to learn and get myself acquainted with it, I enrolled in IT stuff as well..."(Lecturer)

"...I was able to get knowledge or information on how these are conducted...it was a learning experience in one way..."(Lecturer)

"...the most desirable aspect of this experience is the opportunity to learn continuously with other people, the new knowledge" (Lecturer)

"We use the skills...like, presenting online, we learnt online tools, like google meet other than the virtual team..." (Student)

“It was a good chance for me to learn more” (Student)

“I learnt something new through online assessment...how to do an e-portfolio...we were not taught how to do one...we had to learn by ourselves through the internet” (Student)

Similar to the qualitative findings, quantitative survey results also showed that the majority of the students (41.3%) agreed that online learning allowed them to add value to their learning. This assertion was supported by lectures (57.6%) who agreed that online learning enhanced their students' learning.

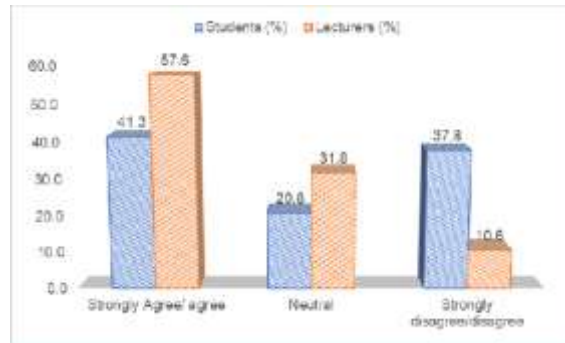


Figure 1. *Online assessments add value to learning*

These findings are in line with other research which also reported enhanced technological skills and confidence among students' and educators when they are involved in online assessment (Baleni, 2015; Elzainy et al, 2020; Ndibalema, 2021). Additionally, students benefited from online assessments by enabling them to be engage in self-directed learning, which improved their divergent thinking and self-reflection (Ndibalema, 2021). According to Fitriyah & Jannah (2021) it also helped to cultivate students' autonomous learning abilities. Likewise, findings of this study showed that students were forced to engage in self-directed learning as they had to attempt online assessment tasks, enabling them to be more autonomous.

2. Enhanced Accessibility

Another major benefit of online assessments found from this study was that it allowed students from different parts of the country access higher education and continue their studies while being in their islands without the need for travel, even to attempt summative exams. Getting access to higher education opportunities without the need to relocate is of high value to a country like Maldives, considering the geographical dispersion of the islands. Nearly all the participants admitted that online exams provided the opportunity to do exams regardless of their location. As stated below;

“It provides the opportunity for many students living in different regions to participate” (Lecturer)

“I think it’s very important, especially for Maldives, because of the dispersed geographical nature...the people who want to pursue education they have to relocate themselves or migrate in order to get education” (Lecturer)

"Opportunity for students to do the exam from any part of the country" (Lecturer)

In addition, participants stressed on how online exams paved the way to carry out exams while being at home and attending family responsibilities. As mentioned below.

"What is most appealing to me is that I can attend the online exam wherever I am, at any place" (Student)

"I can participate in the exam while at home without going to campus. Since I have a baby, it's very difficult to go to places at a specific time" (Student)

From the quantitative data collected, similar results were also found. More than two-thirds (77.6%) of the students believed that online evaluations were more accessible than physical exams, while more than half (70.6%) of the lecturers agreed with this assertion.

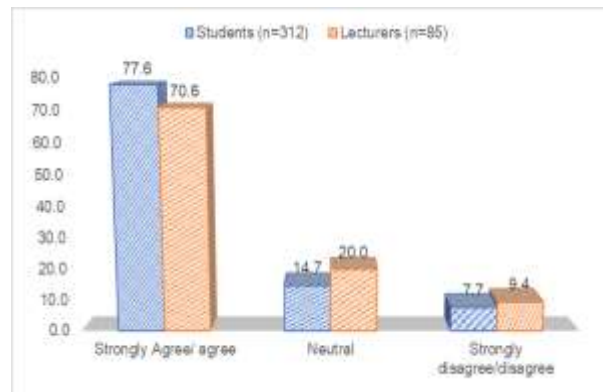


Figure 2. *Online assessments are more accessible than physical exams*

Hence, students benefitted from such systems as they can write their tests and submit their assignments remotely. When you run online assessments, it is easier to adapt those assessments for candidates who have disabilities. It is also easier to add extra time for online candidates who need special considerations. Online exam tools have the option to define exams with multiple schedules and multiple time zones, so students across geographical boundaries can take up exams, the way they want. Instructors, on the other hand, could evaluate from anywhere (Cutri, Mena, & Whiting, 2020).

