

**EXPLORING EFFECTIVE EDUCATIONAL TECHNOLOGIES FOR
SUPPORTING STUDENTS LEARNING SUSTAINABLY: THE CASE OF
MZUZU UNIVERSITY ODEL**

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CERTIFICATION

The under-signed certifies that she has read and hereby recommends for acceptance by the Open University of Tanzania (OUT) a dissertation entitled: **Exploring Effective Educational Technologies for Supporting Students Learning Sustainably: The Case of Mzuzu University ODeL**, in partial fulfilment of the requirements for the award of degree of Master of Education in Open and Distance Learning.

.....

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Date

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DECLARATION

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Signature

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Date

DEDICATION

This work is dedicated to my beloved brother, Tedson Mkandawire and my wife, Takondwa Ngwira whose efforts, directives and encouragement resulted to high achievements of my education.

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I acknowledge with gratitude the following people; without whose valuable contribution my study would never have been possible. My supervisor **Professor Elinami Swai**, for her positive encouragement and expert guidance until the completion of this dissertation. The Mzuzu University (MZUNI) for assisting me with funds during my study period. The MZUNI Lecturers, ODeL Administrators and students who provided valuable data. I also thank Ms. Sarah Mwaja for assisting me with the setting of the thesis. My wife Takondwa and children Nicol and Onesther for always be with me.

ABSTRACT

The study aimed at exploring effective educational technologies to support students learning sustainably at Mzuzu University Open, Distance and e-Learning (ODEL). This study intended to respond to the problem of dropout of students and little use of educational technologies to support the increasing enrolment. The results from this study indicated that lack of computers and smartphones (Mean of 3.00), unfamiliarity with technology (Mean of 2.83) and lack of online academic support (Mean of 3.38) were among the factors which led to dropout of students at MZUNI ODeL. The ODeL administrators agreed to these factors with means of 2.80, 2.60 and 3.60 respectively. The study further found that smartphone (95.7%) and laptops (100%) were popularly used technological devices among students, instructors, and administrators. Moodle, WhatsApp and Email were identified as popularly used technological applications for learning. The students also liked the content for learning be represented in audio and video clips. It was also found that the institution could not use virtual labs and assistive technologies. Lastly, 20 instructors (90.9%), 5 administrators (100%) and 99 students (87.6%) were willing and accepted to use educational technologies but this was affected by unstable network and electricity blackout. It was therefore recommended that the institution should train the staff and students on technology use, establish virtual labs, upgrade their internet speed, use additional energy such as solar and distribute power banks to staff and students.

Keywords: *student support; dropout; educational technologies; technology acceptance*

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LIST OF ABBREVIATIONS

AARP	American Association of retired Persons
CAI	Computer Assisted Instruction
CD	Computer disc
CMC	Computer Mediated Communication
CMI	Computer Managed Instruction
DVD	Digital Video Disc
EJsS	Esy Javascript Simulation
HEIs	Higher Education Institutions
IBS	Icfai Business School
ICT	Information and Communication Technology
IPTS	Private Higher Learning Institutions
LMS	Learning Management Systems
Moodle	Modular Object Oriented Dynamic Learning Environment
MZUNI	Mzuzu University
NOUT	National Open University of Nigeria
OCL	Online Collaborative Learning
ODeL	Open, Distance and eLearning
OE	Open Education
TNM	Telecom Networks Malawi
TTCs	Teacher Training Colleges
ZOU	Zimbabwe Open University

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Open, Distance and e-Learning (ODeL) has been identified as the best strategy in the provision of education due to its flexibility in the access, affordability, and high involvement of students in the learning transaction compared to conventional education (Olugbemiro, 2009). However, high dropout is a common phenomenon in ODeL compared to conventional education (Budiman, 2018). This implies there is no support that ensures students' high dropout is minimized. Boateng and Boadu (2013) listed several factors that lead to students' dropout from distance education; including weak communication between the students and instructors and lack of collaboration with other students. Raphael and Mtebe (2017) added two factors related to student dropout from Open and Distance Learning (ODL) in the list, which he termed: intrinsic and extrinsic factors. They associated extrinsic factors with social and economic responsibilities, and capabilities such as lack of resources, time, access, and technical support. Intrinsic factors according to Raphael and Mtebe (2017) emanate from individual students, such as lack of self-efficacy, interest and motivation. These lists suggest that quality interaction and students support service are important in retaining the students in ODL setting.

With aforementioned factors leading to dropout, ODeL institutions utilize various educational technologies to support students based on the assumption that these technologies are appropriate in enhancing communication, collaboration, raise students' interest and motivation (Kumari, 2018; Ouma, 2019, Purdue University,

2022; Ratnayake, 2018). A survey on Instructional Technology in Distance Education conducted in 2014 found that the effective use of educational technologies in distance learning leads to high student retention with 8% lower than face-to-face instruction (Peters, et al., 2017). To some extent, educational technologies are an array of tools which are able to provide administrative, social and academic support in terms of registration, teaching, assessing and for other students' support services (Selwyn, 2010). As a result, the subject of educational technologies in student support in ODL institutions has received a high profile in the research field (Anjana, 2018; Chaputula, 2010; Kaur, 2018; Rangara-Omol, 2019, Thinyane, 2010).

Since educational technologies are viewed as a “young field” in the provision of education (Czerniewicz, 2008: 171), researchers and practitioners in ODeL institutions are seeking to gain a better understanding of ‘which technologies are popularly used to support the students and which are unpopular’ as well as ‘how efficient these technologies are in supporting the students and how can they be used to support the students sustainably’ (Joint Information Systems Committee, 2008). Educational technologies include Learning Management Systems (LMS), publish and share tools, collaborative systems, social networking technologies, interpersonal communication tools, content aggregation tools, 3D virtual worlds, assessment and feedback systems, mobile tools and assistive technologies (Gao, Nagel & Biedermann, 2019; Gudanescu, 2010; Pinto & Leite, 2020; Selwyn et al., 2016).

In Malawi, studies have been conducted concerning educational technologies and how best to exploit them to enhance learning (Chaputula, 2010; Gombachika and Kanjo, 2006; Ndovi 2021, Saka 2021; Schimitt 2021). Other researchers are

Chibambo (2009), Msiska (2013), Zozie (2020), and Zozie and Chawinga (2018). Mobile service providers in Malawi also help to propel the permeation of educational technologies in ODeL institution. For example, Telecom Networks Malawi (TNM) issue smartphones and affordable data bundles to university and college students (Chawinga & Zinn, 2016). However, students' dropout continues and there is still a gap on which educational technologies can sustainably support students.

Different literature considers student support as an all-inclusive term for academic and non-academic issues that may impede learning (Arko-Achemfuor, 2017; Dampson, et al., 2019; Kumari, 2018; Mpofu, 2016, Rangara-Omol, 2019). Arko-Achemfuor (2017) found that quality student support is that which is well mediated through educational technologies. Research conducted by Arko-Achemfuor (2017) in developing countries shows that technological devices such as laptop, tablet, and smartphone are easily accessible and effectively provide a proper learner support.

In this study, sustainable support of students means allowing every student to acquire the necessary academic and non-academic support without compromising the quality of education for the present and the future of the learner (Makoe, 2012; Mpofu, 2016). This is because learners who do succeed develop autonomy and independence and a feeling of 'belonging' to their institution (Boyle & Boice, 1998) than their counterparts. Those who do not succeed develop a feeling of 'outsiders' to their institution, with a result of being demoralized and eventually drop out.

Some researchers hold the opinion that modern educational technologies are more efficient than the traditional ones. For example, Wu and Zhan (2012) hold that

extensive application of modern education technologies provide individualized autonomous learning, at the same time, they form the coordination of teaching environment and systems. In such interactive learning environment, students can select the study content and suitable ways to study for personal characteristics according to their study interest and level. The study conducted by Pinto and Leite (2020) found that Moodle (Modular Object-Oriented Dynamic Learning Environment) as a modern educational technology provides access to educational resources and services in formal educational settings, and supports blended and e-learning practices. They further pointed out that, communication between students and students, students and teachers on Moodle platform has no limitations to each other and realize the cooperative learning of free discussing. In that way, students can break through the restrictions of time and space, micro and macro, history and reality.

However, these technologies are constrained by their availability, affordability and limitation in terms of internet connection especially in rural communities in African context (Halverson & Smith, 2009; Rueda, Krylova, et al., 2021; Benitez & Braojos, 2017). As regards to availability, many countries have invested heavily in educational technology (Halverson & Smith, 2009). Other countries are constrained by socio-economic factors as well as expertise (Krylova, et al., 2021; Wu, & Zhan, 2012). Studies conducted in Tanzania found that availability of modern educational technologies are constrained by socio-economic factors (Raphael & Mtebe, 2017), poor Internet connectivity (Lwoga, 2012), inadequate training and staff support to integrate educational technologies into the classroom and lack of time (Mtebe,

Mbwilo, & Kissaka, 2016) on the part of teachers.

Researchers like Hodges, Carpenter, and Borthwick (2017), Miltiadou and Yu (2000), and Crossan (2020) who are in support of the efficacy of educational technologies put forward the argument that the key issue is not the traditional or modernity of the technology but rather, the efficacy of that technology in supporting the majority of the students. For example, despite of its ancient, printed materials are still in use to the present day. This implies that it is an educational technology that has sustained the education institution for a long time. Similarly, Gao, Nagel, and Biedermann (2019) contend that the efficacy of a technology in education is a better way to give credit to any technology. Considering the lack of clarity about ‘which educational technology is more effective in supporting the students sustainably’, the likes of Wright (2014) and Mohammed (2019) have concluded that there is a lack of a systematic and objective understanding of what educational technologies the high education institutions (HEIs) should consider to use to support the students sustainably. As such, it becomes necessary to explore educational technologies for addressing student support services sustainably.

Constructing a possible sustainable support for students lies in relations and contexts, as a whole rather than deriving from single, isolated objects or views without connections. For example, instead of getting support from a single technology such as television or smartphone, students can access support from a variety of sources and this enhances motivation and urge to continue learning. Such the case, in ODeL, sustainable student support is characterised by diverse information access points, easy access, high interaction, reduced isolation, and use of alternative variety of

educational technologies to meet their academic and non-academic needs.

Previous studies such as Zozie (2020), Ratnayake (2018) and Rao (2011) found many educational technologies but failed to identify which ones facilitate student support sustainably. Thus, the question of which educational technology can support students sustainably is relatively under researched and there are many gaps that still need to be addressed. As some researchers have put it, “The history of education is replete with instances of traditional and modern Information and Communication Technologies (ICTs) but the efficiency of these technologies in supporting the majority of students sustainably are less well documented or analysed and this suggests a need for attention (Cushman and McLean, 2008).

A study conducted by Monyemangene (2012) however, revealed that while there may be high availability of students support technologies, there was low access, retention and completion of education. She suggested that there are other factors at play that may impede a certain technology to sustainably support the students such as differences of use due to demographic differences. In order to understand the external factors impeding effectiveness of technologies in supporting students sustainably, it is important to understand the critical role of context and the significant variability that exists among the stakeholders including teachers and students.

1.2 Problem Statement

A study conducted by Chawinga and Zozie (2016), they found that there was an increase in the number of drop out students enrolled at MZUNI ODeL. However, there is not much that has been studied on the educational technologies that can

sustainably support the students so as to minimise the dropout. Other studies such as those of Hodges, Carpenter, and Borthwick, (2017), Miltiadou and Yu (2000), Crossan (2020), and Raphael and Mtebe (2017) have looked into the efficacy of educational technologies, but they did not explore their sustainability in supporting the students. Further, though many studies have been carried out at Mzuzu University on technologies (Chaputula, 2010; Zozie, 2020; Zozie & Chawinga, 2018; Chawinga & Zozie, 2016), no study has been done to understand sustainable technological tools that can effectively support the increasing enrolment and minimize dropout rates. While the Centre proposed to use a variety of technological tools (Mzuzu University, 2014), there was no study that had ever been done to explore other factors that might impede a certain technology to sustainably support the students (Monyemangene, 2012). This study therefore aimed to fill this gap in the literature.

1.3 Research Aim

The aim of the study was to explore effective educational technologies for supporting students learning sustainably. The goal was to find a way to retain enrolled students and support them, not only to complete their education, but to become lifelong learners in modern technological world.

1.4 Research Objectives

The research objectives of this study were to:

1. Examine the factors leading to drop out among the enrolled students at MZUNI ODeL

2. Explore popularly used educational technologies that MZUNI ODeL is using to support the students.
3. Determine the Technological Acceptance for supporting learning at MZUNI ODeL to sustainably support the students.

1.5 Research Questions

1. What are the factors leading to dropout among the enrolled students at MZUNI ODeL?
2. What are popularly used educational technologies that MZUNI ODeL is using to support the students?
3. To what extent do the instructors, administrators and students at MZUNI ODeL accept the use of technologies for their educational practices?

1.6 Significance of the Study

This study intended to suggest appropriate and sustainable educational technologies for student support services to overcome the students' dropout of students due to isolation. Through the provision of quality support services, the students will have the full faith in the system that they are not being left on their own in the academic journey while pursuing the programme of study. The use of sustainable educational technologies will help attain student retention. Mpofu (2016) states that student support is an important aspect in retaining ODeL students.

