SCHOOL OF LIBRARY ARCHIVES AND DOCUMENTATION STUDIES

(SLADS)

RESEARCH REPORT ON

AN ASSESSMENT ON THE USE OF GEMINI ARTIFICIAL INTELLIGENCE (AI) IN IMPROVING REFERENCE SERVICES: A CASE STUDY OF THE UNIVERSITY OF DAR ES SALAAM

BY:

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A Research report Submitted to The School of Library Archives and Documentation Studies (S LADS) as A Particular Fulfillment for the Award of Ordinary Diploma in Library and Informati on Management.

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CERTIFICATION

This is to certify that this research report entitled "An Assessment on the Use of Gemini Artificial Intelligence (AI) in Improving Reference Services for Library Users in Academic Libraries: A Case of the University of Dar es Salaam Library" was carried out by Michael Mchaki under my supervision. This work is submitted in partial fulfillment of the requirements for the award of the relevant academic qualification.

Signature: .....

MR. ALLY

(Supervisor)

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May Almighty God Bless Them All

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DEDICATION

I Thankfully to my beloved parents, whose unwavering love, encouragement, prayers, and sacr ifices have been the foundation of my academic journey. Their financial, moral, and emotiona l support has enabled me to pursue my education and successfully complete this study.

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Finally, I dedicate this research report to all my lecturers, classmates, and friends whose advic e, inspiration, and encouragement contributed to my personal and academic growth. May this work serve as a source of knowledge and inspiration for future researchers and library profess ionals interested in the application of Artificial Intelligence in improving reference services in a cademic libraries.

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LIST OF ABBREVIATIONS

ACRL – Association of College and Research Libraries

AI – Artificial Intelligence

ICT – Information and Communication Technology

IFLA – International Federation of Library Associations and Institutions

LIS – Library and Information Science

SLADS – School of Library, Archives and Documentation Studies

UDSM – University of Dar es Salaam

UNESCO – United Nations Educational, Scientific and Cultural Organization

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ABSTRACT

This study assessed the use of Gemini Artificial Intelligence (AI) in improving reference servic es for library users at the University of Dar es Salaam Library. The study was guided by four o bjectives: to examine how Gemini AI is used in providing reference services, to assess the ben efits of using Gemini AI in improving reference services, to determine the level of awareness a nd use of Gemini AI among library users, and to identify the challenges associated with its us e.

A mixed-methods research design was adopted. Data were collected from 50 respondents, co mprising 40 students and 10 librarians. Questionnaires were used as the primary data collecti on instrument, while interview data were obtained from librarians to complement the quantitat

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ive findings. Quantitative data were analyzed using frequencies and percentages, whereas qu alitative data were analyzed thematically.

The findings revealed that most respondents used Gemini AI mainly to search for academic in formation, complete assignments, conduct research, and improve their understanding of acad emic topics. The majority of respondents considered Gemini AI easy to use and expressed sat isfaction with the information it provided. The study also found that Gemini AI enhanced acce ss to information, saved time, and supported learning and research activities.

The study concluded that Gemini AI has significant potential to improve reference services in academic libraries by providing faster access to information and supporting users' academic activities. The study recommends that the University of Dar es Salaam Library strengthen the integration of AI technologies through staff training, user awareness programmes, improved t he development of policies to guide the responsible use of Artificial Intelligence in library servi ces.

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.0 Introduction

This introduced the study on the assessment of the use of Gemini Artificial Intelligence (AI). It presented the background of the study, the statement of the problem, research objectives, rese

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arch questions, the significance of the study, the scope of the study, the limitations of the stu dy, and the organization of the study.

1.1 Background of the Study

The rapid advancement of Artificial Intelligence (AI) technologies has transformed the way inf ormation is created, accessed, and disseminated across various sectors, including education and academic libraries Association of College and Research Libraries (2024). AI-powered tool s such as Gemini Artificial intelligence (AI) had emerged as innovative technologies capable o f assisting users in searching, retrieving, summarizing, and understanding information efficie ntly. These developments had encouraged academic libraries to explore AI-based solutions to improve the delivery of reference services and enhance users' access to information resource s. Nowkarizi, M. (2021)

Academic libraries have traditionally relied on librarians to provide reference services by assist ing users in locating, evaluating, and utilizing information resources. However, the increasing volume of digital information and the growing demand for instant access to information have created challenges in meeting users' expectations through conventional reference services alo ne. American Library Association (2024). Four major factors influenced the adoption of AI in li braries and transformation of library services, provision of innovative services, librarians and users' satisfaction, and technological revolution such as; technological challenges, skills and knowledge barriers, financial challenges, and organizational and cultural barriers caused barri ers for librarians to adopt AI apps in libraries (Shahzad, 2025).

