**ACCESSIBILITY AND USAGE OF ELECTRONIC RESOURCES BY LIBRARY USERS AT THE NATIONAL INSTITUTE OF TRANSPORT, TANZANIA**

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## CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by The Open University of Tanzania a dissertation entitled, **Accessibility and Usage of Electronic Resources By Library Users at the National Institute of Transport, Tanzania*.*** In partial fulfillment of the requirement for the award of Degree of Master of Library and Information Management (MLIM) of the Open University of Tanzania

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Signature

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## DEDICATION

This dissertation is dedicated to my Lord, who gave me the wisdom, the grace, and the strength to complete this work and, to my family especially my beloved wife Ashura A. Ditopile for her love and support. You are all special to me.

## ACKNOWLEDGEMENT

Many people deserve my gratitude for their invaluable assistance in pursuit of this study. I can't put on record all the people who contributed to the successful completion of this work. However, the following deserve special mention;

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## ABSTRACT

##

Library users in the libraries are influenced by information needs such as searching and accessing online materials and other e-resources. This study aimed to investigate the accessibility and usage of electronic resources by library users and suggest ways to improve accessibility and usage of e-resources in the library. The objectives of the study were to: identify electronic resources available in the library, examine the level of access and usage of electronic resources, explore challenges faced in accessing and using electronic resources, and find out how to improve access and usage of electronic resources. The study was informed by the Technology Acceptance Model created by Davis (1989). A case study design was employed in this study with the application of both quantitative and qualitative approaches. A combination of purposive and simple random sampling techniques was employed to obtain 70 students, 30 lecturers, and 2 Librarians. Data were collected through a combination of methods (triangulation) including a standardized questionnaire with both closed and open-ended questions, interviews, and observation. The quantitative data was analyzed by Statistical Package for the Social Sciences (SPSS) version 25 and Microsoft Word Excel (Windows 11) programs while qualitative data was analyzed by using content analysis methods and presented using frequency distribution tables and charts. The findings reveal that the NIT library has subscribed to e-resources such as e-books, e-journals, and databases for thesis which are key in providing current information to support teaching, learning, and research. The findings revealed that the level of use of e-resources at the NIT library is very low. The main challenges facing effective access and use of e-resources are shortage of training on e-resources, limited search skills, and high internet costs as well as inadequate ICT facilities such as computers, and network bandwidth. The study concludes that library users could exploit the benefits of e-resources in the library, however, several challenges need to be addressed beforehand. Therefore, this study recommends use of user education programs, provide adequate budgets to the library, and the government to equip academic libraries with the enabling infrastructure, and library skills training to increase skills in the use of computer applications and online library e-resources.

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## ABBREVIATIONS AND ACRONYMS

AACR2 - Anglo America Cataloguing Rules

COTUL - Consortium of Tanzania University and Research Libraries

DOAB - Directory of Open Access Books

DOAJ - Directory of Open Access Journals

ICT - Information Communication Technology

ISSN - International Standard Serial Number

LAN - Local Area Network

NIT - National Institute of Transport

OPAC - Online Public Access Catalogue

PEOU - Perceived ease of use

PU - Perceived usefulness

SPSS - Statistical Package for the Social Sciences

TRA - Theory of Reasoned Action

TRID - Transport Research International Documentation

# **CHAPTER ONE**

## INTRODUCTION AND BACKGROUND INFORMATION

##

## 1.0 Introduction

## This chapter is composed of eight main parts. These include background information, the status of the National Institute of Transport library (NIT), the problem statement, the objectives of the study, research questions as the opener of this research, the significance and limitations of the study, and the definition of the key terms.

## 1.1 Background to the Study

In recent decades, the development of Information and Communication Technologies (ICT) has had strong potential to transform economies and societies in several ways, such as reducing information and transaction costs, creating new collaborative models to increase the efficiency of workers, promoting innovation, and improving education and access to basic services (Arellano & Cámara, 2017). All this has been possible due to availability, application, and information communication technologies ICT, which facilitate manipulation. This has also made processing, storage, and dissemination of information. Due to these new developments, the world has become a global village, with no barriers related to time and space.

Libraries around the world have also been applying ICT to improve their services (Clayton, 1987); traditionally libraries have been stocked mainly with print resources such as books and magazines. However, in recent decades, there have been problems with access to print resources, especially in developing countries like Tanzania. These problems are a result of outdated print resources, a shortage of adequate relevant printed resources, and declining library budgets. However, with the advents in ICT, it has become possible to access library resources in electronic formats, which take up less space and can be accessed by multiple users at the same time. ICT developments also facilitated library operations such as the acquisition, and circulation of library materials and services, cataloging, resource sharing, and social contacts.

With the development of ICT, which facilitates the transfer of electronic information resources, the availability, utilization, and distribution of timely and current information have become easier. The academic community has entered a new phase in which Internet-accessible Electronic Information Resources (EIRs) are used in addition to printed materials by library patrons (Dada & Eghworo, 2020).

In the majority of developing nations worldwide, especially those with institutes set up specifically for research purposes, the availability, use, and utilization of electronic information resources have improved dramatically in the twenty-first century. Using electronic information resources (EIRs) can help research scientists make better decisions, do better research, and perform their jobs more effectively (Abbas & Song, 2020).

Electronic resources include databases, journals, books, newspapers, magazines, conference papers, research papers, scripts, and monographs in electronic forms (Nicholars et al., 2007). In Tanzania, the application of ICT began in the 1960s following the installation of the first computer at the Ministry of Finance. Libraries began to apply ICT in the 1990s. The first libraries to apply ICT in Tanzania are the University of Dar es Salaam Library and the Sokoine University of Agriculture Library. Other libraries in the country are following suit (Mgaya, 1994). These libraries began to apply ICT in simple operations such as cataloging and classification, and later to make available to their users as resources which were in the electronic form to supplement printed resources.

Bala et al. (2018) state that e-resources are free of cost, save time, are easy to access, and allow one to get all the information needed in one place. However, being free from financial and legal implications is a luxury only open-access resources provide. Subscription resources are not free of costs and legal restrictions. In this regard, Bala et al. (2018) argued that the use of open-access resources is boosted by the ease of availability and convenience for users. This corroborates the findings by Mishra et al. (2019) which reveal that the use of e-resources was associated with the minimization of time and financial resources spent. In addition to this, a study by Aladeniyi (2017) suggests that e-resources constitute an important source of current and timely data and information, ease of access, storage, and time-saving.

According to Mtega, Nyinondi, and Msungu (2013), few libraries in Tanzania subscribe to e-resources; others enjoy the national-wide subscription of e-journals through the Consortium of Tanzania University and Research Libraries (COTUL)

Electronic resources (e-resources) have increasingly become major sources of information in supporting academic and research activities. E-resources refer to academic information materials in electronic formats which are made available to users through digital retrieval systems. It is now widely accepted that e-resources significantly contribute to improving research and academic activities (Lwoga & Sife, 2018).

**NIT Library Services**

NIT is an autonomous Higher Learning Institution under the then Ministry of Works and Transport mandated by the Government of the United Republic of Tanzania to offer training and conduct research and consultancy in all modes of transport (air, railway, road, marine, and pipeline).

The National Institute of Transport Library was been established to support the teaching and research programs of the Institute. Therefore, the main objective was to provide bibliographic, documentation, and information support to the teaching and research programs of the Institute.

The Library holds a collection of more than 13,000 books and printed journals as well as e-books and electronic journals, subscribed to by the International Network for the Availability of Scientific Publication (INASP) through the Consortium of Tanzania Universities and Research Libraries (COTUL). The Library also has a good number of ICT facilities such as computers, printers, and internet services. Some databases can be accessed without using the NIT IP address, as they can be accessed outside of the NIT Library premises. Currently, library users access both printed and e-resources.

## 1.2 Statement of the Problem

The use of electronic resources is no longer an option but a necessity since e-resources are increasingly becoming a preferred and effective source of scholarly information in enhancing teaching and learning in the academy, as well as in resource-poor contexts (Samzugi, 2019). Even though e-resources are beneficial to libraries, many libraries specifically in developing countries do not fully benefit from the subscription of e-resources due to several barriers, such as inadequate knowledge, shortage of information literacy training, shortage of information acquisition skills, and inadequate effective marketing methods which affect the use of electronic resources (Eskrootchi & Boroumand, 2022).

The NIT library has automated its services to increase the wide range of access to library materials and services for its users and to cope with the problem of inadequate subscriptions of print materials. The NIT library subscribes to several electronic resources, in addition to those that the institute generates or obtains freely from other sources. Moreover, library subscribed different e-resources to support learning activities for the library users. However, it is not well known whether library users are aware of these resources or the extent to which library users can access and make use of available electronic resources in the NIT library. This study investigated the accessibility and usage of electronic resources by library users at the National Institute of Transport, Tanzania.

## 1.3 Objectives of the Study

This study was guided by the following general and specific objectives, as follows:

## 1.3.1 General Objective of the Study

## The General objective of this study was to investigate the accessibility and usage of electronic resources at the NIT library.

## 1.3.2 Specific Objectives

1. To identify electronic resources available in the library
2. To investigate the level of access and usage of electronic resources at the NIT library
3. Explore challenges faced in accessing and using electronic resources at NIT Library
4. To find out how to improve access and usage of electronic resources at NIT Library.

## 1.4 Research Questions

Based on the above objectives, the study addressed the following questions:

1. What kind of electronic resources are available for users at the NIT library?
2. What is the level of access and usage of e-resources at the NIT library?
3. What challenges do users face when accessing and using electronic resources at NIT Library?
4. How can access and usage of electronic resources at NIT Library be improved?

## 1.5 Significance of the Study

The study results are significant in the following ways: expected to show the extent of access and usage of electronic resources at the NIT library and the challenges faced in accessing and using these resources at the NIT library. The potential results of this study will also be of importance to library users, library management, and other pertinent authorities for planning and decision-making on electronic resource acquisition, training, and usage in libraries. It offers an understanding of library users' level of awareness, usage of e-resources, and challenges will help libraries to step up a good strategic plan that helps the availability and accessibility of e-resources.

## 1.6 Scope of the Study

The study focused on the accessibility and usage of e-resources by library users at the NIT. There was limited accessibility and usage of e-resources by NIT library users in accessing academic information at the NIT library. The study focused only on electronic resources used by library users.

## 1.7 Limitations of the Study

Time constraint whereby the time given for fieldwork was limited to six months only. Besides, as an employee, I was faced with the challenge of fulfilling my employer's demands which required me to work while studying. To overcome this challenge, I had to work in the night. Budget constraints were also another limitation. This study was self-sponsored and hence, it was difficult to raise funds to cover tuition fees and at the same time meet family obligations. The limitation was minimized by the support from the family and bank loan.

