THE SCHOOL OF LIBRARY ARCHIVES AND DOCUMENTATION STUDIES (SLADS).

RESEARCH REPORT ON;

THE CONTRIBUTION OF ICT IN PROVISION OF ONLINE REFERENCE SERVICE IN ACADEMIC LIBRARY: A CASE STUDY OF THE AGENCY FOR THE DEVELOPMENT OF EDUCATIONAL MANAGEMENT (ADEM)BAGAMOYO.

BY

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A Research Report Submitted at The School of Library, Archives and Documentation Studies (SLADS) as a Partial Fulfillment of Requirements of the Award of the ordinary Diploma in Library and Information Management.

August,2026

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CERTIFICATION

The undersigned certify that he has read and hereby recommends for acceptance by the School of Library, Archives and Documentation Studies (SLADS) a research report entitled “The Contribution of ICT in Provision of Online Reference Service in Academic Library: A Case Study of the Agency for the Development of Educational Management (ADEM) Bagamoyo,” as a partial fulfillment of the requirements for the award of Diploma in Library and Information Studies.

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I, Benson E. Mtenga, declare that this research report is my own original work and that it has not been presented, and will not be presented, to any other institution for the award of an Ordinary Diploma or any other award.

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GOD bless them all.

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DEDICATION

I dedicate this research work to my parents and relatives, who gave me financial and psychological support throughout my studies.

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LIST OF ABBREVIATIONS

ADEM – Agency for the Development of Educational Management

ICT – Information and Communication Technology

LMS – Library Management System

OPAC – Online Public Access Catalogue

SLADS – School of Library, Archives and Documentation Studies

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ABSTRACT

This study examined the contribution of Information and Communication Technology (ICT) in the provision of online reference services in academic libraries, using the Agency for the Development of Educational Management (ADEM) Bagamoyo as a case study. The study was guided by four specific objectives: to identify the ICT tools commonly used in providing online reference services, to assess the role of ICT in enhancing the effectiveness of such services, to examine the challenges facing the use of ICT in online reference service provision, and to suggest strategies for improving ICT-based online reference services at ADEM-Bagamoyo. A descriptive research design and a mixed research approach were adopted, and data were collected from 27 respondents, comprising students, library staff and ICT support staff, through questionnaires and interviews.

The findings revealed that ADEM-Bagamoyo library relies on a combination of general-purpose ICT tools, including email, the library website, OPAC, social media platforms and live chat services, rather than a single dedicated Library Management System, to deliver online reference services. ICT was found to enhance the effectiveness of reference services mainly through faster and remote access to information, improved communication and wider access to digital resources. Nonetheless, the study identified several challenges affecting effective ICT use, including poor internet connectivity, inadequate ICT infrastructure, limited financial resources, insufficient ICT skills and low user awareness.

The study concludes that ICT makes a meaningful contribution to the provision of online reference services at ADEM-Bagamoyo, although its full potential has not yet been realized due to the challenges identified. The study recommends investment in ICT infrastructure, continuous staff training, improved internet connectivity, increase d user awareness and the eventual acquisition of a dedicated Library Management System to strengthen the delivery of online reference services in academic libraries.

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TABLE OF CONTENT

CERTIFICATION i
DECLARATION AND COPYRIGHT ii
ACKNOWLEDGEMENT iii
DEDICATION iv
LIST OF ABBREVIATIONS v
ABSTRACT vi
CHAPTE R ONE 1
INTRODUCTION AND BACKGROUND OF THE STUDY 1
1.0 Introduction 1
1.1 Background of the Study 1
1.2 Statement of the Problem 3
1.3 Objectives of the Study 4
1.3.2 Specific Objectives 4
1.4 Research Questions 4
1.5 Significance of the Study 4
1.6 Scope of the Study 5
1.7 Limitations of the Study 5
1.7.1 Inadequate Funding 5
1.7.2 Limited Research Experience 5
1.7.4 Time Constraints 6
1.8 Operational of Key Terms 6
1.8.1 Information and Communication Technology (ICT) 6
1.8.2 Online Reference Services, ... 6
1.8.4 Information technology communication (ICT) Tools 7
..... 7
CHAPTER TWO 8
LITERATURE REVIEW 8
2.0 Introduction 8
2.1 ICT Tools Used in the Provision of Online Reference Service. 8
2.2 Role of ICT in Enhancing the Effectiveness of Online Reference Services 9
2.3 Challenges Facing the Use of ICT in Online Reference Services 10
2.4 Strategies for Improving ICT-Based Online Reference Services 11

SLADS Research Hub · SLADS/2026/00009 · repository.slads.sc.tz

2.5 Research Gap 12
CHAPTER THREE 13
RESEARCH METHODOLOGY 13
3.0 Introduction 13
3.1 Research Design 13
3.2 Research Approach/Type 13
3.3 Area of the Study 14
3.4 Population of the Study 14
3.5 Sample Size 15
3.5.1 Sampling Techniques 15
3.5.2 Simple Random Sampling Technique 15
3.5.3 Purposive Sampling Technique 15
3.6 Data Collection Methods 16
3.6.1 Primary Data 16
3.6.2 Secondary Data 16
3.7 Data Collection Instruments 16
3.7.1 Questionnaire Guide 17
3.7.2 Interview Guide 17
3.7.3 Data Quality Control 17
3.8 Source of Data 17
3.9 Ethical Considerations 18
3.10 Data Processing and Analysis 18
CHAPTER FOUR 19
DATA ANALYSIS, PRESENTATION AND DISCUSSION 19
4.0 Introduction 19
4.1 Response Rate 19
4.2 Demographic Information of Respondents 20
4.2.1 Respondents' Gender 20
4.2.2 Respondents' Age 21
4.2.3 Category of Respondents 23
4.2.4 Education Level of Respondents 24
4.2.5 ICT Tools Commonly Used in Providing Online Reference Services 25
4.2.6 Role of ICT in Enhancing the Effectiveness of Online Reference Services 26
4.2.7 Challenges Facing the Use of ICT in Online Reference Services 26
4.2.8 Strategies for Improving ICT-Based Online Reference Services 27

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CHAPTER FIVE 29
SUMMARY, CONCLUSION AND RECOMMENDATIONS 29
5.0 Introduction 29
5.1 Summary of the Findings 29
5.1.1 ICT Tools Commonly Used in Providing Online Reference Services 30
5.1.2 Role of ICT in Enhancing the Effectiveness of Online Reference Services 31
5.1.3 Challenges Facing the Use of ICT in Online Reference Services 31
5.1.4 Strategies for Improving ICT-Based Online Reference Services 31
5.2 Conclusion 32
5.3 Recommendations 33
5.4 Areas for Further Study 34
REFERENCES. 35
BIBLIOGRAPHY 37
APPENDIX I 39
QUESTIONNAIRE FOR LIBRARY STAFF AND STUDENTS 39
Section 1: Introduction 39
APPENDIX II 42
INTERVIEW GUIDE FOR LIBRARIANS AND ICT STAFF 42
BUDGET 43
APPENDIX IV 44
REAEARCH WORK PLAN/ SCHEDULE TIME FRAME 44

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LIST OF TABLES

Table 4.6: ICT Tools Used in Providing Online Reference Services---------- 25
Table 4.7: Contribution of ICT to Online Reference Services (N=27) ---------- 26
Table 4.8: Challenges Facing the Use of ICT (N=27) ---------- 27
Table 4.9: Strategies for Improving ICT-Based Online Reference Services (N=27) ---------- 28

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LIST OF FIGURES

Figure 4.2: Information on Gender of Respondents (N=27) ---------- 21

Figure 4.3: Distribution of Respondents by Age (N=27) ---------- 22

Figure 4.4: Category of Respondents (N=27)---------- 23

Figure 4.5: Education Level of Respondents (N=27)---------- 24

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CHAPTE R ONE

INTRODUCTION AND BACKGROUND OF THE STUDY.

1.0 Introduction

This chapter presented the introduction and background of the study, providing the foundation for understanding the focus and context of the research. It outlined the purpose of the study, the research problem, objectives, research questions, significance, scope, limitations, and key operational definitions. The study examined the contribution of Information and Communication Technology (ICT) in the provision of online reference services in academic libraries, with a specific focus on ADEM–Bagamoyo. The chapter established the rationale for the study and highlighted the importance of ICT in enhancing access to reference services in academic library environments.

