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First-Year Student's E-Readiness to Use Learning Management System: COVID-19 Realities

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Abstract: The COVID-19 pandemic has profoundly impacted higher education institutions worldwide, prompting a rapid shift towards online learning environments. This study aims to assess the e-readiness of first-year students in using the Learning Management System (LMS) in the context of COVID-19. The researchers used the Technology Acceptance Model (TAM) framework to understand the first-year students' acceptance and adoption of technology, focusing on perceived usefulness and ease of use. This study employed a concurrent mixed methods approach: To what extent were University of South Africa (UNISA) first-year students e-ready to use the LMS for engaging in online teaching, learning, and assessment activities during the COVID-19 pandemic? A sample of 2,707 first-year students and 30 academics from diverse academic disciplines was selected from nine colleges of the South African Open, Distance, and e-Learning (ODeL) institution during

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the years 2020 and 2021. The study evaluated the students' technological proficiency, digital literacy skills, access to digital devices and the internet, and their perceptions and attitudes towards online learning and assessment. The study explored students' experiences, motivations, and barriers to effectively using an LMS for engaging in online teaching, learning and assessment activities during the COVID-19 pandemic. Preliminary findings indicated that while many first-year students had basic digital skills and access to the necessary technological resources, many faced challenges in adapting to online learning environments. These challenges included limited internet connectivity, lack of technical support, difficulties in managing time and motivation, and unfamiliarity with LMS resources and activities. However, students also expressed positive attitudes towards the flexibility and accessibility offered by online learning, appreciating the convenience and diverse learning resources available through an LMS. The outcomes of this research will inform educators, administrators, and policy-makers in developing strategies to enhance first-year students' e-readiness and improve the implementation of online teaching, learning, and assessment activities. Addressing the identified challenges can lead to a more inclusive and effective learning environment, ensuring equitable access to education amidst the ongoing COVID-19 realities.

Keywords: COVID-19, digital literacy, e-Readiness, First-year students, online learning, Open-Distance and e-Learning, Technology Acceptance Model

L'état de cyberpréparation des étudiants à l'utilisation du système de gestion de l'apprentissage : contexte de la COVID-19

Résumé : La pandémie de la COVID-19 a profondément changé la culture dans le monde des établissements d'enseignement supérieur et a accéléré la transition vers des environnements d'apprentissage en ligne. Cette étude a pour objectif d'évaluer l'état de cyberpréparation des étudiants de première année universitaire à l'ut du système de gestion de l'apprentissage (SGA) dans le contexte de la COVID-19. Les chercheurs ont utilisé comme cadre, le modèle d'acceptation de la technologie (MAT), afin de comprendre le degré d'acceptation et d'adoption de la technologie par les étudiants en ciblant leur perception sur sa facilité d'utilisation et son utilité. Cette étude utilise une approche de méthodes mixtes simultanées : Dans quelle mesure les étudiants de première année de l'Université d'Afrique du Sud (UNISA) sont-ils préparés au numérique pour utiliser le SGA et s'intéresser aux activités d'enseignement, d'apprentissage et d'évaluation en ligne durant la pandémie de la COVID-19? Un échantillon de 2 707 étudiants de première année provenant de 30 universités et de différentes disciplines a été sélectionné à partir de neuf (9) collèges participants de l'Institut pour une collectivité ouverte, à distance et en ligne (IODL) de l'Université d'Afrique du Sud, pendant les années 2020 et 2021. L'étude évalue l'aptitude à la technologie, les habiletés numériques, l'accessibilité aux outils technologiques et à l'Internet ainsi que leur perception et leur attitude face à l'apprentissage et l'évaluation en ligne. Elle analyse également les expériences, la motivation et les barrières d'une utilisation efficace du SGA pour s'engager dans les activités d'enseignement, d'apprentissage et d'évaluation en ligne durant la

pandémie de la COVID-19. Les résultats préliminaires indiquent qu'alors que plusieurs étudiants de première année possèdent des habiletés numériques de base et ont accès aux ressources technologiques essentielles, plusieurs d'entre eux ont des difficultés d'adaptation aux environnements d'apprentissage en ligne. Ces difficultés comprennent la qualité de la connexion à Internet, le manque de soutien technique, celles de gérer leur temps et leur motivation ainsi que le manque de familiarité avec les ressources et les activités du SGA. Cependant, les étudiants ont aussi exprimé une attitude positive envers la flexibilité et l'accessibilité que l'apprentissage en ligne peut offrir, de même qu'ils ont apprécié les avantages et la diversité des ressources offertes par un SGA. Les constats de cette recherche vont permettre de renseigner les éducateurs, les administrateurs et les décideurs dans le développement de stratégies pour accroître l'état de cyberpréparation des étudiants de première année et améliorer l'implantation des activités d'enseignement, d'apprentissage et d'évaluation en ligne. Agir face aux défis identifiés ne peut que conduire vers un environnement d'apprentissage plus inclusif et plus efficace, assurant ainsi un accès équitable à l'éducation dans la continuité des réalités de la COVID-19.

Mots-clés : COVID-19, habileté numérique, état de cyberpréparation, étudiants de première année universitaire, apprentissage en ligne, collectivité ouverte, à distance et en ligne, modèle d'acceptation de la technologie

Introduction

The global pandemic caused by the outbreak of COVID-19 has dramatically transformed the landscape of education, ushering in an era of unprecedented reliance on digital platforms and online learning environments (Hodges et al., 2020). As educational institutions rapidly transitioned to remote teaching and learning, first-year students were immersed in a virtual world, navigating the challenges of adapting to online education. Within this context, using a learner management system (LMS) and online teaching, learning, and assessment activities have become pivotal in ensuring the continuity and effectiveness of learning processes. The present study aims to assess the e-readiness of first-year students in using an LMS and engaging in online teaching, learning, and assessment activities, considering the unique realities posed by the COVID-19 pandemic. E-readiness refers to successful implementation of online learning among undergraduates (Ranganatha et al., 2021). Other scholars including Abdulwahid et al. (2019) define e-readiness in relation to areas or communities. According to Abdulwahid et al. (2019), e-readiness is the degree to which a community or economy is made ready to sustain participation in the digital

economy. By evaluating the e-readiness of first-year students, we can identify potential barriers and design targeted interventions to enhance their digital literacy skills and overall learning experience.

An LMS is critical in supporting flexible and accessible learning, particularly in a remote learning context. Bradley (2021) regards an LMS as a resource that supports an inclusive learning environment for academic progress with interceding structures that promote online collaborative groupings, professional training, discussions, and communication among other LMS users. Drawing from Bradley's view on an LMS, we argue that using an LMS reduces the financial burden on students and fosters collaborative and inclusive learning environments, empowering students to engage actively with educational content while adapting to the challenges of online learning. With a similar view, Coman et al. (2020) emphasize that online teaching, learning, and assessment activities offer a dynamic approach to evaluating students' progress and understanding. Through frequent online quizzes, assignments, and discussions, educators can gauge students' comprehension, provide timely feedback, and tailor instruction accordingly (Haleem et al., 2022). An LMS promotes self-regulated learning and

enables students to build upon their strengths while addressing areas that require improvement.

The researchers are professional development specialists in the Open, Distance and e-Learning (ODeL) institution. They experienced a high number of training requests from academics who required new digital literacy skills to teach and assess students online. The requests led the researchers to reflect on their experiences as first-year students who once transitioned from face-to-face to distance learning. The reflections brought to mind past experiences similar to what the current first-year students are experiencing. However, online learning is somewhat different from the researchers' experiences and the current ODeL first-year students' experiences. This occasioned a need to explore the students' e-readiness to use the LMS when engaging in online teaching, learning, and assessment activities that required a shift in knowledge and digital literacy skills. Mphahlele (2023) established that the cost, limited reach, and slow internet connections might frustrate accessing course materials in online learning. Hence, the quick transition from blended learning to fully online learning revealed the following gaps:

- A need to employ an LMS to speed up (support) the move towards online teaching and learning; and
- A consideration of fully online teaching, learning, and assessment activities to reinforce the efficacy of distance learning.

Considering the COVID-19 realities that have shaped the educational landscape, this study recognizes the need to assess the e-readiness of first-year students specifically. First-year students often face unique challenges when transitioning to higher education, such as adapting to new learning environments, establishing a sense of belonging, and acquiring essential digital skills (Braxton, 2019). Understanding their e-readiness to effectively use the LMS to engage in online teaching, learning, and assessments will shed light on the strategies needed to support their successful educational journey during these unprecedented times.

The researchers used a theoretical framework explained in the next section to validate and challenge the theoretical assumptions related to first-year students' e-readiness.

Theoretical Framework

To facilitate understanding of the scope of the study and unpack the students' e-readiness to use an LMS to engage in online teaching, learning, and assessments in the ODeL, the researchers used the Technology Acceptance Model (TAM) framework developed by Davis (1986). Focusing on perceived usefulness and perceived ease of use, they used this framework to

understand the first years' acceptance and adoption of technology. The COVID-19 pandemic has forced educational institutions worldwide to transition from traditional face-to-face instruction to online learning modalities rapidly. As a result, assessing first-year students' e-readiness to use an LMS to engage in online teaching, learning, and assessment activities has become crucial.

The TAM framework has been widely used to examine users' acceptance and adoption of technology. It is based on two primary constructs: perceived usefulness (PU) and perceived ease of use (PEOU). According to Davis (1986), individuals are more likely to adopt and use technology if they perceive it as useful and easy to use. Mugo et al. (2017) affirm that TAM has been extensively applied to various technological contexts and has proven to be a valuable framework for understanding user behaviour. They further advise scientific investigation guided by appropriate TAM before adoption of any technologies.

The paradigm shift brought about by digital technologies in the educational system is highlighted by Haleem et al. (2022), who also suggest that understanding students' attitudes and intentions toward adopting technology is essential for spotting potential obstacles and creating effective interventions to improve e-readiness. This approach aligns with the principles of TAM, which emphasize the importance of perceived usefulness and ease of use in shaping user behaviour, which in this case is the e-readiness of students to embrace and make effective use of technology.

