

Availability and Utilization of ICT Facilities for Enhancing Academic Performance of the University Students in Tanzania. An Experience from Mzumbe University Main Campus, Morogoro Tanzania

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ABSTRACT

This study examined the availability and utilization of ICT facilities for enhancing the academic performance of university students, using the experience of Mzumbe University Main Campus in Morogoro, Tanzania. Specifically, the study sought to identify the ICT facilities available to students, assess how these facilities are used for academic purposes, and examine the challenges that affect their effective use. The study is guided by two theories: the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The study employed a mixed research design that combined quantitative and qualitative approaches. A sample of 388 undergraduate students was selected through simple random sampling from a target population of 13,240 students at Mzumbe University. Data were collected using questionnaires and interviews and analyzed using descriptive statistics. The findings revealed that major ICT facilities are available at the university, with an overall mean score of 2.98, indicating general availability. The study further found that students widely use ICT facilities to conduct and participate in online learning activities. These uses positively contribute to academic performance by improving access to information, enhancing learning efficiency, and facilitating communication. However, the study identified several challenges hindering effective ICT utilization. The study concludes that although ICT facilities are available and beneficial in supporting academic performance at Mzumbe University, infrastructural and technical challenges limit their full potential. The study recommends increased investment in ICT infrastructure, improved internet services, regular ICT training programs, enhanced power supply systems, and stronger government support for ICT development in higher education institutions.

Keywords:

Availability, Utilization, ICT, Facilities, Academic Performance, University Students, Mzumbe University and Tanzania.

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1. INTRODUCTION

Information and Communication Technology (ICT) is the use of computer and telecommunication technologies, techniques, and instruments that allow collecting, processing, transmission, and storage of information (Wu et al., 2018). According to Hicks and Graber (2010), ICT facilitates independent learning, collaborative learning, critical thinking, and access to vast amounts of educational resources that were previously unavailable through conventional learning methods. Similarly, Limnious and Smith (2010) argue that ICT enhances students' engagement in learning by creating interactive and flexible learning environments that support both face-to-face and online learning. Consequently, ICT has become an essential component of higher education systems worldwide especially universities.

According to (Venkatesh et al., 2003) the role of ICT in transforming university education cannot be overstated. ICT encompasses a wide range of technologies including computers, the internet, digital projectors, Learning Management Systems (LMS), mobile devices, and other digital tools that facilitate the creation, storage, processing, and dissemination of information. Universities are increasingly integrating ICT facilities into their teaching, learning, and research activities to enhance the quality and effectiveness of education.

The Government of the United Republic of Tanzania has recognized the importance of ICT in education and has developed several policies aimed at promoting the integration of technology in educational institutions. Initiatives such as the National ICT Policy of 2016, the Science, Technology and Innovation Policy, and partnerships with international development agencies have been designed to improve ICT infrastructure across all levels of education (Malero et al., 2015; MoEVT, 2007). Despite these efforts, challenges persist regarding the availability, accessibility, and effective utilization of ICT facilities in Tanzanian universities, which subsequently affects students' academic performance.

The integration of ICT in higher education institutions across Sub-Saharan Africa has gained momentum over the past two decades. Tanzania, as one of the fastest-growing economies in East Africa, has made notable strides in expanding its higher education sector. The number of universities and university colleges has grown significantly, from only one public university in 1990 to over 50 accredited higher learning institutions by 2020 (TCU, 2020). This expansion has been accompanied by increasing efforts to incorporate ICT in university education.

According to Machumu (2016), ICT facilities in universities include hardware such as computers, printers, projectors, and networking equipment, as well as software tools such as e-learning platforms, digital libraries, and online databases. Research has consistently shown that when properly available and utilized, these tools significantly improve students' academic performance by enabling access to a vast range of information, promoting collaborative learning, facilitating self-paced study, and improving communication between students and instructors. And supported by (Mtebe, 2018) on his research about "ICT integration in universities in Tanzania: Challenges and strategies." Described that properly available and utilized, these tools significantly improve students' academic performance.