1.1 Background of the Study

The rapid advancement of Information and Communication Technology (ICT) has significantly transformed the way information is generated, organized, accessed, and disseminated across the world. According to Chowdhury, (2016). The development of digital technologies has particularly influenced the operations and service delivery of libraries, especially academic libraries that support teaching, learning, and research in higher learning institutions. Traditionally, library services were provided through physical collections and face-to-face interactions between librarians and users. However, the integration of ICT has enabled libraries to offer digital services that allow users to access information resources and receive assistance remotely.

Globally, academic libraries have adopted various ICT tools such as online databases, institutional repositories, electronic journals, and virtual reference systems to improve information access and service delivery. One of the major developments brought by ICT in libraries is the introduction of online reference services. Online reference services

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enable librarians to assist users through electronic communication platforms such as email, live chat, and library websites. These services allow users to access professional assistance without being physically present in the library, thereby improving accessibility and efficiency in information service delivery (American Library Association, 2010). According to Tenopir (2018), the adoption of online reference services has enhanced communication between librarians and users and improved the speed of information retrieval in academic libraries.

According to Kumar, R. (2019). Explain That In Africa, academic libraries have increasingly recognized the importance of ICT in improving library services and supporting academic activities. Many universities and higher learning institutions have introduced ICT-based systems such as Online Public Access Catalogues (OPAC), digital repositories, and electronic information resources to facilitate access to scholarly information (Aina, 2014). The integration of ICT in African academic libraries has helped expand access to knowledge and support research and innovation. However, despite these developments, many academic libraries in Africa still face several challenges, including inadequate ICT infrastructure, insufficient financial resources, and limited ICT skills among library staff (Mutula, 2016).

In Tanzania, the adoption of ICT in academic libraries has grown in recent years due to the expansion of higher education and the increasing demand for digital information services. Higher learning institutions have been investing in ICT infrastructure such as internet connectivity, computers, and electronic information resources to enhance the quality of library services. These developments have enabled libraries to introduce online reference services that allow students and researchers to obtain information support electronically (Lwoga, 2013). Nevertheless, some academic libraries still experience difficulties in implementing effective online reference services due to limited ICT facilities, inadequate training for library personnel, and low awareness among users about the availability of these services (Mtega & Benard, 2013).

The Agency for the Development of Educational Management (ADEM), located in Bagamoyo, Tanzania, is one of the higher learning institutions responsible for providing

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education and training in educational leadership and management. The institution has an academic library that supports teaching, learning, and research activities by providing access to information resources for students and staff. In order to improve the delivery of library services, the ADEM library has been adopting ICT tools such as computers, internet connectivity, and electronic information resources to facilitate online access to information.

Despite the increasing use of ICT in academic libraries, the extent to which ICT contributes to the provision of online reference services in some institutions remains unclear. It is therefore important to examine how ICT tools support online reference services and to identify the challenges affecting their effective implementation. This study therefore aimed to investigate the contribution of ICT in the provision of online reference services in academic libraries using The Agency for the Development of Educational Management (ADEM) – Bagamoyo

1.2 Statement of the Problem

Academic libraries play a critical role in supporting teaching, learning, and research by providing effective reference services. With the increasing number of students, distance learners, and digital information needs, reliance on traditional face-to-face reference services alone has become inadequate. ICT offers opportunities for libraries to provide online reference services that are timely, flexible, and accessible regardless of location.

Despite the availability of ICT tools, many academic libraries, particularly in developing countries, face challenges in fully utilizing ICT for online reference services. These challenges include limited ICT infrastructure, insufficient funding, lack of skilled personnel, and low awareness among users about available online reference services (Lee & Kim, 2021). At ADEM–Bagamoyo, it is not clearly documented how ICT is being used to support online reference services and the extent to which these services meet users' information needs. This gap may limit effective access to reference support for students and academic staff. Therefore, this study sought to examine the contribution of ICT in the provision of online reference services in the academic library at ADEM–Bagamoyo.

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1.3 Objectives of the Study

Research objectives described the specific goals that the study intended to achieve.

1.3.1 General Objective

The general objective of this study was to examine the contribution of ICT in the provision of online reference services in academic libraries, with specific reference to ADEM–Bagamoyo.

1.3.2 Specific Objectives

The specific objectives of the study are:

i. To assess the commonly used ICT tools in providing online reference services.
ii. To examine the role of ICT in enhancing the effectiveness of online reference services at ADEM–Bagamoyo.
iii. To explore the challenges facing by academic library in using ICT to provide online reference services.
iv. To suggest possible recommendations for improving the use of ICT in the provision of online reference services at ADEM–Bagamoyo.

1.4 Research Questions

The study was guided by the following research questions:

i. What ICT tools commonly used in providing online reference services?
ii. How does the use of ICT contribute to the effectiveness of online reference services?
iii. What challenges facing when using ICT for online reference services?
iv. What possible strategies can be recommended to improve ICT-based online reference services at ADEM–Bagamoyo library?

1.5 Significance of the Study

The findings of this study were beneficial to academic libraries by providing insights into how ICT can enhance online reference service delivery. The study helped library

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management and policymakers understand the importance of investing in ICT infrastructure and staff training. It also assisted librarians in improving service delivery and meeting users' information needs more effectively. Additionally, the study contributed to existing academic literature on ICT application in library reference services and served as a reference for future researchers.

1.6 Scope of the Study

The study focused on the contribution of ICT in the provision of online reference services in academic libraries, specifically at ADEM–Bagamoyo. The research involved library staff, students, and academic staff as respondents. The study was conducted within a specified period and focused only on ICT-related reference services offered by the academic library.

ADEM–Bagamoyo was selected as the study area because it is a higher learning institution that has adopted ICT in supporting library services and academic activities. Therefore, the institution provides a relevant environment for examining how ICT contributes to the provision of online reference services in an academic library setting.

1.7 Limitations of the Study

When conducting this study, certain limitations were expected to arise:

1.7.1 Inadequate Funding

The budget allocated for this study is limited and may not cover all necessary research activities, including data collection, transport, and materials. To address this limitation, essential activities were prioritized and focus was placed on the most critical aspects of the study to ensure successful completion (Creswell, 2018).

1.7.2 Limited Research Experience

This study represents a first major research project, which may affect some aspects of study design and data collection. This limitation was mitigated by seeking guidance and

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supervision from experienced academic staff and library specialists at ADEM–Bagamoyo (Mugenda & Mugenda, 2012).

1.7.4 Time Constraints

The study was conducted within a specific timeframe, which limited the depth of data collection and analysis. Efficient data collection methods were adopted to maximize the use of available time.

Despite these limitations, the study provided valuable insights into the contribution of ICT to online reference services in academic libraries, particularly at ADEM–Bagamoyo, and informed strategies for improving ICT-based library services.

1.8 Operational of Key Terms

1.8.1 Information and Communication Technology (ICT)

ICT refers to the use of digital tools, computers, software, internet systems, and communication networks to manage, store, and deliver information (Chowdhury, 2016). In the context of this study, ICT includes tools used for online reference services, such as email, live chat, OPACs, electronic databases, and library websites.

1.8.2 Online Reference Services,

Online reference services are professional library services provided to users through electronic platforms, enabling users to receive information support remotely, Pomerantz & Luo, (2006). These services include assistance via email, live chat, web forms, and video conferencing

1.8.3 Academic Library

An academic library is a library within a higher learning institution that supports teaching, learning, and research by providing access to information resources. In this study, the focus is on the ADEM–Bagamoyo Academic Library (Tenopir, 2018).

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1.8.4 Information technology communication (ICT) Tools

ICT tools are digital platforms and applications used in providing online reference services. These include OPACs, electronic databases, email systems, live chat platforms, social media applications, and video conferencing tools (Kern, 2018).

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CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

According to Hart (2018), literature review is a systematic examination of scholarly publications relevant to a particular research topic. A literature review helps researchers understand existing knowledge, identify theoretical perspectives, and reveal gaps that justify further investigation. In academic research, the literature review also provides a conceptual framework that guides data collection and analysis. This chapter reviews literature related to the contribution of Information and Communication Technology (ICT) in the provision of online reference services in academic libraries. The review focuses on the concept of ICT in academic libraries, online reference services, ICT tools used, the contribution of ICT to reference service delivery, challenges encountered, and the research gap.

2.1 ICT Tools Used in the Provision of Online Reference Service.

Information and Communication Technology tools are essential in facilitating online reference services in academic libraries. These tools allow librarians to communicate with users, respond to information requests, and provide access to digital information resources. The use of ICT tools has expanded the scope of library services by enabling libraries to support users beyond the physical library environment.

