

UNIVERSITY OF GHANA COLLEGE OF EDUCATION

SCHOOL OF INFORMATION AND COMMUNICATION STUDIES

DEPARTMENT OF INFORMATION STUDIES

**FACTORS INFLUENCING THE PROVISION OF ACADEMIC LIBRARY
SERVICES IN ACHIEVING UNITED NATIONS SUSTAINABLE DEVELOPMENT
GOAL 4 IN GHANA**

BY

ABDUL-RAZAK AWUDU

(11358730)

SUPERVISORS

DR. MRS. FLORENCE ENTSUA-MENSAH

DR. MUSAH ADAMS

**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN
PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF AN
MPHIL IN INFORMATION STUDIES DEGREE**

OCTOBER 2025

DECLARATION

I declare that, except for the reference to other individual's academic work that have been duly acknowledge, this thesis is the result of my work conducted under the supervision of my supervisors. This work has not been submitted, in whole or in part, for any other degree elsewhere.

(Candidate)

ABDUL-RAZAK AWUDU

Sign:  Date: 27-10-2025

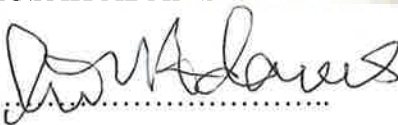
(Principal Supervisor)

DR. FLORENCE ENTSUA-MENSAH

Sign:  Date: 29/10/2025

(Co-Supervisor)

DR. MUSAH ADAMS

Sign:  Date: 28/10/2025



DEDICATION

This work is dedicated to my wife Halimatu Ibrahim, my daughters Humaira and Zakiya, and my sons Sulieman (Jur.) and Ibrahim



ACKNOWLEDGEMENT

This study has been made possible through the graciousness of Almighty Allah, to whom all initial gratitude is due.

I am also deeply indebted to several individuals who have helped me along the way and offered valuable advice. I owe profound gratitude to my supervisors Dr. Mrs. Entsua-Mensah and Dr. Musah Adams, for their untiring effort, commitment, guidance, and support in helping me complete this thesis.

I am particularly grateful to Dr. Ebenezer Ankrah and all the lecturers at the Department of Information Studies for their encouragement and support throughout the course.



TABLE OF CONTENTS

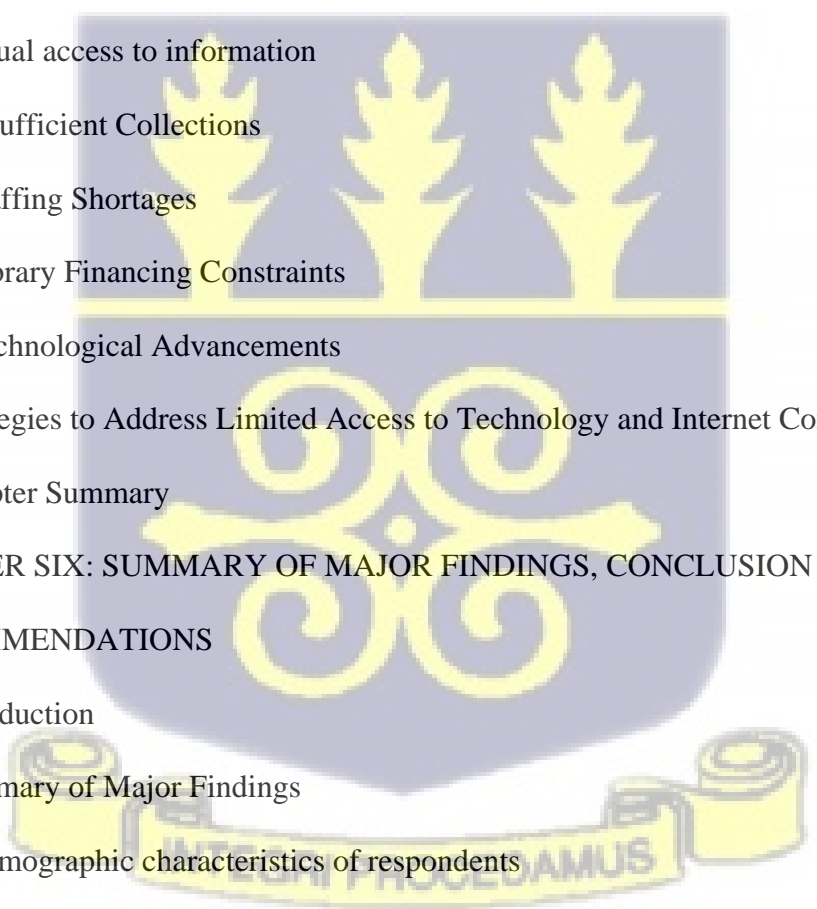
Content	Page
DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATION	xii
ABSTRACT	xiii
CHAPTER ONE: INTRODUCTION	1
1.1. Background to the Study	1
1.2. Statement of the Problem	6
1.3. Purpose of the Study	8
1.4. Objectives of the Study	8
1.5. Theoretical Framework	9
1.6. Application of the Study to the Theory	11
1.7. Limitation\ the Scope of the Study	13
1.8. Significant of the Study	13
1.9. Organization of Chapter	14
1.10. Conclusion	16
CHAPTER TWO: LITERATURE REVIEW	17
2.1. Introduction	17

2.2. The Concept of Academic Library Services	18
2.2. The Concept of Academic Library Services	19
2.3. The concept of SDG 4	22
2.4 Academic Libraries and SDG 4	26
2.5. Infrastructure that Supports the Provision of library services	29
2.6. Specialized Services at Academic Libraries	33
2.7. Skills and Competence of Academic Librarians	36
2.8. Policies or Legal Framework on Academic Libraries	40
2.9. Challenges confronting academic librarians in service delivery to achieve SDG4	43
2.10. Conclusion	45
CHAPTER THREE: RESEARCH METHODOLOGY	47
3.1. Introduction	47
3.2. Research Paradigm	47
3.3. Research Method	50
3.4. Research Design	51
3.5. Selected Case(s)	53
3.6. Study Setting	54
3.6.1 Sam Jonah Library	54
3.6.2. John Kofi Borsah Library	55
3.7. Selection of Subjects	56
3.7.1. Population	57
3.7.2. Sampling Size	60
3.7.3. Sampling Technique	60