Studies conducted at various Tanzanian universities have revealed a mixed picture. For instance, research at the Sokoine University of Agriculture (SUA) indicated that while some ICT facilities such as computers and projectors were available, they were not being effectively utilized for academic purposes (Chirwa, 2018). Similarly, findings from teacher colleges in Tanzania showed that only 12.5% of respondents used the internet daily for academic purposes, despite the presence of ICT infrastructure (Mwalongo, 2011). The University of Dar es Salaam and Mzumbe University have invested in Moodle-based e-learning platforms, yet student uptake remains below expectations due to infrastructural and capacity challenges (Mtebe & Raisamo, 2014).

The digital divide between urban and rural areas further compounds the challenge. Students from rural backgrounds who join urban universities often lack prior ICT exposure, limiting their ability to utilize available facilities effectively (Sedoyeka, 2012). Gender disparities are also notable, with male students generally accessing and utilizing ICT more than female students (Ndume et al., 2021). These dynamics underscore the need for a systematic examination of both the availability and utilization of ICT facilities in Tanzania's universities and their impact on academic outcomes.

1.2 Problem statement of the study

Despite the Government of Tanzania's efforts to integrate ICT into higher education through policies and

investment, the availability and effective utilization of ICT facilities in universities remain inadequate and uneven. Many Tanzanian universities continue to face significant deficiencies in ICT infrastructure, including insufficient computers, unreliable internet connectivity, outdated equipment, and limited access to digital learning resources (Ndume et al., 2021; Mtebe, 2018). These gaps are even more pronounced in universities located in rural regions and among students from disadvantaged socioeconomic backgrounds.

The problem is compounded by the fact that even where ICT facilities are available, their utilization for academic purposes is often low. Many students tend to use available ICT resources predominantly for entertainment, social media, and non-academic activities rather than for learning and research (Machumu, 2016) these deficiencies collectively undermine the potential of ICT to enhance academic performance in Tanzanian universities. Without a clear understanding of this relationship, universities, policymakers, and stakeholders cannot make informed decisions about how to invest in and manage ICT resources to optimize student outcomes. This study therefore seeks to bridge this gap by examining the availability and utilization of ICT facilities and their implications for the academic performance of university students in Tanzania in experience of Mzumbe university main campus Morogoro Tanzania.

1.3 Research questions

The study is guided by the following questions:

1. What are the ICT facilities available in Tanzanian university to promote academic performance of the students?
2. What are the uses of ICT facilities in university on academic performance of students?
3. What are the challenges facing the uses of available ICT facilities among the university in Tanzania to promote academic performance of students?

2.0 LITERATURE REVIEW

2.1 Theoretical Review

This study is attached on two major theoretical frameworks that explain technology adoption and use in educational settings: the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). These theories provide a conceptual lens for understanding how university students perceive and engage with ICT facilities and the factors that influence their behavioral intention to utilize them for academic purposes.

2.1.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), originally proposed by Davis (1989), is one of the most widely applied theoretical frameworks for understanding individual technology adoption behavior. TAM posits that two fundamental beliefs Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) determine a user's attitude toward a technology, which in turn influences behavioral intention and actual use of the technology (Davis, 1989; Venkatesh & Davis, 2000).

Perceived Usefulness refers to the degree to which a person believes that using a particular technology will enhance their job or academic performance, while Perceived Ease of Use refers to the extent to which a person believes that using the technology will require minimal effort (Davis, 1989). In the context of university students in Tanzania, TAM predicts that students who perceive ICT facilities as useful for their studies and easy to use are more likely to adopt and regularly utilize them for academic purposes, thereby improving their academic performance.

Empirical research supports the applicability of TAM in educational contexts across Africa. A study on ICT acceptance among university students in Somalia found that perceived usefulness, ease of use, ICT self-efficacy, and availability of ICT infrastructure were robust predictors of students' ICT readiness acceptance (Hassan et al., 2021). Similarly, research on Nigerian tertiary institutions found that perceived usefulness and perceived ease of use were significant predictors of lecturers' attitudes toward ICT adoption, consistent with the core propositions of TAM (Kolade

et al., 2024).

In adapting TAM to the Tanzanian university context, it is important to consider contextual factors such as ICT infrastructure quality, prior ICT training, and socioeconomic barriers that may influence students' perceptions of usefulness and ease of use. Factors such as perceived ease of use may be influenced by individual differences including age, gender, prior technology experience, and educational background (Venkatesh & Davis, 2000; Chirwa, 2018). Therefore, TAM provides a valuable framework for exploring why some Tanzanian university students actively utilize ICT facilities while others do not, despite having access to them.