In addition, the educational technologies that will be mapped will provide all information learners need, encourage students to fully utilise the available facilities, motivate learners to assimilate what they learn, provide necessary counseling, and

create a friendly environment among students, the faculty and the administration. As such, this study will help Mzuzu University create a regulatory framework in line with the use of sustainable educational technologies to guard against learner support.

1.7 Limitations of the Study

Since this is a case study, it implies that the findings cannot be generalised to other Open and Distance Learning institutions due to differences in learning environment, policy issues and learning culture. However, it is possible to transfer these findings to institutions that have characteristics similar to the ones that have been studied at Mzuzu University. It is therefore suggested that other researchers may conduct a comparative study by targeting two or more institutions of higher learning offering ODL programmes in Malawi. Another limitation was that participants could take a lot of time to respond to the questionnaire, especially the students. Most students use internet bundle for WhatsApp only because it is cheap. As a result, they could not open the Google form to respond to the questions. Others had internet bundle but could not remember to respond to the questionnaire. I had to remind them several times for them to respond to the questionnaire. Fortunately, substantial data was collected after a struggle.

1.8 Delimitations of the Study

The delimitation of this research ranged from educational technologies to academic and administrative student support services. Ideally, the study intended to reduce an increase in the number of dropout for students enrolled at Mzuzu University ODeL by enhancing student support services through educational technologies. The study firstly established the factors leading to drop out among the enrolled students at this

institution. Later, it explored the popularly used educational technologies that MZUNI ODeL is using to support the students; and finally it examined the Technological Acceptance at MZUNI ODeL. The data were collected from ODeL students, lecturers and ODeL administrators of Mzuzu University because they were the ones who were in the best position to know what kinds of support systems were important.

1.9 Operationalisation of Key words

1.9.1 Student Support Services

In this study, student support is considered as an all-inclusive term for academic and non-academic issues that may impede learning. For student support to be sustainable, institutions should allow every student to acquire a necessary academic and non-academic support without compromising the quality of education for the present and the future of the learner. Such the case, this study looks at sustainable student support as being characterised by diverse information access points, easy access, high retention, high performance, high interaction, reduced isolation, and use of alternative variety of educational technologies to meet students' academic and non-academic needs.

1.9.2 Student dropout

This study considers several factors that may lead to students' dropout from distance education such as weak communication between the students and instructors and lack of collaboration with other students. Some factors are intrinsic while others are extrinsic.

1.9.3 Educational technologies

The study also considers educational technologies as array of tools which are able to provide administrative, social and academic support in terms of registration, teaching, assessing and for other support services. It is assumed that these technologies are appropriate in enhancing communication, collaboration, and raising students' interest and motivation. Both technological devices and applications are used in this study.

1.9.4 Technological Acceptance

This study uses technological acceptance concept to investigate the reasons why students accept or reject some educational technologies. Some students could accept or reject technologies based on their mastery, ease of use, cost of technology, usefulness of the technology and many more.

1.10 Chapter Summary

The chapter discussed the background information to the study, defined the problem, objective of the study, significance of the study and the research question that were answered by this study. In the next chapter of literature review, the study focused on theoretical framework and empirical literature based on the study problem and research questions.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a critical review of related literature. The literature reviewed is related to educational technologies in addressing learner support services sustainably. The first part discusses the theoretical framework, while the second part presents the empirical literature. The third part presents the conceptual framework.

2.1 Theoretical Framework

Various approaches and theories have been used to understand students' support services in ODL setting. Some of these theories include Freire's (1970) dialogic process of communication, Holmberg's (1983) theory of didactic conversation, Moore's (1997) theory of transactional distance and Trumper's (2004) theory of dialogue can be used to form a theoretical framework for this study. In the context of this study, Moore's (1997) theory of transactional distance is used to understand the gaps in supporting learners in distance education sustainably.

Theory of Transactional Distance

Moore's theory of transactional distance explains the importance of considering the gap between the learner and the educational institution (Arko-Achemfuor, 2017; Dampson, et al., 2019; Makoe, 2012). According to him, this distance is determined by the amount of dialogue which occurs between the learner and the instructor, the amount of structure which exists in the design of the course and autonomy or the nature of self-directedness of the learner. Moore (1997) described the physical distance as a barrier because it tends to create fear and anxiety among distance

learners, by creating in them a sense of isolation that may prevent them from benefiting from any form of dialogue that could occur during the learning process. Moore's theory of transaction distance suggests that, when physical distance is left untouched, learners will feel isolated and barred from their instructors and this may create frustration, which may lead to drop out. According to Moore, a variety of transactions can occur through the use of educational technologies, thereby improving dialogue (Arko-Achemfuor, 2017). Educational technologies are used to enhance two-way communication in distance education. Garrison (1989) states that two-way communication can only be sustained if students are also in control of the educational technologies. Such technologies must enhance student support centeredness which aims at developing a sense of responsibility in each student for their own learning (Makoe, 2012). In this case, the ODeL institutions must use the technologies that students are already using and are comfortable with to adapt to formal learning environments.

Using this theory as a lens for this study, will enable the researcher to make sense of the unique factors that lead to drop out of school and the efficacy of the modern educational technologies used to support them. Although Moore did not identify the technologies that can sustainably support the educational transaction, his theory is relevant in this study because there are a lot of reports on students' drop out from ODeL institutions as compared to conventional institutions, and thus in need of considering the gap between the learner and the educational institution and use appropriate technologies to support students sustainably (Arko-Achemfuor, 2017; Dampson, et al., 2019; Makoe, 2012). Appreciating the transactional presence means

to address the challenges students face in accessing education in ODeL setting to minimize the possibility of dropping out.

2.2 Empirical Literature

This literature revolves around the three research objectives developed in chapter 1: factors leading to drop out; popularly used educational technologies; and the efficacy of the educational technologies in sustainably supporting the students.

2.2.1 Factors leading to dropout

The literature related to ODeL is replete with factors leading to students' drop out from ODeL institutions. These factors can be categorised into four: those related to educational institution, those related to educational technologies, those related to students, and those related to situation.

Rashid and Awan (2019) investigated educational factors leading to dropout of students at graduate level in Vehari, Pakistan. They interviewed 100 students and 30 teachers to collect primary data from them. The results showed that lack of resources such as computers and smartphone were the main cause of dropout of studies. They suggested that the government should take regulatory and fiscal measures to educational resources and provide financial assistance to students.

A similar study on costing was carried out by Commonwealth of Learning (2002) in Sub-Saharan Africa in ODeL institutions. It reviewed ODeL costing and provision of loans to ODeL students. It was found that most countries do not provide loans to ODeL students, which contributed to dropout. Several students postpone semesters and examinations at least once due to limited financial resource base. The further

problem was that Most ODeL institutions did not have financial assistance scheme for students. Findings from some studies suggest that institutions should display links regarding financial assistance on their institutional website or hyperlinked with financial institutional assistantships (Arko-Achemfuor, 2017; Fynn & Janse van Vuuren, 2017). This enhances application for financial aid without ever visiting the campus for the same. Although the Commonwealth of Learning study did not focus on educational technologies, financial support may be an external factor impeding the effectiveness of students' support.

Musingafi, et al. (2015) employed quantitative and qualitative approaches to investigate the challenges facing Open and Distance Learning students at the Masvingo Regional Campus of Zimbabwe Open University (ZOU) The results showed a range of obstacles in the courses of studies which resulted to a number of students dropping out from school. The most reported challenge was lack of sufficient time for study. Students complained that job and home responsibilities, failure of trainees to receive training materials on time reduced their time for study. Musingafi and colleagues recommended that ZOU should strive to achieve effective and balanced teaching and learning system that satisfies the desire of the learners to the extent that they would wish to come back to the institution for further studies.

In connection to lack of sufficient time for studies, using questionnaires and interviews, Ndiokubwayo (2017) investigated the barriers encountered by science teachers in laboratory activities in Rwandan teacher training colleges (TTCs) Ndiokubwayo found that many ODeL students complained of lack of adequate learning hours in laboratory-based practicals. The aforementioned researcher further

found that students found it difficult to request for an additional class for practicals and that the increased numbers of students in any course further reduced the opportunities per student to use instruments in a laboratory class. Ndiokubwayo (2017) suggested that although it is difficult to deliver science and engineering courses in the distance mode, learners can practice pre-laboratory sessions that are delivered online. It is believed that this practice enables students to spend less number of hours physically present in the laboratory.

In the study conducted at the National Open University of Nigeria (NOUN) to identify the risk behaviours and early warning signals for dropout students, Okopi (2011) found that students were frustrated by lack of timely feedback on their examinations and assignments. It was suggested that without an effective learners' support services system that provides timely feedback, student achievement is undermined and leads to increase in dropout rates and procrastination. It was suggested that the institutions should recruit competent, self-motivated and committed academics that are able to use ICT facilities in providing feedback timely.

Biswas and Mythili (2006) analysed student attrition and completion of distance education programmes of Indira Gandhi National Open University (IGNOU) These scholars established academic related challenges such as lengthy and difficult course content as triggering dropout of students. Biswas and Mythili (2006) suggested that institutions should introduce more contact sessions and monitoring the already available contact sessions regularly.

In a descriptive study, Musingafi et al (2015) investigated the challenges facing Open and Distance Learning students at the Zimbabwe Open University (ZOU). These scholars found that most respondents had challenges in working with information and communication technologies (ICT). 70% of the respondents had no computer and 55% were computer illiterate. As such, the implication was that most of these students could not access information on the Internet which led to their decision to drop out. The use of electronic media in ZOU was therefore likely to exclude the majority of distance learners. As such, Musingafi et al (2015) suggested that ZOU should regularly train students on how to work with ICT. I would also suggest that the institution look for alternative solution to reach out to those who would prefer other traditional technologies such as printed materials.

A well-balanced study was that of Hisham (2012) who conducted a study to determine the factors leading to dropouts in Perlis, Malaysia. Hisham indicated that unfamiliarity with technology led to loss of level of interactivity within the interaction triads from student-to-student, student-to-instructor, and student-to-interface (technology). Hisham suggested that the ODeL institutions should have a user manual and recorded videos for students' self-training on how to use the technology.

Biswas and Mythili (2006) conducted a study to analyse student attrition and completion rate (during 1994-2000) of two distance education programmes (Postgraduate Diploma in Distance Education and Master of Arts in distance Education) of IGNOU. These researchers found that lack of academic support, loss of interest, course content not relevant to present career, and fear of failure were the

reasons for students' dropout. Biswas and Mythili (2006) suggested that the university should regularly conduct guidance and counseling and increase number of contacts for orientation using various media like phone-in radio counselling, teleconferencing, and e-mail facilities.

Moyo, et al. (2021) conducted a study on socio-economic factors contributing to students' dropout in community technical colleges in Thyolo and Phalombe Districts with a focus on Milonga and Naminjiwa Technical Colleges. The results showed that most students in community technical colleges dropout before completion of their training course, particularly female students, which is counterproductive with regard to women empowerment. The study also revealed several socio-economic factors that contribute to dropout of female students from the two colleges. Moyo and colleagues suggested that the Ministry of Labour Skills and Innovation should recruit more female instructors to act as role models to other female students.

2.2.2 Educational Technologies Used in ODL Institutions

There are different types of Educational technologies used to support students learning in ODL institutions. In the literature, these technologies range from the most used Learning Management System (LMS) to the least used, mobile applications (Pinto & Leite, 2020; Gudanescu, 2010; Selwyn et al., 2016). Within each pattern of digital technology, Pinto and Leite (2020) observed that the tools are not mutually exclusive because they depend on how students and teachers use them to support learning.

Islam and Hasan (2016) conducted a study in a number of educational institutions in Bangladesh in order to understand the technologies that were used in open and distance learning. These researchers noted that the common technologies that were used to support ODeL were in two main categories: hardware and software. The hardware were radio, television, telephone (land, mobile, fax, Voice over Internet Protocol or VoIP), and computers. The software included Learning Management Systems (LMS). They also found that Learning Management Systems (LMS) were often meshed with other pre-existing technologies such as databases and digital libraries. They also observed that computer applications for distance education fell into four broad categories: Computer Assisted Instruction (CAI), Computer Managed Instruction (CMI), Computer Mediated Communication (CMC), and computer-Based Multimedia.

Venter, Jansen van Rensburg and Davis (2012) carried out a research to examine the determinants of usage of an online learning management system (LMS) by fourth level business students at a South African Open and Distance Learning University. A survey was conducted among students at their annual summer school, with 213 usable questionnaires being returned. Results indicated that 64% of students were frequent users of the LMS, using the application at least once a week. Occasional users of the system (using the system once a month) constituted 23%, while 10% of users used the system less than once a month (infrequent users). By far the majority of the students were, therefore, at the least occasional users of the LMS. Most students used the platform only for administrative purposes (i.e. to download material and submit assignments) or as passive observers, reading the postings from

other students or lecturers but not contributing to discussions. Venter, Jansen van Rensburg and Davis (2012) also found that the students had multiple Internet access points for utilization of LMS, i.e., from computers at work and home, and mobile Internet access.