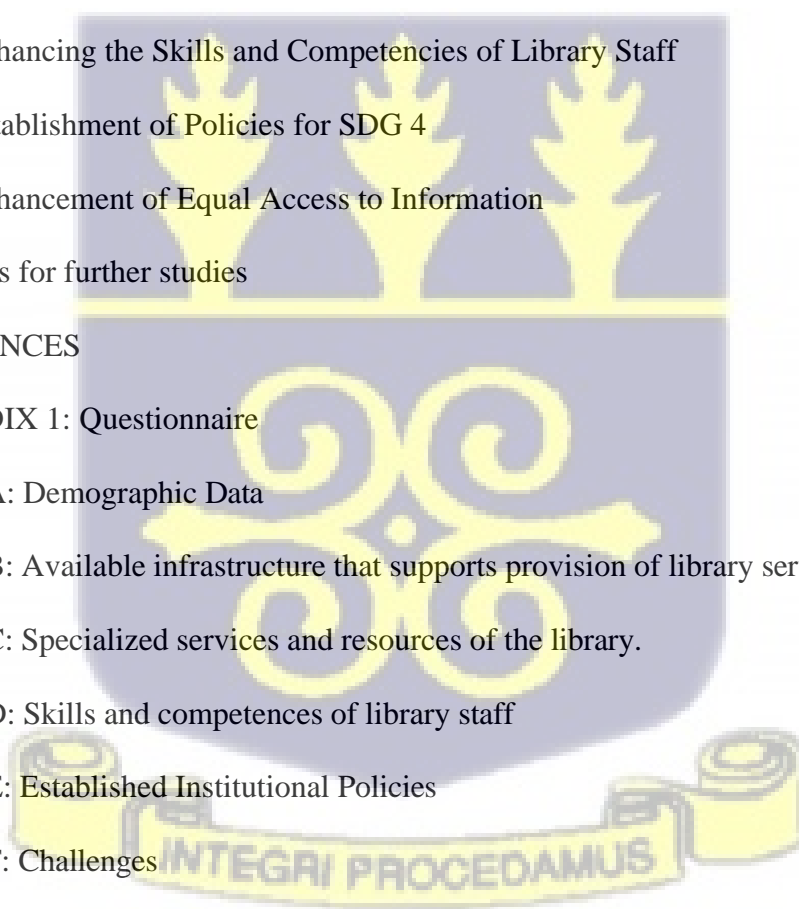


3.8. Instrumentation	61
3.8.1. Pilot Testing of Instruments	62
3.8.2. Reliability of the Instrument	63
3.9. Data Collection Procedures	64
3.10. Data Presentation and Analysis	65
3. 11. Ethical Consideration	67
3.12 Chapter Summary	68
CHAPTER FOUR: DATA ANALYSIS AND FINDINGS	69
4.1. Introduction	69
4.2. Respondent Demographics	70
4.3. Library infrastructure availability for SDG4	76
4.4. Specialized Library service and resources of the library	83
4.4.1. Effectiveness of current specialized resources and services	85
4.4.2. Availability of trained personnel for specialized services	86
4.5. Skills and Competencies of Library Staff	88
4.5.2. Information Retrieval Skills	91
4.6. Established Institutional Policies	93
4.7.1. Challenges libraries faced in providing access to information	96
4.7.2. Strategies to address limited access to technology and internet connectivity	99
CHAPTER FIVE: DISCUSSION OF MAJOR FINDINGS	103
5.1. Introduction	103
5.2. Respondent Demographics	103
5.3. Available infrastructure that supports library services	104

5.4. Specialized Library service and resources of the library	125
5.4.1. How well is your library resource	125
5.4.2. Effectiveness of Specialized Resources and Services	127
5.4.3. Availability of trained personnel for specialized services	129
5.5. Skills and competencies of library staff	133
5.5.1. Computer Knowledge	135
5.5.2. Information Retrieval Skills	136
5.6. Established Institutional Policies	140
5.7. Challenges libraries faced in providing access to information	145
5.7.1. Equal access to information	145
5.7.2. Insufficient Collections	146
5.7.3. Staffing Shortages	147
5.7.4. Library Financing Constraints	148
5.7.5. Technological Advancements	149
5.8. Strategies to Address Limited Access to Technology and Internet Connectivity	150
5.9. Chapter Summary	151
CHAPTER SIX: SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS	153
6.1. Introduction	153
6.2. Summary of Major Findings	153
6.2.1. Demographic characteristics of respondents	153
6.2.2. Availability of Infrastructure that Supports Library Services	154
6.2.3. Specialized Library Service and Resources of the Academic Library	155

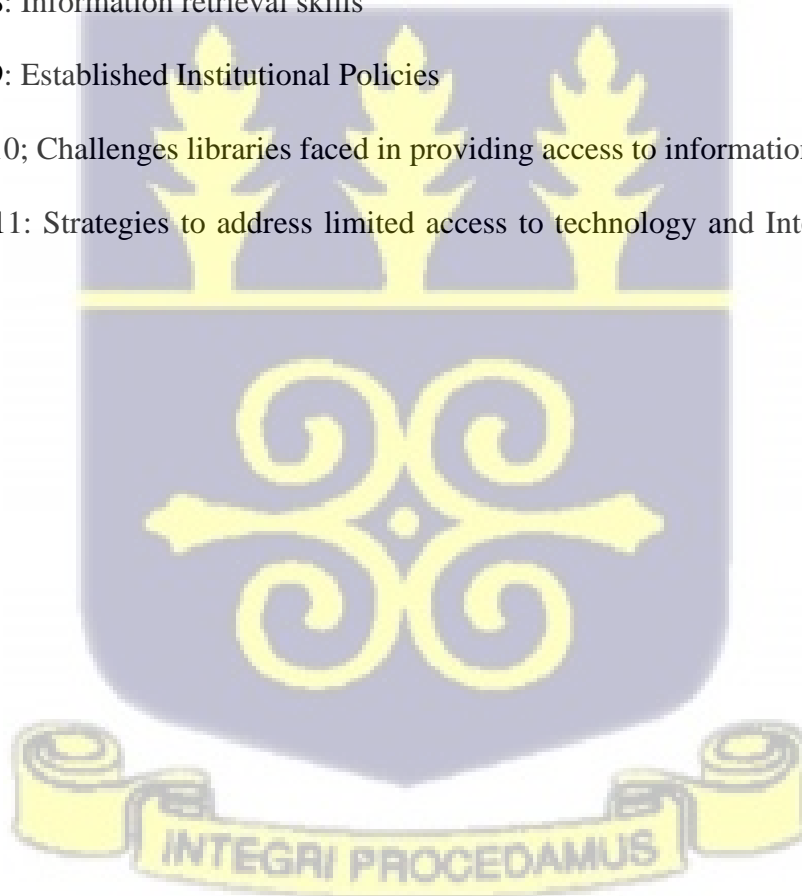


6.2.4. Skills and Competencies of Academic Library Staff	156
6.2.5. Established Institutional Policies of Academic Library	157
6.2.6. Challenges Academic Librarians Face in Providing Access to Information	159
6.2.7. Strategies to Address Limited Access to Technology and Internet Connectivity	159
6.3. Conclusion	160
6.4. Recommendations	162
6.4.1. Provision of More Inclusive Infrastructure for the Library	162
6.4.2. Improve Specialized Resources and Services and the Engagement of More Qualified Library Staff	163
6.4.3. Enhancing the Skills and Competencies of Library Staff	163
6.4.4. Establishment of Policies for SDG 4	164
6.4.5. Enhancement of Equal Access to Information	164
6.5. Areas for further studies	165
REFERENCES	166
APPENDIX 1: Questionnaire	190
Section A: Demographic Data	191
Section B: Available infrastructure that supports provision of library service.	191
Section C: Specialized services and resources of the library.	192
Section D: Skills and competences of library staff	193
Section E: Established Institutional Policies	194
Section F: Challenges	195
APPENDIX 2	197
APPENDIX 3	198



LIST OF TABLES

Table 4.1: Respondents Demographics	71
Table 4.2; Availability of library infrastructure	77
Table 4.3. Specialized Services and Resources	84
Table 4.4: Effectiveness of specialized resources and services	85
Table 4.5: Availability of trained personnel for specialized services	87
Table 4.6. Availability of well-qualified staff	88
Table 4.7: Knowledge of computing	90
Table 4.8: Information retrieval skills	91
Table 4.9: Established Institutional Policies	94
Table 4.10; Challenges libraries faced in providing access to information	97
Table 4.11: Strategies to address limited access to technology and Internet connectivity	100



LIST OF FIGURES

1. Model for Inclusive Access to Information (Ezeani, Ukwoma, Gani, Igwe, 2017). 10



LIST OF ABBREVIATION

CCTU	Cape Coast Technical University
MDGs	Millenium Development Goals
ICT	Information Communication Technology
UCC	University OF Cape Coast
UN	United Nations
UNSDGS	United Nations Sustainable Development Goals
SDG 4	Sustainable Development Goal 4
IFLA	International Federation of Library Associations and Institutions
SJL	Sam Jonah Library
JKBL	John Kofi Borsah Library



ABSTRACT

This study investigates the various factors that influence the provision of academic library services with the overarching goal of contributing to Ghana's achievement of United Nations Sustainable Development Goal 4 (SDG 4). The study purposefully selected libraries from public universities. The libraries are the Sam Jonah Library, University of Cape Coast, and the John Kofi Borsah Library, Cape Coast Technical University. Positivist paradigm, and quantitative research design was used in the study. The study used the questionnaire as a data collection tool. The study involved a total population of 103 individuals. The study included the entire population due to the researcher's decision not to sample due to the limited population size. Fifty-two (52) responded to the questionnaire. The data was analyzed using descriptive statistics with SPSS. The study highlights a mixed assessment of library satisfaction, recognizing positive aspects but also pinpointing areas requiring attention for overall user contentment and inclusivity. There are notable differences between UCC and CCTU libraries, concerns about specialized personnel, and the need for uniform computing knowledge that suggest opportunities for improvement. The nuanced analysis of institutional policies for SDG4 emphasizes areas for enhancement, while challenges faced by librarians prompt proposed strategies like mobile libraries and digital literacy programs to overcome limitations in technology and internet access. The researcher proposed some recommendations to address and alleviate the challenges librarians face in their service delivery, such strengthening specialized staff training programs at UCC library and establishment of legal policy framework for the SDG 4 at CCTU library.