According to Kern (2018), several ICT tools are commonly used in providing online reference services. These include library websites, Online Public Access Catalogues (OPACs), electronic databases, email systems, live chat software, and social media platforms. These tools allow librarians to provide timely responses to user queries and guide users in locating relevant information resources.

Email is one of the earliest and most widely used ICT tools for providing online reference services. It allows users to submit questions to librarians and receive responses with

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detailed explanations and links to relevant resources. McClure and Lankes (2017) state that email reference services are widely used because they are simple, accessible, and cost-effective.

Live chat systems are also commonly used to provide real-time communication between librarians and users. According to Pomerantz and Luo (2006), live chat services enable librarians to provide immediate assistance and guide users in information searching processes. This form of communication improves user satisfaction because it allows quick responses to reference questions.

Social media platforms such as WhatsApp, Facebook, and Twitter have also become important tools for online reference services. Corrall (2019) notes that social media platforms are widely used by students and therefore provide convenient channels for communication between librarians and users.

Additionally, video conferencing tools such as Zoom, Microsoft Teams, and Google Meet have enhanced online reference services by allowing librarians to conduct virtual consultations and information literacy training sessions. Breeding (2017) emphasizes that the integration of such digital tools enables libraries to provide flexible and interactive services to their users

2.2 Role of ICT in Enhancing the Effectiveness of Online Reference Services

ICT plays a crucial role in enhancing the effectiveness of online reference services in academic libraries. One of the key contributions of ICT is improving access to information services. Through digital technologies, library users can obtain reference assistance without physically visiting the library.

According to Tenopir and King (2020), ICT enables academic libraries to extend their services to remote users, including distance learners and off-campus researchers. This increases accessibility and ensures that users receive information support regardless of their location.

Another important role of ICT is improving the speed and efficiency of reference services. Digital databases, electronic journals, and online catalogues allow librarians to retrieve

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relevant information quickly and provide accurate responses to users' queries. Lankes (2016) argues that ICT-supported reference services allow librarians to provide more personalized and user-centered assistance.

ICT also enhances the quality of reference services by providing access to a wide range of digital information resources. Academic libraries subscribe to electronic databases and digital repositories that contain scholarly information required for academic research (Corrall, 2019).

Furthermore, ICT improves communication between librarians and users. Online communication tools allow continuous interaction and follow-up support, which strengthens the relationship between library staff and users. Connaway and Radford (2017) found that users value the convenience and flexibility offered by online reference services.

Additionally, the use of ICT has improved user satisfaction with library services. According to Breeding (2017), users prefer online reference services because they provide quick responses, easy access to information, and flexible communication channels.

2.3 Challenges Facing the Use of ICT in Online Reference Services

Despite the benefits of ICT in academic libraries, several challenges affect its effective implementation in providing online reference services. One of the major challenges is inadequate ICT infrastructure. Many academic libraries, particularly in developing countries, experience unreliable internet connectivity, outdated computer systems, and limited technological resources (Issa & Aliyu, 2019).

Another significant challenge is the lack of ICT skills among library staff. Online reference services require librarians to have technical knowledge and competencies in using digital communication tools and electronic databases. However, some librarians may lack adequate training and experience in using these technologies effectively (Quadri & Quadri, 2018).

Financial constraints also present major challenges for academic libraries. The acquisition, maintenance, and upgrading of ICT equipment and software require significant financial

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investment. According to Breeding (2017), limited financial resources often restrict the ability of academic libraries to implement advanced ICT-based services.

Low awareness among users about available online reference services is another challenge. Some students and researchers may not be aware that libraries offer online assistance through digital platforms. As a result, they continue to rely on traditional face-to-face reference services (Connaway & Radford, 2017).

Security and privacy concerns also affect the use of ICT in library services. Libraries must ensure that users' personal information and communication are protected when using digital platforms. Corrall (2019) emphasizes that proper security measures are necessary to protect digital library systems from cyber threats.

2.4 Strategies for Improving ICT-Based Online Reference Services

Several strategies have been suggested in the literature to improve ICT-based online reference services in academic libraries. One important strategy is investing in reliable ICT infrastructure. Libraries should ensure the availability of stable internet connectivity, modern computer systems, and updated digital communication tools (Breeding, 2017).

Another important strategy is providing continuous training and professional development for librarians. According to Corrall (2019), training programs help librarians improve their technical skills and adapt to new technological developments in library services.

According to Tenopir & King,(2020).User education is also essential for increasing the utilization of online reference services. Libraries should organize orientation programs and information literacy training sessions to inform students and academic staff about available digital services

Academic libraries should also develop policies and guidelines to ensure effective management of online reference services. These policies help standardize service delivery and maintain quality standards in digital communication (Lankes, 2016).

Collaboration among academic libraries is another strategy for improving ICT-based services. By sharing knowledge, resources, and best practices, libraries can improve their ability to implement digital services efficiently (Kern, 2018).

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2.5 Research Gap

Although many studies have examined the adoption of ICT in academic libraries, limited research has specifically focused on the contribution of ICT to the provision of online reference services at individual institutional levels, particularly in developing countries. Most existing studies focus on the general use of ICT in library operations without assessing its direct impact on reference service effectiveness and user satisfaction. Furthermore, there is limited empirical evidence regarding how ICT tools are utilized in specific academic libraries and the challenges encountered in their implementation.

Therefore, this study sought to fill this gap by examining the contribution of ICT in the provision of online reference services at the academic library of ADEM–Bagamoyo. The findings of this study provided valuable insights into how ICT can be effectively utilized to enhance reference service delivery in academic libraries.

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CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presented the research methodology used in this study. It outlined the research design, approach, and area of the study, followed by a description of the population, sample size, and sampling techniques. The chapter also discussed data collection methods, data collection instruments, and issues of data quality control, including validity and reliability. Ethical considerations guiding the study were also presented, and the chapter concluded with a discussion of the procedures used for data processing and analysis.

3.1 Research Design

Research design is a structured plan outlining procedures for collecting and analyzing data to address a specific research problem. For this study, a descriptive research design is adopted. Descriptive research focuses on providing a detailed account of the current state of affairs regarding the contribution of ICT in the provision of online reference services in academic libraries (Atinmo, 2019). This design is chosen because it enables systematic description, examination, and interpretation of how ICT tools (such as chat reference, email, and digital platforms) support online reference services at Adem-Bagamoyo Academic Library. The descriptive approach is appropriate as it allows for an in-depth understanding of the current practices without manipulating the variables involved.

3.2 Research Approach/Type

Research approach refers to the overall strategy that guides the research process. This study employs a mixed-methods approach, combining both quantitative and qualitative methods to provide a comprehensive analysis of the contribution of ICT in online reference service provision;(Johnson & Onwuegbuzie, 2020). The mixed-methods

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approach is selected to capture a holistic view by integrating numerical data from questionnaires with detailed qualitative insights from interviews. This integration enhances the validity and richness of the findings by allowing triangulation across multiple sources of evidence.

3.3 Area of the Study

The area of the study refers to the specific geographic and organizational context in which the research is conducted. This research was conducted at Adem-Bagamoyo Academic Library in Bagamoyo, Tanzania. The library is chosen due to its adoption of ICT-based services including online reference services and its significance as an academic support resource for students and faculty (Moyo & Chimuka, 2021). The study focused on the ICT tools, platforms, and systems that support online reference services and how they contribute to user satisfaction and academic engagement.

3.4 Population of the Study

The population of the study encompasses the entire group from which a sample was drawn for research purposes. For this study, the population includes library staff, ICT support personnel, and students who use online reference services at Adem-Bagamoyo Academic Library. These groups are directly involved in or impacted by the provision and usage of ICT-supported reference services. The estimated total population is 100 people (Bryman, 2016).

This population was considered appropriate because library staff and ICT support personnel manage and support the online reference services, while students are the main users of these services. Including all three groups helped the study capture both the provider and the user perspectives. The estimated population was based on the library's records of registered users and staff.

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3.5 Sample Size

Sample size refers to the number of participants or observations included in a study (Fink, 2020). For this research, a sample size of 30 respondents where by 21 students, 6 library staff and 3 ICT support staff were used to represent the whole population. This number is manageable and sufficient to generate reliable and meaningful data given the study's design and context.

Students formed the largest share of the sample because they are the main users of online reference services. Library staff and ICT support staff were included in smaller numbers to provide expert, service-provider views. This distribution ensured a balanced representation of both providers and users of the service.