2.1.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al. (2003) as an integrated model that synthesizes elements from eight earlier technology acceptance models, including TAM, the Theory of Planned Behavior (TPB) and the Diffusion of Innovation Theory. UTAUT proposes four key determinants of technology acceptance and use: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). These determinants are further moderated by gender, age, experience, and voluntariness of use (Venkatesh et al., 2003).

Performance Expectancy refers to the degree to which an individual believes that using the technology will help them attain gains in job or academic performance, while Effort Expectancy refers to the degree of ease associated with the use of the technology. Social Influence refers to the degree to which an individual perceives that important others believe they should use the technology. Facilitating Conditions refer to the degree to which an individual believes that organizational and technical infrastructure exist to support the use of the technology (Venkatesh et al., 2003).

In the context of ICT utilization in Tanzanian universities, UTAUT is particularly relevant because it accounts for facilitating conditions the availability of ICT infrastructure, technical support, and institutional policies which are critical determinants of whether students can and will use available ICT facilities for academic purposes. A study conducted in South Africa to validate UTAUT among higher education students found that performance expectancy accounted for 64% of variance in behavioral intention towards technology use, followed by facilitating conditions (45.6%) and effort expectancy (25.5%) (Pather et al., 2018). Research in Ghana on ICT adoption in higher education similarly identified the UTAUT model as comprehensive and suitable for examining technology integration challenges in Sub-Saharan African universities (Asare, 2014).

The Social Influence construct of UTAUT is also relevant in the Tanzanian context, where peer behavior and institutional culture significantly shape students' attitudes toward technology use. When students observe peers and instructors actively using ICT for academic activities, they are more likely to follow suit (Venkatesh et al., 2003; Ndume et al., 2021). Together, TAM and UTAUT offer complementary theoretical lenses for analyzing the factors that drive or inhibit the availability and utilization of ICT facilities among university students in Tanzania.

2.2 Empirical Review

2.2.1 The Availability of ICT Facilities in Tanzanian Universities to Promote Academic Performance of Students

The availability of ICT facilities is a fundamental prerequisite for their utilization in university education. Research indicates that Tanzanian universities have made notable but uneven progress in establishing ICT infrastructure. The University of Dar es Salaam (UDSM), Sokoine University of Agriculture (SUA), Open University of Tanzania (OUT), and Mzumbe University are among the institutions that have invested in ICT infrastructure including computer laboratories, internet connectivity, and e-learning platforms (Mtebe & Raisamo, 2014). The University of Dar es Salaam, for instance, offers blended learning programs through its Moodle platform at regional centers in Mbeya, Mwanza, Dar es Salaam, and Arusha (Mtebe, 2018).

According to (Chirwa, 2018), A study at Sokoine University of Agriculture found that while audiovisual materials and some ICT tools were present, they were not adequate in number and were not effectively utilized by academic staff

and students. However, the availability of ICT facilities in many Tanzanian universities remains below desired levels. Similarly to (Mwalongo, 2011), research on teacher colleges in Tanzania concluded that internet access and ICT facilities were limited, with institutions lacking the necessary ratio of students and tutors to available computers and internet-enabled devices. These findings align with broader evidence from across Sub-Saharan Africa that ICT infrastructure in higher education institutions remains insufficient and unevenly distributed (Asare, 2014).

The rural-urban divide further affects ICT availability across Tanzanian universities. Institutions in urban centers such as Dar es Salaam and Arusha tend to have better ICT infrastructure compared to those in more remote regions (Sedoyeka, 2012; Ndume et al., 2021). The digital divide also manifests in electricity supply challenges, which affect the functionality and consistent availability of ICT equipment. The government's recognition that ICT facilities are essential for enhancing students' performance has led to policy interventions, including partnerships with international organizations such as SIDA, but implementation gaps persist (MoEVT, 2007; Malero et al., 2015).

Evidence from secondary schools provides additional context for university-level challenges. Research in Dar es Salaam secondary schools found a significant association between the availability of ICT infrastructure and student academic performance (Machumu, 2016). However, it also noted a paradox where some schools had ICT laboratories connected to the internet but still performed poorly, suggesting that availability alone is insufficient without corresponding utilization and pedagogical integration (Machumu, 2016). This finding underscores the importance of moving beyond merely providing ICT facilities to ensuring their strategic and effective deployment in academic activities.