CHAPTER ONE

INTRODUCTION

1.1. Background to the Study

This chapter covers the background of the study. It also looks at the statement of the problem, and the purpose of the study. The objectives, definition of terms, and theoretical framework and scope of the study are also in this chapter. The chapter ends with the significance of the study and the organization of the study.

Society's progress and growth are largely dependent on education. The nation's libraries are vital to the education of its citizens. The Sustainable Development Goals (SDGs) are international goals for which every country must develop and implement national plans as well as to track and report on its progress. The SDGs are an offshoot of the Millennium Development Goals (MDGs), which were set by the United Nations (UN) and were to be achieved between 2000 and 2015 (UN, 2019). By 2015, the eight target MDGs had seen significant progress, particularly in the areas of health and education. But because some of the goals weren't fully achieved, there were certain shortcomings. The SDGs, which the UN announced in September 2015, comprise 17 targets out of 169 that must be accomplished by 2030 (Mashroofa, 2022).

High-quality education is the subject of Sustainable Development Goal 4 (SDG 4 or Global Goal 4), one of the 17 sustainable development goals that the UN established in September 2015 (United Nations, 2017). SDG 4's full title is "To ensure inclusive and equitable quality education and promote opportunities for lifelong learning for all." Ten SDG 4 aims are tracked by ten indicators. The seven outcome targets include: increasing

the number of people with the skills needed for financial success; eliminating all forms of discrimination in education; providing free primary and secondary education; providing equal access to high-quality pre-primary education; providing affordable technical, vocational, and higher education; and providing education for sustainable development and global citizenship. The three implementation aims are to create and improve inclusive and secure schools, raise the number of higher education scholarships for developing nations, and boost the availability of qualified teachers in those nations (United Nations, 2017).

The library communities in each nation are prepared to demonstrate how libraries can work as partners to help achieve the objectives and satisfy the needs of local development as these plans are being developed (Oyemike 2019). Stating that libraries and information centers have an important role to play in the realization of the SDGs is not an overstatement. The library no doubt is crucial to the realization of government policies at any level and by implication occupies a central place in the realization of SDG 4 (Oyemike, Chinwendu, & Ijeoma, 2019). According to Garcia-Febo et al (2017), citing the IFLA's Lyon Declaration, public access to information enables people to make informed decisions that can improve their lives. Communities that provide timely and relevant information to all members are better positioned to eliminate poverty and inequality, improve agriculture, provide equality education, and support people's health, culture, research, and innovation. However, to achieve the sustainable development objectives, all institutions involved must contribute. While some contributions may be direct, others may be indirect as a result of the support provided to other organizations (Anyaoku, 2022).

According to Onoyeyan and Adesina (2021), information and academic library services in Africa have encountered challenges regarding Africa's contribution to SDG 4. To address these issues, university libraries first assessed their contribution to their respective SDGs and the progress of the African continent and then aligned their institutional strategies to accomplish each goal. Libraries, according to Adegoke (2019), have evolved into tools for societal growth. As a result, to improve people's ability to live responsibly, libraries must be able to meet their needs at the right moment. Drotner (2019) corroborated this assertion with the opinion that libraries foster learning and development in society by rendering different quality information-related services to the citizens to enable them to make informed decisions and solve societal problems, as well as enable the citizenry to play an active role in the society.

Like the industrialized world, developing nations have university libraries that let scholars reuse data and research to create new knowledge, promote literacy projects, and offer safe spaces for study; Kenya, Mauritius, Ghana, Nigeria, Angola, and South Africa are a few examples (Dadzie and Atta-Obeng 2020). However, the literature on the SDGs shows that governments around the globe are keen to address issues including environmental degradation, gender inequality, women's empowerment, poverty, and hunger in addition to inadequate education and health (Onoyeyan and Adesina 2021). The world's most pressing developmental issues are addressed in SDG 4 in a number of ways.

Massingham (2021), found that SDG 4 can help tell the story of libraries' contribution to higher education and nations, filling a gap in library assessment. He continued by noting that research outputs for higher education were typically used to evaluate national and

international effects rather than library services in the past. When discussing the difficulties academic libraries have in assisting in the accomplishment of SDG 4, Dei and Asante (2022), noted that these libraries lack funding and assistance from university management prevent them from completely implementing SDG 4 and this was supported by the findings of Abata-Ebire et al. (2018) and Samantaray (2017), who also discovered that the lack of funding has prevented most academic libraries from properly fulfilling their duties in achieving the SDG 4. Nworie et al. (2018) in their research found that the libraries' ability to play effective parts in achieving SDG 4 was hindered by a lack of personal computers, publications, and audio-visual resources. The Sustainable Development Goals (SDGs), adopted by all 193 UN member states as part of the Agenda 2030, took effect on January 1, 2016. These goals aim to eradicate poverty, protect the planet, and promote peace and prosperity worldwide. Among them, Sustainable Development Goal 4 (SDG 4) focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all. It targets the educational needs of people at all life stages, children, youth, and adults, through ten specific objectives, with a central emphasis on lifelong learning (Boeren, 2019; UN, 2015).

An academic library is one that serves a college, university, or other higher education institution. These libraries provide resources and services to support the teaching, learning, and research needs of students, faculty, and staff (Reitz, 2018). Academic libraries typically offer access to a wide range of materials, including books, journals, databases, and digital resources, as well as study spaces, research assistance, and various academic services. Their primary goal is to enhance learning and promote academic success within the institution (Hotsonyame, 2023). According to Adeniran (2020),

academic libraries have a mandate to assist students in completing their studies and to assist researchers in conducting impact-based research, which is crucial for addressing ongoing socioeconomic issues faced by citizens. Their primary duty is to cater to the information needs of their parent institution, serving faculty, staff, students, and the surrounding community.

Academic libraries in Ghana provide a variety of resources, including books, journals, electronic databases, and multimedia materials. They also conduct information literacy programs to enhance students' research skills. They offer research support services through reference services and consultations. They participate in interlibrary loan systems to expand resource access. Digital libraries and archives are established to preserve local knowledge and provide access to historical documents (Dadzie, 2018). Additionally, academic libraries engage with their communities through outreach programs and partnerships, fostering a culture of learning beyond the university (Adu- Sarkodee, Asante, & Akussah 2020). A typical academic library in Ghana can be exemplified by the John Kofi Borsah Library at Cape Coast Technical University (CCTU) and the Sam Jonah Library at the University of Cape Coast (UCC), both situated within prominent institutions of higher learning. UCC, established in 1962 and attaining full autonomy in 1971, is home to one of Ghana's largest academic libraries, the Sam Jonah Library. CCTU, formerly Cape Coast Polytechnic, was upgraded to a tertiary institution in 1992 and focuses on technical and professional education. Its main library, the John Kofi Borsah Library, is equipped with necessary facilities. Academic libraries in Ghana play a pivotal role in supporting SDG 4, which promotes inclusive and equitable quality education and lifelong learning. These libraries contribute by providing access to diverse

educational resources such as books, journals, electronic databases, and multimedia materials. They support teaching and research through information literacy training, reference services, and consultations, thereby enhancing students' academic and research skills. Through initiatives like interlibrary loans, digital archives, and community outreach programs, academic libraries extend learning opportunities beyond campus boundaries.

1.2. Statement of the Problem

SDG 4, or quality education, is a crucial objective in the Sustainable Development Goals, aiming to break the cycle of poverty, improve career opportunities, and lead fulfilling lives. However, the absence of a library hinders this goal, as academic libraries promote teaching, learning, and research, thereby achieving SDG 4 (Mashroofa, 2022). Libraries are vital hubs of academic activities, attracting instructors, learners, and the public. They should provide prompt, reliable services, and studies show a link between these services and Sustainable Development Goals (Boeren, 2019).