At the University of Dar es Salaam Library, the adoption and use of digital technologies had c ontinued to expand in order to enhance teaching, learning, and research activities. Gemini AI h ad become one of the emerging tools that students and librarians could utilize to search for a cademic information, generate summaries, answer research related questions, and support le arning activities. University of Dar es Salaam (2024). Reference services involve assisting use rs in locating, evaluating, and using information resources. The adoption of Gemini AI has tra nsformed these services by providing conversational assistance, multilingual support, literatur

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e searching, and research guidance (Ayinde, 2026).

developed countries such as the United States, Canada, the United Kingdom, and Australia, a cademic libraries have begun investigating with generative AI tools, including Gemini, to supp ort reference librarians. Rather than replacing librarians, Gemini is used to answer frequently a sked questions, assist users in locating scholarly resources, generate research keywords, sum marize academic articles, translate information into multiple languages, and provide 24-hour virtual reference support. These capabilities reduce librarians' workload while enabling users t o obtain faster responses (Ayinde, 2026). A recent study published in the *Journal of Academic Librarianship* evaluated generative AI tools against traditional virtual reference services. The r esearchers found that generative AI systems demonstrated a strong ability to understand user s' reference questions and produce relevant responses. However, the Gemini AI reported weak nesses in citation accuracy and factual reliability, emphasizing that AI should complement rat her than replace professional librarians (Ayinde et al., 2026).

Across Europe and North America, university libraries are increasingly integrating Gemini and similar AI systems into digital reference services because these tools support natural languag e searching, personalized information retrieval, and rapid summarization of large volumes of academic literature (Ayinde et al., 2026). Libraries are also using AI to improve accessibility fo r users with disabilities through speech recognition, text summarization, and language transla tion. African universities have also begun exploring generative AI for library services (Nkomo & Matli, 2025). Although implementation remains at an early stage, libraries are investigating the use of Gemini for practical reference, information literacy instruction, and user support. No te that there is currently limited research focused exclusively on Gemini in library settings. Mo st recent publications discuss Gemini alongside other generative AI tools such as Chatty and Microsoft (Boyle, 2025). Challenges remain in infrastructure, funding, digital skills, and AI gov ernance. Recent studies conducted in Tanzania examine the integration, literacy, capabilities, and impacts of Generative AI tools, including Google Gemini, across higher education, langua ge learning, and scientific research (Boyle, 2025). Tanzania has worked on how to implement

the Gemini AI by creating meetings with international organizations like UNESCO and provide d a summary on it plan for implementation.(Tanzania, United Republic).UNESCO (2023).

Despite these potential benefits, limited empirical evidence had been available regarding the e xtent to which Gemini AI had been used to improve reference services and facilitate access to learning information resources within the library. Therefore, this study was conducted to asse ss the use of Gemini AI in improving reference services for library users at the University of Da r es Salaam Library, Tanzania. Boyle, C. (2025)

1.2 Statement of the Problem

Academic libraries had increasingly adopted digital technologies to improve the delivery of inf ormation and reference services. The emergence of Artificial Intelligence (AI) tools such as Ge mini AI had created new opportunities for enhancing users' access to academic information t hrough faster searching, information retrieval, summarization, and question-answering capabi lities. Despite these developments, there had been limited understanding of how effectively G emini AI had been utilized to support reference services in academic libraries.

At the University of Dar es Salaam Library, students and librarians had gained access to vario us digital information resources, and some users had begun using AI-powered tools to suppor t their learning and research activities. However, there had been insufficient empirical evidenc e regarding the level of awareness and use of Gemini AI, its effectiveness in improving access to learning information resources, the benefits experienced by users, and the challenges enco untered during its use. As a result, library management and other stakeholders had lacked ade quate information to determine the extent to which Gemini AI could support or improve refere nce services. University of Dar es Salaam. (2024).

The absence of such evidence had made it difficult to develop appropriate strategies for integ rating AI technologies into library reference services and for promoting their effective and resp onsible use among library users. Therefore, the study was conducted to assess the use of Ge mini AI in improving reference services for library users at the University of Dar es Salaam Libr

ary. The study generated evidence on the level of use, effectiveness, benefits, and challenges associated with Gemini artificial intelligence (AI), thereby providing information that could su pport decision-making, improve library services, and guide future research on AI applications i n academic libraries.

1.3 General Objective

To assess the use of Gemini artificial intelligence (AI) in improving reference services fo r library users at the University of Dar es Salaam Library.