According to Amadu et al. (2018), PU measures how much people think technology will improve their performance and help them achieve their learning goals. In using an LMS to engage in online teaching, learning, and assessment activities, TAM can help determine students' perceptions of the LMS's usefulness and ease of use. Factors such as content relevance, flexibility, and accessibility of the LMS, and the alignment of online teaching, learning, and assessment activities with learning outcomes, will contribute to students' PU.

The theoretical framework presented in this study serves as a critical compass for navigating the uncharted waters of online teaching, learning, and assessment activities, particularly during the challenging context of the COVID-19 pandemic. By delving into the factors that either hinder or promote students' engagement, this framework equips educators and institutions with valuable insights to shape effective interventions and strategies. With this guidance, we can work towards enhancing students' e-readiness and fostering greater acceptance and utilization of the LMS. As we embark on this journey of assessing first-year students' e-readiness, it is with the aim of not only understanding the present challenges, but also creating a more resilient and adaptable educational landscape for an envisioned future in which technology and learning coalesce seamlessly.

COVID-19 Realities and TAM Application

The COVID-19 pandemic has presented unique challenges to first-year students' e-readiness. The sudden shift to online learning as stated by Haleem et al. (2022) has increased the reliance on technology, making the application of TAM particularly relevant. Ryder and Machajewski (2017) identified that factors such as the lack of access to a reliable internet connection, limited access to personal devices, and students' varying digital literacy skills have further magnified the importance of understanding students' attitudes towards technology adoption. TAM can aid in identifying barriers and developing strategies to mitigate these challenges and enhance students' e-readiness.

The TAM framework offers a valuable lens for assessing first-year students' e-readiness to use LMS to engage in online teaching, learning, and assessment activities, particularly during the COVID-19 pandemic. To bring clarity and focus to students' e-readiness to use an LMS to engage in online teaching, learning, and assessment activities, the researchers used the general framework of narrative reviews (Ferrari, 2015) to broaden the knowledge base in this study.

Literature Review

In the wake of COVID-19, the traditional educational landscape has been forever altered. As institutions scrambled to implement their LMS and virtual classrooms, the need to assess the e-readiness of first-year students took

centre stage. This literature section explores the challenges, solutions, and insights gained from assessing students' preparedness to engage effectively in online teaching, learning, and assessment activities amidst the *new normal*. The researchers discussed, evaluated, and summarized the critical points in the following sections in relation to assessing the extent of students' digital readiness. These critical points helped identify factors influencing the e-readiness of students and provided insights into the benefits of the LMS within the context of COVID-19.

Defining Students' E-readiness

Students' e-readiness, according to Alsobhi et al. (2021) is the process that allows universities to evaluate their readiness level, determine any existing gaps, and adapt their strategy to address these gaps in building an effective e-learning system. On the other hand, Adams et al. (2018) define students' e-readiness as the ability to use digital technology, the internet, computer software programs, and e-learning methodologies to facilitate their learning. Students' e-readiness enables them to engage in online learning.

In the South African ODeL institution context, online learning is designed for students from various parts of the country, including rural and remote areas where access to most online resources is still challenging (Letseka et al., 2018). Because of the vast geographic spread of the country and socio-economic realities, some students are not privileged to access online teaching

and learning resources. This includes rural and remote students, those located in previously disadvantaged urban townships, and those in correctional facilities who did not have access to education previously (Pherali, 2022).

The University of South Africa's (UNISA) strategy emphasizes education for all, providing qualifications and programs to full-time and part-time students and accommodating students with various learning, language, and cultural barriers (Msila, 2021). Effective realization of this strategy is supported by strong Information and Communication Technology (ICT) and agile administrative support in striving for a fully-fledged ODeL delivery mode. UNISA provides access to local and international student communities and ensures all study materials are accessible online. The student-centric academic project, agenda, and services are at the forefront of the vision and mission of the institution.

Online learning based on Barrot et al. (2021) has recently afforded opportunities to diverse students, as required in ODeL environments, and they managed to identify strategies to overcome online learning challenges. The focus in online learning according to Marin (2022) has shifted from a teacher-centred to a student-centred approach. In addition, Al-Rikabi and Montazer (2023) stress that student centredness in online learning authorities must analyze various aspects of e-readiness including network components and human and organizational readiness in order to design appropriate policies and development strategies. This implies that the teaching and learning

strategies are adaptable, that content is designed to suit students' diverse needs, and that synchronous and asynchronous interactions and activities enhance effective teaching and learning. Continuous online assessment is an integral part of online learning, requiring students' e-readiness. E-readiness gives students the ability to address the limitations of social and class boundaries, thereby making e-learning accessible for all students, anywhere and at any time (Wagiran et al., 2022).

Several scholars have explored students' e-readiness focusing on different aspects. Zine et al. (2023) focused on machine learning. Yang and Xu (2023) examined the e-readiness level of students and instructors in promoting e-learning success in students for whom English is the first language. Wagiran et al. (2022) determined the e-readiness of higher education students during the COVID-19 pandemic. These studies emphasize effective learning in virtual settings. Special emphasis was put on the use of the internet and computers, students' ability to learn independently, their problem-solving and critical thinking skills, time management skills, inner motivation to succeed, leadership skills, effective communication, peer and self-assessment, interaction with others, and ability to effectively use online resources and learning strategies. These components are still relevant in the current study, which explores students' e-readiness during COVID-19 to use an LMS for online teaching, learning, and assessment activities.

In using online learning resources, students should recognize their own learning needs and prior knowledge and use this to arrange, examine, and make meaning of available information to advance their e-learning knowledge and skills (Coman et al., 2020). This implies that their acquisition of critical thinking and problem-solving skills is important for e-readiness and online learning. Students able to apply these skills effectively are, therefore, self-motivated individuals and accountable for their learning (Darling-Hammond et al., 2020).

E-readiness also involves students' ability to create opportunities for self-study, access multiple online resources, select resources, and manage their time. It is crucial that students acquire e-readiness skills before attempting to study online. Students must use cognitive and metacognitive abilities to progress in online learning environments. Several researchers (Coman et al., 2020; Mohd Basar et al., 2021; Haleem et al., 2022) argue that if students acquire e-readiness strategies before their studies, their performance in using online learning platforms will improve. Co-operative and collaborative skills would enhance their ability to interact in online learning environments.

The Factors Influencing E-Readiness of Students

The e-readiness of first-year students; in other words, their preparedness for engaging with electronic resources and technologies for

learning, can be influenced by various factors. Several studies (Harrell & Bynum, 2018; Rotar, 2022; Lilian, 2022; Kaushik & Agrawal, 2021; Kim et al., 2019) have been undertaken worldwide to understand the factors influencing the e-learning readiness of higher education students. The key factors that can impact e-readiness, identified by various scholars, include but are not limited to technological infrastructure, digital literacy skills, attitude and motivation, academic preparedness, and institutional support.

Too often infrastructure and how the technological tools will be used in the learning environment are overlooked when making purchasing decisions (Harrell & Bynum, 2018). In the case of ODeL, the technological infrastructure includes the students' access to reliable internet connectivity, computer devices, and software. Despite the technological infrastructure, digital literacy skills contribute to students' e-readiness. Rotar (2022) asserts that students need proficiency for success in online learning. With a similar view, Kaushik and Agrawal (2021) affirm that a lack of proficiency in using digital tools and technologies is one of the factors inhibiting students from navigating online platforms and searching for information with ease and confidence.

Wang et al. (2021) identify motivation as one of the factors influencing students' e-readiness. They emphasize that motivation plays a significant role in mediating the indirect effect of digital technology capabilities and supporting equipment on e-readiness. In addition, Lilian (2022) establish a connection between digital literacy skills and motivation, asserting that

individuals who lack prior exposure to e-learning often underestimate its significance, resulting in limited enthusiasm for engaging in the e-learning experience. Furthermore, Kim et al. (2019) postulated that proficient utilization of online technologies by students necessitates a certain degree of motivation and active engagement. Despite the obstacles or variables impacting students' readiness for utilizing an LMS, this approach offers numerous advantages, particularly within the context of ODeL.

Benefits of Learning Management Systems in ODeL

One of the primary advantages of using an LMS in an ODeL environment is the flexibility and accessibility it offers to learners. LMS platforms enable students to access course materials, resources, and interactive content anytime and from anywhere with an internet connection (Al Rawashdeh et al., 2021). This flexibility allows learners to study independently, accommodating their schedules and learning preferences.

Hollister et al. (2022) argue that LMS platforms provide various tools and features that facilitate collaboration and communication among students and instructors. Discussion forums, chat rooms, and messaging systems enable students to interact with peers and instructors, fostering a sense of community and promoting active engagement. The LMS can also easily manage collaborative projects and group activities, encouraging teamwork and knowledge-sharing among learners.

LMS platforms often incorporate adaptive learning functionalities, allowing the system to customize the learning experience based on individual student needs and preferences. Soler Costa et al. (2021) establish that through adaptive learning algorithms, an LMS can deliver personalized content, resources, and assessments, thereby catering to each learner's strengths, weaknesses, and learning pace. This personalization promotes more effective and efficient learning outcomes.

According to Bradley (2021), an LMS allows for version control, which helps to ensure that the most up-to-date materials are available to students. With version control, instructors can upload lecture notes, multimedia content, readings, and supplementary materials as needed, thereby ensuring easy access for students. Additionally, the LMS facilitates the easy distribution of announcements, updates, and notifications, which ensures timely communication between instructors and learners.

Focusing on online assessments, Gamage et al. (2019) acknowledge that LMS platforms offer tools for creating and administering online assessments, quizzes, and assignments. These tools can automatically grade multiple-choice questions and provide immediate feedback to students, saving instructors time and effort. LMS platforms also enable instructors to track students' progress, monitor participation, and provide personalized feedback, all of which enhances the assessment and feedback processes.

Veluvali and Surisetti (2022) encourage using analytics and reporting features in the LMS platforms because they provide valuable insights into student engagement. These analytics help to identify struggling students, evaluate the effectiveness of instructional strategies, and inform interventions or improvements.