3. Opportunity to use a range of diverse assessment techniques

Data revealed that embedding online assessments into the courses enabled educators to use a range of different types of assessments with various levels of complexity which would not have been easy to implement in the traditional setting. This helped educators to assess students' learning more frequently and provide prompt feedback for improvement without much effort. In addition, it was also found that the opportunity to add 'variety' to the types of assessments used (such as quizzes, videos, simulations) helped to engage students in their own learning since it offered a means to cater to the different learning styles of students as highlighted below by some lecturers.

“The online assessments help to mould the lecturers’ teaching as well as identify the students’ learning styles. So, giving different types of assessments is very important, so we can reach every student and identify what the students are lacking. It is very important for both teaching and learning” (Lecturer).

“...I am able to conduct assessments in a manner where I can incorporate three different techniques” (Lecturer)

This was reinforced by the students who got the opportunity to show their understanding of content knowledge and skills through a variety of assessments like, video editing, essay writing, oral presentations. Furthermore, this enhanced their knowledge on online assessment techniques and online technologies at large which would be helpful for their career growth.

“Many opportunities to do assessment in many ways. Lots of assessment techniques” (Student)

“...Learned lots of ways to provide assessment for my students even” (Student)

“We learned a lot of online techniques and got familiar with online technologies” (Student)

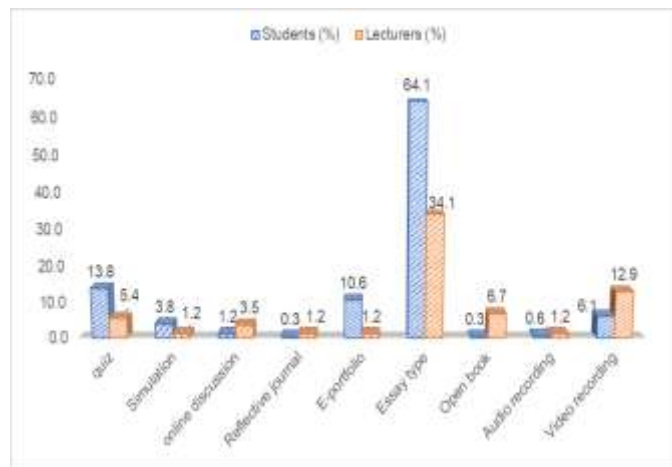


Figure 3. Online assessments techniques used

Quantitative data collected provided additional evidence that a range of assessments techniques were applied in online setting, which included quizzes, simulations, online discussion forums, e-portfolios, reflective e-journals, essays, open book exams, audio and video recorded presentations. Among these different techniques, essay writing was found to be most commonly employed strategy by both students (64.1%) and lecturers (34.1%).

In accordance with the present results, previous studies have demonstrated that online assessment provides the opportunity to create question types using a range of tools which make the whole testing experience much more interactive and interesting (Elzainy, Sadik, & Al Abdulmonem, 2020).

4. Efficiency in marking and evaluating students’ standard

Lecturers reported enhanced efficiency in marking online assessments compared to traditional exams papers. They described that online assessment platforms were more helpful for marking as it saved their valuable time since marking particular types of assessments such as MCQs can be automated. As noted below;

"There are online platforms to mark the papers so it's time-saving" (Lecturer)

"Marking, hard copy is difficult. Online MCQ, can put keys, it's automatically marked. So marking is easier and faster" (Lecturer)

"Marking is better online" (Lecturer)

Moreover, online assessments were found to be an easier way to evaluate and analyse the general standards of students and to take proactive measures to enhance students’ learning. It was found to be an efficient method to continuously monitor students’ learning progress.