Saidi et al (2021) conducted a survey on students' preference for their convenience in the use of online learning at Public Higher Learning Institutions (IPTA) and Private Higher Learning Institutions (IPTSin Malaysia. The result revealed that the most popular LMS used by the educators was Google Classroom (97.3% of the respondents), followed by their Campus' Learning Management System (uFuture/iLearn, Blackboard, Spectrum), Schoology, Edmodo, Flipgrid, Edpuzzle, Moodle, Quizziz, Kahoot, Padlet and Jamboard. However, none of the respondents reported that their educators used iSpring for ODeL. This could be most students chose Google Classroom because it is the one that they know how to operate and this made a significant impact on the students' preference.

Pinto & Leite (2020) conducted a literature review on the students' preference in the use of LMS. The results indicated that institutional platforms such as Moodle (Modular Object-Oriented Dynamic Learning Environment) and Blackboard were the most preferred LMS because they could be most used for academic purposes. These platforms provided access to resources and services in formal educational settings, supported blended and e-learning practices. Hence, these platforms had positive impact in students' academic outcomes and could support communication with local and international students.

Koneru (2017) explored Moodle functionality for managing ODeL e-Assessments at Icfai Business School (IBS) in India. She found that Moodle allows ODeL institutions to integrate existing systems; administer diagnostic, formative, summative and competency-based assessments; grade and report learners' performance and provide descriptive feedback as well as generating reports. This researcher observed that e-Assessment has more advantages over traditional, paper-based assessment. E-Assessment provides lower long term costs, instant feedback to students, greater flexibility with respect to location and timing, improved reliability with machine marking, improved impartiality, and enhanced question styles that incorporate interactivity and multimedia. She therefore commented that the advent of Learning Management Systems (LMS), such as Moodle paved the way for integrated advanced services for: interactive dialogue, controlling knowledge at different stages of distance process and e-Assessment systems. Moodle provides the complete integrated environment for handling all aspects of e-Assessment from authoring questions through to reports for course teams

Islam & Hasan (2016) explored the use of print materials as medium of instructional delivery in Bangladesh. They found that students were easily able to focus on the content, without becoming mesmerized or frustrated by the process of reading itself. These researchers also found that students could use the print materials at any time and any place without the aid of supplemental resources such as electricity, viewing screen, and specially designed electronic classrooms. These scholars recommended that it was necessary for ODeL institutions to produce print materials because they

were learner-controlled and very important for rural learners with limited access to advanced technology.

Said et al (2021) conducted a survey to identify types of social media used by the educators and students' preference in ODeL institutions. They found WhatsApp, followed by Telegram, Email, Facebook, Instagram and Twitter as the most preferred social media.

Mnkandla and Minnaar (2019) carried out a metasynthesis research to identify social media in eLearning. They used conceptual framework for online collaborative learning (OCL) in higher education. The results showed that social media such as blogs, wikis, Skype or Google Hangout, Facebook; as well as mobile apps, such as WhatsApp could facilitate deep learning and the creation of knowledge in e-learning at higher educational institutions.

Firat et al (2017) conducted a study to reveal Open Education (OE) related social media usage in Turkey, using social network analysis. These scholars found that Facebook was the most widely used. In general and Facebook in particular constitute an effective venue for ensuring that OE learners receive greater benefits from instruction such as greater academic success, socialization through communication with other students attending the same program, and ability to access useful information shared on these pages and groups while preparing for exams. Firat et al suggested that Students of OE institutions may be advised to take active part in Facebook groups and pages created to aid instruction.

Jena (2020) explored educational technologies that were used at Indira Gandhi National Open University (IGNOU). Jena found online system using internet based technologies as the most used technologies. Jena further found that in online system platforms, learners used three important resources like Education Broadcast, Virtual Class and eGyanKosh to explore the links to access all learning resources available online. Jena recommended for online counselling classes in order to assist students with learning disabilities.

Ahmad (2015) reviewed the literature regarding the types of assistive technologies that can help students with learning disabilities. Ahmand found that the concept of assistive technology was generic that includes assistive, adaptive, and rehabilitative devices for individuals with disabilities and includes virtually anything that might be used to compensate for lack of certain abilities, ranging from low-tech devices like crutches or a special grip for a pen, to more advanced items like hearing aids and glasses, to high-tech devices such as computers with specialized software for helping dyslexics to read. As regards to types of assistive technology, the results indicated that there were assistive technologies for students with mobility impairments, visual impairment/ blindness, Low Vision, Hearing and/or Speech Impairments and others with Specific learning disabilities. The study suggested that ODeL institutions should make an effort to help all the students access education and support them through assistive technologies.

Guzman and Joseph (2021) conducted a study on technologies that were used for laboratory practice in science and technology. They found that Web-Based Virtual Lab application called Easy Javascript Simulation (EJSs) was very versatile and

valuable for providing realistic experience for students in science, technology and engineering (STE) fields. This Virtual Lab application could be used on any device capable of accessing the Web (laptops, tablets, or smartphones), thus allowing the virtual lab to be available anytime and anywhere, even offline. It was discovered that the application has a user-friendly interface and yielded motivation and interest in students.

In a study conducted at MZUNI in Malawi, Chibambo (2009) contacted a number of students and lecturers purposely to find out about their knowledge, attitudes and practices about mobile-phones and probably establish the availability of this technology. The questions that he used sought to establish accessibility and affordability of mobile-phone technology and were tailored and distributed to the Intermediate Certificate in ICT class for them to respond. The results showed that the majority (95%) of the students in this class had access to a cell-phone and or own a cell-phone making it the most ubiquitous form of communication. While 10% of them own ground-phones, 1% owns computers. It was further found that 95% of the students use mobile-phones to communicate with relatives and friends; 10% use it for business communication with their clients and 5% use it for academic and administrative support services. From these statistics, it was evident that mobile-phones were once considered as mere mobile-phones and their immense potential and effectiveness in supporting academic and administrative issues have remained anonymous. It is a given fact that no concrete research regarding the use of mobile-phones in ODL in Malawi universities has been done. As such it is also my interest

in my research to determine the efficacy of mobile technologies in addressing ODL student support services sustainably.

Zozie (2020) conducted a study which aimed at integrating e-learning technologies into conventional teaching and learning in the schools and higher education system in Malawi. The results indicated that students in Universities/ Colleges possess one or more of technological tools which can be very useful for distance education. The technologies that were found were: Facebook, memory sticks, personal computers, phones, DVDs, WhatsApp, Skype, Twitter, CDs, Youtube, Google, Moodle, webcam, audio/ video conference, flash disks, tablets, iPads, iPods, external hard-drives, radios, email, and memory cards.

2.2.3 Technological Acceptance

Digital technologies have gained much popularity in education to the cost efficiency they gain through scalability. Hence, Spenger and Schwaninger (2021) used technology acceptance model (TAM) to investigate technology acceptance of four digital learning technologies (classroom response system, classroom chat, e-lectures, and mobile virtual reality) in Northwestern Switzerland. The results indicated that the educational technologies that the students were more exposed to had the highest level of acceptance. It was closely followed by e-lectures, then the classroom chat and then mobile virtual reality. The students evaluated all tools favourably before and after usage, except for mobile virtual reality, which saw a substantial drop in perceived usefulness and behavioural intention after 3 months' usage.

Monyemangene (2012) did a study on unanticipated behaviour displayed by students to information communication technologies (ICTs). She explored the reasons why students privileged with high access to ICTs make such limited use of them. She found that students displayed unexpected behaviour and there were no great variations in ICT practices in terms of age, educational background or socio-economic status. She also found that high access can be attributed to the lack of psychological resources, such as positive attitudes towards ICTs. Monyemangene recommended that ODeL institutions should strive to develop ICTs capacities to ensure the development of ICTs in order to motivate students to use ICTs in learning.

Another study was carried out by Ndebele and Mbodila (2022) and used Technology Acceptance Model (TAM) to examine technology acceptance in learning and teaching at a Historically Disadvantaged University in university in the Eastern Cape Province in South Africa. These scholars found that most academic staff believed and saw the value that ICTs bring in their teaching and learning practices. They also found that teachers were aware that technology use in education improves learning and teaching, and they were willing to embrace the use of technology to improve their practices. These researchers recommended intensification of lecturer training in the use of technology for teaching and learning to enable them to embrace it in their teaching practice. They further recommended that the ODeL institution needed to put in place support systems for academic staff to empower them to have continuous access to devices and internet connection for technology integration in teaching and learning. They further recommended establishment of e-learning communities of

practise in the university that would allow lecturers to assist each other as well as share best practices in the use of technology for teaching and learning.

Su and Li (2021) also conducted a study to explore application of Technology Acceptance Model (TAM) in online entrepreneurship education for new entrepreneurs in China. They found that online entrepreneurship education influenced the perceived ease of use of the user and perceived credibility. They also found that the quality of online entrepreneurship education had a positive impact on the user's perceived usefulness. Interactivity had a positive influence on perceived ease of use and perceived usefulness, and interactivity positively influenced the perceived ease of use of the user and perceived credibility. Perceived usefulness, perceived ease of use, and perceived credibility had a positive impact on the behavioural intention of the users. Su and Li recommended that institutions need to apply some technical and theoretical support for the application of TAM in online entrepreneurship education for new entrepreneurs.

2.4 Literature Gap

The literature has discussed factors that lead to students' dropout, how technologies support the students and the drivers that let students accept or reject new or existing technologies. However, this has not been studied in Malawi to relate the dropout of students and how the educational technologies can minimise such a problem. This study therefore intends to fill this literature gap.

2.5 Conceptual Framework

The study adopted the Technology Acceptance Model (TAM) so as to guide the

researcher in exploring educational technologies for addressing student support services sustainably at Mzuzu University ODeL. TAM was developed by Davis (1989) to investigate the reasons why people accept or reject an information technology. It is used to represent the mutual relationship between external variables which affect the acceptance of technology by a user and factors which affect actual behavior.

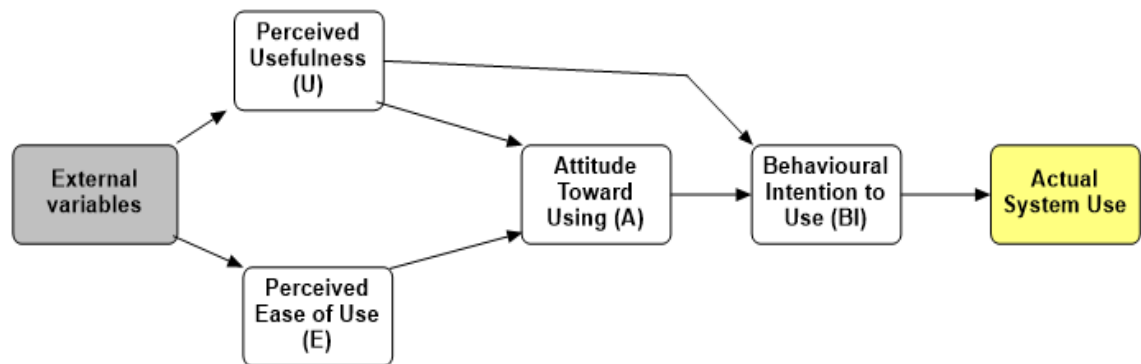


Figure 2.1: Technology Acceptance Model (Davis, Bagozzi & Warshaw, 1989)

Figure 2.1 is the classical TAM. The model suggests that when users are presented with a new technology, their decision to accept or reject it is influenced by two variables, that is, the perceived usefulness (U) and perceived ease of use (E). Davis (1989) and Davis, Bagozzi, and Warshaw (1989) defined Perceived Usefulness as the degree to which a person believes that using a particular system would enhance his or her job performance. It means whether or not someone perceives that technology to be useful for what they want to do. They also defined perceived ease of use as the degree to which a person believes that using a particular system would be free of effort. These variables affect attitude towards using (A) and the behavior intention (BI) to use technology. If the technology is easy to use, then the barriers are conquered and one has positive attitude and intention to use new technology. If it's not easy or hard to use and the interface is complicated, no one has a positive attitude

towards it. In this Model, BI is viewed as “being jointly determined by the person’s attitude toward using the system (A) and Perceived Usefulness (U), with relative weights estimated by regression: $BI = A + U$ ” (Davis, Bagozzi, & Warshaw, 1989). The actual system use is the end-point where people use the technology.

Granić and Marangunić (2019) conducted a systematic literature review in order to provide an overview of the current state of research efforts on TAM application in the field of learning and teaching for a variety of learning domains, learning technologies and types of users. The review identified 71 relevant studies ranged between 2003 and 2018. The main findings indicated that TAM and its many different versions represented a credible model for facilitating assessment of diverse learning technologies. TAM’s core variables, perceived ease of use and perceived usefulness, have been proven to be antecedent factors affecting acceptance of learning with technology.

2.6 Chapter Summary

The literature review focused on transactional distance theory and Technological acceptance Model as guides on examining the factors that lead to students’ dropout and how technologies can minimise this problem. The next chapter provides means of data collection and analysis for presentation and discussion.

CHAPTER THREE

RESEARCH METHODOLOGY

This section presents the research approach; research design; study population, sample size and sampling technique; instruments for data collection; data analysis plan; validity and reliability; and ethical consideration.