1.4 Specific Objectives

1. To examine how Gemini AI is used to provide reference services to library use rs at the University of Dar es Salaam.
2. To assess the benefits of using Gemini AI in improving reference services for library users.
3. To assess the level of awareness and use of Gemini AI among library users a t the University of Dar es Salaam.
4. To identify the challenges associated with the use of Gemini AI in providing r eference services.

1.5 Research Questions

1. How is Gemini AI used in providing reference services in academic libraries?
2. What benefits do library users gain from using Gemini AI to access reference i nformation?
3. What is the level of awareness of Gemini AI among library users at the Universi ty of Dar es Salaam?
4. What challenges do library users face when using Gemini AI for reference servi ces?

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1.6 Significance of the Study

The study contributed to the growing body of knowledge on the application of Artificial Intelligence in academic library services, particularly the use of Gemini AI in improving reference services. The findings provided empirical evidence on the level of awareness and use of Gemini AI, its effectiveness in accessing learning information resources, the benefits experienced by users, and the challenges associated with its use at the University of Dar es Salaam Library. The findings benefited librarians by providing a better understanding of how Gemini AI supported reference service delivery. The evidence enabled librarians to identify areas where AI technologies could complement traditional reference services, improve the efficiency of information retrieval, and enhance user support. University of Dar es Salaam. (2024).

For students and other library users, the findings increased awareness of the potential of Gemini AI as a tool for accessing academic information, conducting literature searches, summarizing information, and supporting learning and research activities. The study also identified challenges that users experienced, thereby providing a basis for improving user guidance and digital literacy programmers.

1.7 Scope of the Study

This study will be conducted at the University of Dar es Salaam Library. It will focus on assessing the use of Gemini Artificial Intelligence (AI) in improving reference services for library users in an academic library. The study will involve two categories of respondents, namely librarians and students, because they are directly involved in the provision and use of reference services.

The study will specifically examine the extent to which Gemini AI is used to access learning information resources, its effectiveness in supporting reference services, the challenges associated with its use, and possible strategies for enhancing its application in academic libraries. Other artificial intelligence tools, library operations, and non-academic libraries will not be covered because the study is limited to Gemini AI and reference services at the University of Dar es Salaam Library.

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The findings of this study are expected to provide information that may assist librarians, university management, researchers, and policymakers in understanding the contribution of Gemini AI to improving reference services in academic libraries.

1.8 Limitations of the Study

The study may face several limitations. First, the research will be conducted at only one academic library, the University of Dar es Salaam Library. Therefore, the findings may not fully represent all academic libraries in Tanzania.

Second, the study will rely on data collected through questionnaires. Some respondents may provide incomplete responses or may not return the questionnaires on time, which could affect the completeness of the data collected.

Third, the level of awareness and experience with Gemini AI may differ among respondents. Some students and librarians may have limited knowledge or practical experience with Gemini AI, which may influence the accuracy and depth of their responses.

Despite these limitations, appropriate research procedures will be followed to ensure that the data collected are reliable and valid, and that the findings provide useful information for achieving the objectives of the study.

1.9 Definition of Key Terms

In the context of the provided several key terms need to be defined to establish a clear understanding of the subject matter. Below are the definitions of these key terms which are artificial intelligence and Gemini AI details.

1.9.1 Artificial Intelligence (AI): The capability of computer systems to perform tasks that normally require human intelligence, including learning, reasoning, problem-solving, language understanding, and decision-making.

1.9.2 Gemini AI: A generative artificial intelligence model developed by Google that assists users in generating content, retrieving information, answering questions, and supporting problem-solving through natural language interaction.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This review existing of literature related to the use of artificial intelligence (AI), particula rly Gemini AI in improving reference services in academic library. The section examined previous studies and scholarly discussion on how AI technologies are used in libraries p roviding reference services, the benefits of AI in improving reference services, the level o f awareness and usage of AI tools among library users.

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2.1 Use of Gemini AI in providing reference services in academic libraries

Reference services are an essential function of academic libraries because they assist users in locating and accessing information resources needed for academic work. Tradi tionally, reference services have been provided through face to face interactions betwee n librarians and users at reference desk. However, technology development has transfor med these services through the integration of digital tools and artificial intelligence. A g enerative artificial intelligence tool, has the capability to process natural language ques tions and provide detailed response to users' information queries. This technology can assist Library users in searching for information, identifying relevant resources and und erstanding complex topics. According to Tella (2023), AI technologies in academic libra ries help automate reference services by answering frequently asked questions, guiding users in database searches, and recommending relevant resources. Similarly, Cox et al (2023). Note that generative AI tools such as Gemini can support academic research by providing quick explanations, summarizing information and directing users to scholarly materials. For example, AI Gemini additional use cases include generating custom rese arch guides, explaining academic concepts in simple language, and assisting with litera ture reviews (Jyoti & Kumar, 2024).