**1.8 Organization of the Dissertation**

Chapter one presents the introduction and background information, containing the statement of the problem, general objective, specific objectives, research questions, significance of the study, as well as limitations of the study. Chapter two describes the literature review and relevant research related to the problem including, theories/models (summary), conceptual definitions, theoretical analysis, related empirical review, research gap and conceptual frame work. Chapter three explains the methodology and procedures that were used to conduct the study and data analysis. Chapter four is data presentation, analysis, and discussion and chapter five is the summarized study findings, conclusions, recommendations, and areas for future research.

#

# **CHAPTER TWO**

## LITERATURE REVIEW

## 2.1 Introduction

This chapter presents a review of the theoretical and empirical literature on the access and use of electronic resources. The aim is to identify the contribution of those studies to the available body of literature as well as any gaps in the literature. The literature review is organized around broad themes such as conceptual definition, theoretical analysis, empirical analysis, research gap identified, conceptual framework, and statement of hypotheses.

## 2.2 Conceptual Definitions

**2.2.1 Access**

Techopedia (2018) defines access as a user’s ability to retrieve resources stored within a database or other repository. A user who has access can store, retrieve, move, or manipulate electronic resources, which can be stored on a wide range of hard drives or external devices. In the context of this study, this definition will apply.

**2.2.2 Accessibility**

Accessibilitycan be defined in this statements: “The fullest use of any resource should be given to the greatest number of people. In this study, accessibility means “the ease with which a person may enter a library, gain access to its online systems, use its resources, and obtain needed information regardless of its format. In a more general sense, the quality of being able to be located and used by someone.

**2.2.3 Electronic Resources (e-resources)**

These refer to those materials that require computer access, through either a personal computer, mainframe or handled mobile device. They may either be accessed remotely via the internet or locally. Some of the common types of e-resources include e-journals, e-books, full-text databases, indexing and abstracting databases, reference databases like bibliographies, dictionaries, encyclopedias, e-audio and visual resources.

In the context of this study, this definition will apply.

**2.2.4 Library**

A library is a collection of materials, books, or media that are accessible for use and not just for display purposes. A library provides physical or digital access to materials and maybe within a physical location a virtual space, or both. A library's collection can include books, periodicals, newspapers, manuscripts, films, maps, prints, documents, microform, CDs, cassettes, videotapes, DVDs, Blu-ray Discs, e-books, audiobooks, databases, table games, video games, and other formats.

**2.2.5 Library User**

Nwalo (2003) defined library user as anybody who visits a library to exploit its resources to satisfy his information needs. The underlined word "visits" as used in the 21st century, includes remote access to the library portal or website. Moshoeshoe-Chadzingwa (2005) sees the term "user" to include all those who benefit themselves of the services offered by a library. The term encompasses various terms such as patrons, clients, information users, information seekers, consumers, readers, etc. These terms can be used interchangeably because they all apply to those seeking the services of a library. In the context of this study, this definition of library user will apply.

**2.2.6 Usage**

Usage may be defined as “the power, right or privilege of employing or using something”. To this study, the word 'usage’ means “take, hold, or deploy (something) as a means of accomplishing or achieving something”.

## 2.3 Theoretical Analysis

## 2.3.1 Concept of Electronic Resources

Electronic resources (E-resources) have become the most sought-after modern library reserves in satisfying the diverse needs of students, teachers, and researchers with minimum risk and time. Information technology has changed the world and has become one of the essential tools for retrieving information. Electronic information resources have acquired a significant portion of library collections. The aforementioned is very important for university libraries since most of them call for more and more research work (Veer & Panda, 2021).

According to Anyim (as cited in Oseghale, 2023), “Electronic resources encompass all materials that contain information that can be accessed through digital or online means by the support of computer technologies.”

The Library of Congress Collection Policy, (2008) identifies four categories of electronic resources in a library:

* “Acquire” electronic resources that are received through licenses or other agreements, and acquisition processes such as gifts, copyright deposits, exchange, ISSN requests, etc.
* “Collect” electronic resources which are permanently owned by the library and for which the library has permanent ownership
* "Link" electronic resources are remotely accessed through links from the library's web resources, and
* "Archive" electronic resources are permanent digital repositories managed and maintained by the library or for the benefit of the library

E-resources have become part of the library collections that need to be marketed to realize their value for money (Ndungu, 2016). In the digital era where patrons have abundant sources of information, library is not considered the only place to go and search for information; in this case, libraries ought to promote their resources to attract their clients (Yi, 2016). In the 21st century, learning is changing, and so accessing library e-resources is made 24/7/365 regardless of time, boundaries, and devices, including mobile ones (Bennett et al., 2018). Libraries are not considered modern if they do not offer e-resources to clientele (Merande, 2021).

According to Katabalwa (as cited in Oseghale, 2023), E-resources play a vital role in promoting learning, teaching, research, and community service mandates for which universities are established. Most students use e-resources for various purposes, including assignments, literature reviews, and research report writing, among others. The use of e-resources has reduced the rigor researchers go through in searching for printed information materials in libraries. This is because a significant amount of relevant information is speedily accessible through a computer device with an internet connection (Oseghale, 2023). For this study, electronic resources refer to OPAC, CD-ROM, Dspace, and academic databases subscribed to by the National Institute of Transport Library.

## 2.3.2 Challenges Faced in Accessing and Using Electronic Resources for the Library Users

Tetteh (2018) states that value of e-resources in libraries and safeguarding their usage is not encouraging. Library users' quest to use e-resources for their work encounters some difficulties in terms of access and usage. Therefore, for libraries and information centers to improve their e-resource services, it is imperative to better understand the impediments users encounter in accessing these resources. The demand for e-resources comes with challenges in the area of ICT infrastructure, licensing, ownership, and long-term preservation; copyright and intellectual property legislation; and collection development and cataloging issues (Tetteh, 2018).

Muzamil and Ariba (2020) found out that there is also lack of skilled staff in libraries which thus poses a challenge in building e-resource collections. It was also revealed that libraries are having difficulties in archiving e-resources. The lack of proper ICT infrastructure is a major issue resulting in the under-utilization of e-resources which needs to be addressed by the libraries.

Bhatt and Rana (2011) also identified that the most common problems with e-resources are low-speed connectivity, lack of awareness about statutory provisions for accessing e-resources by the institutions, technical problems, unavailability of sufficient e-resources, doubts in permanency, high purchase prices and lack of legal provision. A similar study by Shukla and Mishra (2011) revealed that the majority of research scholars have the problem of low internet connectivity.

Other factors that may affect the utilization of e-resources include inadequate competence use of e-resources on the part of users, such as lack of knowledge, negative attitudes, poor practices, and inadequate and limited infrastructure (Tetteh, 2018).

In another study, Leonard, Hamutumwa, and Mnubi-Mchombu (2020) point out that lack of awareness of e-resources and information retrieval and searching skills; poor information technology infrastructure (especially in Africa and the rest of the developing world), such as limited access to computers, unstable network connectivity, and slow download speeds; and limited access to e-resources including limited access to relevant titles and contents on specific subjects. Access to e-resources is challenged by inadequate computers in the library. In support of this view, libraries are therefore charged to put in place adequate mechanisms to enable effective and efficient access and use of e-resources.

## 2.3.3 Strategies Adopted to Improve Use of Electronic Resources

The ICT age has improved the handling of library services in the provision of fast information services to its users. Electronic services minimize the work of filing and make less intensive and time-consuming activity. These library systems allow multiple options for retrieval and can be provided without using cross-references or making duplicates for filing under different headings

Wema and Manda (2011) reported that there is a good deal of information literacy skills and a good awareness of the resources available, however, the level and application of skills and the usage of resources varies greatly between institutions and individuals. The varied focus and length of InfoLit workshops creates an uneven level of knowledge and the ability and willingness to apply the skills learned can have a noticeable impact on the usage of e-resources. Requests for longer workshops and follow-up training are all too common. Requests for longer workshops and follow-up training are all too common. Echezona as cited in Ani et al, (2016) states that availability and access to library resources will be enhanced if the following are taken into consideration; provision of online materials in electronic format, provision of both printed and electronic information resources, updating the skills of library staff to enable them to help users in meeting their informational needs, improving the funding of the library to enable it to purchase and maintain needed information technology, books, journals, and audio-visual resources.

## 2.4 Related Empirical Literature

Several studies have been conducted on ICT applications in library services in Tanzania. For example, Msuya (2016) carried out a study on the access and use of E-resources in Tanzanian academic and research Institutions and found out that some institutions had not registered to use e-resources. Another example is in the Southern Highlands zone, where only 6 out of the 11 (54.5%) institutions visited have properly registered. The main problems hindering registration were lack of registration skills, lack of IP address, and non-availability of internet services. Another study by Ternenge and Kashimana (2019) investigated on availability, accessibility, and use of electronic information resources for research by students. This study found out that electronic information resources are available, accessible, and utilized for research by students however, some problems encountered while students accessing and using the available electronic information resources were such as inadequate computers in the library, poor internet connectivity, difficult to access and use, limited subscribed titles, power outages, lack of relevant e-resources in various disciplines as well as no assistance from the library staff.

Mwantimwa et al., (2021) point out several problems with access and use of E-resources in Tanzania, including institutions that are not immune to factors that undermine access to and use of e-resources by researchers and academic staff. For example, the slow Internet connection was the biggest challenge across the surveyed institutions. Further, ineffective use of both subscribed and free and open access resources was associated with the inability to access full-text documents, time constraints to retrieval relevant teaching and research resources, unreliable power supply, and shortage of computers.

Oseghale (2023) conducted a study on digital information literacy skills and the use of electronic resources by humanities graduate students and found that it is necessary not only to provide electronic sources that fulfill the same standards of quality as printed sources but also to improve the education and training of scholars and students in the use of appropriate electronic sources, to establish a system that ensures precise long-term access and provision of adequate local contents to the subscribed digital sources. It is also essential to take active steps to ensure that those who can benefit most from higher education are not further marginalized as they seek to access and use e-resources. Therefore, the management of university libraries in collaboration with database providers and other support services has a key role to play in ensuring the effective utilization of e-resources among humanities graduate students in universities (Oseghale, 2023).

Leonard et al., (2019) carried out a study on the use of electronic resources by law academics at the University of Namibia and found out that e-resources subscribed to by the UNAM library are useful and relevant in supporting the faculty teaching, learning and research. The report also that even databases that are not heavily used are critical in supporting the faculty curriculum and international comparative on specialized research areas. Also, it is evident from the findings of this study that the majority of potential users were aware of UNAM’s library-subscribed e-resources and were using them to support their research, in publishing research papers, class preparation, and for study purposes (Leonard et al., 2019).