3.1 Research Approach

The study extensively used a quantitative methods research approach for data collection and analysis. Quantitative research was used to provide the mean score of students' dropouts, the percentage of popularly used educational technologies and the extent of technological acceptance. To a lesser extent, qualitative research was used to provide respondents' concepts, reasons, opinions and attitudes towards the use and acceptance of educational technologies.

3.2 Research Design

The study employed a survey design to explore the educational technologies that are popularly used to address student support services. According to Babbie (1990), a survey provides a description of trends, attitudes, or opinions of a population. As such, this study was designed to understand the popular attitudes and opinions of respondents with regards to factors that could lead to dropout of ODeL students, the popularly used educational technologies and to determine the technological acceptance of respondents.

3.3 Study Area

The study was conducted at Mzuzu University as one of the public universities in Malawi. It is a dual mode and hosts both face-to-face and ODeL students. The ODeL system consists of five satellite centres across all administrative regions of Malawi. This area was chosen because the literature shows that there is high dropout of ODeL students and that the institution proposed to use many educational technologies to support students. However, none has conducted a study on how educational technologies can minimise the dropout of ODeL students and that which technologies can be sustainable to support students.

3.4 Study Population

This research targeted ODeL registered students, ODeL administrators and lecturers. By then MZUNI ODeL hosted around 3000 students, 11 ODeL administrators and 80 lecturers.

3.5 Sampling Technique and Sample Size

The study used voluntary response sampling technique. Respective links were sent to 1000 students, 80 Lecturers and 8 administrators to voluntarily respond to questions created on the Google online platform. The links were sent to them through their email addresses. In this survey, 119 students, 22 lecturers and 5 administrators volunteered to respond to the questions. This represented 11.9%, 27.5% and 62.5% response rates respectively. According to Tools4dev (2022), a good maximum sample size is usually around 10% of the population. This non-probability sampling technique was used because the participants were well known to the researcher such

that they could voluntarily provide the much-needed information as suggested by Fraenkel and Wallen (2009).

3.6 Instruments for Data Collection

The questionnaire was used to collect the data based on closed and open-ended questions as shown in appendices 1, 2 and 3. It was administered to students, instructors and administrators to get information regarding dropout of students, popularly used educational technologies and the extent of technological acceptance. Open ended questions helped the researcher to get in-depth information from students, instructors and administrators.

3.7 Data Analysis Plan

The data was analysed using descriptive statistics tool called the ‘Statistical Package for the Social Sciences’ (SPSS). Descriptive statistics provided summaries as regards to both numerical and categorical variables. The collected data were properly tabulated, analyzed and interpreted by using appropriate statistical tools in terms of frequency percentages and means. The mean score of each item was calculated by using the formula below so as to work out overall average score. Value assigned to each response was based on 4 Likert type scale as follows: strongly agree (SA) – 4; agree (A) – 3; disagree (D) – 2; strongly disagree (SD) – 1.

$$\text{Mean score} = \frac{FSA * 4 + FA * 3 + FD * 2 + FSD * 1}{N}$$

Where: *FSA* is the frequency of ‘strongly agree’ responses; *FA* is the frequency of ‘agree’ responses; *FD* is the frequency of ‘disagree’ responses; *FSD* is the frequency of ‘strongly disagree’ responses; and *N* is the total number of respondents.

To determine the minimum and the maximum length of the 4 Likert type scale, the range was calculated by subtracting the highest Likert scale (4) to the lowest Likert scale (1) and then divide by the number of Likert scale (4) (Rashid & Awan, 2019), i.e. $(4 - 1)/4 = 0.75$. Hence, the mean ranges were as follows: strongly disagree (SD) $\rightarrow 1 - 1.75$; disagree (D) $\rightarrow 1.76 - 2.50$; agree (A) $\rightarrow 2.51 - 3.25$; strongly agree (SA) $\rightarrow 3.26 - 4$.

3.8 Validity and Reliability

The questionnaire tools were piloted before the actual research. Piloting the questionnaire aimed at improving the appearance and content and validity of the instrument, and to get an idea of how long it would take to complete the questionnaire (De Vos et al., 2011). Babbie and Mouton (2006) add that it does not matter how carefully the questionnaire was designed because as a data collection instrument, there is the possibility of error. As such, a pilot test was conducted on a population different from potential respondents to assess their reading levels and understanding of the questions. Their feedback was used to improve the content of the questionnaire.

3.9 Ethical Consideration

The researcher ensured that ethics are adhered all the time and in all stages in this study. As such, a Research Clearance letter was obtained from OUT as shown in appendix 4. Since the context of the study was at Mzuzu University ODeL, the consent was obtained from participants as they were informed of the objective of the study before they responded to the questionnaire as shown in Appendix 5. They were further informed about their voluntary participation and right to withdraw from the

activities of the study, if and when they no longer wished to participate. Individual respondents were referred to as Participant 1, 2 etc. so as to maintain anonymity and confidentiality.

3.10. Chapter Summary

This chapter has described that the data will be analysed quantitatively using descriptive statistics in SPSS to have the means and percentages of the factors leading to dropout, popularly used technologies and technological acceptance. To a lesser extent, qualitative method especially thematic analysis was used to provide reasons for the output of quantitative data. The next chapter will provide the presentation and discussion of the findings.

CHAPTER FOUR

RESULTS AND DISCUSSION

This Chapter presents the findings and discussion in line with the following research questions: What are the factors leading to dropout of MZUNI ODeL students? What are popularly used educational technologies that MZUNI ODeL is using to support the students? To what extent are the educational technologies accepted at MZUNI ODeL?

4.1 Demographic Profile of Respondents

This section presents the demographic profile of the respondents.

Table 4.1: Demographic profile of respondents

<i>Variable</i>	<i>Subscale</i>	<i>Students</i>	<i>Instructors</i>	<i>Administrators</i>
		%	%	%
Gender	Male	55.8	77.3	100
	Female	44.2	22.7	0
Age	30 and below	34.8	4.5	0
	31-45	55.7	36.4	40
	46-55	9.6	59.1	60
	56 and above	0	0	0
Highest Qualification	PhD		35	0
	Master's Degree		55	100
	Bachelor's Degree		10	0
Students' Location	Rural	73.7		
	Urban	26.3		
Employment Status	Full time job	77.9		
	Part-time	4.4		
	Self-employed	1.8		
	Not employed	15.9		
Source of Fees	Scholarship	1.7		
	Loan	0.9		
	Self-sponsored	86.1		
	Relatives	11.3		

Source: Field data (2022)

Table 4.1 reveals that most of the students and instructors were males. It was also noted that there was none female ODeL administrator. According to Zozie and Chawinga (2018), the reason for female scarcity in Malawian tertiary education institution is that more females drop out of school at primary and secondary school levels. The findings by World Bank Working Paper (2010) extend that in Malawi, there is high drop out of girls at primary and secondary school levels because culturally, females are expected to stay at home and do house chores and get married once they reach puberty stage. As a result, very few reach the high learning institutions. Although in unrelated study, Andrah (2000) found that there were more female than male students at College of Education in Winneba which is located in Central Region of South Ghana.

Table 4.1 also showed that there were no respondents with 56+ years. Previous studies indicate that people over the age of 60 do not have much confidence in their ability to use technology and low technological skills (American Association of retired Persons [AARP], 2002; Czaja, 2006; Kapondera & Ngalande, 2016). Since there was none on age group 56 and above, this clearly indicates that the respondents in this study can confidently use technology in education and may have strong cognitive abilities, computer self-efficacy, and less computer anxiety in the use of technology.

In terms of highest qualification, it could be observed from Table 4.1 that majority of instructors and almost all ODeL administrators were Master's Degree holders in various fields of study. This was an indication that their professional competency levels were very high.

It could be further observed from Table 4.1 that the majority of students (73.7%) came from rural areas. This statistically showed that rural areas were the biggest users of distance education. Previous studies found that this was possible because of proliferation of technological tools which overcame any access difficulties imposed by geographical distance (Macintyre & Macdonald, 2011; Lembani, Gunter, Breines & Dalu, 2020).

In terms of sources of fees, majority (86.1%) of students are self-sponsored. This correlates well with employment status such that most of students (77.9%) were on full time job. If the institution plans to support students, it has to financially support 15.9% of the students because they were found to be unemployed.

4.2 Factors Leading to Dropout of ODeL Students

Research objective 1 was designed to find out the factors that may lead to dropout of ODeL students at Mzuzu University ODeL. Views were collected from the students, ODeL administrators and instructors. Likert scale in order of strongly disagree (SD) → 1 – 1.75; disagree (D) → 1.76 – 2.50; agree (A) → 2.51 – 3.25; strongly agree (SA) → 3.26 – 4 was used. The responses are shown in Tables 4.2, 4.3 and 4.4.

Table 4.2: Students' views on factors leading to dropout of ODeL students

	Strongly disagree		Disagree		Agree		Strongly agree		MEAN	Remarks
	N	%	N	%	N	%	N	%		
Fail to pay tuition fees	1	0.9%	10	9.1%	22	20.0%	77	70.0%	3.59	SA
Fail to buy resources such as computers and smartphone for studies	1	0.9%	32	30.2%	39	36.8%	34	32.1%	3.00	A
Denied to get a loan from the High Education Students' Loans and Grants Board (HESLGB)	0	0.0%	19	17.9%	31	29.2%	56	52.8%	3.35	SA
Insufficient time for study due to job and home responsibilities	3	2.9%	34	32.7%	32	30.8%	35	33.7%	2.95	A
Lack of adequate learning hours in laboratory-based practicals	2	2.1%	23	24.0%	40	41.7%	31	32.3%	3.04	A
Lack of timely feedback on their examinations and assignments	1	0.9%	13	12.3%	37	34.9%	55	51.9%	3.38	SA
Missing of grades	2	1.8%	5	4.6%	21	19.3%	81	74.3%	3.66	SA
Lengthy and difficult course content	5	5.1%	30	30.3%	33	33.3%	31	31.3%	2.91	A
Unfamiliarity with technology (computer illiterate, etc.)	4	4.0%	36	36.0%	33	33.0%	27	27.0%	2.83	A
Lack of academic support	1	1.0%	10	9.7%	41	39.8%	51	49.5%	3.38	SA
Fear of failure	7	7.1%	40	40.8%	36	36.7%	15	15.3%	2.60	A
Course content not relevant to present career	11	11.1%	37	37.4%	34	34.3%	17	17.2%	2.58	A
Delay in starting facilitating the course and distribution of learning materials	1	0.9%	17	15.7%	38	35.2%	52	48.1%	3.31	SA
Lack of skills in studying and writing assignments and tests	4	3.9%	34	33.3%	41	40.2%	23	22.5%	2.81	A
Insufficient orientation to the websites functions, course selection, LMS, ICT usage, University policies, learning in distance education, library facilities, etc.	1	0.9%	14	13.1%	27	25.2%	65	60.7%	3.46	SA
Mean of means									3.12	Agree

Source: Field data (2022)

Results presented in Table 4.2 on the students' views showed the mean of means as 3.12. This means that as a whole, students generally agreed that the listed factors were possible causes of dropout of ODeL students. It also implied that there were many factors that could lead to dropout of ODeL students at Mzuzu University. However, among all the factors, the 'missing of grades' had a relatively high consensus with a mean of 3.66 leading to dropout of ODeL students. This confirmed a study conducted by Chawinga and Zozie (2016) who also found that loss of grades was a big problem faced by Mzuzu University ODeL with 163(70%) respondents.

With a critical analysis of all factors, it showed that the institution could possibly influence the dropout of students due to their lack of timely feedback on students' examinations and assignments (M=3.38), missing of grades (M=3.66), lack of academic support (M=3.38), Delay in starting facilitating the course and distribution of learning materials (M=3.31), and insufficient orientation to the websites functions, course selection, LMS, ICT usage, University policies, learning in distance education, library facilities, etc. (M=3.46).

The mean of means presented in Table 4.3 (M=2.85) indicated that ODeL administrators agreed that the listed factors were possible factors that could lead to dropout of ODeL students at Mzuzu University. The results also indicated that the institution was the one which could influence dropout of students as it failed to provide academic support properly (M=3.60) and that it could not provide feedback timely on students' examinations and assignments (M=3.40).