"...its very easy for me to analyse and evaluate the general standard of students... individual and group as well. This help to generate statistics of student's standard...can monitor well, take corrective action more easily" (Lecturer)

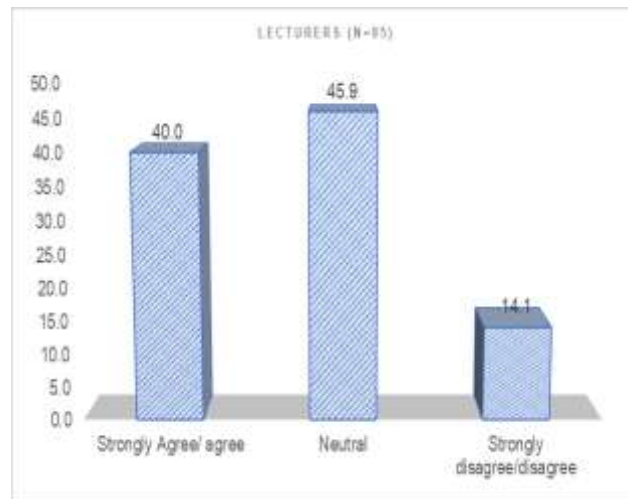


Figure 4. *Marking is efficient for online assessments*

Results of the quantitative survey further confirm the qualitative findings since 40.0% of lecturers also agreed/strongly agreed that marking is more efficient in online assessment.

The above findings support recent literature findings as well. Shraim (2019) also discussed the advantages of online assessments, particularly how the widely adopted digital LMSs (such as Blackboard, Moodle, and Canvas) can be used to automatically mark and provide immediate feedback for large numbers of students in a short period of time, with little cost and effort, and with enhanced reliability of grading, evidencing its practical efficiency. This suggest that online

assessments can be a useful method to accommodate the increasing higher education student enrollment and to manage the increasing class sizes and staff workload accompanied with it.

5. Efficiency in providing feedback to students

Most of the lecturers expressed the ease of providing instant feedback when conducting online assessments. They further highlighted the efficiency in giving feedback via multiple means to individuals or groups online. As mentioned below;

“I believe the frequent and timely feedback is one of the important aspects of learning. So that is something that I can do more efficiently during online assessment” (Lecturer)

“The ability to give instant feedback and the opportunity to give detailed feedback using a variety of ways...written, audio and video feedback. For large groups, you can engage them in broad discussion, for two weeks, you don’t need to give individual feedback” (Lecturer)

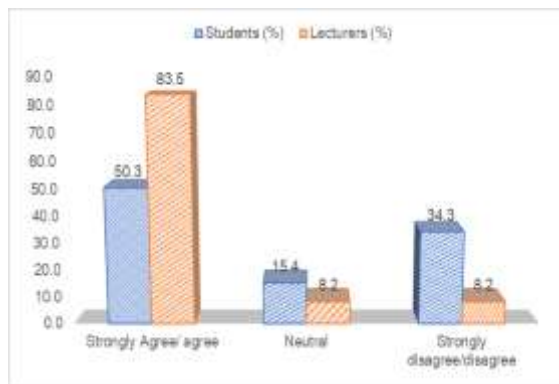


Figure 5. Feedback given online

Furthermore, the student survey findings revealed that 50.3% (n=157) of the 312 students felt that they received feedback easily via online. Similarly, the majority of lecturers (83.5%) believed that providing feedback was simple.

Online assessments use technology features that offer automated marking and provide instant feedback to students, contributing to improved academic performance of the students in summative assessments (Mitra & Barua, 2015). Online assessment provides the additional advantage of allowing for quick and precise feedback to large student cohorts on individual performance, allowing students to focus on their weakest areas for improvement (Mate & Weidenhofe, 2022). It was found that such tools used in online assessments significantly enhanced learner engagement and contributed to the creation of a learning community, especially when used for formative assessment purpose (Gikandi, Morrow & Davis, 2011). Enhanced learner engagement in online platforms in turn positively contributed to student achievement (Elzainy et al, 2020).

6. Flexible and convenient

Another recurring theme was the flexibility and convenience of online exams. It was reported by both teachers and lecturers that exams can be done ‘at any time’, revealing the flexibility and convenience in doing and conducting online exams. As remarked below;

"It's a good thing, it's useful. That way, we can give the test at any time. I like the flexibility it offers" (Lecturer)

"Papers were 2-6 hrs long. Can begin whenever we want... so that flexibility is there" (Student)

"Flexible. They ask us beforehand which times are easier for us and set..." (Student)