Table 1:
Summary of Available ICT Facilities in Tanzanian Universities and Their Contribution to Academic Performance

ICT Facility	Description	Contribution to Academic Performance	Citation
Computer Laboratories	Dedicated rooms equipped with desktop computers for teaching, learning, research, and accessing digital resources.	Enable students to conduct research, complete assignments, access online learning materials, and develop digital skills.	Mtebe & Raisamo (2014); Chirwa (2018)
Internet Connectivity	Access to online resources through wired or wireless internet services within universities.	Facilitates access to e-books, e-journals, online databases, virtual classrooms, and academic communication.	Mtebe & Raisamo (2014); Mwalongo (2011)
E-learning Platforms (Moodle)	Online learning management systems used to deliver course materials, assignments, discussions, and assessments.	Support blended learning, distance education, and continuous access to learning resources.	Mtebe (2018)
Audiovisual Materials	Educational videos, audio recordings, multimedia presentations, and digital instructional materials.	Enhance understanding of complex concepts and improve student engagement during learning.	Chirwa (2018)
Computers and Internet-Enabled Devices	Desktop computers, laptops, tablets, and smartphones connected to the internet.	Facilitate online learning, academic collaboration, information searching, and assignment preparation.	Mwalongo (2011); Ndume et al. (2021)

ICT Laboratories	Specialized facilities designed for practical ICT training and technology-based learning activities.	Enhance students' ICT competencies and practical application of digital technologies.	Machumu (2016)
Electricity and Power Infrastructure	Reliable electrical power required to operate ICT equipment and services.	Ensures uninterrupted access to ICT facilities and supports effective utilization of digital learning resources.	Sedoyeka (2012); Malero et al. (2015)

2.2.2 The Utilization of ICT Facilities on University Students' Performance in Tanzania

The utilization of ICT facilities by university students has been shown to have significant implications for academic performance when directed toward educational purposes. ICT tools such as the internet, digital libraries, e-learning platforms, and word processing software enable students to access a broader range of academic resources, improve their research skills, collaborate with peers, and receive timely feedback from instructors (Davis, 1989; Venkatesh et al., 2003). Studies across Sub-Saharan Africa have found positive correlations between ICT use for academic purposes and improved student performance and engagement (Asare, 2014; Kisanga & Ireson, 2015).

According to (Mtebe, 2018), In Tanzania, the utilization of ICT for academic purposes among university students is still developing and remains below its potential. Research found that more than 50% of respondents used internet services primarily for searching news, entertainment, and social media activities, while only 12.5% used the internet for academic purposes. This pattern of use raises concerns about whether universities are adequately supporting and incentivizing students to redirect their ICT use toward academic activities. The adoption of technology is described as very slow and differing from one institution to another, even as ICT equipment and use rates are generally growing (Machumu, 2016).

Despite these challenges, studies have documented positive impacts of ICT utilization on student learning outcomes. Research at Jimma University in neighboring Ethiopia demonstrated that ICT tools have a significant impact on students' understanding, grades, and classroom performance (Alemu, 2015). The study recommended that ICT facilities and training be made available to students and that students be encouraged to use ICTs with better time allocation between academic and non-academic activities. These findings are relevant to the Tanzanian context, where similar socioeconomic and infrastructural conditions prevail. Furthermore, studies on online learning adoption in Tanzanian universities during the COVID-19 pandemic highlighted that institutions with better ICT infrastructure and student digital literacy were better positioned to maintain academic continuity (Mtebe et al., 2021).

Table 2:

ICT Devices, Their Academic Uses, and Contribution to Students' Performance

ICT Device/Facility	Academic Uses	Contribution to Academic Performance	Citation
Computers (Desktop Computers)	Accessing e-learning platforms, preparing assignments, conducting research, accessing digital libraries and databases	Improves research skills, academic writing, information access, and learning outcomes	Mungwabi (2018); Chirwa (2018)
Laptops	Writing reports, completing coursework, conducting online research, participating in virtual learning	Enhances flexibility in learning and supports independent study	Mungwabi (2018); Mtebe et al. (2021)