Table 4.3: ODeL Administrators' views on factors leading to ODeL students' attrition

	Strongly disagree		Disagree		Agree		Strongly agree		MEAN	Remarks
	N	%	N	%	N	%	N	%		
Fail to pay tuition fees	0	0.0%	1	20.0%	2	40.0%	2	40.0%	3.20	A
Fail to buy resources such as computers and smartphone for studies	0	0.0%	1	20.0%	4	80.0%	0	0.0%	2.80	A
Denied to get a loan from the High Education Students' Loans and Grants Board (HESLGB)	0	0.0%	2	40.0%	2	40.0%	1	20.0%	2.80	A
Insufficient time for study due to job and home responsibilities	0	0.0%	3	60.0%	2	40.0%	0	0.0%	2.40	D
Lack of adequate learning hours in laboratory-based practicals	0	0.0%	2	40.0%	2	40.0%	1	20.0%	2.80	A
Lack of timely feedback on their examinations and assignments	0	0.0%	1	20.0%	1	20.0%	3	60.0%	3.40	SA
Missing of grades	0	0.0%	2	40.0%	0	0.0%	3	60.0%	3.20	A
Lengthy and difficult course content	0	0.0%	1	20.0%	3	60.0%	1	20.0%	3.00	A
Unfamiliarity with technology (computer illiterate, etc.)	0	0.0%	2	40.0%	3	60.0%	0	0.0%	2.60	A
Lack of academic support	0	0.0%	0	0.0%	2	40.0%	3	60.0%	3.60	SA
Fear of failure	0	0.0%	2	40.0%	3	60.0%	0	0.0%	2.60	A
Course content not relevant to present career	0	0.0%	4	80.0%	1	20.0%	0	0.0%	2.20	D
Delay in starting facilitating the course and distribution of learning materials	0	0.0%	2	40.0%	3	60.0%	0	0.0%	2.60	A
Lack of skills in studying and writing assignments and tests	0	0.0%	1	20.0%	4	80.0%	0	0.0%	2.80	A
Insufficient orientation to the websites functions, course selection, LMS, ICT usage, University policies, learning in distance education, library facilities etc.	0	0.0%	1	20.0%	4	80.0%	0	0.0%	2.80	A
Mean of Means									2.85	Agree

Source: Field data (2022)

The results presented in Table 4.4 on the instructors' views show that the mean of means was 2.12. As a whole, this entails that instructors generally disagreed that the listed factors could lead to students' attrition. Among all the factors, 'Fail to pay tuition fees' had high rate of disagreement with a mean of 1.62. In reference to demographic data in Table 4.1, it correlates with instructors' views that fail to pay tuition fees was not an indicator that students could drop out from their studies as majority of students had full time jobs such that they were able to sponsor themselves. However, the instructors agreed on one factor that 'lack of skills in studying and writing assignments and tests' ($M=2.52$) could lead to dropout of ODeL students. This might be true because the instructors are the ones who assess the students and know them better.

Table 4.4: Instructors' views on factors leading to ODeL students' attrition

	Strongly disagree		Disagree		Agree		Strongly agree		MEAN	Remarks
	N	%	N	%	N	%	N	%		
Fail to pay tuition fees	13	61.9%	3	14.3%	5	23.8%	0	0.0%	1.62	SD
Fail to buy resources such as computers and smartphone for studies	5	25.0%	7	35.0%	8	40.0%	0	0.0%	2.15	D
Denied to get a loan from the High Education Students' Loans and Grants Board (HESLGB)	8	38.1%	5	23.8%	8	38.1%	0	0.0%	2.00	D
Insufficient time for study due to job and home responsibilities	7	33.3%	7	33.3%	7	33.3%	0	0.0%	2.00	D
Lack of adequate learning hours in laboratory-based practicals	8	40.0%	4	20.0%	8	40.0%	0	0.0%	2.00	D
Lack of timely feedback on their examinations and assignments	6	28.6%	6	28.6%	9	42.9%	0	0.0%	2.14	D
Missing of grades	5	25.0%	6	30.0%	9	45.0%	0	0.0%	2.20	D
Lengthy and difficult course content	2	10.5%	9	47.4%	8	42.1%	0	0.0%	2.32	D
Unfamiliarity with technology (computer illiterate, etc.)	6	30.0%	6	30.0%	8	40.0%	0	0.0%	2.10	D
Lack of academic support	6	30.0%	5	25.0%	9	45.0%	0	0.0%	2.15	D
Fear of failure	6	30.0%	8	40.0%	6	30.0%	0	0.0%	2.00	D
Course content not relevant to present career	3	15.0%	12	60.0%	5	25.0%	0	0.0%	2.10	D
Delay in starting facilitating the course and distribution of learning materials	4	20.0%	3	15.0%	13	65.0%	0	0.0%	2.45	D
Lack of skills in studying and writing assignments and tests	2	9.5%	6	28.6%	13	61.9%	0	0.0%	2.52	A
Insufficient orientation to the websites functions, course selection, LMS, ICT usage, University policies, learning in distance education, library facilities, etc.	9	42.9%	1	4.8%	11	52.4%	0	0.0%	2.10	D
Mean of means									2.12	Disagree

Source: Field data (2022)

It is surprising to see that the views of students and ODeL administrators do not agree with instructors' views. This might be that there is no smooth communication between administrators and instructors when providing support to students. As such, it is suggested that another study needs to be carried to bring to view how the relationship between the administrators and facilitators may affect the efficacy of students support services in ODeL institutions.

These findings correlate with those of Rashid and Awan (2019) who found that the college in the District of Vehari-Pakistan appeared to influence dropout rate through their organization, their structure, their environment, policies and possibly practically push students towards a gradual exit (fade-out) or to leave college (push-out). However, a cause for students themselves that had a high consensus and could lead to their attrition was failing to pay tuition fees ($M=3.59$).

Likewise, Musingafi et al (2015) found that lack of academic support such as failure of trainees to receive training materials was the most possible factor leading to dropout of distance learners at the Masvingo Regional Campus of Zimbabwe Open University (ZOU). Although students themselves highlighted that 'insufficient time for study due to job and home responsibilities' as well as 'course content not relevant to present career' could lead to drop out of some students, ODeL administrators did not agree on these and they regarded them as irrelevant factors.

In their study, Musingafi et al (2015) also found that lack of study skills may force students to submit assignments that are not properly written and they are likely to get to examinations without enough preparation resulting in poor performance and

withdrawal or dropout voluntarily. It is therefore suggested that the instructors should equip students with independent study skills so that they do not think of dropping out of school.

4.3 Popularly Used Educational Technologies

The second objective aimed at exploring the popularly used educational technologies at MZUNI ODeL. The respondents were given a number of educational technological tools as shown in Table 4.5 and were asked to choose those they popularly use. They were also given a space to indicate other devices which were not on the list. The results from the students, instructors and administrators are shown in Table 4.5.

Table 4.5: Popularly used educational technologies at MZUNI ODeL

Factors	Subscale	Students		Instructors		Administrators	
		N	%	N	%	N	%
Popularly used devices	Laptop	56	48.7	22	100	5	100
	Desktop	8	7	0	0	3	60
	Smartphone	110	95.7	18	81.8	5	100
	Keypad phone	3	2.6	0	0	0	0
	Tablet	2	1.7	4	18.2	3	60
	Radio	4	3.5	0	0	0	0
	Flashdisk	27	23.5	10	45.5	3	60
	Television	6	5.2	0	0	0	0
	DVD player	1	0.9	0	0	0	0
	Memory card	17	14.8	1	4.5	0	0
	Ipod	0	0.0	0	0	1	20
	External hard drive	2	1.7	6	27.3	1	20
	Projector	0	0	1	4.5	0	0
	Printer	0	0	1	4.5	0	0
Applications for online lessons	Moodle	103	88.8	22	100	5	100
	Google Meet	4	3.4	1	4.5	0	0
	Google Classroom	8	6.9	0	0	0	0
	WhatsApp	77	66.4	19	86.4	5	100
	Zoom	20	17.2	1	4.5	3	60
	Facebook	5	4.3	0	0	0	0
	Email	21	18.1	6	27.3	3	60
	MZUNI Website	44	37.9	4	18.2	2	40
	Microsoft teams	0	0	1	4.5	0	0
Applications for capturing video lessons	Moodle			7	33.3	4	80
	Camtasia			9	42.9	3	60
	Zoom			1	4.8	2	40
	Flashback Express			2	9.5	3	60

Applications for capturing audio lessons	OBS			3	14.3	1	20
	WPS Recorder			1	4.8	0	0
	Never used at all			3	14.3	1	20
	Moodle			10	45.5	4	80
	Audacity			6	27.3	3	60
	Zoom			0	0	2	40
	WhatsApp			9	40.9	2	40
	Phone recorder			8	36.4	4	80
	WPS Recorder			1	4.5	0	0
	Never used at all			4	18.2	0	0
Sending and receiving materials	Moodle	103	89.6	19	90.5	5	100
	Memory card	3	2.6	1	4.8	0	0
	WhatsApp	74	64.3	14	66.7	4	80
	Facebook	1	0.9	0	0	0	0
	Email	5	4.3	5	23.8	1	20
	Flashdisk	9	7.8	2	9.5	1	20
	External hard drive	2	1.7	1	4.8	1	20
	MZUNI Website	8	7	2	9.5	1	20
Communication	Phone calling	78	68.4	17	77.3	4	80
	Text messages	15	13.2	5	22.7	1	20
	Moodle	40	35.1	15	68.2	3	60
	WhatsApp	107	93.9	22	100	5	100
	Facebook	4	3.5	0	0	0	0
	Email	36	31.6	15	68.2	5	100
Assignments	MZUNI Website	5	4.4	2	9.1	0	0
	Moodle	111	97.4	19	86.4	5	100
	WhatsApp	15	13.2	10	45.5	1	20
	Facebook	0	0	0	0	0	0
	Email	22	19.3	4	18.2	1	20
Online discussion	Moodle	25	22.1	16	72.7	4	80
	Google Classroom	1	0.9	0	0	0	0

Online library	WhatsApp	98	86.7	15	68.2	5	100
	Facebook	1	0.9	1	4.5	0	0
	Email	4	3.5	2	9.1	2	40
	Never used at all	19	16.8	1	4.5	0	0
Orientation	Moodle	100	84	22	100	5	100
	MZUNI Website	0	0	0	0	0	0
	Digital Repository	49	41.2	0	0	1	20
	Never used at all	14	11.8	0	0	0	0
Learning disability	Moodle	15	12.6			5	100
	WhatsApp	37	31.1			5	100
	Facebook	0	0			0	0
	Email	3	2.5			3	60
	Recorded videos	27	22.7			4	80
	Recorded audios	21	17.6			5	100
	Never used at all	50	42			0	0
	Braille	0	0	6	27.3	2	40
Learning disability	Screen magnifiers	0	0	0	0	1	20
	Screen readers	0	0	1	4.5	1	20
	Clickers	0	0	0	0	0	0
	Recorded audios	2	1.7	0	0	1	20
	Never used at all	117	98.3	16	72.7	0	0

Source: Field data (2022)

As shown in Table 5, the students popularly use smartphone [110(95.7%)] for their education. The instructors mostly use laptop [22(100%)] and smartphone [18(81.8%)] to support students. On the same, all administrators popularly use laptop [5(100%)] and smartphone [5(100%)] to provide student support services.

In terms of popularly used applications for online lessons, the results in Table 5 show that most students, instructors and administrators use Moodle and WhatsApp. The same Table 5 shows that most instructors [9(42.9%)] use Camtasia for capturing video lessons whereas the most ODeL administrators [4(80%)] use Moodle. Besides that, 14.3% of instructors and 20% of ODeL administrators have never used any application to capture video lessons. As regards to technologies used for developing audio lessons, the results in Table 4.5 show that majority of instructors [10(45.5%)] and ODeL administrators [4(80%)] use Moodle. However, 18.2% of instructors have never used any technology for capturing audio lessons. Regardless of the type of application used, EducationDIVE (2014) and Bates (2005) found that lecture capture in video and audio forms brings a face-to-face experience to ODeL learners and that they can stop, go back, and go over the audio and video lessons as many times as they wish in order to understand.

The study further asked the respondents to mention the popularly used technologies for sending and receiving instructional materials such as recorded video and audio lessons, self-instructional modules and prescribed books. The results in Table 5 show that most students [103(89.6%)], instructors [19(90.5%)] and ODeL administrators [5(100%)] use Moodle for sending and receiving instructional materials. This means that the popularity of Moodle in ODeL institutions has recently risen. Table 5 also

shows that the second technology which was mostly used for sending and receiving instructional materials was WhatsApp with 74(64.3%) students, 14(66.7%) instructors and 4(80%) administrators.

On the technologies mostly used to interact and communicate to each other for academic and administrative issues, the results presented in Table 5 revealed that majority of students [107(93.9%) and all 22 (100%) instructors use WhatsApp while all 5(100%) ODeL administrators use both WhatsApp and Email. As it is appreciated that there is variety of technologies used for communication, only 4(3.5%) students used Facebook for their studies. This implies that Facebook is not popularly used technology for education.

The same Table 5 also indicated that Moodle was mostly used by respondents for formulating, submitting and receiving assignments with 111(97.4%) students, 19(86.4%) instructors and all 5(100%) administrators. The ODeL Administrators were further asked to mention the technologies they use to process and release results. They said that they use Moodle for processing grades and students access the results through their portal on the institutional website.

Most students [98(86.7%)] use WhatsApp for online discussion forums as presented in Table 5. In such online forums, students discuss various academic topics and revise examination past papers. All 5(100%) ODeL administrators mostly engage students for online discussion forums using WhatsApp whereas most instructors [16(72.7%)] use Moodle. However, almost 16.8% students could not take part in online discussion forums while 4.5% instructors could not engage students for online discussion.

As regards to the institutional online library, the results in Table 5 indicated that most students [100(84%)] used Moodle to access eLearning materials. It was also noted on Table 5 that all 22(100%) instructors and all 5(100%) administrators used Moodle to upload instructional materials so as to build online library. However, 14(11.8%) students did not use digital libraries. In relation to online library, Kampa (2017) found that respondents had positive perceptions towards the use of library in Moodle platform because they easily accessed electronic resources for their studies.