2.2 Benefits of Using Gemini AI in Improving Reference Services

The adoption of artificial intelligence technology in academic library offers several ben efits that contribute to the improvement of reference services at university of dar es sal aam. One of the major benefits is the ability of AI systems to provide instant responses to user queries. Unlike traditional reference services that depends on the availability of li brarians is AI tools that can operate continuously and provide assistance at any time. A nother important benefit is improved efficiency in information retrieval. Gemini AI techn ology analyze user questions and provide relevant answers or recommendations quickl y which helps users to save time when searching for information. According to Dwivedi et al. (2023), Gemini AI technologies enhance knowledge Discovery by processing large

volumes of information and presenting summarized responses that are easier for users to understand. Furthermore, AI Gemini can provide personalized information services by analyzing user queries and search patterns, so as Gemini systems can recommend rele vant academic materials, database or research topics. This personalized support helps to improve the learning experience for library users. In addition, the use of AI Gemini at University of Dar es salaam library helps reduce the workload of librarians by automati ng routine reference inquiries. Librarians can therefore focus on more complex tasks su ch as research information literacy training and academic support services.

2.3 Awareness and usage of Gemini AI among library users

Awareness and usage of technological tools play a crucial role in determining their effe ctiveness in academic environments For AI tools such as Gemini to improve reference s ervices. library users must first be aware of their existence and understand how to use t hem effectively. Studies have shown that awareness of digital information tools among library users varies depending on factors such as digital literacy, access to technology, and institutional support. According to Asemi (2018), many libraries users are aware of digital tools but may lack adequate training on how to use them effectively for academi c research. Academic libraries play an important role in promoting awareness of new te chnologies through user education programs and information literacy training. By provi ding guidance on how to use Gemini AI tools responsibly, libraries can help users benefi ts from these technologies while maintaining academic integrity. Therefore, examining t he level of awareness and usage of Gemini AI among library users at the University of D ar es salaam is important for understanding how widely the technology is adopted and how it contributes to reference services.

2.4 Challenges of using Gemini AI in reference services

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Despite the benefits associated with artificial intelligence technology in Gemini AI, there are several challenges that may affect their adoption in academic libraries. One major c hallenge is the issue of information accuracy. Gemini AI sometimes generate incorrect or misleading information, which may affect the reliability of reference services if users rely on them without verification. Another challenge is the lack of technical skills amon g both librarians and users. Implementing and managing Gemini AI technology requires technical knowledge and training. Without adequate skills and training, the effective us e of AI tools like Gemini AI in libraries may be limited. Matli, W. (2025). Privacy and ethi cal concerns also present challenges in the use of AI technologies. Gemini AI systems r eply on large amounts of data, which raises concern about the protection of user perso nal information and data security. Additionally, infrastructure limitations such as inade quate internet connectivity limited funding and lack of technological resources may hin der the adoption of Gemini AI tool in academic library particularly in developing countri es. These highlight the need for careful planning and support when integrating Gemini AI technologies into library services. Nkomo, S. (2025).

2.5 Research Gap

Previous studies have examined the application of Artificial Intelligence (AI) in libraries, focusi ng mainly on AI adoption, digital library services, user perceptions, and information retrieval. H owever, limited research has specifically investigated the use of Gemini AI in improving refere nce services in academic libraries, particularly in Tanzania. Therefore, this study was conduct ed at the University of Dar es Salaam Library to assess the use, effectiveness, benefits, and ch allenges of Gemini AI in improving reference services.

CHAPTER THREE

RESEARCH METHODOLOGY

Research methodology: is the process used to collect information and data for the purp ose of making decisions. The methodology may include publication research, interview s, surveys and other research techniques and can include both present and historical inf ormation.

3.0 Introduction

This presents the research methodology that will be used to conduct the study. It descri bes the research design, study area, target population, sample size, sampling technique s, data collection methods, data analysis procedures, and ethical considerations. The m ethodology provides a systematic approach that will guide the researcher in collecting a nd analyzing data on the use of Gemini AI.

3.1 Research Design

The quantitative and qualitative study design (Mixed study) was conducted among 50 partici pants from the University of Dar es Salaam Library 2026. Quantitative data were collected thr ough questionnaires administered to students, while qualitative data were obtained through in terviews conducted with librarians.

3.2 Study Area

The University of Dar es Salaam Library were selected as the study area because it had adopt ed various information and communication technologies to enhance library service delivery. T he library provided access to electronic databases, digital repositories, online catalogue and ot her digital information resources that supported academic activities.