Researchers from around the world have conducted several studies on the relationship between academic library services and Sustainable Development Goals. Studies by Mashroofa (2022) focused on the contribution of academic libraries towards SDGs in nine public universities in Sri Lanka which the study identifies SDGs that necessitate the direct involvement of libraries and highlights successful activities undertaken by certain libraries for this purpose. Koscieljew (2020) investigated the role of university libraries in bolstering the UN 2030 Agenda for Sustainable Development, concluding that the absence of information access impedes progress in economic, social, and environmental

domains, thereby impeding sustainable development; hence, libraries are vital in promoting an inclusive, sustainable future for all. Similarly, a study conducted by Hamad and Al-Fadel (2022) at the Jordan University library revealed that academic libraries can significantly contribute to the Sustainable Development Goals by providing current information and information literacy training, improving society's quality of life, and using strategies such as collaboration with governmental and health institutions to support the realisation of these goals.

Omoan (2020) examined the role of academic libraries and information services in achieving sustainable development goals, particularly SDG 4. The study found that effective library management is crucial to this goal, and it highlighted the need for the Ugandan government to prioritize this sector. Meanwhile, a study by Nhamo and Malan (2022) showed that, with their wealth of knowledge and resources, University of South Africa libraries can serve as beacons of hope, empowering communities to engage with and advance the Sustainable Development Goals.

Additionally, through collaboration and innovation, libraries can inspire positive change and guide society toward the successful realization of the 2030 Agenda. Awodoyin and Ojo (2021) examined the role of academic libraries in achieving Nigeria's Sustainable Development Goals, and the study revealed that academic libraries serve as vital resources for promoting education and research, which are essential components of sustainable development.

In Ghana, Dei and Asante (2022) investigated some academic libraries' support for SDG attainment, and the study found that library staff are well-informed about SDG 4,

providing materials, training, and engaging patrons in information literacy programs to promote sustainable development., while Owusu-Ansah (2022) examined how university libraries in Ghana are adapting to support Sustainable Development Goal 4, which focuses on quality education. The study found that these libraries are at the forefront in providing resources and services that foster capacity building. In the literature reviewed so far, the studies focused on public traditional universities, but the researcher has not come across any study on traditional universities and technical universities. Consequently, this presents an opportunity for further research to explore how libraries in different educational how libraries in different educational settings contribute to achieving Sustainable Development Goal 4.

This study sought to compare academic library services in public traditional universities and technical universities in Ghana toward SDG 4 attainment.

1.3. Purpose of the Study

This study, therefore, sets out to investigate factors influencing academic library services toward the attainment of SDG 4 in Ghana.

1.4. Objectives of the Study

The specific objectives of the study were:

1. To find out available infrastructure that supports the provision of library services towards the attainment of the SDG 4.
2. To examine specialized services available at academic libraries towards achieving SDG 4.

3. To assess the skills and competence of librarians in providing services to achieve SDG4.
4. To examine established institutional policies towards achieving SDG 4.
5. To determine challenges confronting academic librarians in service delivery to achieve SDG4.

1.5. Theoretical Framework

A study's theory directs the entire investigation. A theory is defined as a system of ideas that are organized to explain a phenomenon (Lloyd, 2010). According to Creswell (2017), it serves as an organizing model for the research questions and the data-gathering process. Mehta (2013) argues that a theoretical framework is comparable to a house's frame in the same way that a foundation supports a building. Research-related predictions about the relationships between variables are supported by a theoretical framework.

A theoretical framework is distinct from conceptual models. A conceptual model simplifies complicated concepts by outlining their interactions within a system. It provides a visual or descriptive description of how things work. A theoretical framework expands on existing theories, using academic or scientific principles to explain or predict phenomena. While both provide frameworks, the conceptual model focuses on practical understanding, whereas the theoretical model relies on basic knowledge and theories (Parmar, 2019). A conceptual model provides a clear, interdisciplinary approach, simplifies complex theories, improves research design clarity, and is stakeholder-friendly, making it ideal for emerging or underexplored topics, whereas a theoretical framework's visual clarity challenges non-experts, limits new ideas, is less practical for empirical

research, more difficult to modify, rigid, and interdisciplinary, potentially limiting exploration in emerging areas (Salawu, Shamsuddin, & Masibo, 2023). Based on the above merit and demerits, the study adopted the model for inclusive access to information, which underpins the achievement of SDG 4, developed by Ezeani, Ukwoma, Gani, and Igwe, 2017.

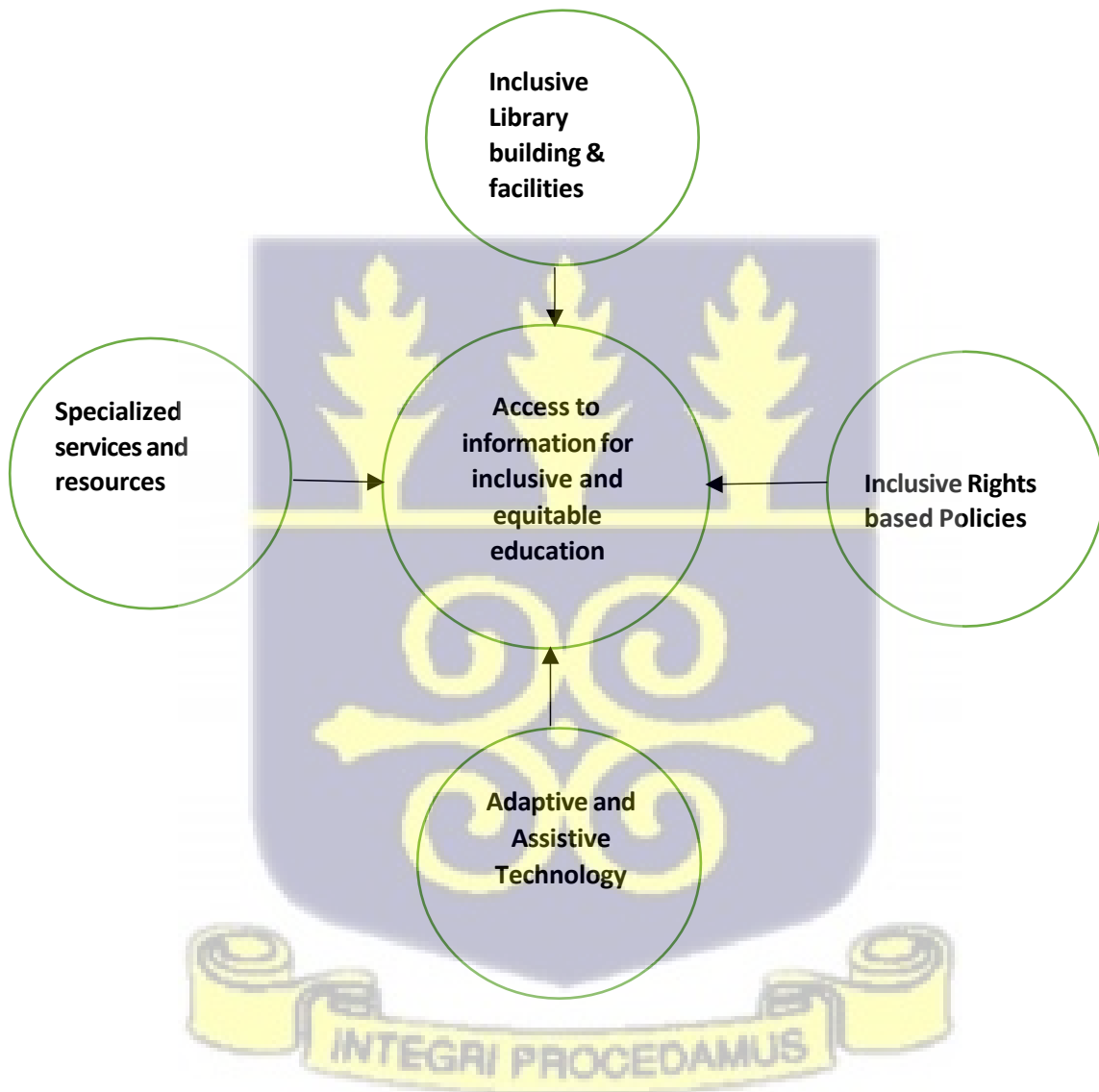


Figure 1: Model for Inclusive Access to Information (Ezeani, Ukwoma, Gani, Igwe, 2017).