Respondents were also asked to mention the technologies they used for orientation. The results in Table 5 show that all 5(100%) ODeL administrators used Moodle, WhatsApp and recorded audios to orient students to the websites functions, course selection, LMS, ICT usage, University policies, learning in distance education, library facilities, and many more. Among all the technologies used for orientation, 37(31.1%) students mostly liked WhatsApp as seen in Table 5. This was followed with recorded videos with 27 (22.7%) students. However, majority of students [50(42%)] did not like any of the technologies which were used for orientation. Many students complained that they did not use such technologies because of lack of mastery in using technologies.

The ODeL administrators were also asked if the institution use virtual laboratory-based practicals. They responded that the institution does not currently use virtual labs to conduct science and technology practicals. Instead, students visit the campus and physically conduct laboratory-based practicals. The problem with this is that it reduces the opportunities per student to use instruments in a laboratory class. That is why the students expressed that lack of adequate learning hours in laboratory-based

practicals could lead to dropping out of some students pursuing laboratory-based programmes as presented in Table 4.1.

In connection to lack of sufficient time for practicals, Ndiokubwayo (2017) also found that many ODL students complained of lack of adequate learning hours in laboratory-based practicals in Rwandan teacher training colleges (TTCs). He then suggested that although it is difficult to deliver science and engineering courses in the distance mode, learners can practice pre-laboratory sessions that are delivered online. It is believed that this practice enables students to spend less number of hours physically present in the laboratory.

On the same Table 4.5, the results show that 2(1.7%) students with learning disabilities only use recorded audios for learning. Table 5 also shows that 6(27.3%) instructors and 2(40%) administrators use Braille to assist students with learning disabilities. Likewise, Figure 4.2 shows that 2% of students have visual problem. On a good note, 27% of facilitators and all administrators said that they have ever assisted students with visual and hearing impairments.

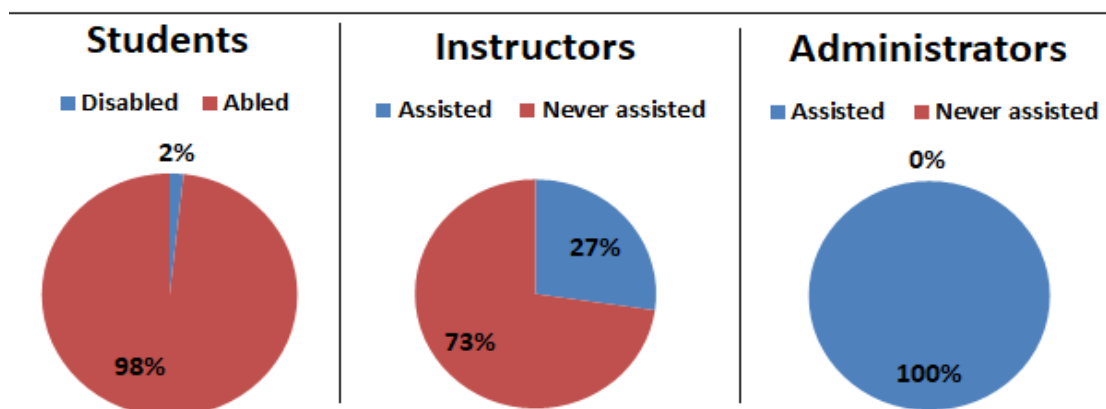


Figure 4.1: Students with learning disability and those who assist them
Source: Field data (2022)

The results presented in Table 5 show that laptops, smartphones, Moodle, WhatsApp, Camtasia, Email, Braille, recorded video and audio clips are popularly used educational technologies for many academic and administrative purposes at Mzuzu University ODeL. According to Technology Acceptance Model (TAM), Davis (1989) indicated that ‘perceived ease of use’ and ‘perceived usefulness’ are the two most important belief constructs of using technology. As such, students, instructors and ODeL administrators viewed the aforementioned technologies to be very usefulness for executing education practices.

Students, instructors and administrators also popularly used the mentioned technologies in the preceding paragraph because they know and have ever used them in their academic work. This correlates well with Prensky (2007) who found that students and teachers prefer the technologies that they are accustomed to and which they have mastered. Likewise, a study conducted by Sprenger and Schwaninger (2021) in Northwestern Switzerland showed that the educational technologies that the students were more exposed to had the highest level of use and acceptance. This implies that exposing and training students to various educational technologies can help carry educational practices without difficulties.

Among all the devices presented in Table 5, smartphone was the popularly used technological device by students with a rate of 95.7%. This shows that smartphone has a high level of access among students. In line with the study conducted by Kapondera and Ngalande (2016), they found that a high level of access of smartphones is due to the fact that most students can manage to buy them on their own. For educational purposes, a study conducted by Fozdar and Kumar (2007) at

Indira Gandhi National Open University (IGNOU), they found that most students possess smartphone because it enhances mobile learning and that it makes education be accessible to full time workers and rural dwellers since it can be used anywhere and anytime.

At Mzuzu University ODeL, Moodle is used for many academic and administrative purposes such as fostering online lessons, capturing video and audio lessons, delivering instructional materials, communication, e-assessments, online discussion, course registration, online library and orientation as presented in Table 5. This means that the popularity of Moodle in ODeL institutions has recently risen. This is in line with Pinto and Leite (2020) who found that Moodle was the most preferred LMS because it provided access to resources and services in formal educational settings, and supported blended and e-learning practices. Likewise, Koneru (2017) found that Moodle was mostly used technology for ODL e-Assessments at Icfai Business School (IBS) in India. She found that Moodle allowed the institution to administer assessments, grade and report learners' performance and provided descriptive instant feedback as well as generating reports.

Like Moodle, WhatsApp is also popularly used technology at Mzuzu University ODeL for enhancing educational purposes such as fostering online lessons, capturing audio lessons, delivering instructional materials and assignments, communication, online discussion and orientation as presented in Table 4.5. In line with these findings, Zozie (2020) also found that students and instructors felt that WhatsApp allows them to access information quickly due to cheap internet data and proliferation of smartphones in Malawi. He also found that WhatsApp helps students

overcome physical separation, feeling of isolation, and lack of support, and raises their feeling of connected. This implies that use of WhatsApp can reduce attrition levels.

4.4 Technology Acceptance

The third objective needed to determine the technology acceptance at MZUNI for sustainable student support. To measure the level of acceptance, the study used frequency percentages by considering the following factors: willingness to use technology, comfortableness in using technology, confidence in using technology, usefulness, technology experience, frequency in using technology, technology related challenges, and technology support. The results for this are presented in Table 4.6.

Table 4.6: Technology acceptance of respondents

Factors	Subscale	Students		Instructors		Administrators	
		N	%	N	%	N	%
Willingness	Willing	99	87.6	20	90.9	5	100
	Not willing	14	12.4	2	9.1	0	0
Comfortableness	Comfortable	101	87.7	20	90.9	5	100
	Uncomfortable	14	12.2	2	9.1	0	0
Confidence in Using tech.	Confident	101	87.7	19	86.4	5	100
	Unconfident	14	12.2	3	13.6	0	0
Usefulness	Useful	100	84	19	86.4	5	100
	Not useful	13	10.9	3	13.6	0	0
Experience in using tech.	7+ years	28	24.8	1	4.5	1	20
	4-6 years	28	24.8	6	27.3	1	20
	1-3 years	51	45.1	14	63.6	3	60
	Just this year	6	5.3	1	4.5	0	0
Frequency in using tech.	Daily	84	73.7	4	18.2	5	100
	Once a week	24	21.1	12	54.5	0	0
	Once a month	5	4.4	4	18.2	0	0
	Once or twice a year	1	0.9	2	9.1	0	0
	Not at all	0	0	0	0	0	0
Problems faced when using technology	Lack of mastery	18	15.1	2	8.3	0	0
	Unreliable gadgets	7	5.8	1	4.2	0	0
	Electricity blackouts	10	8.1	2	8.3	3	60
	Unstable network	62	52.3	12	54.2	2	40
	High internet data charges	22	18.6	3	12.5	0	0
	Inadequate gadgets	0	0	0	0	2	40
Technology support	Supported	53	49.5	18	81.8	4	80
	Not supported	54	50.5	4	18.2	1	20

Source: Field Data (2022)

Table 4.6 revealed that majority of students [99(87.6%)], instructors [20(90.9%)] and administrators [5(100%)] were willing to use technology in their educational practices. In terms of comfortableness in using technology, most students [101(87.7%)], instructors [20(90.9%)], and administrators [5(100%)] were comfortable to use technologies for educational purposes. Concerning the confidence in using educational technologies, a greater number of students [101(87.7%)], instructors [19(86.4%)] and administrators [5(100%)] are confident to embrace technologies for educational practices. In addition, a larger number of students [100(84%)], instructors [19(86.4)] and all administrators [5(100%)] perceived educational technologies as useful for their academic and administrative support. On

a follow up question, the respondents were asked to give the reasons for the usefulness of educational technologies that are used at MZUNI ODeL. The following were some of the reasons that the students, instructors and administrators highlighted:

Student 1: Educational technologies help us save time and resources. We save time for walking and costs of transport, accommodation and meals.

Student 2: It is fast and effective way of sending and receiving assignments and instructional materials.

Student 3: It's easy than carrying a lot of books to use when studying.

Student 4: I'm able can to learn anywhere and anytime.

Student 5: It's easy for me to revisit where I don't understand.

Instructor 1: They equip students with skills as required by working industries. We are living in a digital era and it leaves one with no choice but to embrace technology and enjoy the experience.

Instructor 2: It makes an instructor to communicate with learners anywhere.

Instructor 3: Technology brings about innovative ways for lesson delivery.

Administrator 1: This acts as a backup of information such that students' assignments and grades do not get lost.

Administrator 2: This reaches to a larger audience at a time than face to face.

Administrator 3: Virtual space reduces the effect of distance and congestion of learners in teaching.

Based on the results regarding willingness to use technology, comfortableness in using technology, confidence in using technology as well as perceived usefulness of technology, it shows that students, instructors and administrators accept to use technology for educational purposes. These findings correlate well with those of Ndebele and Mbodila (2022) at a Historically Disadvantaged University in the Eastern Cape Province in South Africa whereby students and teachers were comfortable and willing to embrace the use of technology to improve their practices. Panigrahi et al (2020) also found that self-confidence which represents self-efficacy and capability triggers intention for one to adopt technology-based learning. The results are also consistent with Prensky (2007) who found that students and teachers prefer the technologies that they perceive them useful for educational practices.

In connection with user experience and frequency, Table 6 shows that majority of students [51(45.1%)], instructors [14(63.6%)] and administrators [3(60%)] have 1-3 years of experience in using educational technologies. Further to that, most of students [84(73.7%)] and administrators [5(100%)] use educational technologies daily while majority of instructors [12(54.5%)] use them once a week. This clearly tells that majority of students, instructors and administrators are users of technology at MZUNI ODeL.

The result on user experience is found in congruence with Zardari et al (2021). They found that all the respondents at Quaid-e-Awam University of Engineering, Science and Technology and Institute of Business Administration in Pakistan reported that they had 1–3 years of e-learning portal usage experience and could use it daily. They further discovered that those students who had experience or frequently used e-

learning portals; they felt good, happy, blessed, or satisfied and could accept any educational technology exposed to them. This implies that experience yields pleasure which makes users to accept any technology, specifically, e-learning.

The study also required to note the factors that could make students, instructors and administrators to reject use of technologies for educational practices such as problems they face when using technology and technology support. The results in Table 6 indicate that many students [62(52.3%)] and instructors [12(54.2%)] are affected by unstable/ unavailable network while they are using educational technologies. On the same, majority of administrators [3(60%)] were challenged by electricity blackout in their ODeL satellite centres.

This result is found to be consistent with the previous research finding (Chawinga & Zinn, 2016) who wanted to identify the factors that affect use or non-use of Web 2.0 technologies at Mzuzu University. They found that seventy-four (54.4%) students agreed that they did not use Web 2.0 because the bandwidth was poor while 43 (31.6%) members of staff indicated that frequent electricity outages discouraged them from using Web 2.0 technologies. These were prevailing challenges that made some instructors and students unwilling, uncomfortable and unconfident to use technologies for educational practices as presented in Table 6.

As regards to technology support, the results in Table 6 shows that majority of instructors [18(81.8%)] and administrators [4(80%)] felt that they were supported while most students [54(50.5%)] did not feel that they were supported when they had faced problems in using educational technologies. Through a follow up question,

students were required to explain the extent why they felt not supported. The question was: *Why do you feel not supported by your institution?* Some of the responses were as follows:

- Student 1: In most cases I don't really feel supported because some members of staff do not provide the feedback in time or I don't get response at all when I need help.
- Student 2: Support here is very minimal. When we call ICT department for course registration or for resetting password after forgetting it, their support come well after we meet them face-to-face. They also don't offer proper guidelines on how to register for courses, access of learning materials and grades etc.
- Student 3: Sometimes you find the learning materials were not uploaded because may be the members of staff are too busy. It takes a long time for the lecturer to upload the materials and assistance is not given when one needs a clarification or fails to submit the assignments on time. Sometimes you may find your grades are missing and when you ask for assistance, no one is there to help. You find students doing examinations many times just in case they may be uploaded.
- Student 4: Some platforms seem poorly designed like online registration platform and they keep on removing the data now and again. As such, I get confused and don't feel supported. Sometimes, study materials are not uploaded in time and feedback on assignments are not given.