Smartphones	Accessing online learning materials, communicating with lecturers and peers, searching academic information	Facilitates mobile learning and quick access to educational resources	Mungwabi (2018); Mtebe (2018)
Internet Facilities	Searching scholarly information, accessing e-books and e-journals, online collaboration	Expands access to academic resources and improves learning effectiveness	Mtebe (2018); Davis (1989)
E-learning Platforms (Moodle)	Accessing lecture notes, assignments, quizzes, and discussion forums	Supports blended learning and continuous learning outside classrooms	Mtebe (2018); Mtebe et al. (2021)
Projectors and Multimedia Equipment	Delivering presentations, viewing educational videos and demonstrations	Improves understanding of complex concepts through visual learning	Alemu (2015); Mungwabi (2018)
Social Media Applications	Sharing academic materials, participating in study groups, peer learning	Promotes collaborative learning when used for educational purposes	Mtebe (2018)

2.2.3 Challenges Facing the Utilization of Available ICT Facilities among University Students

Despite the acknowledged benefits of ICT for academic performance, university students in Tanzania face numerous challenges in utilizing available ICT facilities. These challenges span infrastructural, financial, institutional, and individual dimensions, and collectively impede the effective deployment of ICT in support of student learning.

Infrastructure-related challenges represent the most pervasive barrier to ICT utilization. These include inadequate electricity supply, unreliable internet connectivity, insufficient numbers of computers relative to student population, and outdated or poorly maintained equipment (Ndume et al., 2021; Mtebe, 2018). Research on ICT implementation challenges in Sub-Saharan Africa found that Africa is largely excluded from the global ICT revolution network, leading to a 'digital divide' where there is a considerable discrepancy between nations that benefit from ICT integration and those that are excluded from such benefits (Springer, 2022). Tanzanian universities, particularly those in less urbanized areas, are disproportionately affected by these structural deficiencies.

Financial constraints are another significant barrier. Research on obstacles to bridging the digital divide in Tanzania identified low financial power as the key source of the access gap, which blocks bridging initiatives and impairs technical ability to provide connectivity to users (Sedoyeka, 2012). For students, the cost of internet data, devices, and software can be prohibitive, especially for those from low-income households. At the institutional level, limited budgets constrain universities' ability to procure, maintain, and upgrade ICT equipment at the pace required to meet growing student demand.

According to (Chirwa, 2018, Inadequate ICT skills and training present an additional challenge. Many university students in Tanzania lack the foundational ICT skills needed to effectively utilize available technology for academic purposes (Mwalongo, 2011). Research across secondary and higher education institutions in Tanzania found that teachers' and students' inadequate skills in using technological facilities significantly limited ICT efficiency in teaching and teach (Ndume et al., 2021). This skills deficit is compounded by insufficient training programs within universities, leaving students underprepared to take full advantage of ICT resources.

According to (Mtebe, 2018), the misuse of available ICT resources for non-academic purposes further undermines

academic performance. As noted, a substantial proportion of students use internet-enabled devices primarily for social media, entertainment, and gaming rather than research and study. This behavioral challenge is partly a result of limited institutional guidance and monitoring of ICT use within universities. Additionally, psychosocial factors such as technophobia and lack of motivation to engage with ICT tools have been documented as individual-level barriers to ICT utilization among students in Tanzania (Ndume et al., 2021; Sedoyeka, 2012). Policy responses that address these multidimensional challenges are essential to unlocking the full potential of ICT for enhancing academic performance in Tanzanian universities.

3.0 METHODOLOGY

3.1 Research Design

This study will employ a mixed research design, which combines both quantitative and qualitative research approaches. The mixed research design is appropriate because it enables the researcher to collect comprehensive data regarding the availability and utilization of ICT facilities and their contribution to students' academic performance. The quantitative approach will provide numerical data that can be statistically analyzed, while the qualitative approach will generate detailed explanations regarding students' experiences, perceptions, and challenges related to ICT utilization.

According to Mungwabi (2018), a mixed research approach allows researchers to obtain a broader understanding of a research problem by integrating numerical findings with descriptive information. The design is suitable for this study because it facilitates triangulation of findings, thereby enhancing the validity and reliability of the results.

3.2 Study Area and Population

This study was conducted at Mzumbe University main campus (MU), one of the leading public universities in Tanzania. The university is located in Morogoro Region, Mzumbe University was selected as the study area because it has a well-established ICT infrastructure and a large population of students who regularly use ICT facilities for academic activities. The study area is considered appropriate because university students are the primary beneficiaries of ICT services and are therefore capable of providing relevant information concerning the availability and utilization of ICT facilities and their impact on academic performance.