Another study by Wagay and Dutta (2023) investigated the utilization of electronic resources by analyzing awareness and perception of users of Kashmir University and discovered that the use of electronic resources has created a great impact on users at Kashmir University and has also helped students in their respective research works. The rapid developments in information communication technology have facilitated the convergence of new electronic devices and formats. Information has been embedded in a variety of ways and forms in various kinds of electronic resources. It is clear from the study that not only the younger generation has accepted the electronic resources but also the volume of frequent usage of e-resources among all users has been found to be at the optimum level. Still, it is not hard to find respondents who are unaware and have not used online theses/ dissertations, abstracts/indexes, OPAC, online databases, and other resources that are very relevant to their study and research. It is therefore imperative for the library to take the initiative in organizing more orientation programs, lectures, workshops, and user awareness programs in this area to maximize their understanding (Wagay & Dutta, 2023).

Generally, available literature shows that problems that hinder the access and usage of e-resources by library users are varied but are mainly related to limited IT skills, knowledge, and competence among staff, inadequate IT facilities, and lack of computer networks and appropriate computer software (Miranda, 2021). The recommended solutions for such problems include formulation of appropriate policy, staff training, and improved infrastructure for effective and efficient ICT use and providing computer networks in the respective organizations (Mwantimwa, et al., 2021). However, for the case of the NIT, the reasons hindering the effective accessibility and usage of E-resources by library users are not known and this study was geared towards evaluating the accessibility and usage of electronic resources by library users such as the number of e-resources acquired by the library.

## 2.5 Theoretical Framework

This study adopted Technology Acceptance Model which describes an individuals’ acceptance of information Technology as introduced by Davis (1986) as an extension of Theory of Reasoned Action (TRA). The goal of TAM is to provide an explanation of the determinants of computer acceptance among users. TAM replaced TRA’s attitude beliefs with the two technology measures: Perceived usefulness(PU)referring to the degree to which a person believes that using a particular system would enhance his/her job performance; and Perceived ease of use (PEOU) referring to the degree to which a person believes that using a particular system would be free from effort (Davis, 1989). TAM does not include TRA’s subjective norms (SN) as a determinant of behavioural intention. TAM posits that PU is influenced PEOU because, other things being equal, the easier a technology to use, the more useful it can be. Consistent with TRA, TAM suggests that the effect of external variables on intentions is mediated by Perceived ease of use and Perceived usefulness. The actual use or behaviour is usually measured by: amount of time spent using, frequency of use, actual number of usages and diversity of usage. TAM has been adopted across a wide range of information system applications such as office applications; communication technologies (eg. Emails and fax); database systems; microcomputer; workstations; telemedicine technologies; and internet-related IS applications (www information services, online services, virtual workplace systems, digital libraries).

Hu, Chau, Sheng, and Yan (1999) point out that TAM consists of different variables including attitude towards behavior, behavioral intention, actual system use, perceived usefulness as well and perceived ease of use. The TAM principally relies on two factors, perceived usefulness in addition to perceived ease of use, to inspect persons' beliefs in addition to attitudes toward computer technology approval. Perceived Usefulness directly impacts on perceived ease of use; also, external factors have an impact on perceived ease of use in addition to Perceived Usefulness. Figure 2.1 is the original TAM that was proposed by Davis, Bagozzi, and Warsham (1989).

This study measured perceived usefulness concerning providing access and usage to useful information and reducing information retrieval time. In the context of electronic resources, ease of use is expected to be an important factor that determines behavioral intentions through attitude towards electronic resources. Perceived ease of use represents the degree to which online databases are perceived to be easy to understand, learn, or operate (Lin, 2007; Hartshorne & Ajjan, 2009).

Thus, the TAM presupposes that perceived usefulness and perceived ease of use influence attitudes toward behavioral intention to use ICT. Davis (1989) affirmed that the TAM aims to “provide better measures for predicting and explaining the use” of ICT in an organization or institution.

From the theory, the study assumes that;

Perceived Usefulness

Actual Usage

Behavioral Intention to Use

Attitude Toward Usage

Perceived Ease of Use

Figure 2. Conceptual Framework

Adapted from Davis, Bagozzi, and Warshaw (1989)

## 2.6 Research Gap

A review of the literature revealed that a number of studies have been conducted on electronic resources in Tanzania. These include those by Mwantimwa et. al (2017) on utilization of e-resources to support teching and research in higher learning Institutions, Tanzania; Nkebukwa (2016), on status of usage of e-resources by students at the College of Business Education and Wema and Manda, (2011) on the impact of e-resource usage in academic and research institutions in Tanzania. Similarly, as a librarian, I have participated on several occasions, on discussions related to issues on e-resources and their utilization and if they merit the value of money paid for a subscription. Apparently, none of these studies have investigated access and use of electronic resources by library users at the National Institute of Transport, Tanzania. Therefore, the current study was set to determine the accessibility and usage of electronic resources by library users at the National Institute of Transport, Tanzania. This is the gap this research intended to fill.

# **CHAPTER THREE**

## RESEARCH METHODOLOGY

## 3.1 Introduction

According to Kothari (2019), research methodology is a way to systematically solve the research problem. It is normally understood as a science of studying how research is done the steps adopted in the study along the logic behind them. This chapter presents the research methodology employed in this study. The chapter starts by describing the research design, which lays the foundation for the identification of the area of study, population, sample size, sampling techniques, data collection methods, and instrumentation as well as data analysis techniques.

## 3.2 Research Design

Research design is a set of plans and procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis. It provides a direction to be followed from the beginning to the completion of the study. According to Kumar (2011), research design is a procedural plan adopted by a researcher to answer questions validly, objectively, accurately, and economically.

This study used a case study design with the application of both quantitative and qualitative methods. Case study research is an empirical inquiry that investigates a contemporary phenomenon in its real-life context, especially when the boundaries between the phenomenon and the context are not evident (Yin, 2014). The researcher used a case study that looked at the National Institute of Transport to understand the real-life situation of the accessibility and usage of electronic resources by library users. This research design was also adopted to gain the participants' experiences, perceptions, and understandings of the accessibility and use of e-resources in the study area. A case study allowed the researcher to use more than one research method like questionnaires, interviews, focus group discussions, and observation, depending on the situation.

## 3.3 Research Approach

There are two research approaches, one is the quantitative approach which is based on the measurement of quality or amount, and data are presented through numbers and analyzed using statistics. The qualitative research approach, on the other hand, is concerned with a qualitative phenomenon, relating to the quality of data represented through expressions, and pictures, and is analyzed using thematic exploration (Kothari, 2019). In this research, both qualitative and quantitative approaches were adopted. With this approach, it was easy for the researcher to seek a wide views enabling him to view a phenomenon from different perspectives and research lenses.

## 3.4 Area of the Study

This study was conducted at the National Institute of Transport is located in Dar es Salaam, Tanzania in the Mabibo area. NIT as an academic institution is responsible for conducting flexible and sustainable high-quality education and training, research, and consultancy in logistics and transport technology in society.

NIT was selected because it has invested in e-resources to an appreciable degree, hence it was important to explore if the e-resources are accessed and used by library users. In another hand, NIT was selected because of its proximity and also because of its membership to Consortium of Tanzania Universities and Research Libraries in which it takes advantage of the subscribed e-resources.

## 3.5 Population of the Study

Mugenda and Mugenda (2003) define a population as a "set of all the elements, units, objects or subjects in the universe of interest for a particular study". A study population also refers to a group of individuals, objects, or items from which a sample is drawn for measurement; it also refers to an entire group, persons, or elements that have one thing in common (Kombo & Tromp, 2006). The study population was NIT students, academic staff, and non-academic staff. It was drawn from 1350 people whereby 1000 were students, 250 were academic staff and 100 were non-academic staff. These categories of respondents are considered to have information that relates to the topic under study. Students were included because they formed a group of user categories. Academic staff were included because of their roles to instruct students to use library resources for providing assignments and research work that require them to use e-resources available in the library. Non-academic staff were also included because they are invariably involved in the use or instruction of the use, access, and provision of ICT or library e-resources and services within or external to the institution environment.

## 3.5.1 Sampling and Sample Size

A sample is the actual group of research respondents drafted to participate in a study from which data is collected (Punch, 2012). Sample size refers to the number of items to be selected from the universe to constitute a sample, in other words, sample size is the number of items or people to be selected from the population (Kothari, 2019). The sample size for this study was 102 respondents comprising 70 students, 30 lecturers, 2 librarians, 1 Head of ICT department and 1Chief Librarian. These were purposively and randomly selected from a target group of 1350. These respondents were selected because they were expected to provide valid data for the study since they were involved in their roles in the subscription of e-resources and affording access to e-resources through information literacy training. The researcher considered this number to be representative and manageable and hence provides reliable data for this study.

**3.5.2 Sampling Frame**

The sampling process requires the development of a sampling frame. In this study, the current list of NIT students is contained in the student register list in the admission office, also a current list of lecturers and librarians is contained in the human resource office. In this study, both random and non-random sampling techniques were employed. At NIT 100 questionnaires were distributed to students and lecturers and the interview was conducted with 2 librarians as shown in Table 3.1.

**Table 3.1: Sampling Frame n=102**

|  |  |
| --- | --- |
| **Category** | **Distribution of the study Sample** |
| Male | Female | Total |
| Students | 48 | 22 | 70 |
| Lecturers  | 20 | 10 | 30 |
| Librarians  | 1 | 1 | 2 |
| Total | 69 | 33 | 102 |

**Source:** Field Research 2023

As shown in Table 3.1 above, out of 70 students who participated in this study, 48 were males and 22 were females also, out of 30 lecturers who participated in this study, 20 were males and 10 were females and out of 2 librarians participated in this study, 1 was male and 1 was female. Thus, it makes a total sample size of 102 respondents. Based on this fact, the researcher considered this number to be adequate to provide the required information.

## 3.6 Sampling Techniques

Samplings is a process of taking only a portion or part of the targeted population to collect data from them and, subsequently, conclude for generalization purposes to the general population (Krishnaswami, 2002). Thus, sampling is a procedure for extracting a sample from the population. However, there are several sampling designs applicable in drawing the sample size from the target population. Singh and Masuku (2014) argued that purposive sampling and random sampling are common samples applied in literature as a representation of the targeted population of the study.

This study applied two main techniques to draw sample size from the targeted population, namely, Simple random and Purposive sampling techniques.

## 3.6.1 Simple Random Sampling

Simple random is a technique that gives each element an equal chance of being selected. This method is easy to apply and understand, does not need prior knowledge of the population, and the amount of error associated with the sample drawn can be easily computed. Singh and Masuku (2014), simple random sampling makes it possible for each unit to be drafted in the sample because of a certain pre-assigned chance of being included in the sample. Simple random sampling was used to select students and lecturers. The researcher used the students and lecturers list to randomly select respondents. This sampling technique was beneficial because it gave an equal chance to all respondents to be included in the sample.