This model is appropriate for the study because it aligns well with SDG 4, which seeks inclusive and equitable quality education. Academic libraries aiming to support SDG 4 must consider how accessible their resources and services are to all users, including those with disabilities or diverse learning needs.

The theory states that for libraries to contribute towards the achievement of the SDGs, the following critical factor needs to be considered to ensure equitable access to quality education. The variables include specialized services and resources, inclusive library buildings and facilities, adaptive and assistive technologies, and inclusive right-based and standards.

1.6. Application of the Study to the Theory

The chart can be explained by showing the important elements required for inclusive access to information to ensure the achievement of SDG 4. The theory states that with regards to the focus on inclusive access to quality education towards achieving sustainable development goal 4, the academic library should provide a conducive and serene environment for patrons, ICT technologies and electronic resources, and specialized services; for those with special needs for instance. According to the theory, all these critical factors should be put in place to ensure access to quality education.

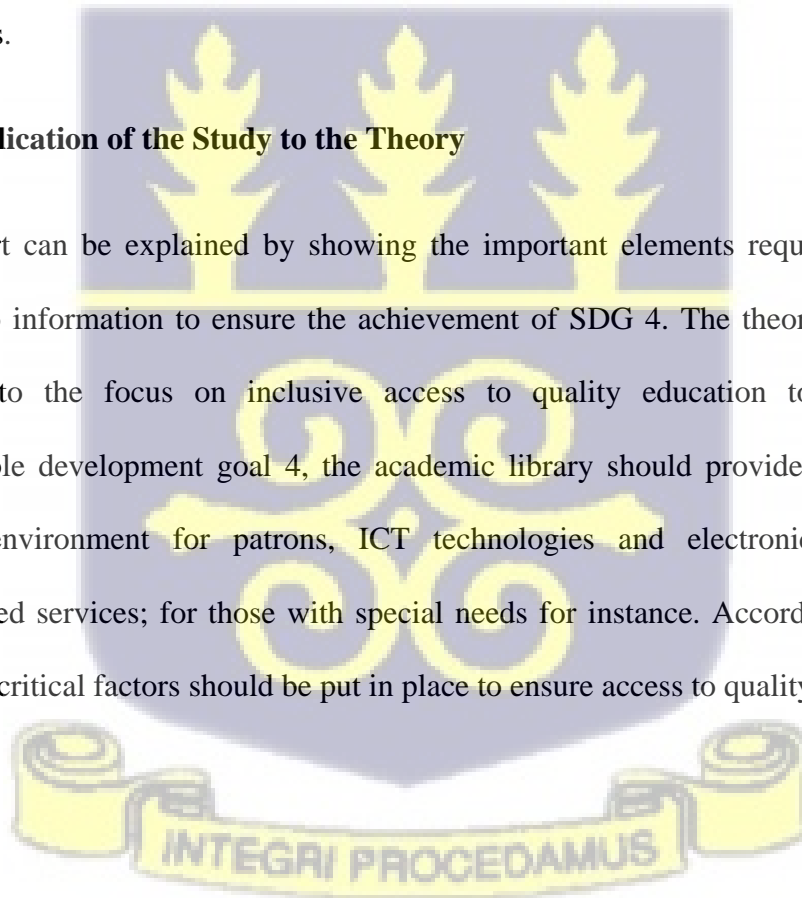


Table 1: Application of the Theory to the Study

Theoretical Construct	The Objective of the Study	Application to the Study
Inclusive Library Buildings and Facilities	To explore the available infrastructure that supports the provision of library services at the libraries towards attainment of the SDG 4.	The concept centres on the availability of libraries and associated amenities that encourage users to explore library resources. Architecture for buildings makes access easier. For instance, a wayfinding system and signage that are produced and placed inclusively. convenient-height shelves that are easily accessible
Specialized Service and Resources	To examine specialized services available at academic libraries towards achieving SDG 4.	In relation to the concept, academic libraries ought to consider the specialised resources that hold significance for users with unique needs.
Adaptive and assistive technologies.	To determine the skills and competence of librarians in providing services to achieve SDG4 To ascertain established institutional policies toward achieving SDG 4	The library should consider the IT resources and skills patrons will need to access library materials, especially electronic resources, in order to meet SDG 4. For instance, screen readers, screen magnifiers, speech recorders, and chat and video conversations. Websites that are easily accessible and online databases
Inclusive rights-based policies and standards	To determine the challenges academic librarians face in delivering services for all to attain SDG 4.	In order to accomplish SDG 4, an academic library should create a well-thought-out, inclusive policy. For example, it should be established policies and procedures on inclusive services. Using pertinent international and national standards. In order to accomplish SDG 4, academic libraries must put out great effort to reduce any obstacles to offering high-quality services.

1.7. Limitation\ the Scope of the Study

First, the study was limited to University of Cape Coast (UCC) and Cape Coast Technical University (CCTU). These institutions were selected due to their distinct characteristics—UCC being a traditional university and CCTU representing a technical institution—offering a comparative view of how different types of academic libraries contribute to achieving SDG4

The study specifically focused on academic library staff as the primary population, given that they are the main providers of library resources and services. Their experiences and perceptions offer valuable insights into the effectiveness and accessibility of these services in supporting educational objectives.

The scope of the study was limited to examining the availability and use of library resources, the infrastructural capacity of the libraries, the policy frameworks guiding staff operations, and the challenges faced by librarians in service delivery. It also explored the role of academic libraries in advancing Sustainable Development Goal 4 (SDG 4)

1.8. Significant of the Study

The study offers evidence-based recommendations to help universities and colleges improve library funding, infrastructure, and integration into education. By applying these findings, institutions can strengthen library services, support teaching and learning, and enhance overall student success.

Academic librarians can use this study to learn practical ways to improve library services that support teaching and learning. Understanding these practices helps match library services with educational goals, creating a better learning experience for students.

This study contributes to academic literature on library and information studies, and sustainable development by addressing gaps related to library services and SDG 4. It also offers practical insights that international organizations can use to shape global strategies, improve educational programs, and enhance the effectiveness of library services worldwide

This study emphasizes the vital role of academic libraries in supporting education and national development, particularly in relation to SDG 4. It offers insights that guide policy, resource allocation, and strengthen libraries' contributions to achieving sustainable development goals, both nationally and globally.

1.9. Organization of Chapter

The study was organized under six main chapters:

Chapter one provides a brief introduction to the chapter and then deals with the introduction, which highlights the background of the study, the statement of the problem, and the purpose of the study. The research objectives, theoretical framework, and scope of the study are considered in this chapter. The chapter concludes with the significance of the study and finally concludes with the organization of the study.

Chapter two also begins with an introduction to the study and then discusses literature related to the study. A literature review was specifically organized under the concept of academic library services, the concept of SDG 4, Academic libraries and SDGs, infrastructure that supports the provision of library services, specialized services at academic libraries, skills and competences of academic librarians, policies or legal framework on academic libraries and challenges confronting academic librarians in service delivery.

The third chapter describes the methodology used in the study. It provides an introduction, research paradigm, research design, study setting, and selection of cases. The selection of subjects; population, sample size, and sampling technique are considered in this chapter. Research instruments, data collection procedures, data analysis as well and ethical issues are also treated in this chapter.

Chapter Four analyzes data to examine factors affecting the effectiveness and efficiency of library services. It explores five key themes: infrastructure, specialized services, staff competencies, institutional policies, and challenges like financial, technological, and user constraints. The study also analyzes respondents' demographics and professional backgrounds to gain insights.