3.3 Target Population

According to Saunders Lewis & Thornhill, (2009), target population is the group of individuals from whom information is required for a study. Targets population are undergraduate students enrolled in Mzumbe universities main campus Morogoro in Tanzania. These students are the primary users of ICT facilities such as computers, internet services, e-learning platforms, electronic databases, digital libraries, projectors, and mobile technologies that support teaching and learning activities. According to Mungwabi (2018), university students are among the major beneficiaries of ICT facilities provided by higher learning institutions, and their level of utilization significantly influences academic performance. The study focuses on undergraduate students because they frequently interact with ICT facilities for academic purposes including accessing learning materials, conducting research, preparing assignments, participating in online learning, and communicating with lecturers and fellow students.

Table 3

Target Population of the Study

Category of Respondents	Description	Purpose of Inclusion
First-Year Students	Undergraduate students in their first year of study	To assess awareness and initial utilization of ICT facilities
Second-Year Students	Undergraduate students in their second year	To examine continued use of ICT facilities for learning
Third-Year Students (Finalist)	Undergraduate students in their third year	To evaluate ICT utilization for research and advanced academic activities

3.4 Sampling Techniques

This study adopted the Simple Random Sampling technique to select respondents from the target population of Mzumbe university students in Morogoro Tanzania. Simple random sampling is a probability sampling method in which every member of the population has an equal and independent chance of being selected for participation in the study. According to Domenico (2008), this study employed simple random sampling to select respondents from the target population. The technique was chosen because it provides each member of the population with an equal chance of being selected, thereby reducing bias and enhancing the reliability of the study findings.

Sample size

The population of students at Mzumbe University main campus in 2025/2026 are around to 13,240, the sample size can be determined using Yamane's Formula (1967), Yamane's formula for calculating sample size from a finite population. The formula is $n = N / (1 + Ne^2)$, where n is the sample size, N is the population size, and e is the margin of error (5%). To determine the appropriate sample size, the researcher used Yamane's Formula (1967):

Where: n = Sample size

N = Population size

e = Margin of error (0.05)

1 = Constant

$n = N / (1 + Ne^2)$

Therefore, the sample size is approximately 388 respondents, from the population of Mzumbe university main campus Morogoro in 2025/2026. A sample size of respondents selected are 388, comprising undergraduate. The sample size is considered adequate for generating representative data while remaining manageable in terms of time and resources.

3.5 Data collection Methods

According to Christian and Stefan (2013), this study employed questionnaires and interview to gather information. Questionnaires containing both open-ended and closed-ended questions will be administered to undergraduate students. The questionnaire method is appropriate because it allows collection of data from a large number of respondents within a short period. And structured interviews will be conducted with librarians and ICT officers to obtain detailed information regarding ICT facilities, utilization patterns, challenges, and institutional support mechanisms.

3.6 Data Analysis Procedures

According to Ndunguru, P. (2006), Quantitative data collected through questionnaires will be coded and entered into the Statistical Package for Social Sciences (SPSS) for analysis. Descriptive statistics such as frequencies, percentages, tables, charts, and graphs will be used to summarize and present the findings. And Qualitative data obtained from interviews and observations will be analyzed using thematic content analysis. Responses will be categorized into themes and sub-themes based on the study objectives. The findings will then be presented narratively and supported with direct quotations where appropriate. The combination of quantitative and qualitative analysis will provide a comprehensive understanding of the availability and utilization of ICT facilities and their influence on students' academic performance.

3.7 Ethical considerations

This study adhered to ethical principles in the use of Information and Communication Technology (ICT) during data collection and analysis. Permission to conduct the study was obtained from the relevant authorities, and informed consent was obtained from all participants before data collection. The use of ICT tools ensured the secure handling and storage of data to protect respondents' information. Confidentiality was maintained, and all data were used strictly for academic purposes.

4. DISCUSSION AND FINDINGS

4.1 Demographic Characteristics of Respondents.

The study involved university students from Mzumbe University's main campus, a selected university in Tanzania. The demographic characteristics of respondents included gender, age, level of study, and access to ICT devices. The data are collected from 388 respondents through simple random sampling.