The implementation of an LMS has had a major influence on ODeL, and academics must ensure that their design activities will lead to effective online teaching and learning. Students must develop their abilities to interact with LMS as a basic tool for learning. The use of an LMS, according to Veluvali and Surisetti (2022), enhances collaboration, promotes student engagement, facilitates assessment, and supports administrative tasks.

This literature review section underscores the profound transformation of the educational landscape triggered by the COVID-19 pandemic. It highlights the paramount importance of assessing students' e-readiness in adapting to online teaching, learning, and assessment modalities. Key aspects of e-readiness encompass students' self-determination, digital proficiency, and the ability to utilize technology and online resources effectively. Despite challenges such as limited technological infrastructure, digital literacy gaps, and varying degrees of motivation, the adoption of an LMS has emerged as a pivotal strategy in ODeL. The LMS platforms offer flexibility, foster collaboration and communication, personalize learning experiences, streamline content distribution, enhance online assessment processes, and provide

valuable insights through analytics. The effective utilization of LMS tools is essential in promoting student engagement and successful online teaching and learning, thereby contributing to the evolving landscape of higher education. Building on the insights from this literature review, the following methodology section details the approach taken to assess students' e-readiness and the implementation of an LMS within the context of the COVID-19 pandemic.

Methodology

This study used a concurrent mixed methods design for assessing first-year students' e-readiness for using an LMS in the context of online teaching, learning, and assessment activities during the COVID-19 pandemic from the year 2020 to 2021. The researchers selected this approach to triangulate data in order to determine and demonstrate congruence between quantitative and qualitative findings as theorized by Bell et al. (2022). In this study, a concurrent mixed methods design was selected to compare and contrast quantitative statistical results from first-year students with qualitative findings from the academics' open-ended questionnaire and the observations made in the LMS.

Participants for this study were academics and students from UNISA. The maximum variation sampling strategy was used to capture various perspectives relating to students' e-readiness and using an LMS. The

researchers set the following exclusion and inclusion criteria for the participants and sent out an online form to all eight colleges of UNISA. The module(s) selected include those that were:

- Active in 2020
- Not fully online in 2020
- Did not use synchronous teaching tools before 2020

To enhance compliance with Section 4 of the Protection of Personal Information Act (2019), all questionnaires in this study were sent with the gatekeeping assistance of UNISA's ICT department.

Data Collection Methods and Instruments

The researchers obtained ethical clearance from the University's Ethics Committee and applied for permission to conduct research involving UNISA employees, students, and data.

After getting the ethical clearance and permission, they started the data collection process for this study which was informed by the concurrent mixed methods design. Three data collection instruments were used: an open-ended questionnaire, a closed questionnaire, and observations. UNISA's ICT department sent an email with information about the study, a link to open-ended questionnaires for academics, a link to a closed questionnaire for students, and the inclusion and exclusion criteria for the participants. Before they were given access to the questionnaire, students were asked to indicate

that they agreed to participate. Students interested in participating returned signed consent forms and completed the questionnaire online.

The researchers started with the LMS observations, using the passive participant observation technique while waiting for the questionnaire responses. The researchers contacted the primary lecturers who consented to participate in this study and arranged to access the LMS as secondary lecturers for a week. During that week, the researchers observed the use of the LMS for online teaching, learning, and assessment activities. In passive participant observation, according to Brancati (2018), researchers observe and record the behaviours of their subjects in their environment without conversing or interacting with their participants in any way. The researchers were linked to the modules they were observing as secondary lecturers, and they disclosed their identities as researchers to the primary lecturers of the modules. Primary lecturers were given the observation schedule that explained the observation process and what would be observed, and they were requested to inform the students about this process. While observing, researchers kept a detailed narrative of LMS use and how students participated in the teaching, learning, and assessment activities.

Researchers started data analysis when all the responses were captured, and the observations had been concluded. The lead researcher exported the two data sets from the lecturers and students into Microsoft Excel and cleaned the data before uploading it into Microsoft Power BI. The

second researcher modelled and transformed the data to connect the data sources in order to filter and visualize the data it was important to present. For analysis with Microsoft Power BI, the data were organized in Microsoft Excel spreadsheets. The researchers formatted the data in tables and uploaded them into the Power BI program. It should be noted that Power BI is able to group open-ended responses into the given codes. Hence, both data sets were uploaded into Power BI. The open-ended responses were grouped according to the given codes and presented in tables in Power BI. The researchers identified the emerging themes from the tables, which were used to present the findings as described in the following section. For the closed-ended responses, visualizations, filters, and field panes were used to generate the following findings.

Presentation of Findings

The presentation of findings for this study starts with the biographical details of the participants.

Biographic Data of Participants

Biographic data from academics is indicated in Figures 1 to 3.

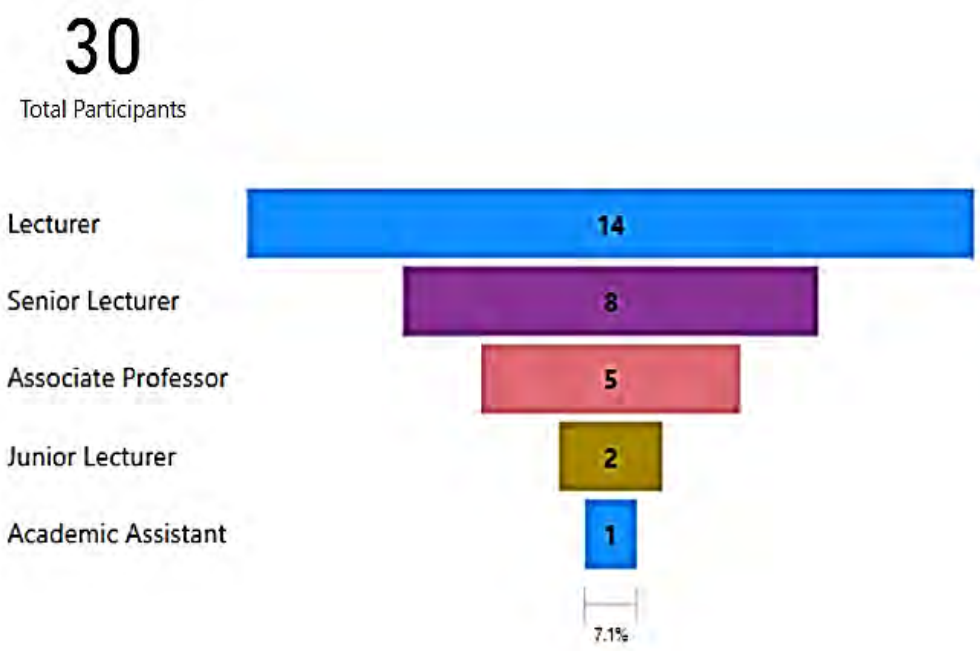

Figure 1. Biographic Data from Academics: Job Title
Image description available.

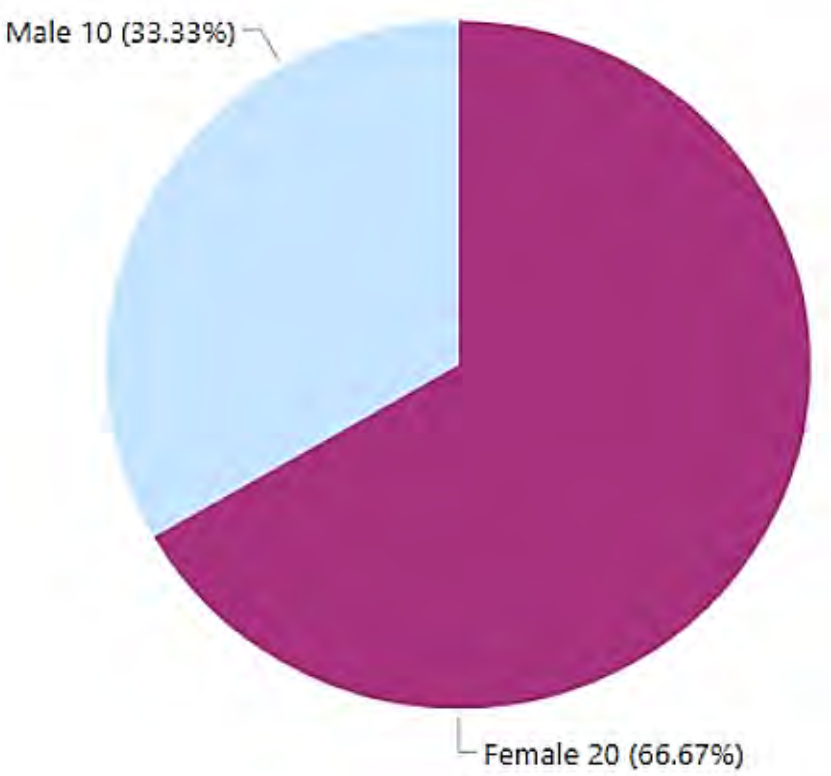

Figure 2: Biographic Data from Academics: Gender
Image description available.