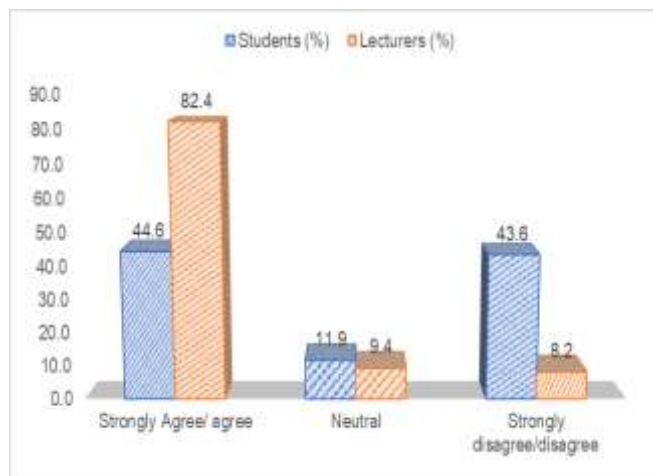


Figure 6. Assessments were flexible

Furthermore, the survey results of students (44.6%) and lectures (82.4%) revealed that online assessments provide the flexibility to take the exam anywhere.

These findings are consistent with previous literature which evidenced the convenience of online assessments for both lecuteres and students, often associated with its flexibility in time and space (Annamalai, Ramirez García, Mažeikien, Alqaryouti, Rashid & Uthayakumaran, 2022; Fitriyah & Jannah, 2021; Spivery & McMillan, 2014). Studies show that online assessments allow adjustable testing times and date during which the test may be conducted (Spivery & McMillan, 2014). It allows direct storage of data, which can be accessed at any time anywhere, allowing educators to look back into student’s work in case it needed to be reviewed, or to see how students’ performance have improved/changed over time (Fitriyah & Jannah, 2021). In addition, Annamalai et al, (2022) found that online exams saved students time in commuting to exam halls, giving them more time to revise.

7. Economical

The pandemic was a challenge, however, opened many opportunities such as online assessment which helped the institutions financially. Online assessment being economical was echoed by many of the participants as it saved funds spent on printed papers and resources in general which could be geared to strengthen the technology related hardware and software of the HEIs. As highlighted below.

"Easy to use. To the environment as well. Paper saving" (Lecturer)

"...saving will be there for the institution. Resources will also be saved in terms of printing paper and so on" (Lecturer)

Similarly, the survey data found that 49.0% students and 87.1% lecturers agreed that online assessments use less paper than physical exams.

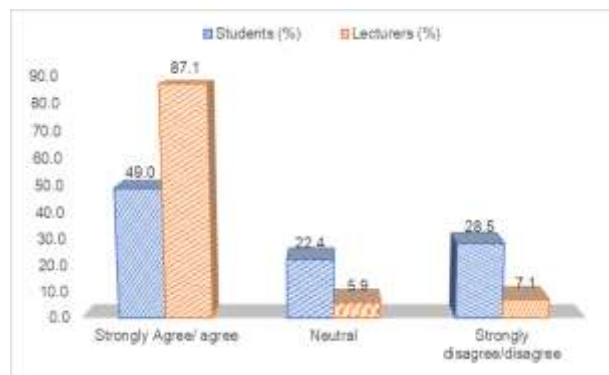


Figure 7. Online assessments use less paper

Looking at the practical implications of online assessments, the most commonly cited benefit of this mode is the significant reduction in cost for things like printing, renting examination space, hiring of invigilators, traveling cost of examination organizers, transport of exam papers, and overall paper usage (Betlej, 2013; Spivey, 2014; Tuah & Naing, 2021). In addition, since most HEIs use freely available online tools and software such as Canvas, Google forms, SurveyMonkey, and HubSpot forms, this makes it a desirable mode to utilize in assessing students as it is cost effective (Tuah & Naing, 2021).

8. Positive impact on mental well-being

Although the pandemic had an adverse effect on the mental health of many, data revealed that online assessment had a positive impact on the student's mental well-being. As such, the students expressed doing the exam with "a lot of peace" indicating their state of mind at the time of attempting their exam paper. Additionally, terms like 'no pressure', 'less stress' and 'comfortable surrounding' were mentioned by the students which may have resulted in performing better in their exams compared to physical exams. As remarked below.

"Did it with a lot peace with no pressure...alone in a room" (Student)

"Less stress rather than going to physical exam...I would feel very stressed. Worried about ink in the pen...whether I brought all the materials needed. In online exam I don't have such stress" (Student)

"I was able to do my test in a more comfortable surrounding without others" (Student)

The students' opinions were complemented by the lecturers. Some of the lecturers expressed *"having the luxury...in their comfortable attire, in their comfortable space"* in describing students doing the exam online. Moreover, the online exam seemed to be more effective as it gave a positive psychological impact to students which perhaps found to be more acceptable by the lecturers as well. As mentioned below.