The implication to this is that these students view use of educational technologies as a challenge to their studies. As such, they could reject use of educational technologies for their studies.

These findings are in line with those of Musingafi et al (2015) who also found technology related challenges at Zimbabwe Open University that made some students have little or no interest to accept technologies for educational practices. Some of the challenges were lack of support from staff, difficulties in learning technically demanding materials, information and communication technologies barriers; delayed or ineffective feedback; lack of instructor's contact and /or inadequate academic support; unhelpful course information and lack of direction and poor course design /inappropriate learning materials; missing of grades; delayed study materials; lack of an effective institutional network of technical assistance; lack of responsiveness from regional centre / ZOU headquarter administrative staff ; and lack of appropriate students services support.

4.5 Chapter Summary

This Chapter has provided the results and findings of the study pertaining to the research questions. The next chapter presents the summary, conclusion and recommendation of the study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the major findings obtained from the study entitled, “Exploring effective educational technologies for supporting students sustainably: The case of Mzuzu University ODeL.” It also presents recommendations for the improvement and areas of further research in learner support practices using educational technologies in an ODeL context.

5.1 Summary of the Study

The aim of the study was to explore effective educational technologies for supporting students sustainably. In Chapter 1, the study dealt with the research problem which outlined that although there is an increase in the number of drop out students enrolled at MZUNI ODeL, there is not much that has been studied on the educational technologies that can sustainably support the students. In line with this problem, research questions were formulated to be investigated for answers.

Chapter two presented related literature focusing on theoretical and empirical literature. Theoretical literature covered Moore’s (1997) theory of transactional distance to understand the gaps in supporting learners in distance education and Technology Acceptance Model (TAM) by Davis (1989) to investigate the reasons why people accept or reject an information technology.

Chapter three was confined to research methodology and used a mixed research approach, which involved both quantitative and qualitative methods for data collection and analysis. A survey design was employed in order to understand the

popular attitudes and opinions of respondents. This research targeted ODeL registered students, ODeL administrators and instructors. It used voluntary response sampling technique and respective links were sent to 1000 students, 80 Lecturers and 8 administrators to voluntarily respond to the questionnaire which was created on the Google online platform. In this survey, 119 students, 22 lecturers and 5 administrators volunteered to respond to the questions. The collected data were properly tabulated, analyzed and interpreted by using appropriate statistical tools in terms of frequency percentages and means in SPSS platform.

Chapter four presented the findings of this research and aimed to answer the following research questions: What are the factors leading to dropout among the enrolled students at MZUNI ODeL? What are popularly used educational technologies that MZUNI ODeL is using to support the students? To what extent do the instructors, administrators and students at MZUNI ODeL accept the use of technologies for their educational practices?

As regards to the first research question, the students and administrators generally agreed that the listed factors were possible factors leading to the dropout of ODeL students with a mean of means 3.12 and 2.85 respectively. Among all the factors, students viewed the ‘missing of grades’ as relatively high factor for dropout of ODeL students with a mean of 3.66 while administrators pinpointed the ‘lack of academic support’ with a mean 3.60. In contrast, the instructors did not agree to all factors but they only agreed to ‘lack of skills in studying and writing assignments and tests’ ($M = 2.52$) could lead to dropout of ODeL students. The study revealed that missing of

grades and lack of academic support were institutional problems in terms of structure and dialogue.

‘Lack of skills in studying and writing assignments and tests’ was related to third factor of transactional distance theory. This is an autonomy or the nature and degree of self-directedness of the learner. On one hand, the findings showed that learners at MZUNI ODeL were not active, collaborative and responsible for their studies. On the other hand, lack of skills in learners in responding to assignments and tests could be a problem of interaction between the instructors and learners or learners themselves.

On the popularly used educational technologies that MZUNI ODeL was using to support the students, the majority identified laptop, smartphone, Moodle, WhatsApp, Camtasia, Email, audio and video clips. Even though the respondents used these educational technologies, majority of instructors (54.5%) used them minimally, for educational practices as the majority used them once a week and this could result into little academic support rendered to students. In addition, among all the technological applications, the results of this study showed that the popularity of Moodle was high.

The above was also reflected in the support rendered to students with learning disabilities. The absence of virtual labs or assistive technology, which the response was as high as [86(73%)] show that the majority of the respondents were not familiar with these technologies. As such, the results indicated that science and disabled students at MZUNI were not fully supported.

It was interesting to find that the extent of technological acceptance among instructors, administrators and students for educational practices was high among the majority of students, instructors and administrators. This implies that all the stakeholders were willing, comfortable, and confident to use educational technologies, despite the unstable/ unavailable network, electricity blackout. However, this enthusiasm was not reflected in supporting the students as the majority of them felt they were not properly supported when faced with technological challenges.

5.2 Recommendations

On the basis of the findings and discussions from the study, the following recommendations were made in the proceeding paragraphs:

On the issue of lack of academic support, it was recommended that online systems should be put into place to monitor and continuously evaluate the effectiveness of the support services in learner achievement learning experiences. On the same, there should be an online portal where students should mention their concerns and be assisted accordingly.

The results also showed that ODeL students experience missing of grades. It is suggested that the University should have a clear structure or learning management system on submission and processing of grades so that no student is missed out. In addition, instructors need to be trained the required computer skills so as to avoid the skipping of students' grades when entering in the online system.

The institution should intensify the use of laptop, smartphone, Moodle, WhatsApp, Camtasia, Email, audio and video clips for sustainable student support and include them in the ICT and ODeL policies.

The institution should introduce a compulsory semester course on introduction to basic computing and use of institutional website. This will equip new students with practical skills and be familiar with the use of computers and institutional Website.

MZUNI should also introduce use of virtual labs to conduct science and technology practicals. This will help learners practice pre-laboratory sessions that are delivered online and have realistic experience in science, technology and engineering (STE) fields. It is believed that this practice will enable students to spend less number of hours physically present in the laboratory.

The results also showed that there were very few instructors and administrators who were able to use assistive technologies to help students with learning disabilities. It was suggested that more staff need to be trained to be able to use such technologies.

Due to unstable network, this study suggests that MZUNI ODeL needs to upgrade internet speed. In addition, to solve the issue of electricity blackout, it was suggested that ODeL satellite centres should use other energy sources as backups such as solar energy or Generator set.

5.3 Areas for further research

On the issue of students' dropout, it was surprising to see that the views of students and ODeL administrators could not agree with instructors' views. This might be that there was no smooth communication between administrators and instructors when

providing support to students. As such, it was suggested that another study needs to be carried out to bring to view how the relationship between the administrators and facilitators may affect the efficacy of students support services in ODeL institutions.

Since the institution did not use virtual labs to conduct science and technology practicals. Thus, a study has to be carried out to model the preferable Web-Based Virtual Lab application for enhancing access to sustainable provision of science, technology and engineering (STE) practicals at Mzuzu University ODeL.

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APPENDICES

Appendix 1: Students' Questionnaire

The researcher is a postgraduate student at Open University of Tanzania who seeks to explore effective educational technologies for supporting student learning sustainably at Mzuzu University ODeL. The questionnaire has been designed to (1) examine the factors leading to drop out among the enrolled students at MZUNI ODeL; (2) explore popularly used educational technologies that MZUNI ODeL is using to support the students; and (3) determine the Technological Acceptance at MZUNI ODeL to sustainably support the students. The information which will be obtained will be used for academic purposes only and will be treated with absolute confidentiality. The researcher therefore kindly asks your assistance to answer the questions below.

Instructions

- [1] Please do not write your name.
 - [2] Kindly try to be honest.
 - [3] Please tick the appropriate response or write in the spaces provided.
-

Section A: Demographic Information

1. Sex

Male []

Female []

2. Age range

Less than 20 years [] 20-29 years [] 30-39 [] More than 39 years []

3. Which of the following statements best describe your employment situation?

Employed full-time [] Employed part-time [] Working at home []

Not currently employed []

4. *What is the name of the degree/diploma/certificate you are studying?*

5. *At what level are you studying currently?*

6. *Where are you currently based?*

Rural [] Urban []

7. *Who is paying for your studies?*

Parents [] Relatives [] Education loan []

Other (scholarship, etc.), specify _____

Section B: Factors leading to drop out of school

8. *Do you think the following would make you drop out of school? (Tick whether you strongly agree, agree, disagree or strongly disagree)*

Factors	Strongly agree	agree	Disagree	Strongly disagree
Fail to pay tuition fees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fail to buy resources such as computers and smartphone for studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insufficient time for study due to job and home responsibilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of timely feedback on their examinations and assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Missing of grades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lengthy and difficult course content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unfamiliarity with technology (computer illiterate, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of academic support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify):				

Section C: Popularly used educational technologies

(Hint: where applicable, tick one or more responses)

9. *What types of devices do you own and use for your studies?*

Laptop [] Desktop [] Smartphone [] Keypad phone [] Tablet [] Radio []
 Flashdisk [] Television [] DVD player [] Memory card [] Ipod [] Hard Drive []

Other (specify) _____

10. *What kinds of technological device would you like in your studies that are not used in your institution?*

11. *Please explain why you prefer this device.*

12. *Which technologies have you ever used for online lessons?*

Moodle [] Google Meet [] Google Classroom [] WhatsApp [] Zoom []
 Facebook [] Email [] MZUNI Website [] Other (specify) _____

13. *What kind of technologies do you use to communicate with facilitators, ODeL staff and your fellow students?*

Phone calling [] SMS [] Moodle [] WhatsApp [] Facebook [] Email []

Other (specify) _____

14. *Which technologies do you use to receive and submit assignments?*

University Website [] Moodle [] WhatsApp [] Facebook [] Email []

Other (specify) _____

15. *What kinds of technology do you use for online discussions?*

Moodle [] Google Classroom [] WhatsApp [] Facebook [] Email []

Other (specify) _____

16. Which of the following learning management system (LMS) have you ever used?

Moodle [] Google Classroom [] uFuture/iLearn [] Spectrum [] Edmodo []

Blackboard [] Schoology [] Flipgrid [] Edpuzzle [] Quizziz []

Kahoot [] Padlet [] Jamboard [] iSpring []

Other (specify) _____

Section D: Technological Acceptance

(Hint: where applicable, tick one or more responses)

17. Are you always willing to use modern educational technologies in your studies?

Yes [] No []

Give a reason: _____

18. Which ones are you more comfortable with?

19. Why are you more comfortable with this technology? Please explain.

20. Did you receive training on the use of technology in your initial training?

Yes [] No []

If not, why not?

21. What are the problems you face in using technology in your studies?

22. *Do you feel supported by MZUNI staff when you have problem in the use of technologies?*

Yes [] No []

If not, why? _____

23. *Which technology do you use to communicate with your teachers?*

24. *How useful is this technology in the communication between you, your teachers and other students?*

Very useful [] Useful [] Not useful []

25. *Please explain.*

End of questions

Thank you very much for your participation!

Appendix 2: Instructors' Questionnaire

The researcher is a postgraduate student at Open University of Tanzania who seeks to explore effective educational technologies for supporting student learning sustainably at Mzuzu University ODeL. The questionnaire has been designed to (1) examine the factors leading to drop out among the enrolled students at MZUNI ODeL; (2) explore popularly used educational technologies that MZUNI ODeL is using to support the students; and (3) determine the Technological Acceptance at MZUNI ODeL to sustainably support the students. The information which will be obtained will be used for academic purposes only and will be treated with absolute confidentiality. The researcher therefore kindly asks your assistance to answer the questions below.

Instructions

[4] Please do not write your name.

[5] Kindly try to be honest.

[6] Please tick the appropriate response or write in the spaces provided.