3.3 Target Population

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The target population consist of 50 respondents, including 40 students and 10 librarians. The se groups were selected because they are directly involved in the use and provision of referenc e services.The target population is expected to possess the knowledge and experience require d to provide reliable and relevant information for achieving the objectives of the study.

3.4 Sample Size

The sample size referred to the number of respondents selected from the target population to participate in the study. It was determined to ensure that sufficient data were collected to addr ess the research objectives while considering the available time, financial resources, and acce ssibility of respondents.

3.5 Sampling Techniques

Sampling techniques referred to the procedures that were used to select respondents from the target population to participate in the study. The selection of appropriate sampling technique s ensured that the respondents possessed relevant knowledge and experience related to the re search problem, thereby enhancing the quality and reliability of the data collected.

3.5.1 Purposive Sampling Technique

The study employed purposive sampling to select the librarian respondents. This technique w as used because the librarians were considered to possess the knowledge, experience, and pr ofessional skills that were relevant to the objectives of the study. Unlike students, the librarian s were directly involved in providing reference services. he reasons for a simple random sampl ing was that, the technique gave every student who used the library an equal chance of being selected to participate in the study.

3.5.2 Simple random sampling

Simple random sampling was used to select the student respondents. This technique gave ev ery student who used the library an equal chance of being selected to participate in the study. The use of simple random sampling minimized selection bias and increased the fairness of t

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he selection process. A total of 40 students were randomly selected from the library users to p rovide information on their awareness, experiences, perceptions.

3.6 Data Collection Methods

Data collection methods referred to the systematic procedures that were used by the research er to gather information from the study respondents in order to answer the research questions and achieve the objectives of the study. In this study, the researcher was using questionnaires as the primary method of data collection. The tool was used to enabled the researcher to obta in standardized information from a large number of respondents in a systematic.

3.6.1 Questionnaire Method

The questionnaire consisted of both closed-ended and open-ended questions. The closed-end ed questions enabled the researcher to obtain quantitative data that were easily summarized and analyzed using frequencies and percentages.

3.7 Data Processing and Analysis

The analysis will be guided by the research objectives. Data related to each objective wi ll be grouped together and analyzed separately to determine the use of Gemini AI in acc essing learning information resources, its effectiveness in improving reference services. The quantitative data were analyzed using frequencies, percentages and presented in t ables, while qualitative data from interviews were analyzed.

3.8 Research Ethics

Research ethics will be observed throughout the study to ensure that the rights, dignity, and w elfare of all participants are protected. Before commencing data collection, the researcher will obtain an introduction letter from the University and seek permission from the management o f the University of Dar es Salaam Library to conduct the study.

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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

4.0 Introduction

This presents the findings obtained from the field study conducted at the University of Dar es Salaam Library. The study aimed to assess the use of Gemini Artificial Intelligence (AI) in improving reference services for library users in academic libraries. The quantitative data were analyzed using frequencies, percentages and presented in tables, while qualitative data from interviews were analyzed.

4.1 Demographic Characteristics of Respondents

This chapter presents the demographic characteristics of the respondents who participated in the study. These characteristics include respondent category, gender, age, education level and year of work experience. these variables were considered important because they may influence respondent's knowledge and experience

4.1.1 Distribution of Respondents by Category

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Table 4.1 Distribution of Respondents by category (N=50)

CATEGORY	FREQUENCY	PERCENTAGE (%)
Students	40	80%
Librarians	10	20%
Total	**50**	**100%**

Source Field Study (2026)

This table 4.1 shows that out of the 50 respondents who participated in the study, 40 (80%) w ere students and 10 (20%) were librarians. Students formed the majority because they are the principal users of academic library reference services and AI tools such as Gemini.

4.1.2 Gender of Respondents

The respondents were asked to indicate their gender, information on gender of respondents w as needed by researcher so as to identify their participation of respondents depending to their gender. The study shows that both male and female were used to escape bias.

Table 4.2 Information on Gender of respondents (N=50)

GENDER	FREQUENCY	PERCENTAGE (%)
Male	22	56%
Female	28	44%
Total	**50**	**100%**

Source Field Study (2026)

The findings show that 28 (44%) respondents were male and 22 (56%) respondents were fem

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ale. This suggests that both male and female respondents participated in the study, providing diverse views on the use of Gemini AI in improving reference services.

4.1.3 Education Level of respondents

The respondents were asked to indicate their level of education. Information on education of r espondents was needed by researcher so as to identify the participation of respondents depe nding to their level of education and data are indicated in table 4.3 below.