"Students who are anxious about things, especially exams, they benefit from the online exams...for some, the physical exam is a frightening experience but for online exams they have the luxury of doing the exam in their comfortable attire, in their comfortable space..."(Lecturer)

"Really love it... as children and grown-ups...the physical exam...exam phobia, anxiety...these things are reduced when we give online exam...they have their own space, and it would be less stressful. So, if we consider psychological perspective even, it's more effective" (Lecturer)

Although the qualitative data indicated that the students had a favorable impact on their mental well-being, the quantitative data contradicted this finding. According to the survey results, both students (67.6%) and lecturers (47.1%) agreed that they encounter major health difficulties during online exams.

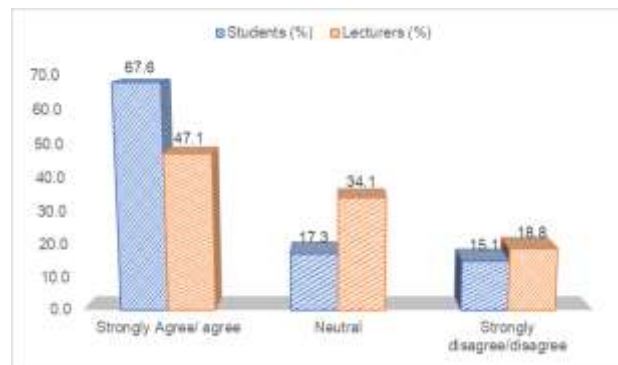


Figure 8. Face health issues

Similar to the qualitative findings, Annamalia et al. (2022) also reported that the freedom to take online exams in the comfort of their homes provided a calmer environment to take the exams. However, this calmness and mental peace reported may vary depending on internet stability, familiarity with the type of online assessments used, familiarity with the LMS and the assessment system itself, and the home environment (Shraim, 2019). In his study, Shraim (2019) found that the fact that LMSs like Moodle is in English and not in the native language of some students, this may further exacerbate the stress associated with taking assessments via such

platform. This helps to explain the contrasting result of quantitative survey. A considerable number of students who took the survey are enrolled in programs conducted in Maldivian native language, Dhivehi.

9. Security

The students expressed that they ‘*trust the system*’, the LMS or the online platform the assessment was carried out in terms of security of the examination. Most of the students highlighted the measures taken for the security of the online examination, such as, the paper being viewed ‘*through a link*’ at a ‘*set time*’ and having ‘*access*’ to online ‘*assessment*’ during the ‘*exam hours*’ only. As reported below.

“I believe it is safe. I trust the system” (Student)

“They tell us we can see the paper through a link at a set time. There is a separate Google classroom for the exam. It is secure, we have not faced any issues” (Student)

“It is secure as the students only have access to the assessment during the specified exam hours” (Student)

Similarly, the quantitative data revealed Both students (45.8%) and lecturers (37.6%) agreed that online exams, like paper-based examinations, were secure.

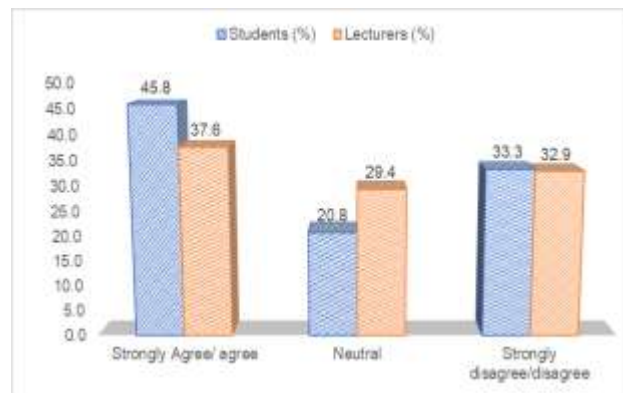


Figure 9. Online assessments are secure

In terms of student’s grades security, the data showed that both students (40.1%) and lecturers (55.3%) believed that students' assessment grades in online examinations were secure. However, it was discovered that a significant number of students (36.9%) believed it was not.