3.5.1 Sampling Techniques

Sampling techniques are methods used to select a subset of individuals from a larger population for research purposes. This study used a combination of sampling techniques to ensure comprehensive and representative data collection (Palinkas et al., 2015).

3.5.2 Simple Random Sampling Technique

Simple random sampling involves selecting participants from the population so that every individual has an equal chance of being chosen (Miller & Salkind, 2021). This technique was used to select students from the library's user list to ensure unbiased representation.

3.5.3 Purposive Sampling Technique

Purposive sampling involves selecting participants based on specific characteristics or expertise relevant to the study; (Alkassim, 2016). This technique was used to identify and select library staff and ICT support personnel who have direct experience with online reference services.

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3.6 Data Collection Methods

Data collection refers to the process of gathering information relevant to the research questions (Sekaran & Bougie, 2019). For the purpose of this study, a variety of methods were used to collect data. These included primary and secondary data as explained below. Using both primary and secondary data allowed information obtained directly from respondents to be compared with existing institutional records. This helped strengthen the accuracy and credibility of the findings. Both methods were therefore applied together to ensure completeness of the data collected.

3.6.1 Primary Data

Primary data refers to information collected directly from original sources (Yegidis et al., 2018). Primary data was collected through questionnaires and interviews.

3.6.2 Secondary Data

Secondary data involves the analysis of existing information collected for other purposes (Bryman & Bell, 2015). Secondary data was gathered from institutional records, library usage statistics, reports, and relevant literature on ICT in library reference services.

3.7 Data Collection Instruments

Data collection instruments refer to the tools used to gather data from respondents, such as a questionnaire or an interview guide (Babbie, 2015). These data collection instruments are explained below.

Both the questionnaire and the interview guide were developed based on the specific objectives of the study. They were pre-tested before being administered to respondents to ensure clarity. This helped ensure that the data collected properly addressed the research questions.

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3.7.1 Questionnaire Guide

A questionnaire is a tool for collecting structured responses from participants (Fowler, 2014). Questionnaires were distributed to students and library staff to gather quantitative data on the usage, satisfaction, and perceived contribution of ICT in online reference services. The advantage of the questionnaire method is that it enables information to be collected from many respondents at once.

3.7.2 Interview Guide

The interview method involves collecting data through direct conversations with participants (Silverman, 2016). Interviews were conducted with library staff and ICT support personnel to gain qualitative insights into ICT integration, challenges, and best practices in online reference service provision. The advantage of the interview method is that it builds trust and rapport between the interviewer and the respondent, making the respondent more comfortable to share their opinions and experience.

3.7.3 Data Quality Control

Data quality control ensures the accuracy and reliability of the research findings.

Validity; refers to the extent to which the research measures what it is intended to measure (Creswell & Creswell, 2018). Validity was ensured through careful design of data collection instruments, review by experts, and triangulation of data sources.

Reliability; refers to the consistency and stability of the research findings over time (Schumacher, 2014). Reliability was ensured through standardized data collection procedures and pilot testing.

3.8 Source of Data

The data used in this study were obtained from two main sources, namely primary and secondary sources. Primary data were sourced directly from the sampled students, library staff, and ICT support personnel through questionnaires and interviews. Secondary data were sourced from institutional records, library usage statistics, reports, and relevant

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literature on ICT in academic library reference services. Combining these sources ensured that the findings of the study were grounded in both first-hand respondent information and existing documented evidence.

3.9 Ethical Considerations

Ethical principles were strictly observed throughout the study to protect the rights and dignity of participants. Research ethics refer to the principles governing the conduct of research to ensure the protection of participants and the integrity of the research process (Childress, 2019). Ethics was assured by obtaining informed consent from participants, ensuring confidentiality, and adhering to institutional ethical guidelines throughout the research process.

Before data collection, permission was obtained from the library administration to conduct the study. Respondents were informed that participation was voluntary and that their information would remain confidential. No respondent was required to write their name on the questionnaire.

3.10 Data Processing and Analysis

Data processing and analysis involve organizing and interpreting the collected data to address the research questions (Nowell et al., 2017). Quantitative data collected from the questionnaires was coded, edited, and processed using Microsoft Excel and analyzed through descriptive statistics such as frequency and percentage, and presented using tables and figures. Qualitative data obtained from the interviews was analyzed using thematic analysis, whereby responses with similar patterns were grouped into coherent categories and interpreted in relation to the study objectives.

Completed questionnaires were checked for completeness before being coded and entered into Microsoft Excel. The data was then analyzed using frequencies and percentages and presented using tables and figures. Qualitative data from the interviews was grouped into themes and presented in narrative form alongside the quantitative results.

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CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.0 Introduction

This chapter presents the analysis, presentation and discussion of findings on the contribution of Information and Communication Technology (ICT) in the provision of online reference services in academic libraries: a case study of the Agency for the Development of Educational Management (ADEM) Bagamoyo. Data for this chapter were collected mainly through questionnaires administered to students and library staff to obtain quantitative data, and interviews conducted with library staff and ICT support personnel to obtain qualitative insights; these were supplemented by documentary review of institutional records, library usage statistics and relevant reports to provide secondary data. The chapter presents the demographic information of respondents, namely gender, age, category and education level, followed by the detailed analysis and discussion of findings based on the specific objectives of the study: to identify the ICT tools commonly used in providing online reference services at ADEM-Bagamoyo, to assess the role of ICT in enhancing the effectiveness of online reference services, to examine the challenges facing the use of ICT in online reference services, and to determine strategies for improving ICT-based online reference services at ADEM-Bagamoyo. The presentation and discussion of findings follows the chronological order of the research objectives, and results are presented in the form of narrations and tables.

4.1 Response Rate

A total of 30 questionnaires were distributed to respondents as the sample size, of which 27 questionnaires were returned, and the results are summarized in table 4.1 below.

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Table 4.1: Respondent's Response Rate

Categories	Frequencies	Percentages (%)
Questionnaire distributed	30	100%
Questionnaire returned	27	90%

Source: Field Study (2026)

The findings in table 4.1 show that 30 (100%) questionnaires were distributed and 27 (90%) were returned, representing a response rate above the threshold generally regarded in social science research as sufficient for drawing reliable conclusions.

4.2 Demographic Information of Respondents

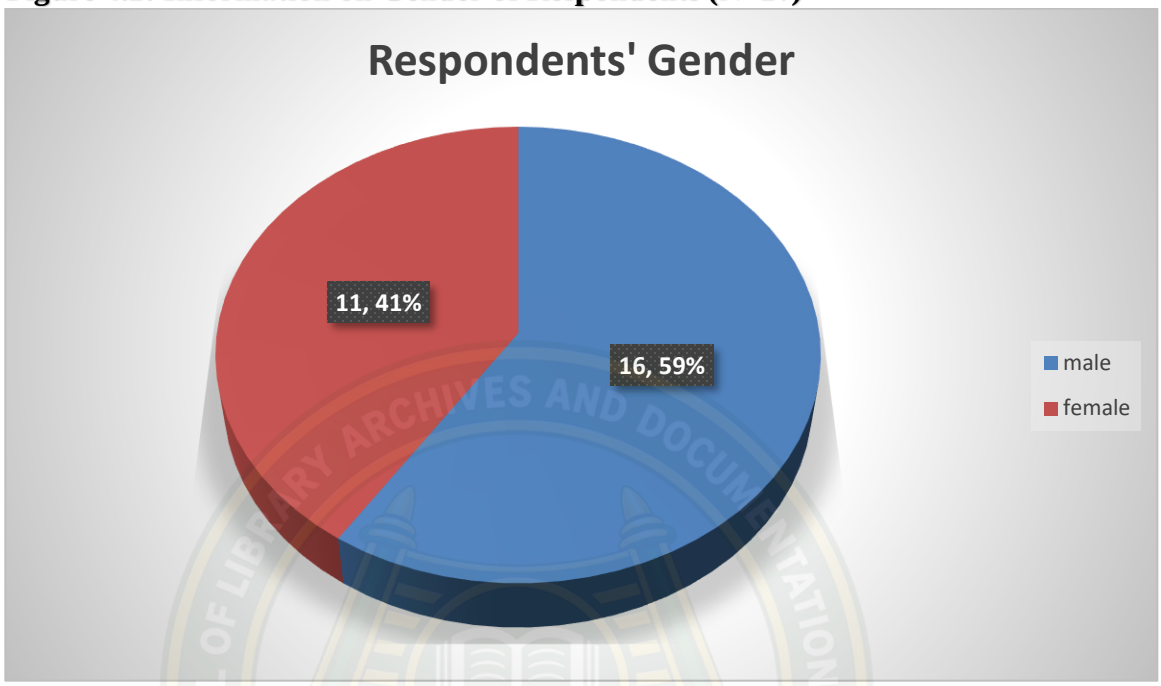
In this part, respondents were asked to provide information about their gender, age, category and education level. This was distributed to the sampled respondents at ADEM-Bagamoyo, comprising students, library staff and ICT support staff. The results are summarized in the sub-sections below.