## 3.6.2 Purposive Sampling

Kombo and Tromp (2006) explicate that purposive sampling can be used in both qualitative and quantitative studies. The power of purposive sampling relies on selecting information-rich cases for in-depth analysis related to the central issues being under review in connection to the research phenomenon. Specifically, the researcher used purposive (judgmental) sampling to select two (2) librarians, one was the Head of ICT department and the other was the Chief Librarian. This method was used due to the nature of this study, which demands the collection of data from some experts or experienced persons on e-resources used in the library. This method enabled the researcher to select rich information cases from key informants. Librarians were included since they play a vital role in the subscription of e-resources and affording access to e-resources.

## 3.7 Data Collection Methods

Kothari (2019) defines data collection methods as instruments that guide a researcher in gathering data to obtain answers to the problem being researched. Creswell, (2014) indicates a range of activities emcapassing data collection methods namely, the data collection steps include setting the boundaries for the study, collecting information through unstructured or semi-structured observations and interviews, documents, and visual materials, as well as establishing the protocol for recording information. Data for this study were collected through a combination of methods (triangulation) including a standardized questionnaire with both closed and open-ended questions, interviews, and observation. The aim was to increase the validity and reliability of the data collected since each method has its strengths and weaknesses. Two types of data were collected namely primary and secondary data.

**3.7.1 Primary Data**

Kumar (2011) defines primary data as information collected for the specific purpose of a study either by the researcher or by someone else. Primary data refers to information obtained first hand by the researcher on the variables of interest for the specific purpose of the study. Some of the examples are individuals, focus groups, and panels of respondents whose opinions may be sought on specific issues (Sekaran, 2003). Primary data can be either qualitative or quantitative. Quantitative data may be descriptive or casual; but for this study, the research was mainly quantitative data. The researcher collected these data through a standardized questionnaire with both close and open-ended questions, interviews (both semi-structured and structured), and observations. The major assumption of this study was that perceptions, feelings, and opinions of the key informants in e-resources access and usage are extremely important.

The advantages of primary data include originality and pertinent to the subject of the research to achieve high accuracy in research. Also, the researcher can get a realistic view of the topic under consideration from the primary data. Primary data are highly reliable because these are collected by the researcher or concerned and reliable party.

**3.7.2 Secondary Data**

Secondary data are data that were used by researchers but have been collected by others (Kothari, 2019). This study used both print and electronic resources. Secondary data was collected from various documents such as; books, newsletters, reports, magazines, journals, daily newspapers, and web resources from the internet. Similarly, secondary data were used in this study because published and unpublished materials can provide significant documented information. The advantage of secondary data is that it saves time, effort, and money and adds to the value of the research study. Through secondary data, it was possible to refine the research objectives of the study.

**3.8 Data Collection Instruments**

According to Kombo and Tromp (2006), data collection is the process of gathering specific information aimed at proving refuting facts. In data collection, the researcher must have a clear understanding of what and how he/she hopes to obtain the required data. Similarly, the researcher must have a clear vision of the instruments to be used, the respondents, and the selected area. The research instruments for this study included questionnaires, interviews, and observation checklists.

**3.8.1 Questionnaires Guide**

A questionnaire is a data collection instrument consisting of a series of questions and other prompts for gathering information from the respondents (Abawi, 2017). The questionnaire is advantageous in terms of economy, as it allows the researcher to collect data from a larger number of respondents more cheaply than other methods such as interviews. This study used a set of pre-prepared questions to collect data relating to the topic under investigation. A structured questionnaire with both closed and open-ended questions was administered to 100 respondents. The study used a self-administered questionnaire. Questionnaires were administered face to face. This was because the self-completion questionnaire was cheaper to administer. A covering letter for the questionnaire was developed in collaboration with the supervisor to request respondents to fill in. Questions were formulated to ensure that they are understood to avoid biased responses. Instructions were also provided to the respondents for a clear understanding of questions to avoid ambiguity. This was made possible by avoiding jargon.

## 3.8.2 Interviews Guide

An interview guide involves the presentation of oral-verbal stimuli to solicit oral-verbal responses through personal or telephone interviews (Kothari, 2019). Under this data collection, there is direct contact between researchers and respondents (Adamu & Kamuzora, 2008). Monday (2020) defines the interview as a verbal conversation between two people to collect relevant information for research. Interviews are particularly useful for getting the story behind a participant’s experiences. The interviewer could pursue in-depth information about the topic. The interview is useful as a follow-up to certain respondents. Monday, (2020) points out the types of interviews these are, structured interviews, semi-structured interviews, unstructured interviews, and non-directive interviews. Structured interviews are standardized because they use preceded answers or an interview schedule. Semi-structured interviews are non-standardized but are based on the themes and questions that the researcher intends to cover. Unstructured interviews are also known as in-depth interviews. Non-directive interviews are structured and semi-structured interviews that are somewhat controlled by the researcher who has set the issues and questions. In non-directive interviews, there is no pre-set topic to pursue. This study used both structured and semi-structured methods to collect data from the field.

The interview guide was used to collect primary data by asking questions. This was a semi-structured interview using open-ended questions and it was targeted to Librarians (Librarians, N=2). Interview helps the researcher to get respondents' opinions relevant to the research. Interview provides the opportunity for the researcher to record the context of the interview, and non-gestures (Kothari, 2019). The interview was very flexible and enabled the researcher to collect the additional information that the questionnaire failed to address.

Interviews are advantageous because they allow the researcher to gain rich and detailed data from participant's own words and expressions, which can reveal their feelings, motivations, and meanings. The researcher used a checklist for respondents (see Appendix III&IV). The researcher used this method to supplement information acquired through questionnaires.

## 3.8.3 Observation Guide

An observation guide serves to keep the researcher on track toward research objectives and facilitates the ethnographic data-gathering process (Roller & Lavrakas, 2015). The study used direct observation to improve the validity and reliability of data obtained from questionnaires and interviews. The observation guide reminds the researcher of key points of observation as well as the topics of interest associated with each, for example, the availability of e-resources in the NIT Library and ICT facilities. It also helped the researcher verify the validity of the information obtained through other methods (See Appendix V).

**3.9 Data Processing and Analysis**

Kothari (2019) points out that data analysis involves editing, coding, classifying, and tabulating the collected data. This study obtained data from qualitative and quantitative instruments whereby quantitative data from closed questions in the questionnaire was analyzed by Statistical Package for Social Sciences (SPSS) version 25 and Microsoft Word Excel (Windows 11) programs while qualitative data from interviews, documentary reviews, and observation were coded, arranged according to their themes as they emerged, and analyzed by using content analysis methods.

**3.9.1 Quantitative Data Analysis**

Bairagi and Munot, (Eds.) (2019) point out that quantitative research involves measurements of quantities of characteristics that can be used as features for the research study. Unlike qualitative, quantitative research assumes that the world is stable and uses statistical analysis on parameter values for conclusions. The quantitative data collected from the questionnaire were coded and summarized before analysis, by using Statistical Package for Social Sciences (SPSS) version 25 and Microsoft Word Excel (Windows 11) programs. The codes were designed to reflect key variables of the research questions. Data was also presented by using tables, charts, and graphs.

**3.9.2 Qualitative Data Analysis**

According to Kumar (2011), qualitative data refers to non-numerical data. This kind of data was analyzed using content analysis methods. A qualitative technique was applied for non-numerical data. The initial stage for qualitative data analysis started soon after reading interview transcripts, observation notes, and documents obtained from the field. The first step was to categorize the interview materials into memos, coding, and thematic analysis. Qualitative data obtained through an open-ended questionnaire were organized, summarized, coded, and arranged according to their themes as they emerged. The statements obtained were included in the explanations of the findings obtained.

**3.10 Data Quality Control**

Data quality is, in essence, understood as the degree to which the data of interest satisfies the requirements, is free of flaws, and is suited for the intended purpose (Max & Patrizio, 2022). To ensure that good quality, valid, and reliable data was obtained, different approaches were used. These included Triangulation and Pre-test.

## 3.10.1 Triangulation

## For validity and reliability assurance of data, a triangulation method was adopted where interview, questionnaire, and observation were employed in data collection. Triangulation is a powerful technique that facilitates the validation of data through cross-verification from two or more sources. In particular, it refers to the application and combination of several research methods in the study of the same phenomenon (Honorene, 2017). In this study, the researcher used a combination of methods to collect relevant reliable data for the study. Hence a questionnaire, interviews, and observation were used. This assisted in maximizing the credibility and confidence level of the findings.

**3.10.2 Pre-test of the Instruments**

According to Kumar (2011), Pre-testing a research instrument entails a critical examination of the understanding of each question and its meaning as understood by a respondent. A pre-test should be carried out under actual field conditions on a group of people similar to your study population. The purpose is not to collect data but to identify problems that the potential respondents might have in either understanding or interpreting a question. Pilot study was conducted on postgraduate students (MLIM) and Library staff at the Open University of Tanzania. Questions that did not yield useful answers were revised or discarded, after consultation with the supervisor.

## 3.10 Ethical Consideration

Robert (2017) portrays that ethical issues involve right and wrong or what is considered good or bad in a particular society. Before conducting the study, a letter requesting permission was sent to the Institution's management for seeking permission to conduct research. Informed consent was used by the respondents in this study to ensure clients' rights and the researcher's responsibility. Consent was also sought from the individuals involved in the study. Efforts were made to ensure that the privacy of the respondents was maintained and honored. The study ensures that the confidentiality of the data is maintained, as well as the privacy of the subjects. Moreover, the anonymity of the respondents was also highly observed to protect them.

# **CHAPTER FOUR**

## DATA ANALYSIS, PRESENTATION, AND DISCUSSION OF THE FINDINGS

## 4.1 Introduction

This chapter presents an analysis and discussion of the major findings of this study. The purpose of the study was to assess the accessibility and usage of electronic resources by library users at the National Institute of Transport, Tanzania. Data were collected by using self-administered structured questionnaires with closed and open-ended questions, supplemented by key informant interviews and observation checklists.

The following is an integrated report of the collected data presented in the following order: demographic information, electronic resources available in the library, level of access and usage of electronic resources at the library, challenges faced in accessing and using electronic resources at the Library and lastly how to improve access and usage of electronic resources by library users. A total number of 102 respondents participated in this study, including 70 students, 30 lecturers, and, 2 librarians, whereby one was the Head of ICT department and the other was the Chief Librarian. Results and discussion of the study are presented in different figures, charts, and tables with frequencies, percentages, and narration.