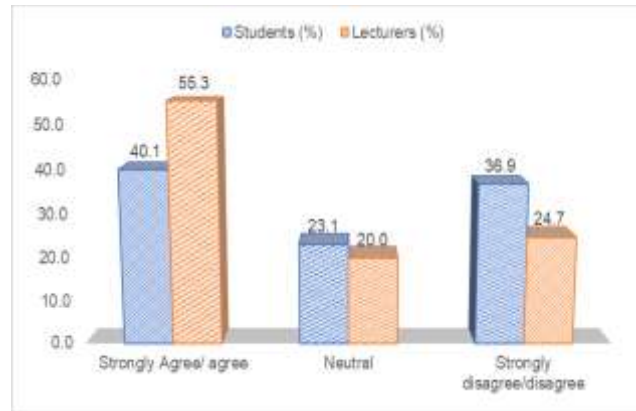


Figure 10. Students' grades are secure

When it came to the system's security, all of the participants, students (45.8%), and lecturers (47.1%), were convinced that it was vulnerable to hackers. This demonstrated that the internet system is vulnerable to hackers and that immediate action is required to resolve the problem.

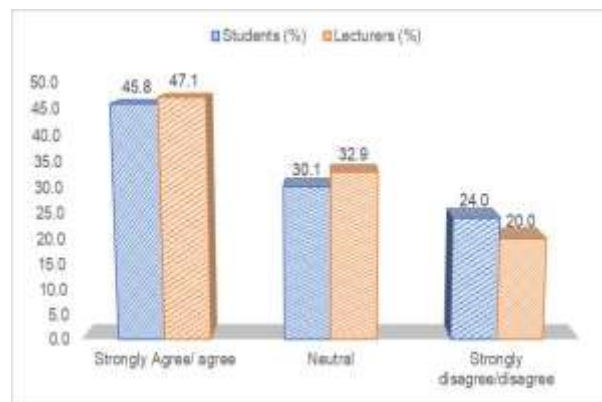


Figure 11. Online exam system is vulnerable to hackers

However, the advancement in Information Communications Technology (ICT) has now enabled secure online assessment a reality. Advancement in ICT has brought in innovations that allow security-enhanced online assessment systems to prevent cheating and fraud. Such online assessment systems use a variety of techniques to prevent and/or detect cheating such as authentication methods, restriction methods, monitoring methods and other data analysis methods amongst others. For example, some online assessment systems utilize recognition methods like multimodal biometric system that uses face recognition and keystrokes dynamics for continuous authentication; restriction methods that disable various features on a user's device in order to prevent cheating (such as disabling copy/paste, blocking exit from full screen, turning off print-screen function, deactivating right click, preventing additional software from being run, disabling printing, disabling control keys of browser and function keys); and also monitoring and surveillance methods that allow machine and human proctoring (Topuz, Saka, Fatsa & Kursun, 2022). Hence, such convincing security features of online assessment systems has made this

modality a viable option for assessing students' learning outcomes and performance summatively (through online examinations).

Conclusion and Recommendations

This research was conducted to analyze lecturers' and students' perception on the benefits of online assessment. Although online assessment practices were adopted as a means to continue education during Covid-19, it has shown a positive impact for all concerned. Both lecturers and students found online assessments as an opportunity for self-growth. The data revealed that the lecturers utilised a variety of assessment methods and efficient ways of marking test papers and providing feedback to students. Students reported they got more acquainted with ICT basics and research skills. The study showed that online assessments were flexible, convenient and economical. In addition, the psychological issues faced in online assessments were less compared to physical examinations.

Considering the findings, the study indicates the room for future programs on online modalities in a more structured manner for the access to higher education across the nation. It is recommended to incorporate technology driven pedagogy and assessments in the continuing professional development programs in HEIs so that lecturers are competent and well versed with the contemporary online assessments. The study contributes to further strengthening the e-learning guidelines and standards of Maldives Qualifications Authority (MQA). It is also recommended to continue online assessments to retain and further develop the acquired technology pedagogy skills. Finally, this paper calls HEIs to evaluate the effectiveness of current online assessment techniques and take necessary actions to enhance the quality of online programs offered in higher education.

Acknowledgements

The study was conducted under the research grant of Islamic University of Maldives.