4.2.1 Respondents' Gender

This part aimed to establish the gender of the respondents. Respondents were requested to indicate their gender in order to examine how gender difference can affect the contribution of ICT in the provision of online reference services at ADEM-Bagamoyo. However, the gender category was included so as to identify which group of gender is more engaged with ICT-based reference services.

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Figure 4.2: Information on Gender of Respondents (N=27)



Source: Field Study (2026)

Figure 4.2 indicates the distribution of respondents by gender. The results showed that 16 (59%) were male and 11 (41%) of the whole respondents were female. The findings of the study indicated that the majority of respondents at ADEM-Bagamoyo were male.

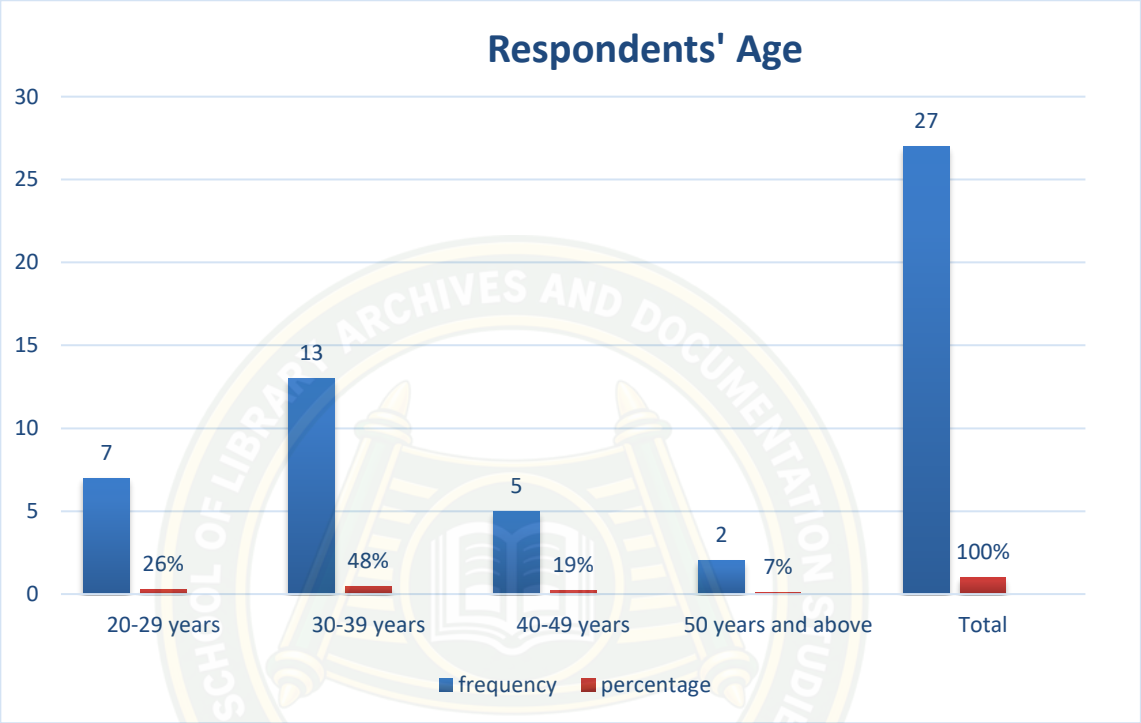
Therefore, the findings of the study revealed that male respondents were slightly more engaged in the use of ICT for online reference services at ADEM-Bagamoyo. Moreover, the results revealed that both genders were fairly represented, which strengthens the credibility of the study.

4.2.2 Respondents' Age

Due to the nature of the study population, respondents were asked to indicate their age groups as it was necessary to understand their age distribution. This question was included in order to identify which group of respondents constitutes the majority of ICT-based online reference service users at ADEM-Bagamoyo.

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Figure 4.3: Distribution of Respondents by Age (N=27)



Source: Field Study (2026)

Figure 4.3 indicates that respondents aged 30–39 years constituted the majority, with 13 respondents equivalent to 48%. Respondents aged 20–29 years followed with 7 respondents equivalent to 26%. Furthermore, 5 respondents equivalent to 19% were aged between 40–49 years, while 2 respondents equivalent to 7% were aged 50 years and above.

The findings therefore reveal that the 30–39 years age group was the largest age category among the respondents at ADEM-Bagamoyo. The fact that almost half of the respondents belonged to this age group indicates that the study obtained substantial views from respondents within the 30–39 years category.

The representation of respondents aged 20–29 years also indicates the participation of younger users, while the presence of respondents aged 40–49 years and 50 years and above provides perspectives from older age groups. This distribution is important because online

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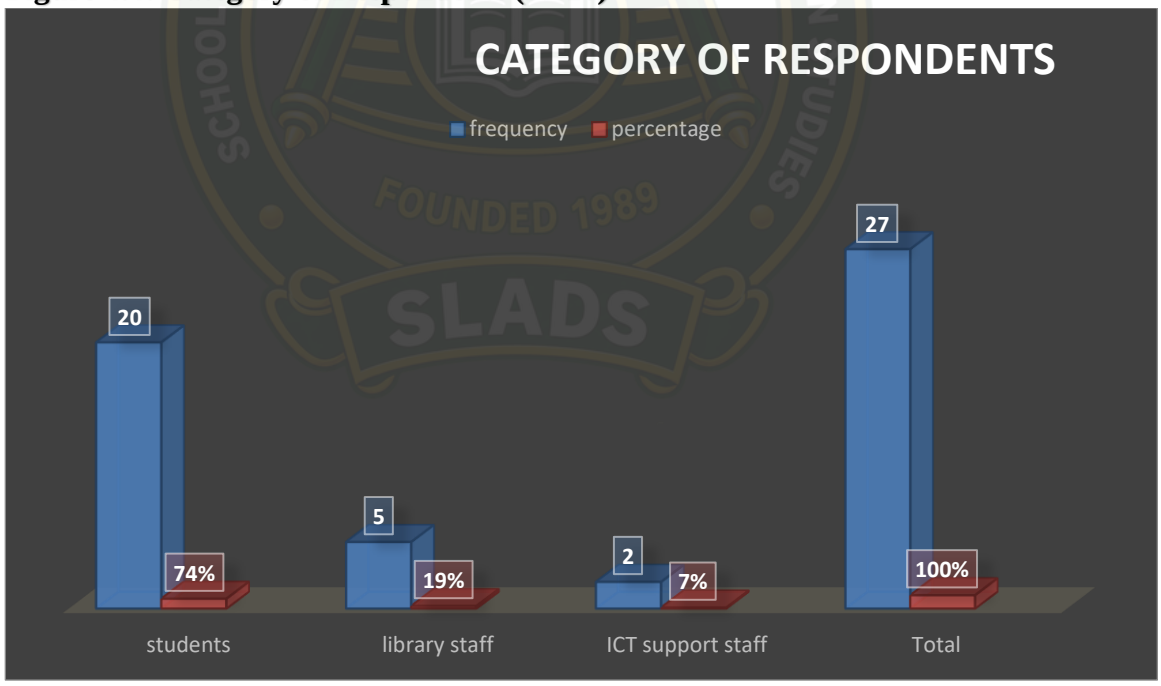
reference services should be accessible to users with different levels of age and ICT experience. The findings therefore provide an opportunity to understand ICT-based online reference services from respondents with varied age backgrounds.

The results further suggest that the majority age group of 30–39 years may have significant experience with both traditional and ICT-supported information services. Such respondents may therefore provide informed views on the changes brought by ICT in the provision of online reference services at ADEM-Bagamoyo.

4.2.3 Category of Respondents

This part sought to establish the category of respondents who took part in the study, since students, library staff and ICT support staff may have different levels of exposure to ICT-based reference services at ADEM-Bagamoyo.

Figure 4.4: Category of Respondents (N=27)



Source: Field Study (2026)

Figure 4.4 indicates that students formed the largest group of respondents with 20 (74%), followed by library staff with 5 (19%) and ICT support staff with 2 (7%).