**4.2 Biographical Data of the Respondents**

Questions 1 to 4 in the questionnaire, focused on the bibliographic data of the respondents who participated in this study including gender, age, education level pursuing and teaching departments of lecturers, and other information describing details of respondents. This information was crucial and provided working knowledge of the characteristics of the NIT respondents who participated in this study. One hundred and two respondents were drawn from students, lecturers, and librarians. Generally, the response rate was very high, recording a 98 percent response and return rate.

## 4.2.1 General Demographic Characteristics of Respondents

This section presents the demographic characteristics of respondents including age, gender, academic qualifications, and department they teach at NIT. The demographic characteristics of respondents are important because they provide information on the background setting of the population where the study took place.

Table 4. Demographic Characteristic of Respondents (n=100)

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable**  | **Category** | **Frequency** | **Percent (%)** |
| Gender | Male | 54 | 54 |
| Female | 46 | 46 |
| Age | 17-29 | 49 | 49 |
| 30-49 | 43 | 43 |
| 50-59 | 8 | 8 |
| Academic Qualification | Ph.D. | 3 | 3 |
| Masters | 16 | 16 |
| Bachelor Degree | 47 | 47 |
| Diploma | 32 | 32 |
| Certificate | 2 | 2 |
| Departments | TET | 2 | 7 |
| LTS | 4 | 13 |
| BES | 7 | 23 |
| LIS | 5 | 17 |
| CCT | 8 | 27 |
| MHSS | 4 | 13 |

**Source: Field Data (2023)**

## 4.2.2 Gender of Respondents

This study involved both male and female respondents. It was necessary to consider gender because NIT has male and female respondents who make use of e-resources. Considering the category of gender helped also the researcher obtain an equal representation of views, ideas, suggestions, and opinions for reliable and valid information concerning the study as well as to capture views from both male and female users.

Findings revealed that out of 100 respondents, 54 (54%) were male and 46 (46%) were female. The findings show that there were more male respondents compared to female respondents. Based on these findings, the study shows that an effort was made to ensure gender balance in the selection of the sample of this study.

**4.2.3 Age of Respondents**

This study included respondents from various age groups due to the nature of the study population. It was necessary to know the age of respondents in this study to help in determining the relationship between access and usage of e-resources and age. The age categories for respondents ranged from the lowest to the highest age. The lowest age was 17 years, while the most senior was 59 years. The majority of respondents (50%) were between 17 to 29 years (see Table 4.1). The findings show that most of the respondents fall under 17 to 29 years of age, which indicates that they are natives (born during the ICT) digital era and they are capable of using a computer to access and use electronic resources. This categories was also followed by 30 to 49 years. This reveals that most of the respondents are young adults who are mature enough to understand the importance of e-resources.

## 4.2.4 Academic Qualifications of Respondents

Respondents were asked about their academic qualifications. This was very important because understanding the availability and use of e-resources depends on the level of academic one has. Out of 100 respondents, 47 (47%) had the qualification of Bachelor's Degree, 32 (32%) had the qualification of Diploma, 16 (16%) had the qualification of Master’s Degree, 3 (3%) had the qualification of Ph.Ds. and 2 (2%) had the qualification of Certificate as is indicated in Table 4.1. The results of the study reveal that the majority of respondents had Bachelor's degrees in that they have adequate knowledge of e-resources as they require e-resources to support their learning and research endeavors.

**4.2.5 Departments of the Respondent**

Respondents were asked to which department they belong and teach. It was necessary to know the department of respondents to determine the relationship between the use of electronic resources and the department being attended. Out of 30 lecturers 8 (27%) were from the CCT department, 7 (23%) were from the BES department, 5 (17%) were from the LIS department, 4 (13%) were from the LTS department, 4 (13%) were from MHHS department and 2 (7%) were from TET department. The results show that all the respondents from the six departments were ready to provide the required information about the study. However, the greater number of respondents fall under the CCT department 8 (27%). The following section presents the findings of the study according to the specific objectives:

## 4.3 Awareness of Respondents on Availability of E-Resources

The respondents were asked if they were aware of the accessibility and usage of electronic resources. This was necessary because user awareness of a given service is the first step toward the acceptance/usage or rejection of that service. Respondents were asked to indicate whether or not they were aware of the availability of e-resources. Responses are summarized in Table 4.2.

**Table 4.2: Status of Respondents (n=100)**

|  |  |  |
| --- | --- | --- |
| **Category** | **Frequency** | **Percent** |
| Aware | 92 | 92 |
| Not aware | 8 | 8 |

**Source:** Field Data (2023)

The responses from Table 4.2 indicate that 92 (92%) out of 100 respondents said they were aware of the availability of electronic resources, while 8 (8%) said they were not. These results implied that there was a high level of awareness of the availability of e-resources which might result in the usage of e-resources by library users. This suggests that electronic resources were marketed enough. Nkebukwa (2016) points out that the majority of students at the College of Business Education (CBE) were not using e-resources because they were not aware of the available education e-resources at the institution. Also, Ndungu (2016) suggests that to increase awareness and promote maximum exploitation of information there is a need for libraries to allocate funds for marketing activities.

## 4.3.1 Availability of Electronic Resources in the Library

To answer the first specific objective of this study, various questions were asked to respondents on the kind of electronic resources available and accessed by library users at the NIT library to determine the awareness of respondents on the availability of E-resources. The findings reveal that all 100 respondents (students and lecturers) acknowledged the availability of e-resources at the library. Also, during the interview, librarians confirmed that the library has subscribed to e-resources.

The results indicate that the 100 respondents are aware of the available e-resources and understand the importance of the library in their academic endeavors. Also, during the observation made by the researcher, it was noted that the library has electronic resources acquired through COTUL which are accessed through the Institute Local Area Network (LAN). The results of the study indicate that NIT has subscribed to e-resources such as e-books, e-journals, and databases for theses/dissertations which are key in providing current information to support teaching, learning, and research which are key functions of any academic institution in the world.

## 4.3.2 User Awareness Creation Methods

The researcher asked students and lecturers about methods used to make them aware of the accessibility and usage of e-resources. Also, the researcher wanted the respondents to mention the most effective awareness-creation methods. The question was supplemented by observation to see if the librarians provide user awareness. Table 4.3 represents the findings.

Table 4. Multiple Responses by Students and Lecturers on User Awareness Creation Methods (n=100)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Creation Methods**  | **Students** | **Lecturers** | **Frequency** | **Percent** |
| Information Literacy Training | 52 (72%) | 17 (57%) | 69 | 69 |
| Library Bulletins | 70 (100%) | 28 (93%) | 98 | 98 |
| Posters | 46 (66%) | 22 (73%) | 68 | 68 |
| Telephones | 0 (0%) | 7 (23%) | 7 | 7 |
| E-mail Messages | 0 (0%) | 24 (80%) | 24 | 24 |
| Photocopy of the table of content | 12 (17%) | 15 (50%) | 27 | 27 |
| Electronic Newsgroup | 16 (23%) | 18 (60%) | 34 | 34 |
| Websites  | 48 (69%) | 9 (30%) | 57 | 57 |
| WhatsApp Group Messages  | 9 (13%) | 14 (47%) | 23 | 23 |
| Library Orientation | 25 (36%) | 6 (20%) | 31 | 31 |
| Social media | 35 (50%) | 26 (87%) | 61 | 61 |

**Source,** Field Data (2023)

As shown in Table 4.3 out of 70 students who participated in answering this question 70 (100%) said that they became aware of the available electronic resources through library bulletins, 52 (72%) information literacy training, 48 (69%) website, 46 (66%) posters, 35 (50%) social media, 25 (36%) library orientation, 16 (23%) electronic newsgroup, 12 (17%) photocopy of the table of content and 9 (13%) WhatsApp Group Messages while out of 30 lecturers who participated in answering this question 28 (93%) said that they become aware of the available electronic resources through Library bulletins, 26 (87%) social media, 24 (80%) Email messages, 22 (73%) Posters, 18 (60%) Electronic newsgroup, 17 (57%) Information literacy training, 15 (50%) Photocopy of the table of content, 14 (47%) WhatsApp Group Messages, 9 (30%) website, 7 (23%) Telephones and 6 (20%) library orientation.

The findings show that 98 (98%) respondents mentioned library bulletins as the main method through which they become aware of the availability of electronic resources, the next method was information literacy training, that is 69 (69%), followed by posters 68 (68%), social media 61 (61%), website 57 (57%), electronic newsgroup 34 (34%), library orientation 31 (31%), Photocopy of the table of content 27 (27%), E-mail messages 24 (24%), WhatsApp Group Messages 23 (23%) and 7 (7%) Telephones. The methods mentioned by a few librarians were WhatsApp Group Messages 23 (23%), and Telephones 7 (7%).

During the interview, the head of the ICT department noted that it is very difficult to provide awareness for the library users because the library does not have good ICT infrastructure that can support them to provide awareness of the available e-resources for the majority of library users at the right time. On another hand through the interview with the head of ICT department, the researcher found out that the library makes efforts to build user awareness among its users but the problem is that not all library users pay attention to this information, As a result, there was a low level of existing awareness creation methods among users.

The same questions were asked to the Chief Librarian by the researcher during the interview and the answer was websites, WhatsApp Group Messages, Library Orientation, and Social media. *“The library provides awareness through library bulletins, website, library orientations, information literacy, and library bronchus to influence the use of available e-resources”.* (Chief Librarian at the NIT, 2023).These responses affirm the findings by Ternenge and Kashimana (2019) who point out that the usage of electronic resources is made compulsory, intensifying awareness campaigns concerning the availability, training on the use of electronic resources, and the problem of power outages be addressed. The results of this study show that user awareness creation methods provided for library users help to create user understanding of the available e-resources in the library.

**4.4 Level of Access and Usage of Electronic Resources at the NIT Library**

Information can only be useful if it is accessed and used by users to perform their academic and research endeavors. The second specific objective of this study sought to find out the level of access and usage of electronic resources by library users at the NIT library. These questions were directed to students and lecturers, Various questions were asked to respondents such as the use of available e-resources, the type of e-resources preferred to use mostly for research and assignments, frequency in use of those e-resources, purpose of use of available e-resources, if library users getting training in accessing those e-resources and if have adequate skills to search those e-resources.

**4.4.1 Use of the Available E-Resources**

Respondents were asked if they make use of available electronic resources. It was very important because it helped the researcher to answer the second objective by investigating the level of access and usage of electronic resources by library users at the NIT library. The question was also important because it helped to show that users were not only aware of the resources but they also used or did not use them sufficiently. Responses are summarized in Figure 4.1.