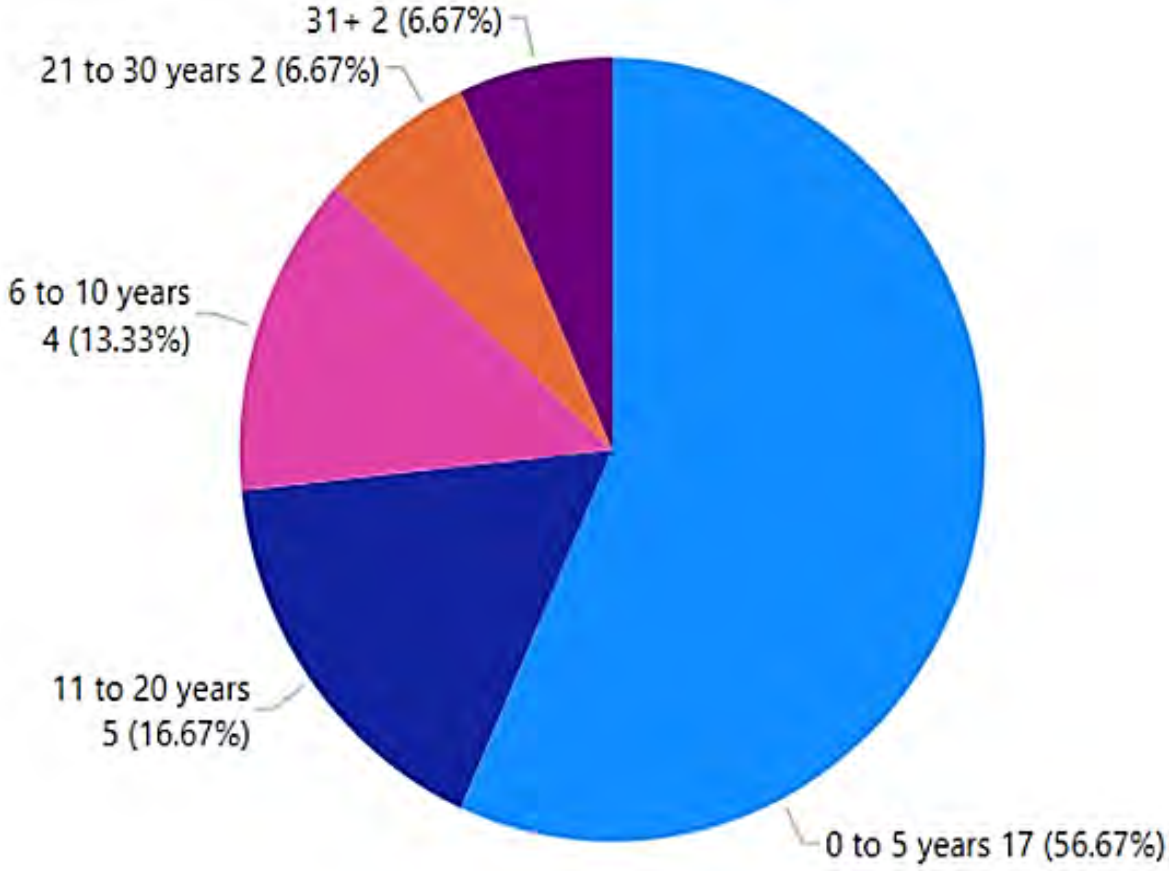

Figure 3: Biographic Data from Academics: Experience
Image description available.

Data was collected from 30 academics including 20 females and 10 males. Most of the academics who participated in this study were lecturers (46.66%), followed by senior lecturers (26.67%) with academic assistants at 3.33%. Most of the academics who participated in this study (17) had zero to five years of working experience. Two academics had more than 31 years of experience, and 9 academics had between 6 and 20 years of experience.

The biographic data of students is presented in Figure 4 which shows that the total number of first-year students who participated in this study was 2,707.

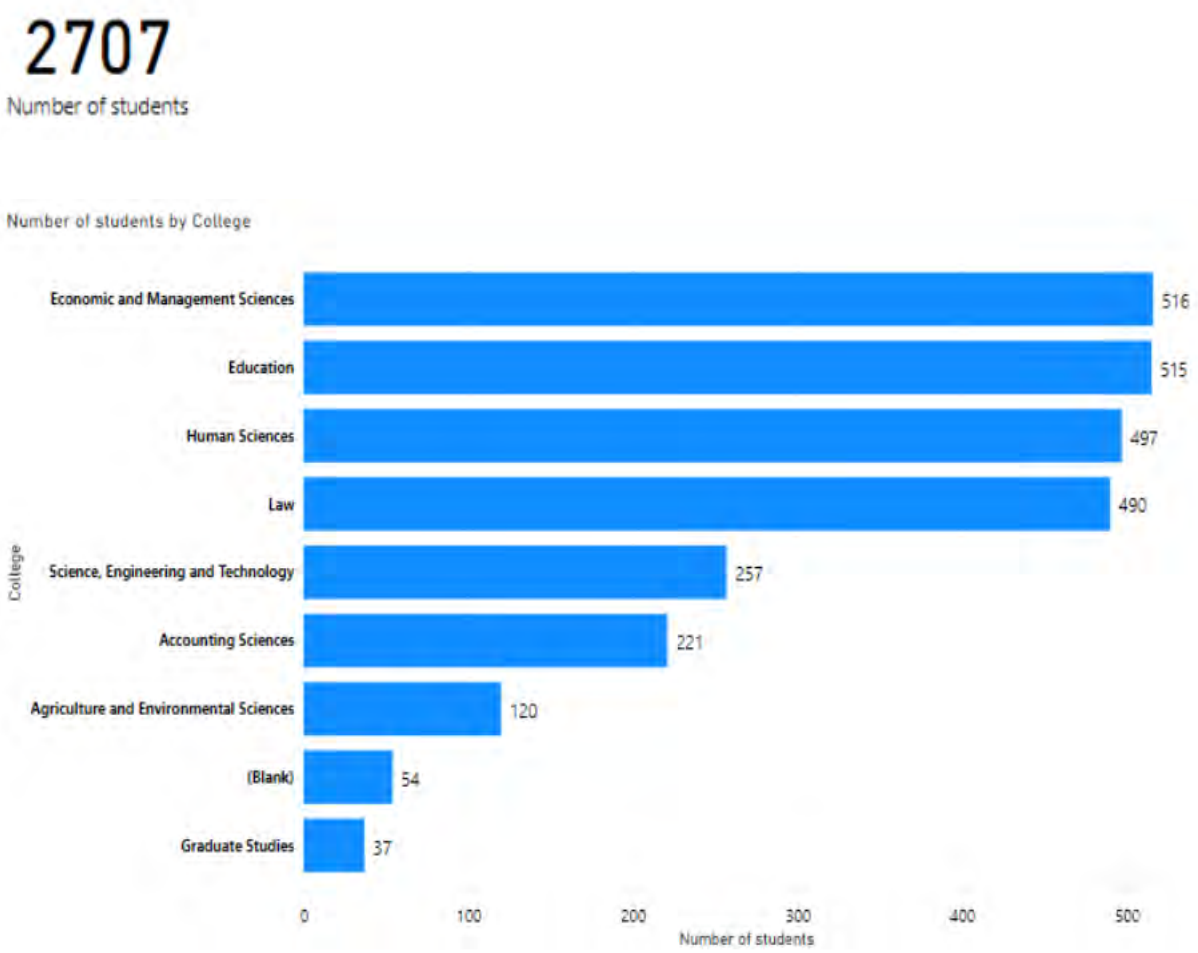

Figure 4: Students' Participation
Image description available.

Figure 4 presents the number of students who participated per college. Most students were from the College of Economic Management Sciences (19.06%), followed by the College of Education (19.02%). A minority of

participants were from the College of Agriculture and Environmental Sciences (4.43%), followed by Graduate Studies (1.37%).

Findings from Academics' Questionnaire

To establish the students' e-readiness from the academics' perspective, the researchers asked about the students' access and use of the LMS. The academic responses, as shown in Figures 5 and 6 respectively, revealed the unreadiness of students to use the LMS.

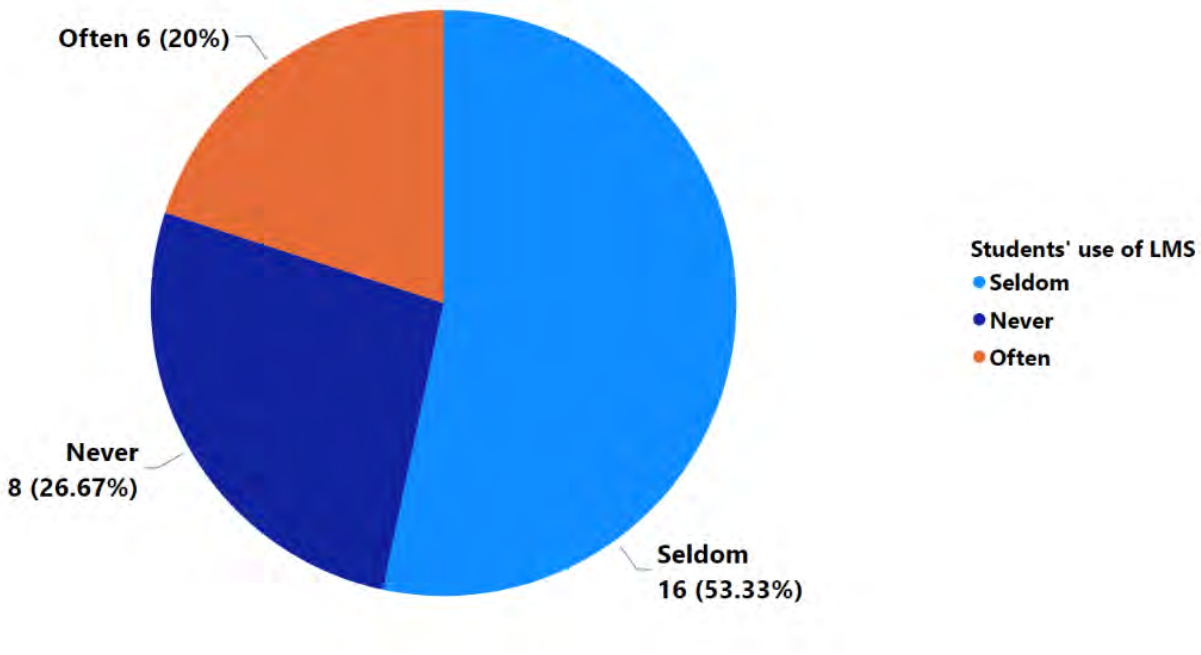

Figure 5: Students' Use of LMS
Image description available.