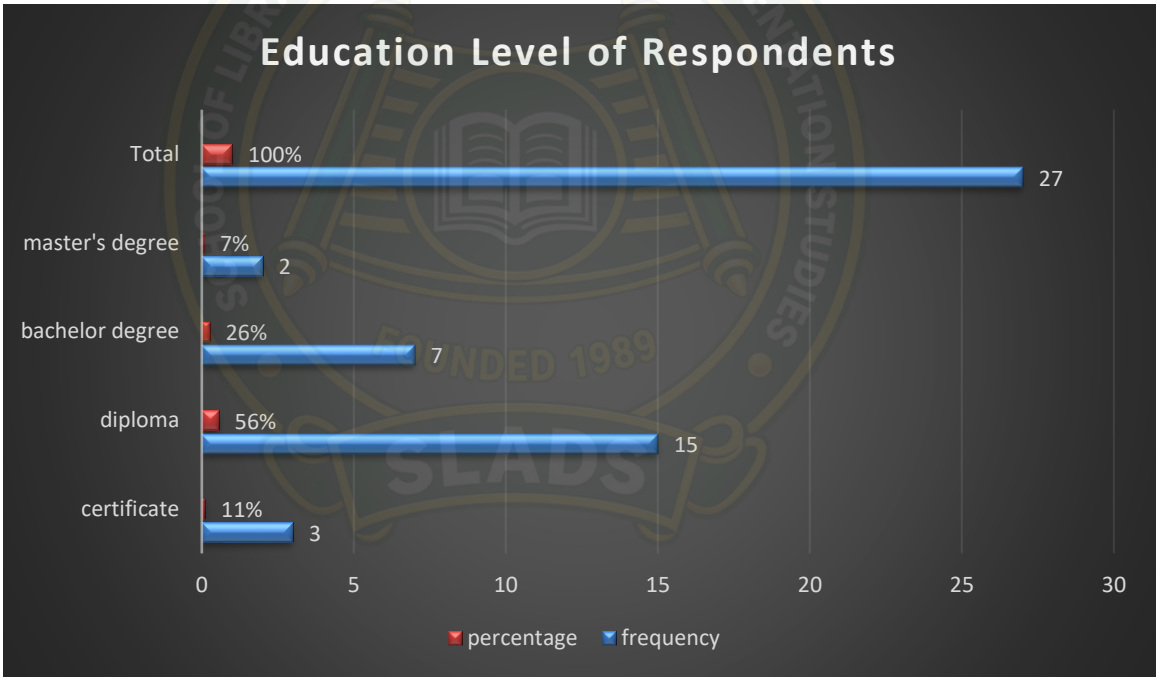
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The findings of the study revealed that students, being the primary and most frequent users of online reference services, were well represented in the study. This justifies the credibility of the findings, since the majority of respondents were direct beneficiaries of the services under investigation and were therefore well placed to comment on them.

4.2.4 Education Level of Respondents

Education is a vital element in any aspect of service provision. In this aspect, the study sought to establish the education level of the respondents in order to determine how their level of education can shape their ability to make use of ICT in online reference services.

Figure 4.5: Education Level of Respondents (N=27)



Source: Field Study (2026)

Figure 4.5 shows that 15 (56%) of respondents had diploma education, 7 (26%) held bachelor's degrees, 3 (11%) held certificates, and 2 (7%) held master's degrees.

The findings of the study revealed that the majority of respondents had attained a reasonable level of formal education. This justifies the reliability of the responses obtained, as educationally qualified respondents are more likely to understand

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questionnaire items correctly and to provide informed, accurate views on ICT-related matters.

4.2.5 ICT Tools Commonly Used in Providing Online Reference Services

This section sought to identify the ICT tools commonly used in providing online reference services at ADEM-Bagamoyo. This question was directed to both library users and library staff, and the results are shown in table 4.6 below.

Table 4.6: ICT Tools Used in Providing Online Reference Services

ICT Tool	Frequency	Percentage
Email Communication	2	7%
Library Website	2	7%
OPAC	4	15%
Social Media Platforms	6	22%
Live Chat Services	2	7%
All of the Above	11	41%
Total	27	100%

Source: Field Study (2026)

The findings in Table 4.6 indicate that 11 (41%) of respondents reported that all the listed ICT tools are used, while 6 (22%) singled out social media platforms and 4 (15%) identified OPAC as the tool most commonly relied upon. These findings show that the library draws on a combination of ICT tools, rather than a single platform, to deliver reference services. This is consistent with the fact that ADEM-Bagamoyo library does not have a dedicated Library Management System (LMS); in the absence of an LMS, general-purpose platforms are being adapted to perform functions that an integrated system would ordinarily consolidate.

> *During interview with respondents it was indicated that WhatsApp, email and the library website are among the tools most frequently used when assisting students with their information needs, and that the library website has improved access to library information and electronic resources.*

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4.2.6 Role of ICT in Enhancing the Effectiveness of Online Reference Services

This section sought to assess the role of ICT in enhancing the effectiveness of online reference services at ADEM-Bagamoyo. The results are shown in table 4.7 below.

Table 4.7: Contribution of ICT to Online Reference Services (N=27)

Contribution	Frequency	Percentage
Faster Access to Information	9	33%
Remote Access to Services	7	26%
Improved Communication	5	19%
Enhanced Access to Digital Resources	6	22%
Total	27	100%

Source: Field Study (2026)

The findings in Table 4.7 show that 9 (33%) of respondents identified faster access to information as the main contribution of ICT, 7 (26%) pointed to remote access to services, and 6 (22%) noted enhanced access to digital resources.

These findings show that ICT contributes to reference service delivery mainly by improving speed and reach rather than through any single isolated benefit. This justifies the continued reliance on ICT tools at ADEM-Bagamoyo even in the absence of a dedicated Library Management System.

> *During interview with respondents it was indicated that students can obtain information even when they are outside the library through online platforms, and that ICT has reduced the time required to locate information resources.*

4.2.7 Challenges Facing the Use of ICT in Online Reference Services

These findings indicate that the major challenges affecting the use of ICT in online reference services include poor internet connectivity, lack of ICT skills, inadequate ICT infrastructure and limited financial resources. Among these challenges, poor internet

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connectivity was identified as the most significant barrier. Other results are presented in table 4.8 below.

Table 4.8: Challenges Facing the Use of ICT (N=27)

Challenge	Frequency	Percentage
Poor Internet Connectivity	9	33%
Lack of ICT Skills	4	15%
Inadequate ICT Infrastructure	6	22%
Limited Financial Resources	5	19%
Low User Awareness	3	11%
Total	27	100%

Source: Field Study (2026)

The findings in Table 4.8 indicate that poor internet connectivity was the most reported challenge, cited by 9 (33%) of respondents, followed by inadequate ICT infrastructure at 6 (22%) and limited financial resources at 5 (19%).

These findings show that infrastructural and financial constraints, rather than skills or awareness alone, remain the greatest obstacles to effective ICT use at ADEM-Bagamoyo library. The absence of a dedicated Library Management System further compounds these challenges, since staff must coordinate several separate ICT tools rather than a single integrated platform.

> *During interview with respondents it was indicated that unstable internet connectivity affects the delivery of online reference services and limits access to digital resources, and that some users are not aware that online reference services are available in the library.*

4.2.8 Strategies for Improving ICT-Based Online Reference Services

The findings indicate that increasing ICT infrastructure, providing staff training, improving internet connectivity, promoting user awareness and developing digital library

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platforms are the key strategies for improving ICT-based online reference services at ADEM-Bagamoyo. For further details, see table 4.9 below.

Table 4.9: Strategies for Improving ICT-Based Online Reference Services (N=27)

Strategy	Frequency	Percentage
Increase ICT Infrastructure	9	33%
Provide Staff Training	6	22%
Improve Internet Connectivity	5	19%
Promote User Awareness	4	15%
Develop Digital Library Platforms	3	11%
Total	27	100%

Source: Field Study (2026)

The findings in Table 4.9 indicate that increasing ICT infrastructure was the most recommended strategy, suggested by 9 (33%) of respondents, followed by staff training at 6 (22%) and improved internet connectivity at 5 (19%).

These findings show that respondents regard infrastructural investment and capacity building as the most urgent priorities for improving service delivery. Notably, developing a dedicated Library Management System could consolidate several of these strategies, since it would integrate infrastructure, training needs and service delivery within a single platform rather than the current arrangement of separate general-purpose ICT tools.