Section A: Demographic Information

1. *Sex*

Male []

Female []

2. *Age range*

Less than 20 years []

20-29 years []

30-39 []

More than 39

years []

3. *Which faculty/ department do you belong to??*

Section B: Factors Leading to Drop out of ODeL Students

4. *Do you think the following could be the possible factors leading to dropout of ODeL students? (Tick whether you strongly agree, agree, disagree or strongly disagree)*

Factors	Strongly agree	agree	Disagree	Strongly disagree
Fail to pay tuition fees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fail to buy resources such as computers and smartphone for studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insufficient time for study due to job and home responsibilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of timely feedback on their examinations and assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Missing of grades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lengthy and difficult course content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unfamiliarity with technology (computer illiterate, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of academic support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify):				

Section C: Popularly used educational technologies

(Hint: where applicable, tick one or more responses)

5. *What types of devices does your institution use to teach?*

Laptop ☐ Desktop ☐ Smartphone ☐ Keypad phone ☐ Tablet ☐ Radio ☐

Flashdisk ☐ Television ☐ DVD player ☐ Memory card ☐ Ipod ☐ Hard Drive ☐

Other (specify) _____

6. *What kinds of technological devices that students mostly prefer?*

7. *Please explain why you think they mostly prefer this device.*

8. *Which technologies are used for online lessons?*

Moodle [] Google Meet [] Google Classroom [] WhatsApp [] Zoom []
 Facebook [] Email [] MZUNI Website [] Other (specify) _____

9. *What kinds of technologies that you think the students prefer that is not used in your institution?*

10. *Please explain why they prefer these technologies.*

11. *What kind of technologies do you use to communicate with the student and fellow ODeL staff?*

Phone calling [] SMS [] Moodle [] WhatsApp [] Facebook [] Email []
 Other (specify) _____

12. *Which technologies are used for students to receive and submit assignments?*

University Website [] Moodle [] WhatsApp [] Facebook [] Email []

Other (specify) _____

13. *What kinds of technology do students use for online discussions?*

Moodle [] Google Classroom [] WhatsApp [] Facebook [] Email []

Other (specify) _____

14. *Which of the following learning management system (LMS) is your institution using?*

Moodle [] Google Classroom [] uFuture/iLearn [] Spectrum [] Edmodo []

Blackboard [] Schoology [] Flipgrid [] Edpuzzle [] Quizziz []

Kahoot [] Padlet [] Jamboard [] iSpring []

Other (specify) _____

Section D: Technological Acceptance

(Hint: where applicable, tick one or more responses)

15. *Are you always willing to use modern educational technologies in your communication?*

Yes [] No []

Give a reason: _____

16. *Which ones are you more comfortable with?*

17. *Why are you more comfortable with this technology? Please explain.*

18. *Did you receive training on the use of technology in your initial employment?*

Yes [] No []

If not, why not? _____

19. *What are the problems you face in using technology in communicating with students and colleagues?*

20. *Is there a supporting system when students and staff have problem in the use of technologies?*

Yes [] No []

If not, why? _____

21. *Which technology do you normally use to communicate with the students?*

22. *How useful is this technology in the communication between you, your colleagues and students?*

Very useful [] Useful [] Not useful []

23. *Please explain.*

24. *Which technology is mostly preferred by students to communicate?*

Give a reason: _____

End of questions

Thank you very much for your participation!

Appendix 3: Questionnaire for ODeL Administrators

The researcher is a postgraduate student at Open University of Tanzania who seeks to explore effective educational technologies for supporting student learning sustainably at Mzuzu University ODeL. The questionnaire has been designed to (1) examine the factors leading to drop out among the enrolled students at MZUNI ODeL; (2) explore popularly used educational technologies that MZUNI ODeL is using to support the students; and (3) determine the Technological Acceptance at MZUNI ODeL to sustainably support the students. The information which will be obtained will be used for academic purposes only and will be treated with absolute confidentiality. The researcher therefore kindly asks your assistance to answer the questions below.

Instructions

[7] Please do not write your name.

[8] Kindly try to be honest.

[9] Please tick the appropriate response or write in the spaces provided.

Section A: Demographic Information

25. Sex

Male []

Female []

26. Age range

Less than 20 years [] 20-29 years [] 30-39 [] More than 39 []

27. Marital Status

Married []

Single []

Widowed []

Divorced []

Section B: Factors leading to drop out of school

28. Which of the following factors did you notice that led to drop out of some ODeL students at MZUNI ODeL? (Tick whether you strongly agree, agree, disagree or strongly disagree)

Factors	Strongly agree	agree	Disagree	Strongly disagree
Fail to pay tuition fees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fail to buy resources such as computers and smartphone for studies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Denied to get a loan from the High Education Students' Loans and Grants Board (HESLGB)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insufficient time for study due to job and home responsibilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of adequate learning hours in laboratory-based practicals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of timely feedback on their examinations and assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Missing of grades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lengthy and difficult course content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Unfamiliarity with technology (computer illiterate, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of academic support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fear of failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Course content not relevant to present career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delay in starting facilitating the course and distribution of learning materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of skills in studying and writing assignments and tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Insufficient orientation to the websites functions, course selection, LMS, ICT usage, University policies, learning in distance education, library/ learning resources, and financial support/ assistance systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify):				

Section C: Popularly used educational technologies

(Hint: where applicable, tick one or more responses)

29. *What types of devices do you own and use for supporting ODeL students?*

Laptop ☐ Desktop ☐ Smartphone ☐ Keypad phone ☐ Tablet ☐ Radio ☐
Flashdisk ☐ Television ☐ DVD player ☐ Memory card ☐ Ipod ☐ Hard Drive ☐
Other (specify) _____ I don't have ☐

30. *What types of technological devices does your Centre have for supporting ODeL students?*

Laptop ☐ Desktop ☐ Smartphone ☐ Keypad phone ☐ Tablet ☐ Radio ☐
Flashdisk ☐ Television ☐ DVD player ☐ Memory card ☐ Ipod ☐ PA system ☐
Other (specify) _____

31. *Which technologies does the Centre use to facilitate online lessons?*

Moodle ☐ Google Meet ☐ Google Classroom ☐ WhatsApp ☐ Zoom ☐
Facebook ☐ Email ☐ MZUNI Website ☐ Other (specify) _____

32. *What kinds of technology does the Centre use to facilitate **live** online lessons?*

BigBlueButton ☐ Google Meet ☐ Zoom ☐ WhatsApp ☐ Google Classroom ☐

Never used ☐ Other (specify) _____

33. *What type of technologies does the Centre use in developing recorded video lessons?*

Moodle ☐ Camtasia ☐ Zoom ☐ Flashback Express ☐ OBS ☐

Never used ☐ Other (specify) _____

34. *Which technologies does the Centre use in developing recorded audio lessons?*

Moodle ☐ Audacity ☐ Zoom ☐ WhatsApp ☐ Phone recorder ☐

Never used ☐ Other (specify) _____

35. *Which technologies does the Centre use to submit recorded video lessons, audio lessons, self-instructional modules or other learning resources to students?*

Moodle ☐ Memory card ☐ WhatsApp ☐ Facebook ☐ Email ☐

Flash disk ☐ External hard drive ☐ Website ☐

Other (specify) _____

36. *Which technologies does the Centre use for formulation and submission of assignments?*

University Website ☐ Moodle ☐ WhatsApp ☐ Facebook ☐ Email ☐

Other (specify) _____

37. *What kind of technologies do you use to engage students for online discussions?*

Moodle ☐ Google Classroom ☐ WhatsApp ☐ Facebook ☐ Email ☐

Other (specify) _____

38. *What kind of technologies do you use to communicate with facilitators and students?*

Phone calling ☐ SMS ☐ Moodle ☐ WhatsApp ☐ Facebook ☐ Email ☐

Other (specify) _____

39. *Which of the following learning management system (LMS) have you ever used?*

Moodle ☐ Google Classroom ☐ uFuture/iLearn ☐ Spectrum ☐ Edmodo ☐

Blackboard ☐ Schoology ☐ Flipgrid ☐ Edpuzzle ☐ Quizziz ☐

Kahoot ☐ Padlet ☐ Jamboard ☐ iSpring ☐

Other (specify) _____

40. *Which technologies does your Centre use for digital libraries?*

Moodle ☐ MZUNI Website ☐ WhatsApp ☐ Facebook ☐ I don't know ☐

Other (specify) _____

41. *Which technologies do you use to process and release End of Semester Results?*

Moodle ☐ MZUNI Website ☐ Email ☐ I don't know ☐

Other (specify) _____

42. *Does the Centre use virtual labs in conducting science and technology practicals?*

Yes ☐ No ☐

43. *If 'Yes' in the above, what are these technologies?*

Project Noah ☐ Prepmagic ☐ Mystery Science ☐ Frog Dissection ☐

Other (specify) _____

44. *Does the Centre use technologies to orient students to the website functions, course selection, LMS, ICT usage, University policies, learning in distance education, library/ learning resources, and financial support/ assistance systems?*

Yes ☐ No ☐

45. *If 'Yes' in the question above, what are these technologies used to orient students?*

WhatsApp ☐ Facebook ☐ Email ☐ Recorded video clips ☐ Recorded audio clips ☐

Other (specify) _____

46. *Does the Centre use technologies for admission, registration process, counselling services, fees payment, and track student records and progress?*

Yes ☐ No ☐

47. *If 'Yes' in the above, what are these technologies?*

Activity	Technology used
Registration process	
Fees payment	
Admission	
Counselling services	
Track student records and progress	

48. *Does the Centre admit students with learning disabilities?*

Yes ☐ No ☐

49. *If yes in the question above, what types of assistive technologies does the Centre use to support students with learning disabilities?*

Braille [] Screen magnifiers [] Screen readers [] Clickers []

Other (specify) _____

50. *Does the Centre use virtual labs in conducting science and technology practicals?*

Yes [] No []

51. *If 'Yes' in the question above, what types of technology does the Centre use in conducting science and technology practicals?*

Project Noah [] Prepmagic [] Mystery Science [] Frog Dissection []

Other (specify) _____

Section D: Technological Acceptance

(Hint: where applicable, tick one or more responses)

52. *Are you always willing to use technologies in supporting students and facilitators?*

Yes [] No []

Give a reason: _____

53. *How comfortable do you feel with technology in supporting students and facilitators?*

Very comfortable [] comfortable [] uncomfortable [] Very uncomfortable []

Give a reason: _____

54. *What are the problems you face in using technology in supporting students and facilitators?*

55. *Do you feel supported by MZUNI Management when you have problem in the use of technologies?*

Yes ☐ No ☐

If not, why? _____

56. *How many years have you used technology in supporting students and facilitators?*

7+ years ☐ 4 - 6 years ☐ 1 - 3 years ☐ Just this year ☐

57. *How often do you use technology in supporting students and facilitators?*

Daily ☐ Once a week ☐ Once a month ☐ Once or twice a year ☐ Not at all ☐

58. *What learning modes for online lessons would you prefer to be used at MZUNI CODEL?*

Synchronous (real time) ☐ Asynchronous (not real time) ☐ Blended (Synchronous & Asynchronous) ☐

Give a reason: _____

59. *Could you explain the reasons that led MZUNI CODEL to adopt and use educational technologies in academic and administrative support?*

60. *Are there incentive mechanisms to encourage people to use technology at
MZUNI CODEL?*

Yes [] No []

If it's 'Yes', please mention them?

End of questions

Thank you very much for your participation!

Appendix 5: Research clearance letter

THE OPEN UNIVERSITY OF TANZANIA
DIRECTORATE OF RESEARCH, PUBLICATIONS, AND POSTGRADUATE STUDIES

P.O. Box 23409 Fax: 255-22-2668759 Dar es
 Salaam, Tanzania,
<http://www.out.ac.tz>



Tel: 255-22-2666752/2668445 ext.2101
 Fax: 255-22-2668759,
 E-mail: drpc@out.ac.tz

30/09/2022

TO WHOM IT MAY CONCERN

RE: RESEARCH CLEARANCE

The Open University of Tanzania was established by an act of Parliament no. 17 of 1992. The act became operational on the 1st March 1993 by public notes No. 55 in the official Gazette. Act number 7 of 1992 has now been replaced by the Open University of Tanzania charter which is in line with the university act of 2005. The charter became operational on 1st January 2007. One of the mission objectives of the university is to generate and apply knowledge through research. For this reason staff and students undertake research activities from time to time. To facilitate the research function, the Vice Chancellor of the Open University of Tanzania was empowered to issue a research clearance to both staff and students of the university on behalf of the government of Tanzania and the Tanzania Commission of Science and Technology.

The purpose of this letter is to introduce to you **Chancy Chakwananga Mkandawire, REG. NO. PG 201802661** who is a Masters student at the Open University of Tanzania. By this letter, **Mr. Mkandawire** has been granted clearance to conduct research in Malawi. The title of his research is "**Exploring Educational Technologies for Addressing Student Support Services Sustainably: The Case of Mzuzu University ODeL**". The research will be conducted at **Mzuzu University, Malawi**. The period which this permission has been granted is from **10/10/ 2022 to 10/11/2022**.

In case you need any further information, please contact:

The Deputy Vice Chancellor (Academic); The Open University of Tanzania; P.O. Box 23409; Dar Es Salaam. Tel: 022-2-2668820

Yours sincerely,

Prof Hossea Rwegoshora
 For: VICE CHANCELLOR
 THE OPEN UNIVERSITY OF TANZANIA

Appendix 6: Research Permit letter



MZUZU UNIVERSITY
CENTRE FOR OPEN, DISTANCE AND e-LEARNING
OFFICE OF THE DIRECTOR

Mzuzu University
Private Bag 301
Luwingu
Mzimba 2
MALAWI

Tel: (+265) 11 320 563/565
Fax: (+265) 11 320 560/320 562
E-mail: code@mzuni.ac.mw

5th October, 2022

Mr. Chaney Chikwananga Mkandawire
Nkharanga Congregation
Post Office box 916
Luwingu, MZUZU 2

Dear Chaney,

Re: Request for Permission for data collection

Reference is made to your letter dated 01st October 2022 in which you were seeking permission to collect data at Mzuzu University Centre for Open, Distance and e-Learning (CODEL). On behalf of the University Registrar, I grant you permission to collect data as requested. Considering that the Mzuzu University ODeL is the case study, as a centre will be delighted if a copy of the report will be shared with us once it is done.

Yours sincerely

Lydia Kishindo-Mafuta (PhD)
Acting Director CODEL

Tel: (+265) 11 320 563/565

Fax: (+265) 11 320 560/320 562

E-mail: code@mzuni.ac.mw