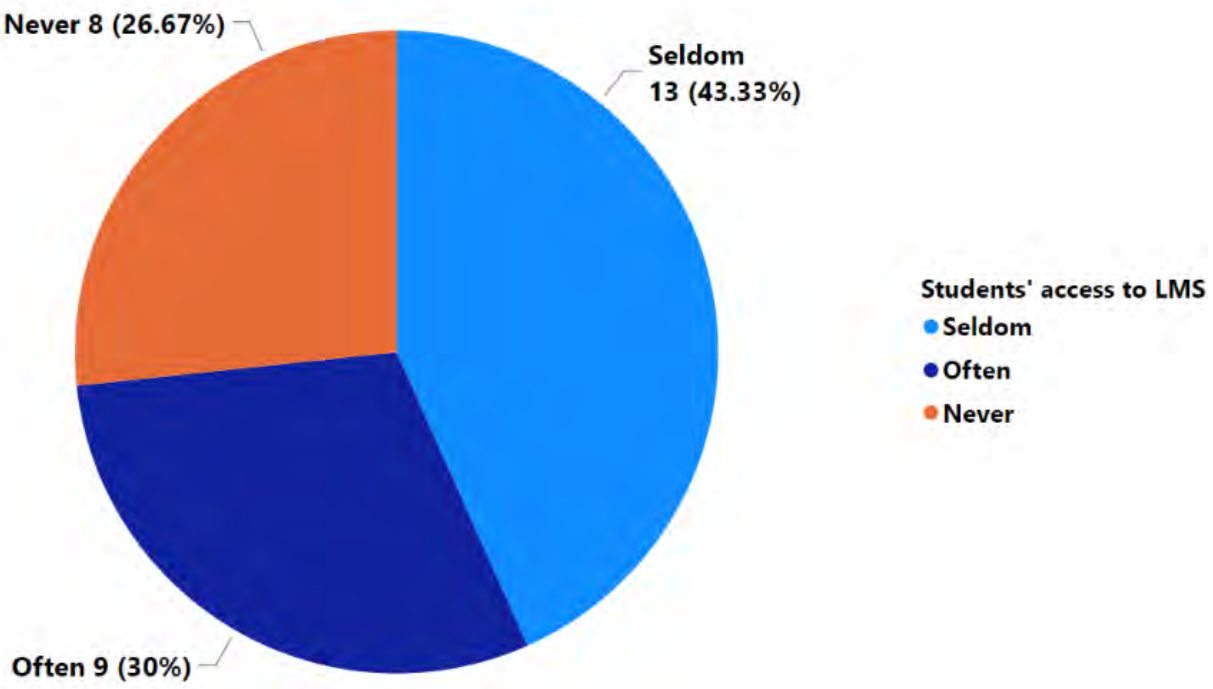

Figure 6: Students' Access to LMS
Image description available.

The access to and use of the LMS can be affected by a number of factors. However, in this instance, the academics provided the teaching, learning, and assessment activities for students to access and use:

> *I share with them links to videos and other e-materials in the LMS for them to access and prepare assignments. This forces them to log in to the LMS to access the material and the assignments. (Respondent 4).*

One of the issues that emerged from these findings was that some students had difficulty accessing and using the LMS. The specific reasons for this are found in the data obtained from students and are outlined in the next

section. Respondent 2 indicated that some students lacked digital literacy skills to access and use the LMS:

> *First years, especially those from rural backgrounds, lack the skills to access and use LMS.*

The following quotations from the academics' responses support the claim that not all students accessed and used the LMS:

> *Less than 10% participation - always. Those who participated performed well. (Respondent 1)*
>
> *The majority of students were not active. (Respondent 9)*
>
> *Though about 26% of students reported having never accessed or used the LMS, academics reported that about 30% of students who accessed and used the OER benefited greatly.*
>
> *Most students find the uses of LMS as good and useful. (Respondent 30)*
>
> *It was very simple for students to access the materials and were able to ask questions where necessary. (Respondent 5)*

In terms of engaging in online teaching, learning, and assessment activities, academics shared differing views, as some regarded the use of the LMS as a good approach:

> *Using LMS is a better approach to online learning. It provides students with multiple assessment options and measures*

progress and performance throughout. Student participation has also increased. (Respondent 2)

It promotes active participation from the students. It enables the lecturer to assess the competencies and skills. It allows the lecturer to offer remedial based on the identified gap. (Respondent 15)

In contrast, others viewed using the LMS as challenging:

Presently, it is frustrating because when I give them activities which are not going to be graded, they do not participate. (Respondent 21)

Findings from Students' Questionnaire

To establish the e-readiness of the students, the researchers asked the students questions that measured their ability to access teaching and learning activities and use the LMS. Figures 7 to 11 present the data that helped the researchers determine the students' e-readiness to use the LMS and engage in online teaching, learning, and assessment activities. The academics avail electronic material that is relevant to their content in the LMS. Given that online teaching, learning, and assessment activities should be accessed on the LMS, researchers saw a need to assess students' knowledge of the LMS and their ability to access the LMS.

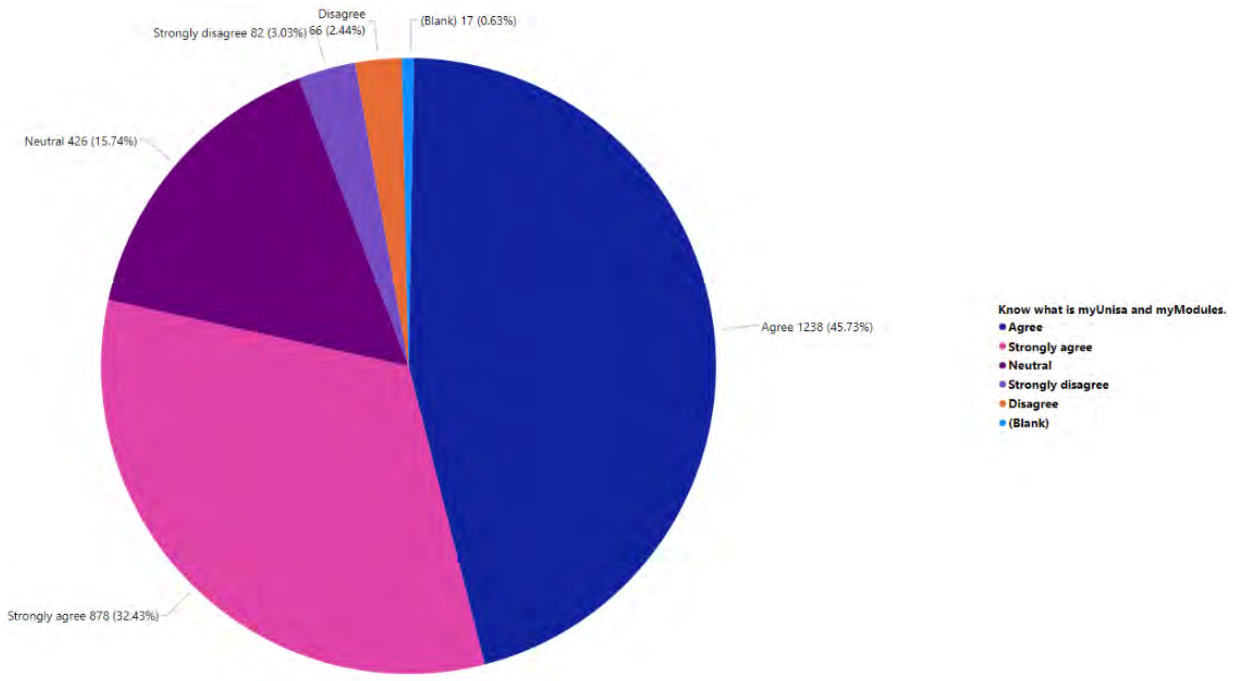

Figure 7: Knowledge of the LMS
Image description available.

It is evident from Figure 7 that at the time of data collection for this study, 5.47% of students indicated that they did not know the LMS. Considering that an additional 15.74% of students selected neutral as their answer, the researchers concluded that 21.21% of students did not know the LMS.

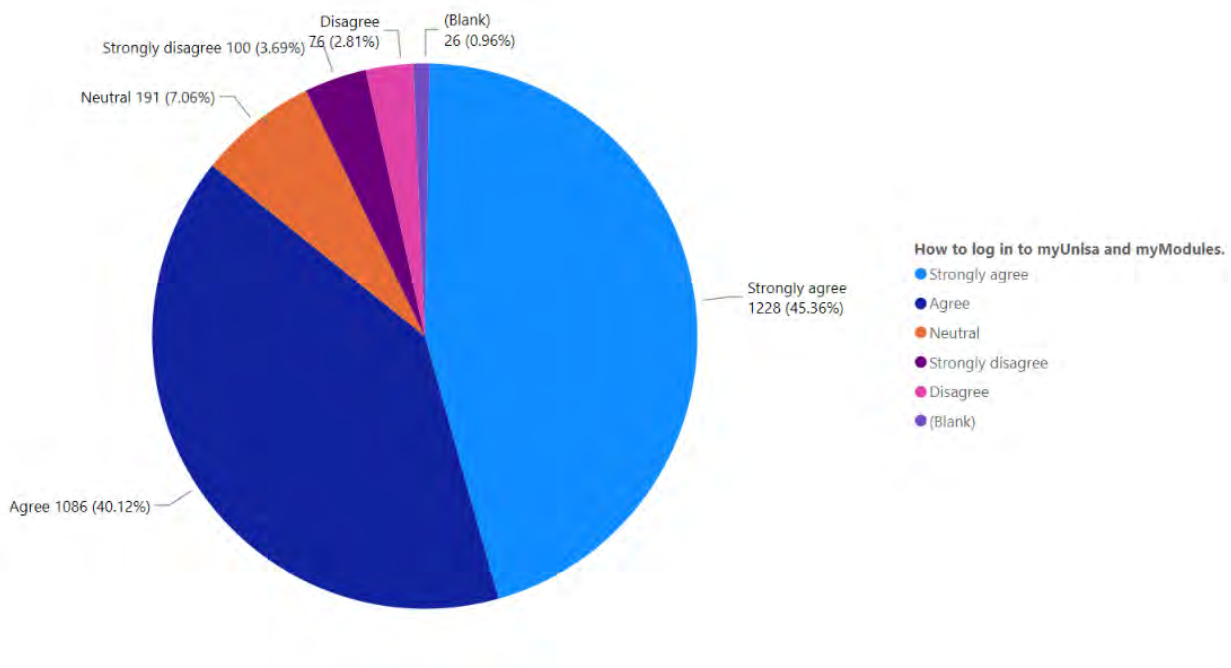

Figure 8: Ability to Log into the LMS

Image description available.