Table 4.3 Education Level of respondents (N=50)

EDUCATION LEVEL	FREQUENCY	PERCENTAGE (%)
Diploma	8	16%
Bachelor Degree	29	58%
Masters	11	22%
PhD	2	4%
Total	**50**	**100%**

Source Field Study (2026)

The findings show that 29 (58%) of the respondents held a Bachelor's degree, making them th e largest group in the study. This was followed by 8 (16%) respondents with a Diploma, 11 (2 2%) with a Master's degree, and 2 (4%) with a PhD.

4.2.4 Distribution of respondents by Age

The respondents were requested to mention their respective age. The question was asked to t he respondents in this study due to its different ages where table 4.4 below summarized the re sults.

Table 4.4 Distribution of respondents by age (N=50)

AGE GROUP	FREQUENCY	PERCENTAGE (%)
Below 25 years	18	36%

25 - 34 years	17	34%
35 - 44 years	10	20%
Above 45 years	5	10%
Total	**50**	**100%**

Source Field Study (2026)

The results show that respondents came from different age groups. The largest group18 (3 6%) was below 25 years, followed by those aged 25–34 years 17 (34%). This reflects the fact that most university students are young adults and are more likely to use emerging technologi es such as Gemini AI.

4.2.5 Work Experience of library

The librarians were asked their different levels of work experience strengthened the quality of t he data collected. Librarians with less than five years of experience provided insights into curr ent practices and the adoption of emerging technologies such as Gemini AI. Those with 5–10 years of experience contributed practical knowledge gained from several years of providing re ference services.

Tables 4.5 Years of work experience(Librarians only n=10)

YEARS OF EXPIERNCE	FREQUENCY	PERCENTAGE (%)
Less than 5 years	2	20 (%)
5 - 10 years	4	40 (%)
11 - 15 years	3	30 (%)
More than 15	1	10 (%)
Total	**10**	**100%**

Source Field Study (2026)

The findings table 4. 5 shows that Among of the librarians 4 (4 0%) had 5–10 years

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of professional experience, while 3 (30%) had 11–15 years of experience. This indicates that most librarian respondents had considerable experience in delivering reference services and w ere therefore well placed to provide informed opinions on the opportunities and challenges of using Gemini AI in academic libraries

4.3 To Assess the Use of Gemini AI in Accessing Learning Information Resources

This objective guided the data collection process by gathering information from students and librarians regarding their use of Gemini AI in accessing learning information resources. The q uestionnaire included questions on the frequency of using Gemini AI, the types of learning res ources accessed through the tool such as books, journal articles, research materials.

Table 4.6 Main Purpose of Using Gemini AI in accessing learning information resources (N= 40)

PURPOSE	FREQUENCY	PERCENTAGE (%)
Searching academic information	16	40%
Completing assignments	10	25%
Research activities	8	20%
General knowledge	6	15%
Total	**40**	**100%**

Source Field Study (2026)

The findings Table 4.6 shows that the majority of respondents, 16(40%), use Gemini AI mainly for searching academic information. This was followed by 10 (25%) of respondents who use Gemini AI to complete assignments, while 8 (20%) of respondents reported using it for researc h activities. The remaining 6(15%) of respondents indicated that they use Gemini AI to obtain general knowledge.

4.4 Perception on Ease of Using Gemini AI

Table 4.7 Respondents Perception of Ease of Using Gemini AI (N=40)

RESPONSES	FREQUENCY	PERCENTAGE (%)
Very easy	15	37.5%
Easy	17	42.5%
Neutral	5	12.5%
Difficult	3	7.5%
Total	**40**	**100%**

Source Field Study (2026)

The findings in Table 4.7 shows that 17 (42.5%) of respondents considered Gemini AI easy to use, while 15 (37.5%) of regarded it as very easy to use. Only 3 (7.5%) respondents reported di fficulties in using the system, whereas 5 (12.5%) remained neutral.

4.5 Satisfaction with Information Provided by Gemini AI

Table 4.8 Satisfaction with information provided by Gemini AI (N=40)

RESPONSES	FREQUENCY	PERCENTAGE (%)
Very satisfied	14	35%
Satisfied	18	45%
Neutral	5	12.5%
Dissatisfied	3	7.5%
Total	**40**	**100%**

Source Field Study (2026)

The findings of Table 4.8 show that 18 (45%) of respondents were satisfied with the informati on provided by Gemini AI, while 14 (35%) of respondents were very satisfied. 5 (12.5%) expre ssed neutral opinions, and only 3 (7.5%) were dissatisfied.

4.6 Challenges Encountered When Using Gemini AI

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The respondents were asked to demonstrate that although Gemini AI had improved reference services, several challenges still limited its effective use.