**Figure 4.1:** **Use of the Available E-Resources (N=70)**

**Source,** Field Data (2023)

The findings in Figure 4.1 above show that 66 (94%) students make use of available e-resources while 4 (6%) were not using those resources. On the other hand, of all lecturers, 30 (100%) indicated that they were making use of the available electronic resources. Ndubusi and Udo (2013) identified several factors that influence the use of electronic resources such as motivation, background, professional orientation, and individual characteristics of the users. Also, Shaqour and Daher (2010) regarding the factors that influence the use and opinion of students, looked at different factors: the personal characteristics of students, the characteristics of the electronic media, the provision of facilities and support by the university, and the course's requirements and teacher's directions. These were factors that were identified by the study respondents who used the available resources.

Again, Figure 4.1 shows that 4 (6%) students who did not use the available electronic resources said they lack searching skills and are also discouraged by slow internet connectivity which leads to time wastage during the use of those resources. These may be good reasons because the researcher's observation revealed that the library does not have a library computer room that can help facilitate the use of electronic resources for students. Also, have a few Local Area Internet Ports in the library in comparison to the number of library users. During the study period, the library has only 11 active computers and 3 other computers allocated to Library staff, thus making a total number of 14 computers. Additionally, there was one wireless connection in the reading room that did not manage to support all library users. This situation makes library users use their personal computers and personal internet through mobile hotspots.

Also, the researcher observed that students were not using e-resources to a larger extent due to challenges like shortage of awareness, inadequate bandwidth, shortage of power supply, and others.



Figure 4. 2: NIT Library Reading Area

**Source,** Field Data (2023)

## 4.4.2 Kind of E-resource Preferred Most by Respondents

The respondents were further asked to indicate the kind of electronic resources they prefer most in finding their information needs. This question was also important because it would assist the library management to know the information needs of the users and include the right resources in the collection. The findings are shown in Table 4.4 below.

Table 4.4 Multiple Responses on Kind of Preferred E-resources (n=100)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Kind of E-resources**  | **Students (n=70)** | **Lecturers (n=30)** | **Frequency** | **Percent %** |
| The Internet | 64 (91%) | 30 (100%) | 94 | 94 |
| Electronic Journals | 67 (96%) | 30 (100%) | 97 | 97 |
| Library Repository | 34 (49%) | 18 (60%) | 52 | 52 |
| Electronic books | 52 (74%) | 28 (93%) | 80 | 80 |
| NIT website | 12 (17%) | 8 (27%) | 20 | 20 |
| Scientific databases | 29 (41%) | 25 (83%) | 54 | 54 |
| CD-ROMs | 0 | 0 | 0 | 0 |

**Source,** Field Data (2023)

It can be seen from Table 4.4 above that 67 (96%) out of 70 students preferred to use e-journals, followed by 64 (91%) who preferred the internet, 52 (74%) preferred to use e-books, 34 (49%) preferred to use library repository and 29 (41%) scientific databases. While out of 30 lecturers who participated in answering this question 30 (100%) preferred to use e-journals, 30 (100%) Internet, 28 (93%) e-books, 25 (83%) scientific databases, and 18 (60%) library repository. The use of the NIT website and scientific databases received low responses from both groups.

The findings show that out of 100 respondents, 97 (97%) preferred to use E-journals while 94 (94%) preferred to use the Internet. The findings on journals were in line with that of Shionkar (2018) that e-journals play a major role in the effectiveness of teachers and students and also play a vital role in the improvement of academic achievement, scientific and technological research, and acceleration of the innovation process. Further, the findings suggest that it is important to ensure that libraries continue providing awareness and more training for the library users to encourage them to use e-resources available in the library.

Through the interview conducted by the Chief Librarian, the researcher was informed as follows;

*“Library users such as students and lecturers use material from subscribed databases and receive training during the library orientation. This helps to influence the use of electronic resources. Also, library users especially students do not all attend the library orientation fully”* (Chief Librarian NIT, 2023).

This indicates that the library needed to continue providing awareness and more training to encourage students and lecturers to make use of electronic resources.

## 4.4.3 How Often Library Users Use E-Resources

The students who used electronic resources were further asked to indicate how often they use e-resources at the NIT library. The results are presented in Figure 4.3.

Figure 4. 3 How Often Library Users Use E-Resources (n=70)

**Source,** Field Data (2023)

Looking at Figure 4.3 it can be seen that 56 (80%) of respondents used e-resources sometimes, 6 (8%) used them most of the time, 4 (6%) used e-resources rarely, 3 (4%) all the time and 1 (2%) of respondents never used e-resources.

## 4.4.4 Students’ Use of Electronic Resources

Students were asked to indicate the reasons on how often they use e-resources. Those who indicated “sometimes” gave the following reasons in Table 4.5, and those who “never” used mentioned reasons such as shortage of ICT skills, lack of awareness, network bandwidth, and technophobia.

Table 4. Students Use Electronic Resources (n=56) Multiple Responses

|  |  |  |
| --- | --- | --- |
| **Reasons given** | **Number of responses** | **Percent**  |
| Used library printed material and personal materials  | 36 | 64 |
| Inability to find the materials needed (searching skills) | 55 | 98 |
| Lack of awareness | 56 | 100 |
| Limited internet accessibility | 56 | 100 |
| Shortage of ICT skills (using a computer) | 38 | 68 |
| Limited time to use | 15 | 27 |
| Plagiarism issues  | 6 | 11 |

**Source,** Field Data (2023)

As would be seen from Table 4.5 above, out of 56 students 56 (100%) of those respondents who reported using the library e-resources sometimes indicate limited internet accessibility and lack of awareness, 55 (98%) inability to find the materials needed (searching skills), 38 (68%) shortage of ICT skills (using a computer), 36 (64%) used library printed materials and personal materials, 15 (27%) limited time to use and 6 (11%) plagiarism issues. The findings indicate that the library needs to create more strategies to attract its users to frequently use the available electronic resources. The findings of this study are in line with those by Shabir et al., (2019) study, which point out that lack of awareness with regard to the availability and use of e-resources at the college level, information literacy levels among the students, and internet facilities are some issues that need to be addressed as a priority by library policymakers. User orientation and awareness programs also need to be carried out by library management for better understanding and utilization of e-resources by the students.

The researcher was informed by the Chief Librarian that;

*“The library provides training to the library users including students on how to write a citation, how to use library web 2.0 technology such as Blogs, Information literacy training, and searching skills and others”.* (Chief Librarian NIT, 2023).

## 4.4.5 Reason for Using Electronic Resources

The availability of resources does not necessarily guarantee its usage. The researcherwas interestedunderstand reasons that made them choose to use electronic resources. Figures 4.4 and 4.5 represent the findings.

Figure 4. 1 Multiple Responses on Purpose to Use E-Resources (n=70)

**Source, Field Data (2023)**

Figure 4.4 shows that out of 70 students, 69 (98%) said they use those resources for writing a thesis/dissertation, 51 (73%) assignments, 44 (63%) current and general information, and 36 (51%) writing projects. Figure 4.5 shows that out of 30 Lecturers 26 (87%) gave a writing project as a purpose for use, 19 (63%) writing thesis/dissertation, 12 (40%) current and general information, and 8 (27%) assignment.

Figure 4. Multiple Responses on Purpose to Use E-Resources (N=30)

**Source, Field Data (2023)**

The results show that the available e-resources were used for different purposes such as writing a project as a purpose for use, writing a thesis/dissertation, current and general information, and assignments. The researcher was informed by the head of ICT that:

*“Most of the library users at NIT library are students so most of them use e-resources for academic purposes like answering their assignments and writing their research or projects another group of library users was the academic staff who use e-resources for different purposes like arranging their lectures or to do research to publish their papers.”* (Head of ICT Department NIT, 2023).

The findings indicate that library users use the library to accomplish their academic purposes and they prefer to use e-resources to access current materials at the right time. Likewise, it was observed by Deng (2010) that the use of electronic resources is very much dependent on the user and the purposes of using them. The awareness and the quality of the available electronic resources are the two important factors for the effective and efficient use of electronic resources. The findings of this study affirm the findings of Wagay and Dutta (2023) who posited that the majority of the students reported using electronic journal resources for various purposes including working on assignments, current awareness, and leisurely exploration of ongoing scientific debates through peer-reviewed papers. The researcher view that respondents need to get search techniques and skills that can help them to evaluate online materials depending on their academic needs.

**4.4.6 Level of Access and Usage of Electronic Resources**

Objective two of this study was to investigate the level of access and usage of electronic resources at the NIT library. The researcher assumed that limited searching skills among others compromised the access and usage of e-resources at the NIT library. It was important to establish the search skills of the students to determine whether it was an issue affecting the access and use of e-resources in the library. Students were asked to rate their searching skills in accessing e-resources in the library. Out of 70 students, 58 (83%) said were competent and had adequate skills to search for e-resources, while 12 (17%) students reported to lack competence and had no enough skills to search for e-resources available in the library. The researcher was also told by the NIT Head of ICT that there was shortage of ICT facilities that can help to create user awareness on searching e-resources in the library. This finding is in line with Nongkseh, Naga, and Chiron (2021) study which observed that information-searching skills are correlated with the use of e-resources. They also found that adequate training in information-searching skills increases the use of electronic information resources.

**4.4.7 Training in Accessing the Available E-Resources**

It is important to equip library users with the knowledge and skills in e-resources in terms of searching, retrieving, and evaluating more critically so that they become effective and efficient information users. The respondents were asked whether they received any training in accessing and using the available e-resources or not. The responses received are shown in Table 4.6.

Table 4. 6 Training in Accessing the Available E-Resources (n=100)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Received Training**  | **Students (n=70)** | **Lecturers (n=30)** | **Frequency** | **Percent** |
| Yes, I agree | 32 (46%) | 13 (43%) | 45 | 45 |
| No, I disagree | 38 (54%) | 17 (57%) | 55 | 55 |
| I don’t know | 0  | 0 | 0 | 0 |
| Total | 70 | 30 | 100 | 100 |

**Source, Field Data (2023)**

As shown in Table 4.6, 38 (54%) out of 70 students indicated do not receive training on the use of available e-resources in the library, and 32 (46%) students received training on the use of available e-resources in the library. Out of 30 lecturers who participated in answering this question, 17 (57%) did not receive training on the use of available e-resources in the library while 13 (43%) received training on the use of available e-resources in the library.

During the interview with NIT Head of ICT in the library, the researcher learned that the students and lecturers received internal training conducted in the library through library orientation on how library users can access available e-resources. Also, some of them have received training from different sources such as friends or they receive training such as information literacy training on how to conduct literature searches, how to make citations and references, and to write scientific papers outside the library. Also, the researcher was informed by the Chief Librarian that:

*“The library is in the process of conducting a special program for library user on how to use electronic resources such as literacy search, also current The library have conducted training for postgraduate students on how to write citations by using APA style, but on the way to conduct training on the using reference management (Mendeley) for all library users. Also, the library is in the process of conducting training on how to use library web 2.0 technology such as Blogs, DropBox, Google Drive, Information literacy training, and skills for scientific writing.* (Chief Librarian NIT, 2023).