What is striking about the data in Figure 8 is that more students were able to log in to the LMS (85.48%) than there were students with knowledge of the LMS in Figure 7 (78.16%). This interesting finding means that some students can log in, although they have limited or no knowledge of the LMS.

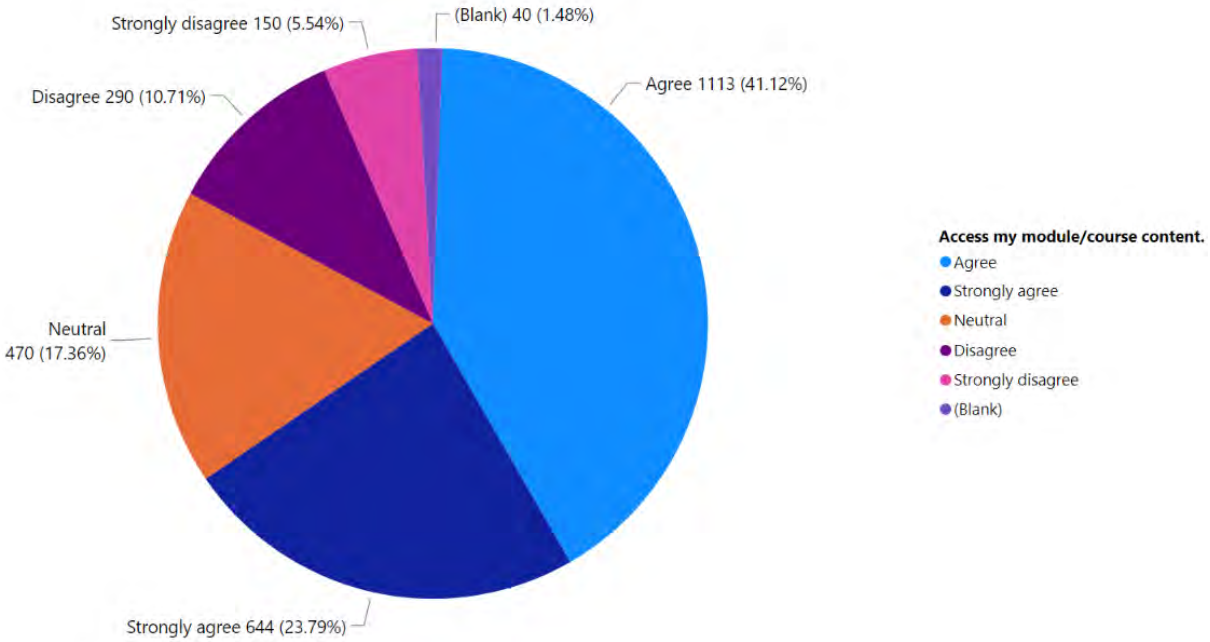

Figure 9: Ability to Access the Teaching and Learning Content
Image description available.

After logging into the LMS, students require another set of skills to navigate the system. Hence, the researchers did not want to assume that by logging in, students would be able to access the content. The results in Figure 10 support the researchers' argument. Figure 9 illustrates that only 64.91% of the students could access the content, despite 85.48% of them being able to log in.

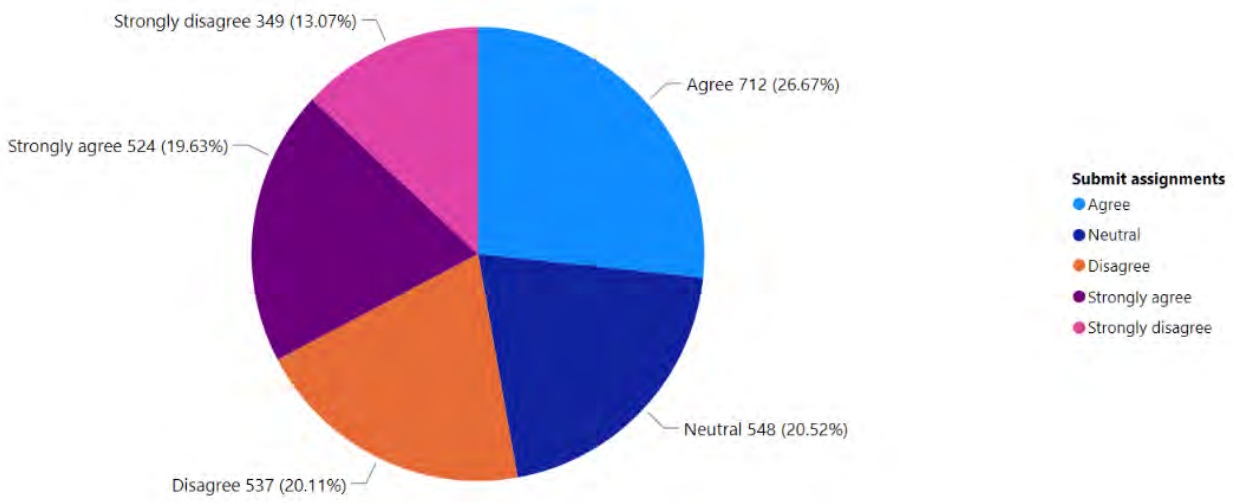

Figure 10: Ability to Submit Assessments on the LMS
Image description available.

Answers to the question on students' ability to submit assessments on the LMS reveal how students engaged in continuous online assessment activities. Figure 10 shows that 46.3% of students could submit assessments on the LMS. Data from Figure 10 can be compared with the data in Figures 8 to 10, which show that knowing the LMS and logging in should not be regarded as an ability to access the teaching and learning content, or to navigate the LMS.

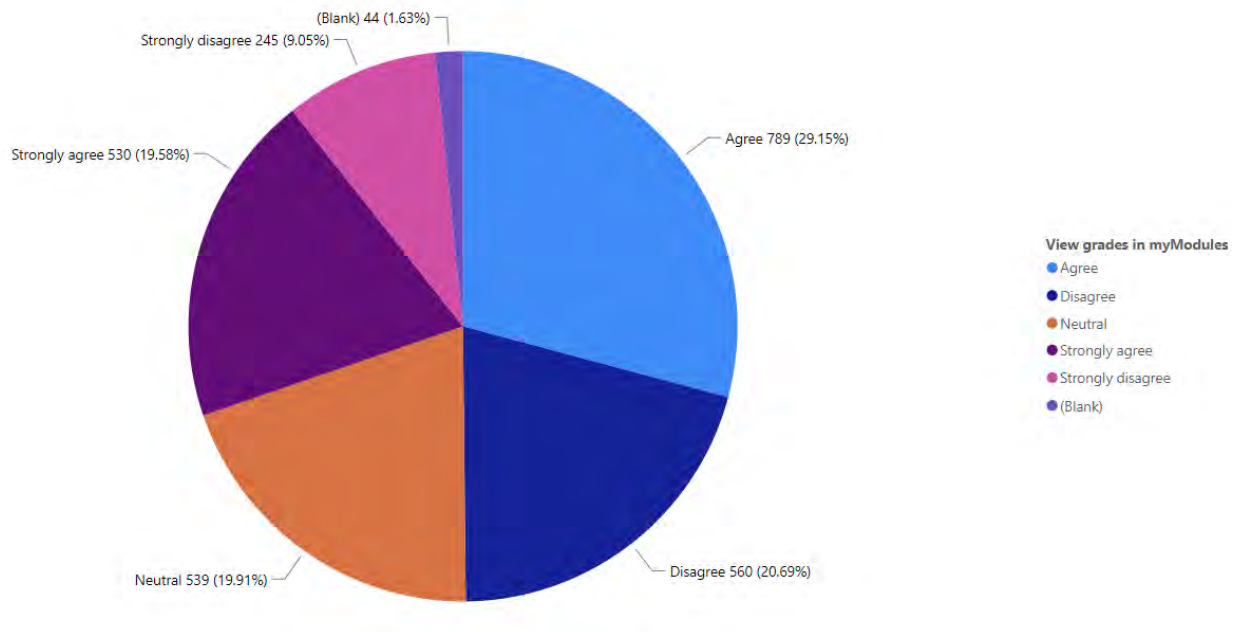

Figure 11: Ability to Access Assessment Feedback
Image description available.

Grades are part of the feedback students receive after their assessments are submitted. When viewing their grades, students are also able to view all the feedback provided on their assessments. Feedback is important for students to rectify mistakes, sustain their performance, or improve. From the data in Figure 11, it is apparent that 29.74% of the participants could not view their assessment feedback.

This section presented findings from diverse participants, from various colleges of the ODeL institution. Academics shed light on students' challenges in accessing and using the LMS. Digital literacy skills emerged as a significant barrier, especially for students from rural backgrounds. While some academics praised the LMS for promoting active participation and offering multiple

assessment options, others expressed frustrations, indicating a need for further improvement in engagement strategies. The insights gathered from students' responses unveiled critical gaps in their e-readiness. A substantial portion of students lacked knowledge about the LMS, even though a majority could log in. This disparity suggests that logging in does not equate to effectively utilizing the platform. Only half of the students could access teaching and learning content, and an even smaller percentage were able to submit assessments on the LMS. Additionally, more than half of the participants faced difficulty accessing assessment feedback, which is crucial for their academic growth. The findings suggest that enhancing e-readiness, providing digital literacy support, and improving LMS usability are crucial for creating a more conducive online learning environment.

Findings from the Observations

The researchers observed five modules in a selected week and focused on first-year students' participation from April to June 2022. Figures 12 to 14 were taken from only three modules to show students' participation. The module codes are hidden for anonymity and confidentiality purposes. Module 1, presented in Figure 12, had 51 students.