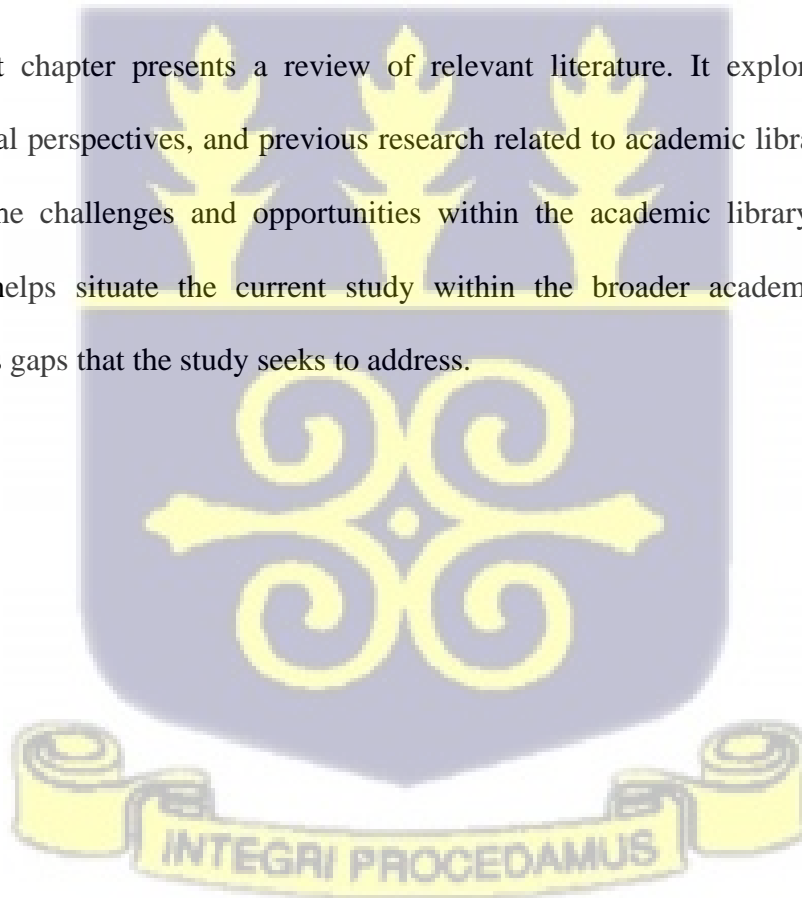
Chapter Five focuses on discussing the findings in relation to the objectives set in Chapter One. It interprets the results, showing how they address the key themes of the study. The chapter compares the findings with existing research and explores their impact on practice, policy, and future studies.

Chapter Six presents the concluding part of the study. It provides a summary of the key findings, the conclusion, recommendations, and lessons for policy development and future research.

1.10. Conclusion

Chapter One laid the foundation for the study by providing the background, identifying the research problem, and outlining the objectives, the theoretical framework guiding the study and limitation or scope of the study. The chapter ends with the significance of the study and the organization of the study.

The next chapter presents a review of relevant literature. It explores key concepts, theoretical perspectives, and previous research related to academic library services, SDG 4, and the challenges and opportunities within the academic library landscape. This review helps situate the current study within the broader academic discourse and identifies gaps that the study seeks to address.



CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter comprises a review of studies carried out by different writers and researchers in the topic area. It is impossible to overstate the value of a literature review in any research activity. Without it, the researchers might not fully comprehend the subject being researched. The literature review outlines the prior study, the methods used, and the issues that resulted from it (Alsadah et al. 2020; Cooper, 2019). Cooper (2010) asserts that reviews help researchers define the parameters of their investigation. They provide a framework for assessing a subject's importance, highlight the importance of conducting research, and act as a benchmark for contrasting one study's findings with those of other studies. Additionally, Hirose, and Creswell (2023) offered his opinions on the literature review, pointing out that it serves a number of functions. The results of previous research that are closely related to the one being conducted are shared with the reader. By completing gaps and expanding on earlier research, it connects the study to the broader, ongoing discussion in the literature. The purpose of a literature review, according to Arbale & Mutisya (2023), is to identify research opportunities that have been subtly ignored in previous studies, to find specific recommendations for additional research to help you avoid just repeating previously completed work, and to sample current opinions in trade, professional, and newspaper journals in order to gain insight into the elements of your research question(s) and objectives that are deemed newsworthy.

The researcher employed narrative (or descriptive) with elements of critical analysis literature in the literature review of the study. A narrative literature review also called a descriptive literature review is a summary and interpretation of existing research on a topic, presented in a thematic form rather than through a rigor or systematic process. It aims to give readers a broad understanding of what has already been studied, what is known, and sometimes what gaps remain, without following the strict procedures of a systematic review. Also, critical analysis literature review (often called a critical literature review) goes beyond merely summarizing existing studies. It evaluates, compares, and interprets the literature to highlight strengths, weaknesses, contradictions, gaps, and trends in previous research.

The themes for the literature review were informed by the theoretical framework of the study, ensuring that the selection and organization of sources aligned closely with the conceptual lens guiding the research.

The chapter undertakes a review of existing relevant literature, and it is organized under the following sub-headings:

2.2. The Concept of Academic Library Services

2.3. The Concept of SDG 4

2.4. Academic Libraries and SDG 4

2.5. Infrastructure That Supports the Provision of Library Services

2.6. Specialized Services at Academic Libraries

2.7. Skills and Competence of Academic Librarians

2.8. Policies or Legal Framework on Academic Libraries.

2.9.Challenges confronting academic librarians in service delivery to achieve SDG4.

2.2. The Concept of Academic Library Services

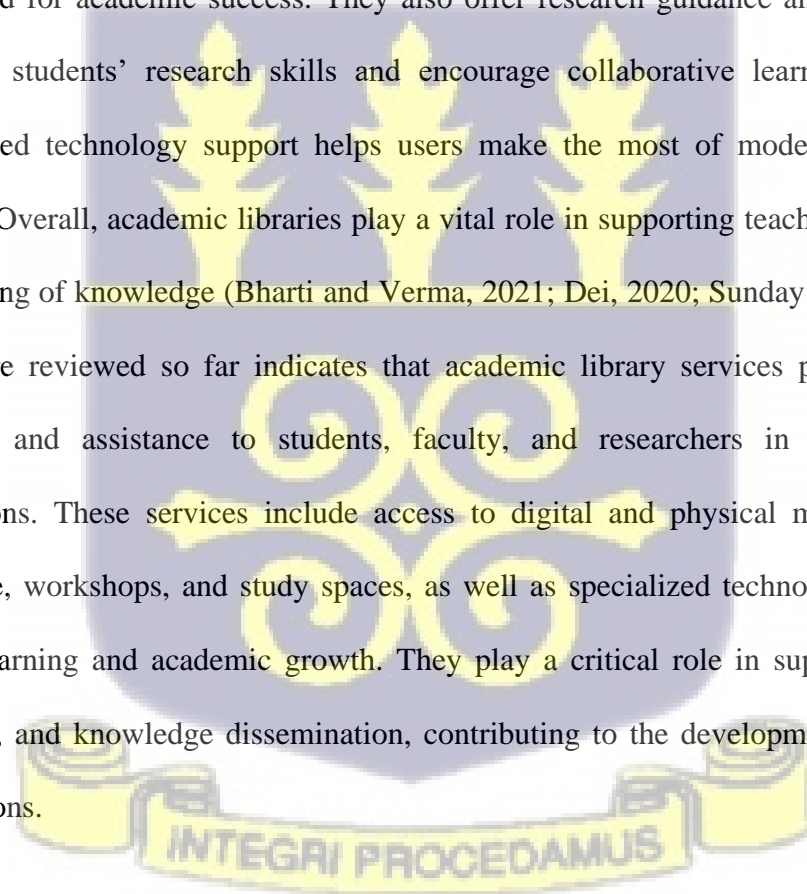
An academic library service encompasses the various resources, assistance, and support provided by a library to meet the needs of a college or university community. These services are designed to aid students, faculty, and researchers in accessing and utilizing information for academic purposes (Kim, 2021). In defining what academic library service is, Nahotko et al. (2023) posited that academic library services include all of the resources, help, and support that a library offers to the college or university community in order to meet their needs. The purpose of these services is to help researchers, teachers, and students access and use academic materials. It is also important to note that studies in Nigeria and other parts of Africa have established academic library services to play a vital role in supporting higher education. In a study conducted by Fombad (2024) in South Africa, it was revealed that academic library services are designed to support research and learning within higher education institutions. These services include assisting users in locating resources and navigating databases, as well as providing extensive access to both print and digital materials, such as books, journals, and multimedia. Additionally, libraries offer interlibrary loan options to enhance resource accessibility. The study also highlighted the provision of diverse study environments, ranging from quiet zones to group study rooms, often equipped with modern technology. Furthermore, academic libraries organize workshops aimed at building essential skills, including research techniques, citation management, and the effective use of specialized databases.