These responses affirm the earlier findings by Gakibayo, Ikoja-Odongo, and Okello-Obura (2013) who said that if students are not encouraged to use electronic resources by their lecturers, and if information skills training occurs outside the curriculum, students will be less likely to make use of electronic resources for academic purposes. This calls for the university library to put in place more effective strategies for its sensitization and training of end-users.

## 4.5 Challenges in Accessing and Using Electronic Resources at NIT

The value of e-resources lies not only in availability but also in accessibility and usage. The third specific objective of this study sought to explore challenges faced in accessing and using electronic resources. This question is directed to students and lecturers. It was important to find those challenges because; through understanding them, it would be easy for NIT management to reach an informed decision on how to improve services. Additional, this assumes that if challenges that contribute to poor utilization of electronic resources in accessing and using are identified and well understood, realist alternatives and possible measures could be recommended to improve the situation. The responses are presented in Table 4.7.

Table 4.7 Multiple Responses on the Challenges Facing Access and Use of Electronic Resources (n=100)

|  |  |  |  |
| --- | --- | --- | --- |
| **Challenges** | **Students (n=70)** | **Lectures (n=30)** | **Total** |
| **Frequency** | **Percent** | **Frequency** | **Percent** | **Frequency** | **Percent** |
| High Internet cost | 7 | 10 | 12 | 40 | 19 | 19 |
| Internet inconsistency | 64 | 91 | 23 | 77 | 87 | 87 |
| Limited search skills | 66 | 94 | 4 | 13 | 70 | 70 |
| Lack of Assistive Technology Software | 2 | 3 | 2 | 7 | 4 | 4 |
| Lack of training on e-resources  | 63 | 90 | 27 | 90 | 90 | 90 |
| Limited ICT knowledge  | 8 | 11 | 0 | 0 | 8 | 8 |

**Source, Field Data (2023)**

Table 4.7 above shows that 66 (94%) out of 70 students indicate that limited searching skills were the main challenge facing effective access and use of e-resources. 64 (91%) internet inconsistency/low cost, 63 (90%) lack of training on e-resources, 8 (11%) limited knowledge, 7 (10%) high internet cost and 2 (3%) lack of Assistive Technology Software. Out of 30 lecturers who participated in answering this question 27 (90%) indicated that lack of training on e-resources was the main challenge facing effective access and use of e-resources. 23 (77%) internet inconsistency/low cost, 12 (40%) high internet cost, 4 (13%) limited searching skills and 2 (7%) lack of Assistive Technology Software.

The findings show that out of 100 respondents, 90 (90%) indicate that lack of training on e-resources was the main challenge facing effective access and use of e-resources. 87 (87%) internet inconsistency/low cost, 70 (70%) limited searching skills, 19 (19%) high internet cost, 8 (11%) limited knowledge, and 4 (4%) lack of Assistive Technology Software.

The first challenge mentioned by 90 (90%) of respondents was a lack of training on e-resources as a result of limited knowledge. Most of the time library users need to be trained on the different issues to increase their knowledge, especially in the usage of e-resources. This discourages library users who need to get knowledge on the access and usage of electronic resources as was observed by Leonard, Hamutumwa, and Mnubi-Mchombo (2020) in the literature. To solve the challenge Lwehabura (2008) suggested that it is important to equip students with the knowledge and skills to use EIRs in terms of searching, retrieving, and evaluating more critically so that students can become effective and efficient information users.

Another challenge reported by 87 (87%) of respondents was internet inconsistency/low cost. Slow internet connection speed as a result of low bandwidth. Most of the time the internet was inaccessible or there was internet downtime when there was a power outage. This discourages library users who are in the middle of downloading files.

The third challenge mentioned by 70 (70%) of respondents was that limited searching skills which hindered the access and use of available e-resources in the library. During the interview, the head of ICT in the library told the researcher that library users especially students received training during the start of the academic year but this was not enough for them to acquire enough search skills to enable them to use the available e-resources in the library. The researcher was also told by the Chief Librarian that there were limited searching skills in the use of e-resources. Tetteh (2018) and Leonard; Hamutumwa and Mnubi-Mchombo (2020) point out that lack of awareness of e-resources and information retrieval and searching skills, poor information technology infrastructure, such as limited access to computers, unstable network connectivity, and slow download speeds was the major challenges to the access and use of electronic resources in the library.

From the observation, it was established that there was low internet speed in the library and this situation was discouraging, time-consuming, and frustrating for library users especially when one needs to download information.

A final challenge was the lack of assistive technology software. This was identified by 4 (4%) respondents, this challenge leads to the users who have a disability. Sanaman and Kumar (2014) observed that computers in libraries are essential tools and assistive technology is the key to using them for people with disabilities. Assistive or Adaptive Technology (AT) involves a device or a computer-based accommodation that helps an individual with special needs to work around or compensate for a disability and enhance individual ability. It was learned by the researcher during an interview with the Chief Librarian that the library does have not any assistive technology software. This was the same observation when the researcher visited NIT library.

**4.6 Suggestions Made by the Respondents to Overcome the Identified Challenges**

The last objective of this study was to suggest strategies that increase the accessibility and usage of e-resources. The study sought to establish possible solutions to the challenges faced by library users in accessing electronic resources. One of the solutions mentioned by students and lecturers out of 100 respondents 98=98% was that NIT management should increase the library budget to support the acquisition of ICT infrastructures that can help to increase the number of networked computers in the library.

**4.6.1 Training and Awareness**

* The Institute should provide free ICT training to all library users as a part of library orientation. In connection to this, most library users indicate that the Institute should generate ICT courses for all library users, and courses should entail actual practice work as part of an assessment.
* The library includes online tutorials and guides. In connection with this, library users suggest that the library must have independent web pages that can help library users to get information.
* Library users also suggest that the library should improve awareness programs. They suggested the library's electronic resources be promoted through social media, and the Institute website, and distribute brochures and pamphlets.

**4.6.2 Improve Infrastructure**

Out of 100 respondents, 92 (92%) mentioned that the library should improve infrastructure like setting up a library computer room, provision of stable internet service, and regular inspection of all electrical switches to ensure they are all functioning. Also, the researcher was told by the Chief Librarian that;

*“The library has to depend on the local budget situation which can cause many things to be delayed because of the shortage of budget”.* (Chief Librarian NIT, 2023).

# **CHAPTER FIVE**

## SUMMARY, CONCLUSION, AND RECOMMENDATIONS

##

## 5.1 Introduction

## This chapter presents a summary, conclusion, and recommendations. The purpose of the study was to investigate the accessibility and usage of electronic resources by library users at the National Institute of Transport, Tanzania. This chapter is divided into five sections, an introduction, a summary of the key findings of the study, a conclusion of the study, recommendations, and possible areas for further study.

**5.2 Summary of the Key Findings of the Study**

**5.2.1 Availability of Electronic Resources in the Libraries**

The results indicate that the 100 respondents were aware of the available e-resources and understood the importance of the library in their academic endeavors. Also, during the observation made by the researcher, it was noted that the library has electronic resources acquired through COTUL which are accessed through the Institute Local Area Network (LAN). The results of the study indicate that NIT has subscribed to e-resources such as e-books, e-journals, and databases for theses which are key in providing current information to support teaching, learning, and research which are key functions of any academic Institution in the world.

**5.2.2 Level of Access and Usage of Electronic Resources at the NIT Library**

The findings revealed that that out of 70 students, 66 (94%) indicated that they make use of available e-resources while 4 (6%) were not using those resources. On another hand, all lecturers 30 (100%) indicated that they were making use of the available electronic resources.

Also, the findings revealed that 67 (96%) out of 70 students preferred to use e-journals, followed by 64 (91%) who preferred the internet, 52 (74%) preferred to use e-books, 34 (49%) preferred to use library e-resources and 29 (41%) scientific databases. While out of 30 lecturers who participated in answering this question 30 (100%) preferred to use e-journals, 30 (100%) Internet, 28 (93%) e-books, 25 (83%) scientific databases, and 18 (60%) library e-resources. The use of the NIT website and scientific databases received low responses from both groups.

Also, the findings revealed that 56 (80%) out of 70 respondents used e-resources sometimes, 6 (8%) used them most of the time, 4 (6%) used e-resources rarely, 3 (4%) all the time, and 1 (2%) of respondents never used e-resources.

It was informed that 58 (83%) out of 70 students said “Yes” have adequate skills to search e-resources, while 12 (17%) students said “No” have not enough skills to search e-resources available in the library.

As far as training in accessing the available e-resources is concerned the findings of the study revealed that 38 (54%) out of 70 students do not receive training on the use of available e-resources in the library, and 32 (46%) students received training on the use of available e-resources in the library. Out of 30 lecturers who participated in answering this question 17 (57%) did not receive training on the use of available e-resources in the library and 13 (43%) received training on the use of available e-resources in the library.

Also, the researcher was interested in getting information about the level of use of e-resources available in the library by students. The findings revealed that 15 (50%) out of 30 respondents indicated that the level of use of e-resources by students at the NIT library is low, followed by 7 (23%) who said high, 5 (17%) said very low and 3 (10%) said very low.

**5.2.3 Challenges Facing Access and Use of Electronic Resources**

The study identified challenges facing access and use of electronic resources which include limited knowledge of the use of ICT facilities as the main challenge facing effective access and use of e-resources, lack of training on e-resources, limited search skills, high internet cost, internet inconsistenc, and lack of Assistive Technology Software. Others were inadequate ICT facilities such as computers, and network bandwidth.

**5.2.4 Suggestions Made by the Respondents to Overcome the Identified Challenges**

The findings revealed that out of 100 respondents, 98 (98%) suggested to NIT management to increase the library budget to enhance effective access and use of e-resources. Also, respondents suggested free ICT training to all library users as a part of library orientation, online tutorials, and guides and improved awareness programs through social media, the Institute website, and the distribution of brochures and pamphlets. The last suggestion was the need for

improved infrastructure like setting up a library computer room, provision of stable internet service, and regular inspection of all electrical switches to ensure they are all functioning.

## 5.3 Conclusion

The study establishes that although e-resources are used to support library users in their academic and research information, these e-resources were not used to an optimum level to support library users due to various reasons as established by the findings. Availability is only as good as the resources can be afforded (e.g., number of subscribed e-resources, number of computers, and stability of the internet), the ability to access e-resources and the infrastructures that support access and use. The conclusion from this study was lack of user training on the usage of e-resources hinders the utilization of e-resources in the library. There was evidence that some library users 8 (8%) were not aware of the availability of e-resources in the library.