> *During interview with respondents, it was recommended that ADEM-Bagamoyo library should invest in ICT facilities, provide regular training for library staff, and improve internet services in order to strengthen online reference service delivery.*

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the study findings, conclusions and recommendations drawn from the analysis and discussion of data presented in chapter four. The study examined the Contribution of Information and Communication Technology (ICT) in the Provision of Online Reference Services in Academic Library, with specific reference to the Agency for the Development of Educational Management (ADEM) Bagamoyo. This chapter presents the summary of the findings arranged according to the specific objectives of the study, draws conclusions based on the findings, and puts forward recommendations together with areas suggested for further research.

5.1 Summary of the Findings

The general objective of this study was to assess the contribution of Information and Communication Technology (ICT) in the provision of online reference services in academic libraries, using ADEM-Bagamoyo as a case study. The study was guided by four specific objectives, namely: to identify the ICT tools commonly used in providing online reference services at ADEM-Bagamoyo, to assess the role of ICT in enhancing the effectiveness of online reference services, to examine the challenges facing the use of ICT in online reference services, and to determine strategies for improving ICT-based online reference services at ADEM-Bagamoyo. The study employed a descriptive research design and a mixed research approach, whereby data were collected from students, library staff and ICT support staff using questionnaires and interviews. Out of 30 questionnaires distributed, 27 were returned, representing a response rate of 90%, which was considered adequate for drawing reliable conclusions. Data were analyzed using descriptive statistics and presented in the form of frequencies, percentages and narrations.

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Demographic findings revealed that the majority of respondents were male, 16 (59%), while females constituted 11 (41%) of the sample. Most respondents, 13 (48%), were aged between 20 and 29 years, indicating that the study population was dominated by young adults who are generally more familiar with ICT-based services. In terms of category, students formed the largest group of respondents with 20 (74%), followed by library staff with 5 (19%) and ICT support staff with 2 (7%). Regarding education level, the majority of respondents, 15 (56%), held diploma qualifications, followed by 7 (26%) with bachelor's degrees, 3 (11%) with certificates and 2 (7%) with master's degrees. It is also worth restating that ADEM-Bagamoyo library does not operate a dedicated Library Management System (LMS); reference services are instead delivered through a combination of general-purpose ICT tools, and this fact shaped the key findings summarized below.

5.1.1 ICT Tools Commonly Used in Providing Online Reference Services

The findings revealed that ADEM-Bagamoyo library relies on a combination of ICT tools rather than a single dedicated system to deliver online reference services. Of the 27 respondents, 11 (41%) indicated that all the listed ICT tools, namely email, the library website, OPAC, social media platforms and live chat services, are used, while 6 (22%) singled out social media platforms and 4 (15%) identified OPAC as the tool most commonly relied upon. Email communication, the library website and live chat services were each cited by 2 (7%) of respondents. Interview responses further confirmed that WhatsApp, email and the library website are the tools most frequently used when assisting students with their information needs, and that the library website in particular has improved access to library information and electronic resources. These findings confirm that, in the absence of a dedicated Library Management System, general-purpose ICT tools have been adapted to perform functions that an integrated system would ordinarily consolidate.

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5.1.2 Role of ICT in Enhancing the Effectiveness of Online Reference Services

The findings established that ICT plays a significant role in enhancing the effectiveness of online reference services at ADEM-Bagamoyo. Faster access to information was identified by the majority of respondents, 9 (33%), as the main contribution of ICT, followed by remote access to services at 7 (26%), enhanced access to digital resources at 6 (22%) and improved communication at 5 (19%). Interview findings supported these results, indicating that students are able to obtain information even when outside the library through online platforms, and that ICT has reduced the time required to locate information resources. Overall, ICT was found to contribute to reference service delivery mainly by improving the speed and reach of services rather than through any single isolated benefit.

5.1.3 Challenges Facing the Use of ICT in Online Reference Services

The study revealed that several challenges continue to affect the use of ICT in online reference services at ADEM-Bagamoyo. Poor internet connectivity was the most reported challenge, cited by 9 (33%) of respondents, followed by inadequate ICT infrastructure at 6 (22%), limited financial resources at 5 (19%), lack of ICT skills at 4 (15%) and low user awareness at 3 (11%). Interview responses corroborated these findings, revealing that unstable internet connectivity affects the delivery of online reference services and limits access to digital resources, and that some users are not even aware that online reference services are available in the library. These results indicate that infrastructural and financial constraints, rather than skills or awareness alone, remain the greatest obstacles to effective ICT use, a situation further compounded by the absence of a dedicated Library Management System.

5.1.4 Strategies for Improving ICT-Based Online Reference Services

With regard to strategies for improvement, the findings indicated that increasing ICT infrastructure was the most recommended strategy, suggested by 9 (33%) of respondents, followed by staff training at 6 (22%), improved internet connectivity at 5 (19%),

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promotion of user awareness at 4 (15%) and development of digital library platforms at 3 (11%). During interviews, respondents recommended that ADEM-Bagamoyo library should invest in ICT facilities, provide regular training for library staff, and improve internet services in order to strengthen online reference service delivery. These findings suggest that respondents regard infrastructural investment and capacity building as the most urgent priorities, and that the eventual development of a dedicated Library Management System could consolidate several of these strategies within a single, integrated platform.

5.2 Conclusion

Based on the findings of this study, it can be concluded that Information and Communication Technology makes a meaningful contribution to the provision of online reference services at ADEM-Bagamoyo. In the absence of a dedicated Library Management System, the library has adapted a combination of general-purpose ICT tools, particularly email, social media platforms and the library website, to reach and assist its users. These tools have enhanced the effectiveness of reference services by enabling faster and remote access to information, improving communication between the library and its users, and widening access to digital resources.

Nevertheless, the study concludes that the full potential of ICT in online reference service delivery at ADEM-Bagamoyo has not yet been realized, largely due to poor internet connectivity, inadequate ICT infrastructure, limited financial resources, insufficient ICT skills among some users, and low awareness of the online reference services that are available. Addressing these challenges through deliberate investment and capacity building, as suggested by respondents, would considerably strengthen the contribution of ICT to reference service delivery and improve the overall user experience at the library.

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5.3 Recommendations

Based on the findings and conclusion of this study, the following recommendations are made:

- ADEM-Bagamoyo library management should invest in improving ICT infrastructure, including computers, network equipment and reliable internet connectivity, to support the effective delivery of online reference services.
- The library should collaborate with ADEM management and internet service providers to address the problem of poor and unstable internet connectivity, which was identified as the most significant challenge facing ICT use.
- Regular training programmes should be organized for library staff and users to enhance their ICT skills and competence in using online reference tools such as OPAC, the library website and live chat services.
- The library should intensify efforts to create awareness among students and staff about the availability and use of online reference services, since a section of users was found to be unaware that such services exist.
- Management should consider allocating sufficient financial resources specifically earmarked for the acquisition, maintenance and upgrading of ICT facilities used in reference service provision.
- ADEM-Bagamoyo should explore the possibility of acquiring a dedicated Library Management System (LMS) that would integrate the currently separate general-purpose ICT tools into a single, coordinated platform for reference service delivery.
- Efforts to develop digital library platforms should be pursued in order to widen access to electronic resources and further strengthen the role of ICT in reference service provision.

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5.4 Areas for Further Study

This study focused specifically on the contribution of ICT in the provision of online reference services at ADEM-Bagamoyo. In view of its scope and limitations, the following areas are suggested for further research:

- A comparative study on the contribution of ICT in online reference service provision could be conducted across other academic libraries in Tanzania to establish whether similar patterns exist.
- Further research could investigate the effect of adopting a dedicated Library Management System on the quality and efficiency of online reference services in academic libraries that currently rely on general-purpose ICT tools.
- A study could be undertaken to assess the relationship between users' ICT literacy levels and their satisfaction with online reference services in academic libraries.
- Future studies could explore the cost-effectiveness and sustainability of the various ICT tools used in providing online reference services in resource-constrained academic institutions.

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APPENDIX I

QUESTIONNAIRE FOR LIBRARY STAFF AND STUDENTS

Section 1: Introduction

My name is Benson Eliasi Mtenga a student from the School of Library, Archives and Documentation Studies (SLADS) pursuing a Diploma in Library and Information Studies. I am currently conducting research on the "The Contribution of ICT in Provision of Online Reference Service in Academic Library: A Case Study of ADEM – Bagamoyo."

The purpose of this study is to examine how Information and Communication Technology (ICT) contributes to the provision of online reference services in academic libraries, particularly at ADEM–Bagamoyo.