Table 4:

Demographic profile of respondents (n=388)

Variable	Category	Frequency	Percentage (%)
Gender	Male	220	56.7%
	Female	168	43.3%
Age	18-24 years	170	43.8%
	25-30 years	150	38.7%
	Above 30 years	68	17.5%
Level of study	Certificate	60	15.5%
	Diploma	70	18.0%
	Bachelor(Degree)	258	66.5%
Total		388	100%

The findings indicate that the majority of respondents were male (56.7%), while females accounted for 43.3%. Most respondents were aged between 18 and 24 years (43.8%), reflecting the dominant age group in universities and other higher learning institutions. Furthermore, bachelor's degree (undergraduate) students constituted the largest share of respondents (66.5%), indicating that they are the primary users of ICT facilities at Mzumbe University's main campus in Morogoro. The demographic distribution reflects a diverse group of students within the university population.

4.2 Findings on Research Questions

4.2.1 The Availability of ICT Facilities in Tanzanian Universities to Promote Academic Performance of Students.

The study identified several ICT facilities commonly available at universities, including computers, internet services, projectors, e-learning platforms, and digital libraries. Respondents rated the availability of these facilities on a Likert scale.

Table 5:

Availability of ICT Facilities in Universities

ICT Facility	Strong Agree		Agree		Disagree		Strong Disagree		Mean(x)
	n	%	n	%	n	%	n	%	
Computer Laboratories	150	38.66%	130	33.51%	70	18.04%	38	9.79%	3.01

Internet/Wi-Fi Services	145	37.37%	125	32.22%	75	19.33%	43	11.08%	2.96
Digital Library	135	34.79%	140	36.10%	75	19.33%	38	9.79%	2.96
Learning Management System	140	36.10%	135	34.79%	70	18.04%	43	11.08%	2.96
Multimedia Projectors	155	39.95%	120	30.93%	75	19.33%	38	9.79%	3.01

The findings presented in Table 5 indicate that computer laboratories recorded a mean score of 3.01, suggesting that respondents generally agreed that computer laboratories are available within the university, the availability of internet and Wi-Fi services obtained a mean score of 2.96, indicating that respondents agreed that internet facilities are available, Similarly, the digital library recorded a mean score of 2.96, indicating that respondents acknowledged the availability of electronic library resources, These services provide students with opportunities to access online journals, electronic databases, academic websites, and other digital learning resources. This finding is consistent with Mungwabi (2018), who reported that the University of Dar es Salaam Library had invested heavily in computer laboratories equipped with networked computers to support teaching and learning. Similarly, Mtebe and Raisamo (2014) observed that Tanzanian universities have increasingly invested in ICT infrastructure to enhance students' access to educational resources.

The Learning Management System (LMS) also achieved a mean score of 2.96, demonstrating that online learning platforms are available and support teaching and learning processes, where students can access course materials, submit assignments, participate in discussions, and communicate with lecturers electronically, Furthermore, multimedia projectors recorded a mean score of 3.01, indicating that respondents agreed that these facilities are available and commonly used during lectures, Overall, the findings revealed a grand mean of 2.98, indicating that respondents generally agreed that ICT facilities are available at Mzumbe University. This suggests that the university has established a supportive ICT environment that enhances students' academic performance by improving access to information, communication, and teaching and learning resources.

4.2.2 The Utilization of ICT Facilities on University Students' Performance in Tanzania.

ICT facilities are used in various academic activities such as research, assignment preparation, communication, and online learning.

Table 6

Uses of ICT Facilities in Enhancing Academic Performance of Students (n = 388)

Usage of ICT Facilities	Strong Agree		Agree		Disagree		Strong Disagree		Mean(x)
	n	%	n	%	n	%	n	%	
Conducting Online Research	165	42.53%	130	33.51%	60	15.46%	33	8.51%	3.10

Accessing Lecture Notes and Learning Materials	155	39.91%	140	36.10%	55	14.18%	38	9.79%	3.06
Assignment Preparation and Online Submission	160	41.24%	135	34.79%	55	14.18%	38	9.79%	3.08
Communication with Lecturers and Fellow Students group discussion	145	37.37%	140	36.10%	65	16.75%	38	9.79%	3.01
Participation in Online Learning Activities	150	38.66%	135	34.79%	65	16.75%	38	9.79%	3.02

The findings show that ICT facilities are widely used for academic research (42.53%) suggesting that respondents agreed that ICT facilities are extensively used for searching academic information, accessing scholarly articles, and obtaining educational resources from online databases, accessing learning materials, and assignment submission (41.24%). Online research recorded the highest mean (3.25), indicating that students heavily rely on ICT for academic content. This finding supports Mtebe and Raisamo (2014), who found that Learning Management Systems improve students' access to learning materials and facilitate continuous learning beyond classroom environments. However, communication and group discussions had (37.37%), suggesting that many students fully utilize interactive ICT tools. Overall, ICT use has positively contributed to improved academic performance through easier access to information and faster communication.