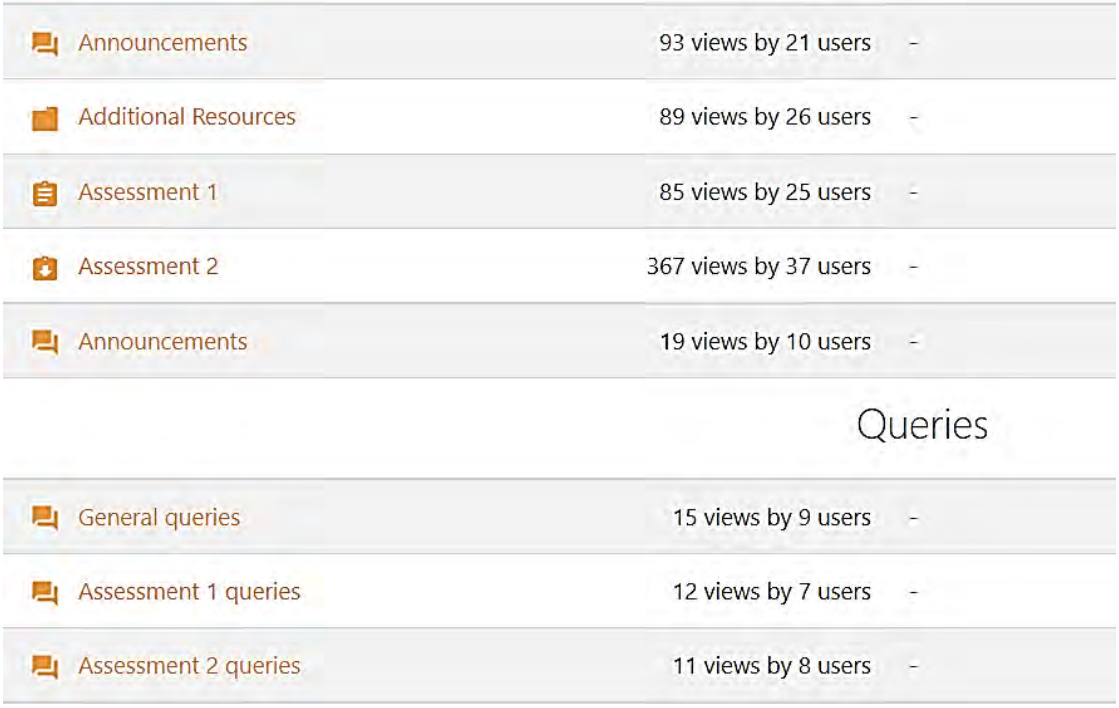

Figure 12: Students' Participation in Module 1

Image description available.

As Figure 12 shows, the number of views is captured as repeats when one student logs in and accesses the platform or the activity several times. However, the number of users is specified, so that it is clear when some students access an activity repeatedly. An activity that was accessed by many students in this module was Assessment 2. For Module 2, the researchers selected activities for Learning Unit 1 to display in this paper.

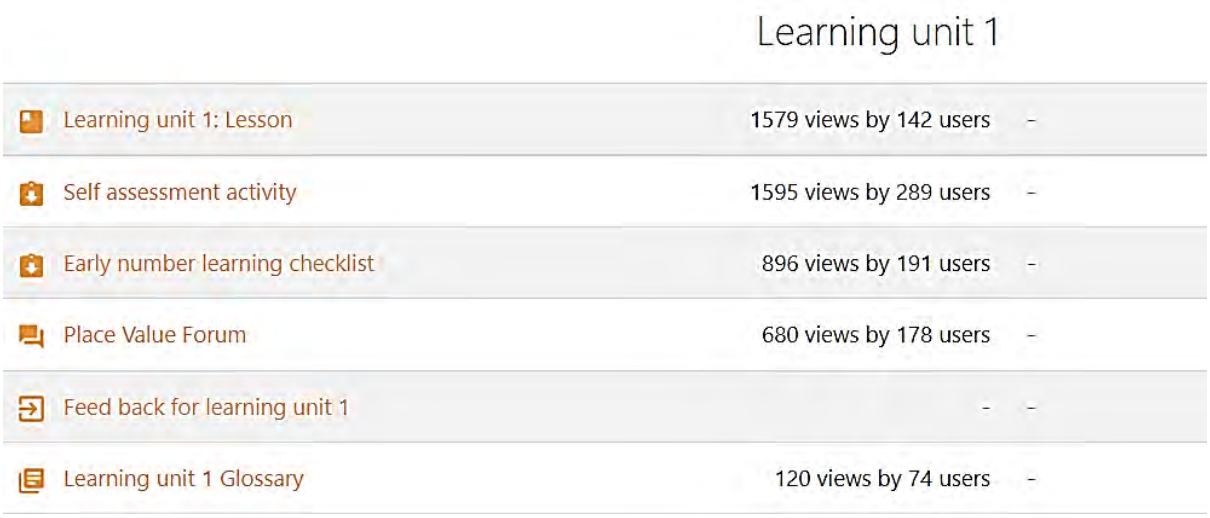

Figure 13: Students' Participation in Module 2

Image description available.

Module 2 had 3,600 students. Figure 13 shows that less than 10% of students participated in these activities.

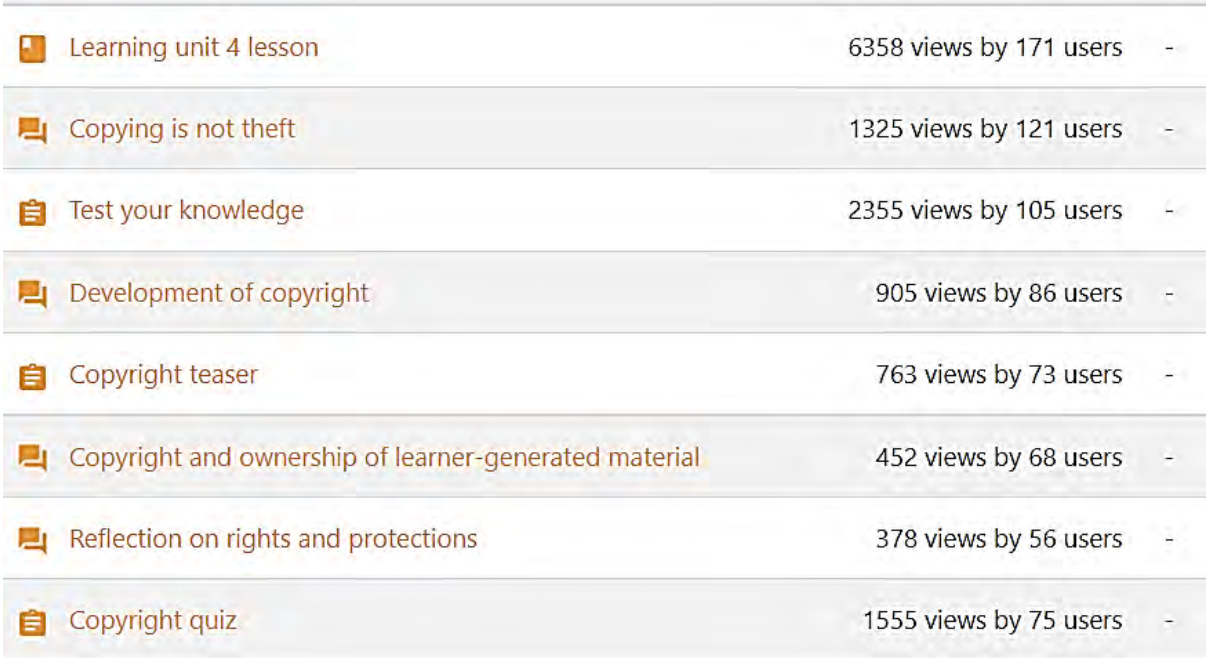

Figure 14: Students' Participation in Module 3

Image description available.

For Module 3, researchers selected Learning Unit 4. Figure 14 presents data observed from Module 3, which had 326 students. Similar to Figures 12 and 13, participation in this module was very low.

Discussion

The TAM framework is used in this section to provide a contextualized understanding of the students' e-readiness to use the LMS to engage in online teaching, learning, and assessment activities. In addition, the discussion connects with the literature reviewed in the section of this paper that followed the theoretical framework. The literature review illuminated the critical significance of evaluating students' preparedness for effective engagement in online teaching, learning, and assessment activities, while also exploring the pivotal role of an LMS within this *new normal* for the educational landscape. It offered insights into defining students' e-readiness, factors influencing their e-readiness, and the benefits of LMS implementation, setting the stage for the subsequent presentation of findings. The findings for this study are discussed under the two constructs of the TAM, which are PU and PEOU, which are used as themes to analyze and discuss the findings.

Perceived Usefulness

According to Davis (1989), PU is the extent to which a technology is expected to improve a potential user's performance. In this study, the researchers assessed students' e-readiness to effectively use the LMS for online

teaching, learning, and assessment activities. Findings relating to PU are discussed under the sub-themes illustrated in Figure 15.

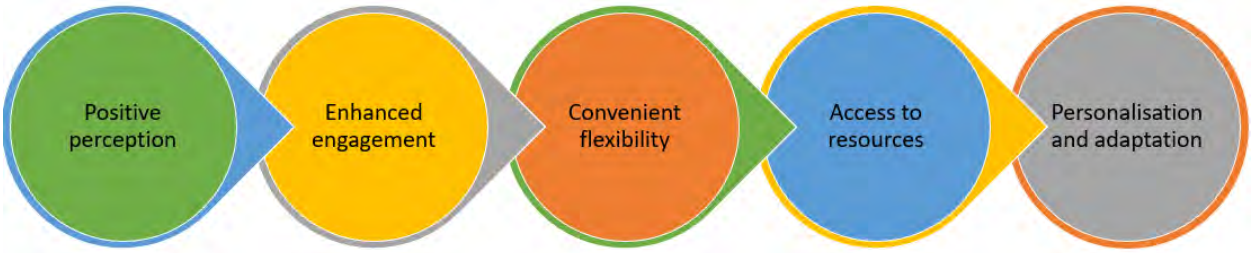

Figure 15: Constructs of Perceived Usefulness
Image description available.

Positive Perceptions

The study revealed that most academics perceived the LMS as useful for their online teaching journey based on the students' access and use. This suggests that the LMS was seen as a valuable tool for engaging in teaching, learning, and assessment activities in the online learning environment. Positive perceptions indicate that students found the LMS effective in supporting their educational needs and goals.