Your responses will be used strictly for academic purposes and will be treated with confidentiality. Kindly answer the questions honestly by ticking (✓) the appropriate option.

Thank you for your cooperation.

Researcher:

Benson Eliasi Mtenga

Section 2: Demographic Questions

1. Gender
    a) Male { }
    b) Female { }

2. Age
    a) 20 – 29 { }
    b) 30 – 39 { }
    c) 40 – 49 { }
    d) 50 and above { }

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3. Category of Respondent

a) Library Staff { }
b) Student { }
c) Academic Staff { }

4. Education Level

a) Certificate { }
b) Diploma { }
c) Bachelor Degree { }
d) Master Degree { }
e) Other (Specify) _____

Section 3: Objectives Questions

5. Which ICT tools are used to provide online reference services in your library?

a) Email communication { }
b) Library website { }
c) Online Public Access Catalogue (OPAC) { }
d) social media (WhatsApp, Facebook, etc.) { }
e) Live chat services { }
f) All answers above { }

6. In your opinion, how does ICT improve online reference services?

a) Provides faster access to information { }
b) Allows users to access services remotely { }
c) Improves communication between librarians and users { }
d) Enhances access to digital information resources { }

7. What challenges affect the use of ICT in providing online reference services?

a) Poor internet connectivity { }
b) Lack of ICT skills among staff { }
c) Inadequate ICT infrastructure { }

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d) Limited financial resources { }

e) Low awareness among users { }

8. What strategies can improve ICT-based online reference services in the library?

a) Increase investment in ICT infrastructure { }

b) Provide training for library staff { }

c) Improve internet connectivity { }

d) Promote awareness of online reference services { }

e) Develop digital library platforms { }

Thank you for your cooperation.

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APPENDIX II

INTERVIEW GUIDE FOR LIBRARIANS AND ICT STAFF

1. What ICT tools are currently used to provide online reference services in the ADEM–Bagamoyo academic library?
2. How frequently are these ICT tools used in providing reference services? *(Probe: daily, weekly, occasionally)*
3. What challenges do you face when using ICT to provide online reference services?
4. How do students and academic staff respond to the use of online reference services?
5. What strategies can be implemented to improve ICT-based online reference services in the library?

6. Is there anything else you would like to add regarding ICT and online reference services in your library?

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APPENDIX III

BUDGET

The study required money in order to achieve the goals for data collection. It included stationery, transport expenses as well as daily expenses for researcher survival. The expenditure was as follows:

S/N	**Item**	Cost analysis	**Cost**
1	Binding both proposal and research	50000/=	50000/=
2	Transportation from Ukuni to Adem	2000X3= 60000/=	60000/=
3	Questionnaire and interviews questions preparation	50 copies @ 200	10,000/=
4	printing proposal	1page =200 150 pages both proposal and report 150x200	30000/=
6	Meals and accommodation	30days @ 5000x30	150,000/=
	TOTAL		**300,000**

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APPENDIX IV

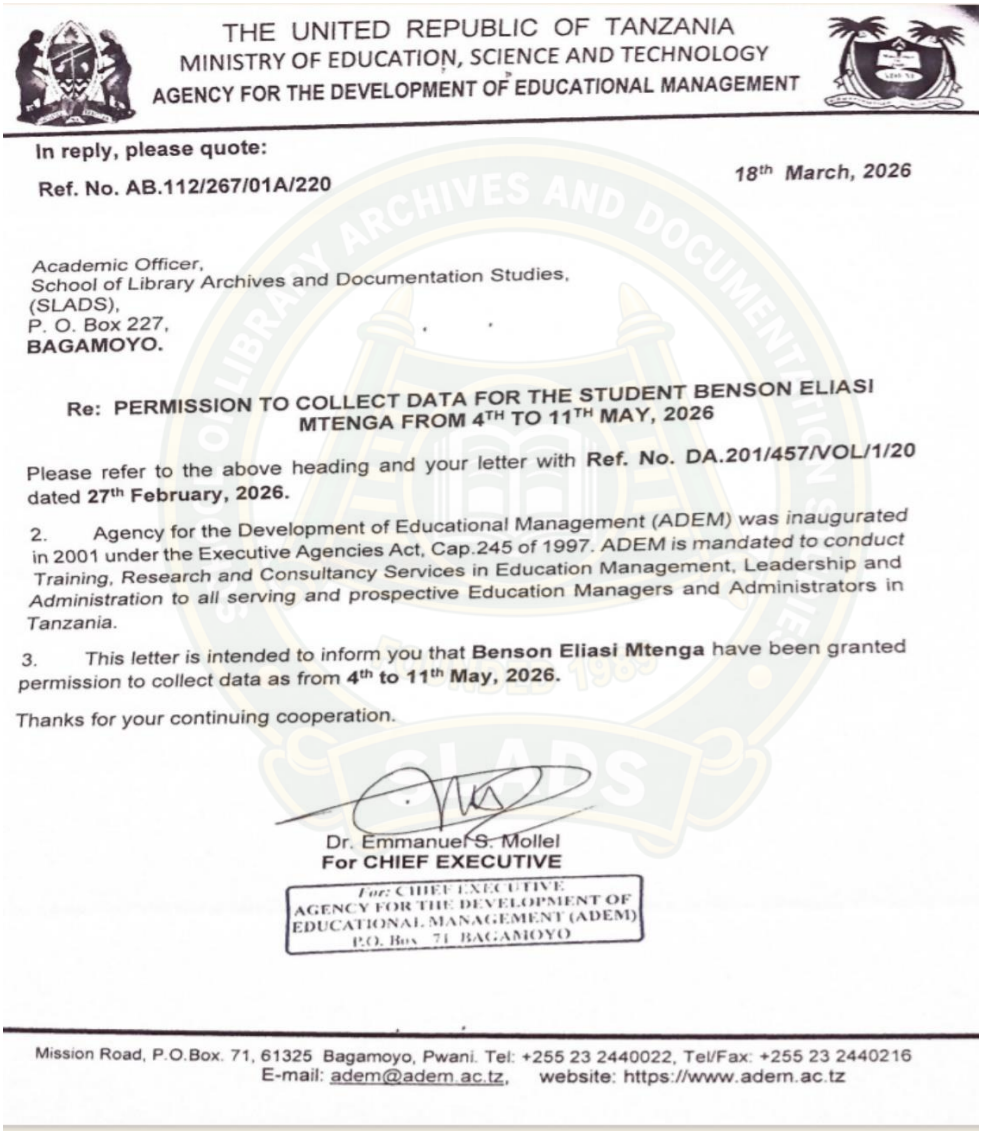
REAEARCH WORK PLAN/ SCHEDULE TIME FRAME

ACTIVITIES	APRIL MONTH	MAY MONTH	JUNE MONTH	JULY MONTH	AUGUST MONTH
Develop questionnaires and Interviews guides					
Data collection,(Interviews,survey)					
Data Analysis					
Write research report (drafts and revisions)					
Finalize and submit research report					

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APPENDIX V

INTRODUCTION LETTER



THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
AGENCY FOR THE DEVELOPMENT OF EDUCATIONAL MANAGEMENT

In reply, please quote:

Ref. No. AB.112/267/01A/220 *18th March, 2026*

Academic Officer,
School of Library Archives and Documentation Studies,
(SLADS),
P. O. Box 227,
BAGAMOYO.

Re: PERMISSION TO COLLECT DATA FOR THE STUDENT BENSON ELIASI MTENGA FROM 4TH TO 11TH MAY, 2026

Please refer to the above heading and your letter with **Ref. No. DA.201/457/VOL/1/20** dated **27th February, 2026.**

2. Agency for the Development of Educational Management (ADEM) was inaugurated in 2001 under the Executive Agencies Act, Cap.245 of 1997. ADEM is mandated to conduct Training, Research and Consultancy Services in Education Management, Leadership and Administration to all serving and prospective Education Managers and Administrators in Tanzania.

3. This letter is intended to inform you that **Benson Eliasi Mtenga** have been granted permission to collect data as from **4th to 11th May, 2026.**

Thanks for your continuing cooperation.

Dr. Emmanuel S. Mollel
For CHIEF EXECUTIVE

For: CHIEF EXECUTIVE
AGENCY FOR THE DEVELOPMENT OF
EDUCATIONAL MANAGEMENT (ADEM)
P.O. Box 71 BAGAMOYO

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E-mail: adem@adem.ac.tz, website: https://www.adem.ac.tz

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