4.2.3 Challenges Facing the Utilization of Available ICT Facilities among University Students

Respondents were asked to indicate their level of agreement regarding various challenges affecting the use of ICT facilities in academic activities. From the findings the challenges that hinder the effective utilization of ICT facilities among students at Mzumbe University were analyzed using mean scores and percentages.

Table 7:
Challenges Facing the Utilization of ICT Facilities (n = 388)

Challenge	Strong Agree		Agree		Disagree s		Strong Disagree		Mean(x)
	n	%	n	%	n	%	n	%	
Poor Internet Connectivity	180	46.39%	120	30.93%	50	12.89%	38	9.79%	3.14
Insufficient ICT Facilities	155	39.95%	135	34.79%	60	15.46%	38	9.79%	3.04

Inadequate ICT Skills Among Students	145	37.37 %	130	33.51 %	75	19.3 3%	38	9.79%	2.98
High Cost of Internet Access	170	43.81 %	125	32.22 %	55	14.1 8%	38	9.79%	3.10
Power Interruptions	160	41.24 %	130	33.51 %	60	15.4 6%	38	9.79%	3.06

The results reveal that the primary challenge to ICT utilization is poor internet connectivity. 46.39% of respondents agreed that unstable internet connections limit their ability to access online learning materials. Other significant challenges include high internet costs (43.81%), indicating that many students face financial challenges in purchasing internet bundles and maintaining regular access to online academic resources; limited ICT facilities; and power interruptions (41.24%), suggesting that unreliable electricity supply affects the availability and effective use of ICT facilities. These findings align with Mwalongo (2011) and Ndume et al. (2021), who identified unstable electricity supply as a major barrier to ICT implementation in Tanzanian educational institutions. Frequent power outages can disrupt online classes, research activities, assignment preparation, and access to electronic learning resources. Additionally, some students lack adequate ICT skills (37.37%), which limits the effective use of available technologies. These challenges reduce the full potential of ICT to enhance academic performance in Tanzanian universities.

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This study examined the availability and utilization of ICT facilities for enhancing academic performance of university students in experience of Mzumbe University Morogoro Tanzania. The findings reveal that the universities have access to basic ICT facilities such as computer laboratories, internet service, projectors, and e-learning platforms. However, the level of availability varies across institutions, with some facilities being more accessible than others. The study further shows that ICT facilities are widely used by students for academic purposes, particularly in conducting online research, accessing lecture notes, submitting assignments, and communicating with lecturers. These uses have positively contributed to improving students' academic performance by enhancing access to learning materials and improving communication efficiency.

Despite these benefits, the study identified several challenges affecting effective ICT utilization. The major challenges include poor internet connectivity, high cost of internet data, insufficient ICT infrastructure, limited ICT skills among students, and frequent power interruptions. These challenges significantly hinder the full integration of ICT in universities. Then, the study concludes that while ICT facilities are available and beneficial in Tanzanian universities, their potential to fully enhance academic performance is not yet fully realized due to infrastructural and technical constraints.

5.2. Recommendations

Improvement of ICT Infrastructure, The government and university management should invest more in ICT infrastructure such as computer labs, servers, and reliable internet connectivity to ensure all students have equal access to ICT services. And Enhancement of Internet Services, Universities should collaborate with internet service providers to improve bandwidth capacity and reduce connectivity problems within campuses. ICT Training for Students and Staff, Universities should organize regular ICT training programs to improve digital literacy and ensure both students and lecturers can effectively use available ICT facilities. And Improvement of Power Supply Systems, Institutions should invest in backup power solutions such as generators and solar systems to minimize disruptions caused by electricity shortages. And Government Support and Policy Implementation, The government should strengthen ICT policies in higher education and ensure proper funding and monitoring of ICT development in universities.

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