Enhanced Engagement

The LMS provided features such as discussion forums, interactive modules, and multimedia resources that encouraged students to participate and collaborate with their peers. Drawing from the argument mentioned in the literature review section (Coman et al., 2020; Modh Basar et al, 2021; Haleem et al., 2022), we motivate that e-readiness is crucial for online engagement with

peers. This finding about LMS features suggests that the LMS played a crucial role in fostering a sense of community and interaction, despite the physical separation caused by the COVID-19 pandemic. However, in the findings from the observations, only a limited number of students used the activities.

Convenience and Flexibility

In the literature, Msila (2021) emphasizes accommodating diverse students, which brings us to the conclusion that the LMS should provide convenience and flexibility to students. From the findings, it is evident that students experienced convenience and flexibility in the LMS when accessing learning materials, submitting assignments, and participating in discussions remotely. That allowed students to manage their learning at their own pace and convenience. This aspect of PU highlights the role of the LMS in adapting to the students' circumstances and preferences.

Access to Resources

Another significant finding was that academics perceived the LMS as a valuable resource hub, providing easy access to various learning materials, including lecture slides, e-books, and supplementary resources. This aspect of PU demonstrates how the LMS effectively supported students' access to course content and materials, enhancing their learning experience. In the literature review section, we presented the view put forward by Pherali (2022) about previously disadvantaged students' lack of access to online resources. Given the

year of publication of Pherali's study, it shows that during COVID-19 the challenge persisted. Ironically, before COVID-19, Harrell and Bynum (2018) stressed a need for students' access to reliable internet connectivity, computer devices, and software.

It was evident in the presentation of the findings section that academics make online teaching, learning, and assessment activities available for students even though only 64.9% accessed the content, as seen in Figure 9. While 85.48% of students (Figure 8) accessed the LMS, only 46.3% (Figure 10) participated in the online assessment activities.

Personalization and Adaptation

The LMS's PU was also linked to its ability to personalize and adapt to individual students' needs. However, as noted in the literature section, Kaushik and Agrawal (2021) pointed out that a lack of proficiency in using digital tools and technologies is one of the factors inhibiting students from navigating online platforms. The observations in this study revealed that students were exposed to various activities, such as reflections, quizzes, forums and progress tracking, which likely contributed to students' positive perceptions. This finding suggests that the LMS effectively catered to first-year students' diverse learning styles and preferences.

The study's findings on the PU of the LMS among first-year students indicate that the LMS played a vital role in facilitating online teaching, learning,

and assessment activities during the COVID-19 pandemic. The positive perceptions regarding engagement, convenience, flexibility, access to resources, and personalization highlight the importance of the LMS as an effective tool for supporting students' online education. These findings can inform educational institutions and instructors in leveraging the LMS effectively to enhance students' learning experiences in future online teaching scenarios.

Perceived Ease of Use

The findings pointed to factors contributing to a limited PEOU of the LMS, such as due to internet connectivity and digital literacy skills. Coman et al. (2020), Mohd Basar et al. (2021), and Haleem et al. (2022) stress the importance for students to acquire e-readiness strategies before registering. Figures 7 and 8 relate to this finding in the literature because acquiring basic digital literacy skills before the student registers in the ODeL institution assist students in accessing the LMS and their ability to log in.

Figure 8 shows that 85.48% of students could log in to the LMS. This finding shows that students register at the university with basic digital literacy skills. However, academic responses and findings from observations showed limited participation of students in the LMS. These findings reveal a need for specific digital literacy skills before students register to support them with logging in to the LMS. The other external factor (internet connectivity) could be attributed to all the findings, especially from Figures 5 to 13. The university offers

student data bundles to access assessments specifically, but some queries on the LMS showed that student need data bundles also to participate in the lesson activities.

According to Goldberg (2020), one advantage of using an LMS is that students can access it anytime and anywhere. Due to its ability to let students set their learning pace, this benefit is consistent with the PEOU principle. Giving students flexibility over the timing and sequencing of their learning, according to Kokoç (2019), reduces the cognitive burden and improves transfer performance. Additionally, Coman et al. (2020) affirm that an LMS allows students to pace, sequence, and choose the information that helps them learn if they have prior knowledge and additional instructional support, which in turn orientates them to the learning environment and helps them self-regulate their learning.

Conclusion

This study's findings provided valuable insights into the readiness of UNISA first-year students to effectively utilise LMS for online teaching, learning, and assessment activities, particularly in the context of the COVID-19 pandemic. Firstly, the study revealed that most first-year students were willing to use the LMS. This finding aligns with the TAM, which posits that a positive attitude towards technology is crucial in determining its acceptance and usage. The students' positive attitude indicated a willingness to engage in online activities. It

suggests that they recognized the importance of adapting to the new learning environment brought about by the pandemic.

Secondly, the PU of the LMS emerged as a significant factor in determining students' acceptance of the LMS. This paper argues that students who perceive the LMS as beneficial for their learning experience and academic success are more likely to embrace its usage. This finding reinforces the claim of the TAM that PU significantly shapes people's willingness to embrace technology. It highlights the importance of providing students with clear information on how the LMS can enhance their learning outcomes and overall educational experience.

Furthermore, the study identified PEOU as another critical factor in students' acceptance of the LMS. The researchers assert that students who find the platform easy to navigate and interact with will be more inclined to engage in online teaching, learning, and assessment activities. This view underscores the notion put forward by the TAM that technology must be user-friendly and intuitive to promote acceptance and adoption. It emphasizes the need for ODeL institutions to offer adequate training and support to students to enhance their technological skills and confidence in using the LMS effectively.

Finally, this study highlighted the impact of the COVID-19 pandemic on students' e-readiness and emphasized the need for continuous support and training to enhance their ability to effectively engage in online teaching, learning, and assessment activities. This recommendation provides important

guidance for ODeL institutions seeking to optimize the use of technology in facilitating students' learning experiences in an online environment.

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Image Descriptions

Figure 1 image description: A bar graph shows the number of academics in the study for each job title:

- Lecturer 14
- Senior Lecturer 8
- Associate Professor 5
- Junior Lecturer 2
- Academic Assistant 1

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Figure 2 image description: A pie chart shows the number of female (66.67%, 20 people) and male (33.33%, 10 people) academics in the study.

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Figure 3 image description: A pie chart compares the experience levels of academics in the study:

- 56.67% (17 people) with 0 to 5 years experience
- 16.67% (5 people) with 11 to 20 years experience
- 13.33% (4 people) with 6 to 10 years experience
- 6.67% (2 people) with 21 to 30 years experience
- 6.67% (2 people) with over 31 years experience

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Figure 4 image description: A bar graph shows the number of students from each college:

- 516 people from Economic and Management Sciences
- 515 people from Education
- 497 people from Human Sciences
- 490 people from Law
- 257 people from Science, Engineering and Technology
- 221 people from Accounting Sciences

- 120 people from Agriculture and Environmental Sciences
- 54 people from unidentified school
- 37 people from Graduate Studies

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Figure 5 image description: A pie chart compares the number of students who use the LMS seldom (53.33%, 16 people), never (26.67%, 8 people), and often (20%, 6 people).

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Figure 6 image description: A pie chart compares the number of students who access the LMS seldom (43.33%, 13 people), often (30%, 9 people), and never (26.67%, 8 people).

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Figure 7 image description: A pie chart compares student responses when asked if they know what myUnisa and myModules are:

- 45.73% (1,238 responses) agree
- 32.43% (878 responses) strongly agree
- 15.74% (426 responses) are neutral
- 3.03% (82 responses) strongly disagree
- 2.44% (66 responses) disagree
- 0.68% (17 responses) did not answer

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Figure 8 image description: A pie chart compares student responses when asked if they know how to log in to myUnisa and myModules:

- 45.36% (1,228 responses) strongly agree
- 40.12% (1,086 responses) agree
- 7.06% (191 responses) are neutral
- 3.69% (100 responses) strongly disagree
- 2.81% (76 responses) disagree

- .96% (26 responses) did not answer

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Figure 9 image description: A pie chart compares student responses when asked if they know how to access my module/course content:

- 41.12% (1,113 responses) agree
- 23.79% (644 responses) strongly agree
- 17.36% (470 responses) are neutral
- 10.71% (290 responses) disagree
- 5.54% (150 responses) strongly disagree
- 1.48% (40 responses) did not answer

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Figure 10 image description: A pie chart compares student responses when asked whether they know how to submit assignments.

- 26.67% (712 responses) agree
- 20.52% (584 responses) are neutral
- 20.11% (537 responses) disagree
- 19.63% (524 responses) strongly agree
- 13.07% (349 responses) strongly disagree

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Figure 11 image description: A pie chart compares student responses when asked whether they know how to view grades and assessment feedback in myModules:

- 29.15% (789 responses) agree
- 20.69% (560 responses) disagree
- 19.91% (539 responses) are neutral
- 19.58% (530 responses) strongly agree
- 9.05% (245 responses) strongly disagree
- 1.63% (44 responses) did not answer

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Figure 12 image description: A table that lists the number of views and users for each type of content in Module 1:

Type of Content	Number of Views	Number of Users
Announcements	93	21
Additional Resources	89	26
Assessment 1	85	25
Assessment 2	367	37
Announcements	19	10
General Queries	15	9
Assessment 1 Queries	12	7
Assessment 2 Queries	11	8

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Figure 13 image description: A table that lists the number of views and users for each type of content in Module 2:

Type of Content	Number of Views	Number of Users
Learning unit 1: Lesson	1,579	142
Self-assessment Activity	1,595	289
Early Number Learning Checklist	896	191
Place Value Forum	680	178
Feedback for Learning Unit 1	--	--

Learning Unit 1 Glossary	120	74

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Figure 14 image description: A table that lists the number of views and users for each type of content in Module 3:

Type of Content	Number of Views	Number of Users
Learning unit 4 lesson	6,358	171
Copying is not theft	1,325	121
Test your knowledge	2,355	105
Development of copyright	905	86
Copyright teaser	763	73
Copyright and ownership of learner-generated material	452	68
Reflection on rights and protections	378	56
Copyright quiz	1,555	75

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Figure 15 image description: An illustration of the progression of constructs of perceived usefulness:

- Positive perception
- Enhanced engagement
- Convenient flexibility
- Access to resources
- Personalisation and adaptation

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