Moonasa (2024) observed that academic library services refer to the diverse resources and assistance that libraries offer to support research, learning, and information access for students, faculty, and researchers. These services can include access to digital and physical collections, research assistance, workshops, and technology support. By providing essential tools and guidance, these offerings aim to enhance the academic experience, ultimately fostering a productive learning environment. By catering to the various needs of the academic community, libraries play a crucial role in facilitating knowledge acquisition and research endeavors. According to Onyancha et al. (2021), academic library services serve as an essential resource that provides students, faculty, and researchers with access to a wide range of information and services necessary for teaching, learning, and research activities. Frederick et al. (2020) also mentioned that academic libraries in Ghana are responsible for such services as acquiring, organizing, and preserving scholarly materials, including books, journals, databases, and other resources that contribute to knowledge creation and dissemination. By offering comprehensive collections and research support, academic libraries facilitate the academic pursuits of students and faculty members, enabling them to engage in critical inquiry and scholarly exploration.

Academic library services cater to the teaching and research needs of faculty, staff, and students through their affiliation with higher education institutions. These libraries serve two complementary purposes: academic and student research, as well as the university curriculum. A nation's development depends on its libraries. (Adeniran, 2020). Adeniran (2020) reported that when asked about the range of services provided by academic libraries, some library staff identified offerings such as printing, document scanning, ICT

services, interlibrary loan, document delivery (ILL/DD), among others. Other services offered by academic libraries include gallery services, access to academic databases, assistance for individuals with special needs, user education (including information literacy and orientation), and book cataloguing and classification. (Parbi, Phuti & Barfi, 2021).

Academic library services do much more than just store books; they are important centers for learning and innovation that support students, faculty, and researchers. By providing a wide range of digital and physical resources, libraries help users access the information they need for academic success. They also offer research guidance and workshops that improve students' research skills and encourage collaborative learning. In addition, specialized technology support helps users make the most of modern tools for their studies. Overall, academic libraries play a vital role in supporting teaching, research, and the sharing of knowledge (Bharti and Verma, 2021; Dei, 2020; Sunday and Shehu, 2020). Literature reviewed so far indicates that academic library services provide resources, support, and assistance to students, faculty, and researchers in higher education institutions. These services include access to digital and physical materials, research guidance, workshops, and study spaces, as well as specialized technological support to foster learning and academic growth. They play a critical role in supporting teaching, research, and knowledge dissemination, contributing to the development of individuals and nations.



2.3. The concept of SDG 4

After being adopted as the United Nations Agenda for 2030 by the 193 member states of the UN, the Sustainable Development Goals (SDGs) came into effect on January 1, 2016 (Chewe and Imasiku, 2018). Sometimes referred to as the United Nations Agenda 2030 (Arhin & Opoku, 2020), it represents a global call to action to end poverty, protect the environment, and ensure that all people, everywhere, can live in peace and prosperity (Mensah, 2019; Siakwah et al., 2020). One of the goals of the SDG is target number four, which is also known as inclusive and equitable quality education. It is referred to as goal 4 because it is the fourth of the UN's seventeen goals. Sustainable Development Goal 4 (SDG 4) focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all (United Nations [UN], 2015). It addresses the educational needs of children, youth, and adults, and is structured around ten specific targets. A central element of SDG 4 is the emphasis on "lifelong learning for all," highlighting the importance of continuous education across all stages of life (Boeren, 2019).

UNESCO (2021) states that SDG 4's ten aims cover a range of educational topics. This outlines three distinct approaches and seven expected results for achieving these goals. Universal pre-primary education, universal early childhood development, equal access to technical/vocational and higher education, skills relevant to decent work, gender equity and inclusion, universal youth literacy, education for sustainable development, and global partnership are some of these targets. The implementation of SDG 4 relies on three key strategies: empowering teachers and educators, providing scholarships, and creating effective learning environments. According to the United Nations Development

Programme (UNDP, 2023), SDG 4 has demonstrated a strong link between rising educational levels and increased labor market participation rates in emerging economies. Additionally, higher educational attainment often equips individuals with better skills and knowledge, enhancing their employability and leading to potentially higher wages. This positive correlation highlights the critical role of investing in quality education to drive economic growth and development. Furthermore, United Nations research (2021) indicates that SDG 4 also addresses broader global challenges such as poverty, inequality, climate change, environmental degradation, peace, and security.

SDG 4 plays a crucial role in every nation's progress. Therefore, a study by Michael and Salleh, 2021 reveals that even though national frameworks for achieving SDG 4 are not legally enforceable, governments are required to assume responsibility for them and build them. It further observes that the pursuit of Sustainable Development Goal 4 is not merely an aspiration but a cornerstone for the advancement of any nation. Its significance transcends educational metrics, laying the groundwork for societal progress and economic stability. Dei, and Asante (2022) supported Michael and Salleh's view and added that while national frameworks designed to meet SDG-4's objectives lack legal enforceability, this limitation underscores an essential truth: it falls squarely on governments to cultivate and operationalize them. By embracing their responsibility, governments can weave education into the fabric of national policy, ensuring that every citizen has access to quality learning opportunities. Ultimately, the commitment to SDG 4 reflects a nation's dedication not only to its present but also to the prosperity and well-being of future generations. Rappleye, et al (2024) SDG 4's key premise that "excellent education" will improve sustainability is more ideological than empirical. We ignored

many sustainability metrics, such as ecological footprint, from the outset, and after a decade of work, no indicator accurately represents sustainability. SDG 4 debates still focus on outcome monitoring, financial advocacy, and banal policy ideas. However, some argue that education plays a crucial role in fostering a sustainable mindset, empowering individuals to make informed decisions that positively impact the environment. Furthermore, advancements in educational methodologies and assessments could potentially lead to more accurate indicators of sustainability in the future.

According to Psacharopoulos and Patrinos (2018), there appears to be a connection between a few of the SDGs' goals in practice. People with higher skill levels, for example, usually find better-paying jobs, have better health, participate more actively in their communities, and practice more active citizenship, according to studies on the benefits of education. Furthermore, we are aware of the correlation between government expenditure on innovation, infrastructure, and the economy and rates of educational involvement (Groenez et al. 2007; Blossfeld et al. 2014). This implies that education has the potential to be a potent "engine" for creating a society that is more egalitarian and cohesive. SDG 4 places a strong emphasis on inclusive, equitable, high-quality, and lifelong learning, as noted by Leal Filho et al. (2019).

Achieving SDG 4 (quality education) in Nigeria faces challenges like poor funding, inadequate infrastructure, low enrolment, corruption, social factors like religious resistance, and security issues. Effective solutions require improved funding, better management, incentives for enrolment, and enhanced school environments. Without radical policy shifts and better public expenditure management, progress by 2030 remains doubtful. However, some argue that grassroots initiatives and community-driven

programs can significantly contribute to overcoming these obstacles, fostering local engagement and ownership of education. Additionally, leveraging technology for remote learning could provide innovative alternatives to traditional schooling, potentially reaching underserved populations more effectively (Wakwe, L. A, Ihabuzor, N, & Onyema, D. L. 2020)

While global agencies such as the United Nations, UNESCO, and the UNDP provide well-defined, aspirational goals and strategic frameworks for achieving Sustainable Development Goal 4 (SDG 4), including clearly outlined targets and implementation pathways, national-level scholars highlight a persistent gap between these global aspirations and the realities of local implementation. They argue that despite the clarity and ambition of international guidelines, actual progress at the national level is often hindered by weak institutional commitment, inadequate policy integration, and lack of enforceable mechanisms. Scholars such as Michael and Salleh (2021) and Dei and Asante (2022) emphasize that the success of SDG 4 ultimately depends on how actively governments assume ownership of these goals, by incorporating them into national development agendas, allocating sufficient resources, and building robust educational systems that are inclusive, accountable, and sustainable. Without such national commitment, the global vision of inclusive and equitable quality education for all remains largely rhetorical.