On the level of access and usage of electronic resources, the study found that there was generally low usage of e-resources by students which may be attributed to inadequate bandwidth, shortage of power supply, and limited skills to access and use e-resources.

Concerning the challenges facing access and use of electronic resources in the library, both students and lecturers mentioned inadequate training, bandwidth, limited search skills, and high internet cost, as some of the key challenges of using the e-resources. The general conclusion of this study is that library users could exploit the benefits of e-resources in the library, however, several challenges need to be addressed beforehand.

## 5.4 Recommendations

Many factors hindered the accessibility and usage of electronic resources by library users at the National Institute of Transport, Tanzania. These factors included; lack of training on e-resources, internet inconsistency, inadequate computers, inadequately skilled, inadequate assistive technology software, lack of assistive technology skills, and limited space.Based upon the above factors the following recommendations were made to librarians, the Institution administration, government policymakers, and library users for enhancing increased accessibility and use of electronic resources in the library.

### **5.4.1 Recommendations to Librarians**

* The library should also look at the possibility of introducing the use of Web 2.0 technologies such as Blogs, Facebook, and WhatsApp to promote library electronic resources to library users.
* User education programs:To develop students’ skills in accessing e-resources, library instruction, and orientation training should be given more priority*.* Efforts should be made to ensure the training receives enough support for all library users to participate in such training.

**5.4.2 Recommendations to Institute Administration**

* The Institute should provide the necessary ICT infrastructure by increasing the number of networked computers in the library to make sure that there is frequent maintenance of ICT facilities. Owing to competing priorities to be met by the Institute budget, it is not possible to buy enough computers for library users. So, library users should be advised to buy their personal computers.
* The Institute should provide free ICT training to all new students as part of orientation. The course should entail actual practical work as part of the assessment. It should ensure ICT training materials and a qualified workforce are in place to support the usage of e-resources in the library.
* The Institute management should provide adequate budgets to the library to subscribe to a variety of scholarly resources and digitize the local / institution-produced materials.

**5.4.3 Recommendation to the Government Policymakers**

* Government should equip Academic libraries with the enabling infrastructure such as adequate power supply, effective internet connectivity, etc. that will encourage the usage of e-resources by library users.
* To increase access by library users, the study recommends that the government should extend Tax relief to ICTs and related services, as well as hardware, to enable many library users to own laptops and smartphones/iPads.

**5.4.4 Recommendation to the Library Users**

* Library users should attend and participate in library orientation and library skills training to increase skills in the use of computer applications and online library e-resources.

## 5.5 Areas for Further Study

This study focused on the accessibility and usage of electronic resources by library users at the National Institute of Transport, Tanzania. There is a need to conduct a similar study on the special libraries in Tanzania to determine the challenges they face and determine the information needs and other libraries in Tanzania. Moreover, there is a need to conduct a study on the information needs of special library users, focusing on the accessibility and usage of e-resources.

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## APPENDICES

## Appendix I: Questionnaire for Students at NIT

**Dear Respondents,**

My name is Victor Julias, a student of The Open University of Tanzania, pursuing a Master's Degree in Library and Information Management. Currently, I am conducting a research study entitled " ***Accessibility and Usage of Electronic Resources by Library Users at the National Institute of Transport, Tanzania”.*** I kindly request you fill in the attached questionnaire and return it to me. Your participation and contribution to this study will be more appreciated and valued.

Information presented in this questionnaire will only be used for this study. In the description of the results of this study, no identification of individual answers will be made. Individual answers will be kept confidential and will only be used for this study.

Thank you in advance for your cooperation and support on this.

**Kindly fill in the blanks or tick where applicable**

**Section A: Background information on respondents**

1. Name of programme: ­­…………………………………………
2. Gender
3. Male ( )
4. Female ( )
5. Age ………………………………………………………..
6. Education Level pursuing
7. Ph.D. ( )
8. Masters ( )
9. Degree ( )
10. Diploma ( )
11. Certificate ( )
12. Others ( )

**Section B: Accessibility and Usage of Electronic Resources**

1. Are you aware of the available e-resources at the NIT library?
2. Aware ( )
3. Not aware ( )
4. If the answer is “Yes” how did you become aware of the available e-resources at the NIT library? (Multiple answers are allowed)
5. Information Literacy Training ( )
6. Through Library Bulletins ( )
7. Posters ( )
8. Telephones ( )
9. Email Messages ( )
10. Library orientation ( )
11. Electronic Newsgroup ( )
12. Websites ( )
13. WhatsApp Group Messages ( )
14. Library Orientation ( )
15. Social media ( )
16. For any other, please specify……………………………
17. Do you use e-resources at the NIT library?
18. Use ( )
19. Not use ( )
20. If No, Why?..................................................................................................
21. If Yes, which of the following sources do you use most for your research and assignments? (Please tick the applicable)
22. CD-ROMs ( )
23. The Internet ( )
24. Electronic journals ( )
25. Library Repository ( )
26. Electronic books ( )
27. NIT website ( )
28. Scientific databases ( )
29. All of the above ( )
30. How often do you use electronic sources?
31. All the time ( )
32. Most of the time ( )
33. Sometimes ( )
34. Rarely ( )
35. Never ( )
36. For what purpose do you use the electronic resources at the NIT library? (Please Tick the applicable)
37. Writing projects ( )
38. Assignment ( )
39. Current and general information ( )
40. Writing thesis/dissertation ( )
41. Leisure ( )
42. All of the above ( )
43. Do you have adequate skills to search electronic resources?
44. Competent ( )
45. Moderate ( )
46. Not competent ( )
47. Does the NIT library provide internal training on accessibility and use of e-resources for library users?
48. Yes, I agree ( )
49. No, I disagree ( )
50. I don’t know ( )
51. What challenges do you face when accessing and using electronic resources in libraries?
52. High Internet cost ( )
53. Internet inconsistency ( )
54. Limited search skills ( )
55. Lack of Assistive Technology skills ( )
56. No access to PC ( )
57. Inadequate Assistive Technology software ( )
58. Lack of training on e-resources ( )
59. Limited knowledge ( )
60. Other (please mention) ………………………………………
61. What are your suggestions on strategies that you think will increase accessibility and usage of electronic resources by students at the NIT Library?

…………………………………………………………………………………………………………………………………………………………………………

## Appendix II for Lecturers at NIT

**Dear Respondents,**

My name is Victor Julias, a student of The Open University of Tanzania, pursuing a Master's Degree in Library and Information Management. Currently, I am conducting a research study entitled " ***Accessibility and Usage of Electronic Resources by Library Users at the National Institute of Transport, Tanzania”.*** I kindly request you fill in the attached questionnaire and return it to me. Your participation and contribution to this study will be more appreciated and valued.

Information presented in this questionnaire will only be used for this study. In the description of the results of this study, no identification of individual answers will be made. Individual answers will be kept confidential and will only be used for this study.

Thank you in advance for your cooperation and support on this.

**Kindly fill in the blanks or tick where applicable**

1. Gender
2. Male ( )
3. Female ( )
4. Age ………………………………………………………..
5. Education Level pursuing
6. Ph.D. ( )
7. Masters ( )
8. Degree ( )
9. Other (please mention) ………………………………………
10. In which department do you teach at NIT
11. TET ( )
12. BES ( )
13. LTS ( )
14. LIS ( )
15. MHSS ( )
16. CCT ( )
17. Aviation ( )

**Section B: Accessibility and Usage of Electronic Resources**

1. Are you aware of the available e-resources at the NIT library?
2. Yes ( )
3. No ( )
4. If the answer is “Yes” how did you become aware of the available e-resources at NIT library? (Multiple answers are allowed)
5. Information Literacy Training ( )
6. Through Library Bulletins ( )
7. Posters ( )
8. Telephones ( )
9. Email Messages ( )
10. Library orientation ( )
11. Electronic Newsgroup ( )
12. Websites ( )
13. WhatsApp Group Messages ( )
14. Library Orientation ( )
15. Social media ( )
16. For any other, please specify……………………………………
17. Do you use e-resources at the NIT library?
18. Use ( )
19. Not use ( )
20. If No, Why?..................................................................................................
21. If Yes, which of the following sources do you use most for your research and assignments? (Please tick the applicable)
22. CD-ROMs ( )
23. The Internet ( )
24. Electronic journals ( )
25. Library Repository ( )
26. Electronic books ( )
27. NIT website ( )
28. Scientific databases ( )
29. All of the above ( )
30. For what purpose do you use the electronic resources at the NIT library? (Please Tick the applicable)
31. Writing projects ( )
32. Assignment ( )
33. Current and general information ( )
34. Writing thesis/dissertation ( )
35. Leisure ( )
36. All of the above ( )
37. Does the NIT library provide internal training on accessibility and use of e-resources for library users?
38. Yes, I agree ( )
39. No, I disagree ( )
40. I don’t know ( )
41. Which of the following challenges do you think hinders the accessibility and use of electronic resources? (Multiple answers are allowed)
42. Inadequate bandwidth ( )
43. Internet inconsistency /low speed ( )
44. Limited search skills ( )
45. Lack of Assistive Technology skills ( )
46. Lack of awareness ( )
47. Lack of fund ( )
48. Lack of training on e-resources ( )
49. Lack of training ( )
50. Other (please mention) …………………………………………
51. In your opinion, what should be done to solve identified challenges?
52. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
53. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
54. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
55. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Appendix III

## Interview Guide for Chief Librarian at NIT

1. Are the electronic resources in your library adequate in supporting users?

information needs?

1. What is the response of the library users on awareness creation methods?
2. What do you do if the response is low?
3. What kind of electronic resources do you think are mostly used by library users?
4. What challenges do you face in providing electronic resources to library users?
5. Kindly suggest any solutions to overcome the identified challenges.

## Appendix IV

## Interview Guide for Head of ICT Department at NIT

1. How do you make library users aware of the available electronic resources in the library?
2. What ICT facilities are available in the library for access by library users?
3. Do think library users take advantage of the available electronic resources when pursuing their studies?
4. Do you provide any training to library users on how to access and use e-resources?
5. Is your library experiencing difficulties in maintaining its e-resources subscription?
6. What suggestions do you have, regard to accessibility and usage of e-resources by library users?

## Appendix V

## Observation Guide

1. Availability of ICT facilities in the library, including their capability
2. The electronic resources available in the library, such as the Electronic catalog, E-papers, E-journals, and E-books.
3. Use of electronic resources by library users
4. Any challenges that library users face in accessing and using electronic resources in the library.
5. Availability of multiple power supply. E.g. Solar power, TANESCO
6. Provisional username and password in accessing electronic resources.