References

- Annamalai, N., García, A. R., Mažeikiene, V., Alqaryouti M. H, Rashid R. A & Uthayakumaran, A. (2022), A phenomenological study of online assessment during a pandemic crisis: Insights from Malaysia, Lithuania, and Spain. *Frontiers in Psychology*, 13:957896.
- Archer, E. (2017, August). The assessment purpose triangle: Balancing the purposes of educational assessment. In *Frontiers in Education* (Vol. 2, p. 41). Frontiers Media SA.
- Baleni, Z. G. (2015). Online formative assessment in higher education: Its pros and cons. *Electronic Journal of e-Learning*, 13(4), pp228-236.
- Betlej, P. (2013). E-examinations from student's perspective-The future of knowledge evaluation. *Studia Ekonomiczne*, 153, 9-22.
- Cutri, R. M., Mena, J., & Whiting, E. F. (2020). Faculty readiness for online crisis teaching: transitioning to online teaching during the COVID-19 pandemic. *European Journal of Teacher Education*, 43(4), 523-541.

- Dermo, J. (2009). e-Assessment and the student learning experience: A survey of student perceptions of e-assessment. *British Journal of Educational Technology*, 40(2), 203-214.
- Dixson, D. D & Worrell, F. C. (2016) Formative and Summative Assessment in the Classroom. *Theory Into Practice*, 55(2), 153-159.
- Elzainy, A., El Sadik, A., & Al Abdulmonem, W. (2020). Experience of e-learning and online assessment during the COVID-19 pandemic at the College of Medicine, Qassim University. *Journal of Taibah University Medical Sciences*, 15(6), 456-462.
- Fitriyah, I., & Jannah, M. (2021). Online Assessment Effect in EFL Classroom: An Investigation on Students and Teachers' Perceptions. *Indonesian Journal of English Language Teaching and Applied Linguistics*, 5(2), 265-284.
- Gipps*, C. V. (2005). What is the role for ICT-based assessment in universities? *Studies in Higher Education*, 30(2), 171-180.
- Gikandi, J. W., Morrow, D., & Davis, N. E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & education*, 57(4), 2333-2351.
- Ilgaz, H., & Afacan Adanır, G. (2020). Providing online exams for online learners: Does it really matter for them?. *Education and Information Technologies*, 25(2), 1255-1269.
- Krejcie, R. V, & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607–610.
- Mate, K., & Weidenhofer, J. (2022). Considerations and strategies for effective online assessment with a focus on the biomedical sciences. *Faseb Bioadvances*, 4(1), 9-21.
- Mitra, N. K., & Barua, A. (2015). Effect of online formative assessment on summative performance in integrated musculoskeletal system module. *BMC medical education*, 15(1), 1-7.
- Ndibalema, P. (2021). Online Assessment in the Era of Digital Natives in Higher Education Institutions. *International Journal of Technology in Education*, 4(3), 443-463.
- Pauli, M., & Ferrell, G. (2020). The future of assessment: five principles, five targets for 2025. JISC. Retrieved from <https://www.jisc.ac.uk/reports/the-future-of-assessment>.
- Reeves, T. (2000). Alternative assessment approaches for online learning environments in higher education. *Journal of Educational Computing Research*, 23(1), 101–111.
- Reyes, S. L. (2015). Increasing access to higher education through e-learning. *E-learning-Instructional design, organizational strategy and management*, 10, 60906.
- Elzainy, A., El Sadik, A., & Al Abdulmonem, W. (2020). Experience of e-learning and online assessment during the COVID-19 pandemic at the College of Medicine, Qassim University. *Journal of Taibah University Medical Sciences*, 15(6), 456-462.

- Shraim, K. (2019). Online examination practices in higher education institutions: learners' perspectives. *Turkish Online Journal of Distance Education*, 20(4), 185-196.
- Spivey, M. F., & McMillan, J. J. (2014). Classroom versus online assessment. *Journal of Education for Business*, 89(8), 450-456.
- Topuz, A. C., Saka, E., Fatsa, Ö. F., & Kurşun, E. (2022). Emerging trends of online assessment systems in the emergency remote teaching period. *Smart Learning Environments*, 9(1), 1-21.
- Tuah, N. A. A., & Naing, L. (2021). Is online assessment in higher education institutions during COVID-19 pandemic reliable? *Siriraj Medical Journal*, 73(1), 61-68.
- Pedersen, C., White, R., & Smith, D. (2012). Usefulness and reliability of online assessments: a Business Faculty's experience. *International Journal of Organisational Behaviour*, 17(3), 33-45.
- Vlachopoulos, D. (2016). Assuring quality in e-learning course design: The roadmap. *International Review of Research in Open and Distributed Learning: IRRODL*, 17(6), 183-205.