Table 4.9 Challenges Encountered when using Gemini AI (N=40)

CHALLENGE	FREQUENCY	PERCENTAGE (%)
Internet connectivity	15	37.5%
Inaccurate information	9	22.5%
Limited AI knowledge	8	20%
No significant challenge	8	20%
Total	**40**	**100%**

Source Field Study (2026)

The findings of Table 4.9 show that poor Internet connectivity was the most common challen ge, reported by 15 (37.5%) of respondents. 9 (22.5%) of respondents cited inaccurate or misle ading information generated by Gemini AI, while 8 (20%) o respondents reported having limite d knowledge and skills in using AI tools. Another 8 (20%) of respondents indicated that they e xperienced no major challenges.

4.7 Overall Effectiveness of Gemini AI in Improving Reference Services

The respondents were asked to overall the negative impact of using Gemini artificial intelligen ce in improving reference services where responses will give their answers in very effective, ne utral, effective and not effective and so it will be conducted by frequency and percentages

Table 4.10 Overall Effectiveness of Gemini AI in improving reference services (N=40)

RESPONSES	FREQUENCY	PERCENTAGE (%)

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Very effective	17	42.5%
Effective	16	40%
Neutral	4	40%
Not effective	3	7.5%
Total	**40**	**100%**

Source Field Study (2026)

These findings show that 17 (42.5%) of respondents considered Gemini AI very effective in improving reference services, while 16 (40%) regarded it as effective. 4 (10%) of respondents remained neutral, whereas only 3 (7.5%) of respondents believed that Gemini AI was not effective.

4.8 To Assess the Benefits of Using Gemini AI in Improving Reference Services for Library Users

The respondents were asked to determine the benefits that library users experienced from using Gemini AI in accessing reference services. Respondents were asked to indicate the main benefit they obtained when using Gemini AI.

Table 4.11: Benefits of Using Gemini AI in improving reference services for library users (N =40)

Benefits	**FREQUENCY**	**PERCENTAGE (%)**
Quick access to information	15	37.5%
Saves time during information searching	10	25%
Improve understanding of academic topics	8	20%
Supports research and assignments	7	17.5%
Total	**40**	**100%**

Source Field Study (2026)

The findings show that 15 (37.5%) reported that the greatest benefit of Gemini AI was providi ng quick access to academic information. 10 (25%) shows that Gemini AI saved time when se arching for information resources. 8 (20%) stated that the technology improved their understa nding of academic concepts, while 7 (17.5%) reported that it supported research and assignm ent preparation.

4.9 To Assess the Level of Awareness and Use of Gemini AI among Library Users

The respondents were asked to assess the level of awareness and how they used Gemini artif icial intelligence among the library users by using frequently and percentages.

Table 4.12: Level of Awareness of Gemini AI among library users (N=40)

Awareness level	FREQUENCY	PERCENTAGE (%)
Highly aware	14	35%
Moderately aware	16	40%
Slightly aware	7	17.5%
Not aware	3	7.5%
Total	**40**	**100%**

Source Field Study (2026)

The findings show that 16 (40%) were moderately aware of Gemini AI, while 14 (35%) were hi ghly aware. 7 (17.5%) reported being slightly aware, whereas only 3 (7.5%) indicated that they were not aware of the technology.

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CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This presents the summary of the study, conclusions drawn from the findings, recommendations, and suggestions for further studies. The study assessed the use of Gemini Artificial Intelligence (AI) in improving reference services for library users at the University of Dar es Salaam Library.

5.2 Summary of the Study

The findings showed that the majority of respondents used Gemini AI mainly to search for academic information, complete assignments, conduct research, and obtain general knowledge. Most respondents considered Gemini AI easy to use and expressed satisfaction with the quality of information it provided.

5.3 The strengths and Limitations of the Study

The used appropriate research procedures that ensured reliable and valid data collection, and that the findings provide useful information for achieving the objectives of the study. Despite the strengths, this study has several limitations that needs to be acknowledged: First, the research was conducted at only one academic library, the University of Dar es Salaam Library. Therefore, the findings may not fully represent all academic libraries in Tanzania. Second, the study used a self-administered questionnaire. Some respondents delayed in return of the questionnaires on time, which could affect the completeness of the data collected. Third, the level of

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awareness and experience with Gemini AI may differ among respondents. Some students and librarians may have limited knowledge or practical experience with Gemini AI, which may influence the accuracy and depth of their responses.

5.4 Conclusion

The study concluded that Gemini AI significantly improved reference services at the University of Dar es Salaam Library. The technology enhanced access to academic information by providing quick responses, assisting users in locating relevant information resources, supporting research activities, and simplifying complex academic concepts.

5.5 Recommendations

The University of Dar es Salaam Library should strengthen the integration of Gemini AI into its reference services by developing clear policies and guidelines for its use. The findings showed that Gemini AI helped users access academic information more quickly and efficiently. Librarians should continuously improve their knowledge and skills in Artificial Intelligence technologies through regular training, workshops, seminars, and professional development programmers. Students and other library users should use Gemini AI as a supplementary academic tool rather than relying on it as the only source of information. Although Gemini AI provides quick access to information and supports learning and research, users should verify the information obtained from AI using scholarly books, peer-reviewed journals, library databases, and other credible academic sources.

5.6 Chapter Summary

This chapter summarized the major findings of the study, presented the conclusions drawn from the findings, and provided recommendations for improving the use of Gemini AI in academic library reference services. The chapter also suggested areas for future research to expand knowledge on the application of Artificial Intelligence in academic libraries.

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APPENDIX I

TIME SCHEDULE

ACTIVITIES	1st MONTH	2nd MONTH	3rd MONTH	4th MONTH	5th MONTH	6th MONTH

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Writing of research proposal						
Submission of research proposal						
Collection of data from the field						
Analysis of data for report drafting						
Writing research report						
Submission of research report						

APPENDIX II

RESEARCH BUDGET

NO.	Budget items	Description of units and costs	Units	Costs	Total

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1	**Stationary**	• Ream paper • Photocopying • Binding expenses • Questionnaire • Pens • Writing materials	1 80@pg 100 2covers@ 1000 35pg@ 100 4@ 500 2000	10,000 8,000 2,000 3,500 2,000 2000	10,000 8,000 2,000 3,500 2,000 2000
2	**Data collection**	• Transport Bagamoyo to Dar es salaam • Meal allowances	30days 30 days	6,000 2,000	180,000 60,000
3	**Secretary services**	• Research proposal • Photocopy • Research report	37pg@ 200 60pg 2 @ 100 40pg @200	7,400 100 8,000	7,400 6,000 8,000
	Grand total				**288,900**

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APPENDIX III

QUESTIONNAIRE FOR STUDENTS

Dear respondents

I am a student from the school of library archives and documentation studies (SLADS). I am h ere to conducting the research on the use of Gemini artificial intelligence AI in improving refer ence devices for library users in academic library at university of Dar es salaam.

Please you are kindly requested to fill these questionnaires by inserting answers in the gaps o r put tick where necessary.

1. Select the gender corresponding to you

a) Male ( )

b) Female

2. Write your level of education

a) Certificate

b) Diploma ( )

c) Degree

d) Masters

3. What group age do you belong to?

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a) Bellow 25

b) 25 _35

c) 35_ 45 ( )

d) 46+

4. How frequently do you use Gemini AI for accessing learning information resource s?

a) Less than three times

b) Five times

c) Everyday ( )

d) Other (specify)

5. Do you enjoy using the Gemini AI artificial intelligence in accessing online learning resource?

a) Yes

b) No ( )

c) Some how

6. Do you rely on using Gemini AI technology to access online learning resources?

a) Yes

b) No ( )

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7. How can you rate Gemini AI technology to meet your learning information needs?

a) Excellent

b) Very good

c) Good ( )

d) Satisfactory

e) Worse

8. What are the challenges do you face when using Gemini artificial intelligence AI as the technology of accessing online learning resource?

……

……

……

9. What are the possible solutions towards solving challenges related to artificial intell igence technology on accessing online learning resources?

……

……

……

APPENDIX IV

INTERVIEW FOR STAFF AND LIBRARIAN

1. Are you aware of Gemini artificial intelligence AI being used in the university of Dar es salaam library?

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2. To your opinion, why do you think Gemini artificial intelligence improved reference s ervices in university of Dar es salaam library collection ?

3. What were the challenges that you have faced while using the artificial intelligence AI in reference services?

4. Do you have any suggestions, additional comments or advise about using the Gemi ni artificial intelligence AI to increase improvement in reference services?

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Our Ref. AB3/31

Date: 20 March 2026

Director
Mwenzi Chagula University Library
University of Dar es Salaam

RE: RESEARCH CLEARANCE

This is to introduce **Mr. Michael Richard Mchaki** who is a Diploma Student at the School of Library Archives and Documentation Studies. He intends to at the moment conducting data collection as part of her Studies. The title of her research is ***"AN ASSESSMENT ON THE USE OF GEMINI AI IN IMPROVING REFERENCE DEVICE FOR LIBRARY USERS IN ACADEMIC LIBRARY".***

This is to request you to grant the above-mentioned student any help that may enable her to achieve her study objectives. The period for which this permission has been granted is from **March to May 2026.**

Sincerely,

Dr. Christine Noe
DIRECTOR OF RESEARCH AND PUBLICATION

CC: Vice Chancellor
DVC – Academic
DVC – Administration
DVC – Research

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