All reviewed sources agree that academic library services are indispensable in supporting higher education. They enable access to vital information, enhance academic skills, and contribute significantly to both individual and national progress. However, while global perspectives focus on optimization and innovation, studies from African contexts

highlight unequal access, infrastructural constraints, and efforts toward inclusivity. When the studies are compared, it becomes evident that libraries in different places have different needs. So, when we try to improve library services, we need to use strategies (plans) that fit each region's unique situation. At the same time, we should try to meet international best practices and quality standards.

2.4 Academic Libraries and SDG 4

According to Ma and Ko (2022), academic libraries contribute to SDG 4 in various ways, often relying on their staff's expertise. These contributions primarily include the provision of digital and information literacy (DIL) skills training, as well as the creation of spaces, collections, reading and writing promotion, donations, and other programs. The study used qualitative methods, including interviews and surveys with library staff, to explore how these libraries contribute to the achievement of SDG 4. Thorpe and Gunton (2022) argued in their qualitative study, conducted in public libraries across the United Kingdom, that libraries play a crucial role in promoting digital literacy and fostering community involvement. The study, which used a combination of interviews and focus group discussions with library staff, community members, and digital literacy educators, explored how technology is shaping library services and community engagement. The researchers highlighted the potential for the rapid development of technology to create a digital divide, leaving some groups behind. Despite efforts to foster inclusiveness, the study also pointed out that marginalized groups continue to face significant barriers in accessing library resources and programs, emphasizing the need for ongoing advocacy and support.

According to Rubin, and Rubin (2020) academic libraries are crucial for helping to achieve SDG 4, which is part of the UN's (United Nations) Agenda 2030 grand challenge, because they make it easier for people to access ICT, teach individuals how to use information well, and keep information safe so that future generations can use it. In China, national, public, and academic libraries play a crucial role in achieving SDG 4, and quality education is important because it raises the educational and literacy levels of the populace, which is dispersed over thousands of islands where access to education is limited, and many library services are rendered by boat (Ma and Ko, 2020). Chaney and Hauke (2020) observed that libraries may support research, offer high-quality education, and provide the tools and resources necessary to assist in attaining universal literacy, among other ways that they can support sustainable development. Sustainable growth and bettering people's lives are based on high-quality education. Via a variety of unique initiatives started by the various libraries, all participating libraries play a crucial part in improving and providing equitable, high-quality education.

There are now "Homework Assistance" programs in all libraries. These programs include clubs whose main goal is to help students and library users improve their critical thinking skills, make sure they know how to find and use information for their assignments, and help academic libraries reach the SD 4 target (Sustainable Development Solutions Network, 2020). Abata-Ebire et al. (2018) said that libraries are responsible for picking out, ordering, getting, processing, storing, and keeping up with resources in different formats so that users can get them when they need them. This helps achieve SDG 4, which is to make sure that everyone has access to a quality education. Similarly, in order to achieve SDG 4, Chigwada (2021) underlined that libraries are locations where

information is gathered, processed, arranged, saved, retrieved, and disseminated to users. In order to help businesses, government agencies, and citizens better understand local information needs, libraries close information gaps and promote universal literacy. This includes digital media and information literacy and skills. Libraries also act as the center of the academic and research community, promote digital inclusion through access to ICT, and protect and make available the world's cultural and historical heritage (IFLA, 2020).

The provision of high-quality education is greatly aided by libraries and other information centers. By assuming new duties, a number of libraries and information services will improve the attainment of high-quality education. Libraries will have to combine the services they provide to help achieve SDG 4. Nonetheless, it is important to stress that while achieving SDG 4 will not be simple, libraries can succeed if well-planned policies and initiatives are designed with it in mind (Omar et al. 2024). Omar (2023) asserts that the majority of national development plans and programs lack adequate information, and planning without it is detrimental to national development. Libraries are mandated to bridge this gap by giving people access to fundamental knowledge on a variety of social and civic issues, including education, health, and agriculture, as well as capacity building that will be necessary for the advancement of the country. By taking campaigning to the next level and delving into a more complex story of policies and indicators, libraries are essential to accomplishing the SDGs (Omona, 2020). According to Dzandza (2017), libraries in Ghana are assisting students in acquiring fundamental ICT skills, which in turn encourages them to use computers for information access, thereby contributing to the achievement of Agenda 2063, Africa's

version of Agenda 2030. While all studies affirm the library's role in achieving SDG 4, their findings vary by regional context, institutional type, and population served. Academic libraries tend to emphasize formal educational support and Digital Information Literacy, while public and national libraries focus more on inclusion, community engagement, and innovative outreach. Despite challenges like the digital divide and limited infrastructure, libraries remain central to realizing quality education and lifelong learning globally.

2.5. Infrastructure that Supports the Provision of library services

Yoon and Kim's (2021) study, conducted at a university in South Korea using mixed methods, examined the evolving needs of library infrastructure in response to technological advancements, user expectations, and societal changes. The study employed a combination of surveys and interviews with library staff, administrators, and users to gather insights. The findings emphasized that library infrastructure must adapt to these dynamic factors to maintain its relevance and effectively support the changing needs of library users in a modern context. Hill (2022) and Phukubje and Ngoepe (2023) support this claim by saying that libraries can continue to be important places for learning, knowledge, and community involvement as long as they invest in both physical and digital infrastructure. This investment also lets libraries offer a wide range of resources and services that meet the changing needs of their customers. Consequently, libraries can maintain their relevance and impact in an increasingly digital and interconnected world. In 2022, Rani, and Khan looked at the modernization of library infrastructure in India's National Capital Region and found that the quality and availability of supporting infrastructure have a big impact on how well library services

are provided. This infrastructure encompasses both physical and digital elements, each playing a critical role in ensuring libraries can meet the diverse needs of their users. The study further reveals that a well-maintained physical space, along with robust digital resources, enables libraries to offer a wide range of services and access to information and this combination is essential for fostering a supportive environment that enhances user engagement and satisfaction.

Ogbuagu, Ubi, and Effiom's (2022) qualitative study, conducted in university libraries across southern Nigeria, explored the components and significance of library infrastructure in service delivery. Through interviews with library staff and administrators, the authors defined library infrastructure to include physical buildings, electrical systems, ICT facilities, furniture, furnishings, and power generators. They emphasized that robust infrastructure forms the foundation for effective library management and the provision of essential services to users. From thoughtfully designed buildings that foster conducive learning environments to dependable technological and electrical systems, each component contributes significantly to improving the overall user experience and supporting modern information needs. Okwu and Oporum (2021) observed that most libraries in Nigeria lack the required facilities and resources to satisfy users' needs. Observations reveal that certain library facilities, such as computers, generators, and other essential equipment, sustain damage and remain unrepaired or unreplaced. Hence, available ones are insufficient, thereby making library services inadequate. Saleem, Shabana-Tabuum, and Sadik-Batcha's (2020) descriptive survey-based study, conducted in academic and public libraries across Nigeria, examined efforts to improve library services despite infrastructural and resource-related challenges. Using

questionnaires administered to librarians and library administrators, the study found that while many libraries struggle with inadequate facilities and limited resources, some institutions are proactively pursuing partnerships and external funding to strengthen their services. Additionally, the research highlighted the rise of digital libraries and online resources as alternative avenues for information access, which increasingly complement traditional library services and expand user reach.

In addition to chairs, bookcases, and tables, Iwhiwhu and Okorodudu (2020) noted that other elements of library infrastructure include restrooms, ICT resources, enough library space, cafeterias, parking, catalogue systems, fans, and air conditioning. Some of the services that the library's patrons need would not be available without a working infrastructure. Inadequate library infrastructure can increase librarians' intention to leave their jobs and render the space unusable for offering consumers relevant information services (Omeluzor, 2017). For the university library and its human resources to be managed effectively, library infrastructure is necessary. Inadequate library infrastructure affects the university library (Okoro et al., 2021). Okoro proceeded by saying that academic libraries' ability to survive in the present day depends on the availability and maintenance of both human resources and infrastructure. According to Okoro et al (2020) having computers available along with other resources like internet, power, a local area network (LAN), computer-assisted instruction (CAI), television-assisted instruction (TAI), open educational resources (OER), and so on will support efficient teaching and learning. The rationale is that there will be a wide range of options available to educators and students when it comes to choosing the ICT resources that will facilitate their learning. However, due to governments' insufficient investment in ICT, many schools in

developing nations have limited access to this kind of infrastructure. It is widely acknowledged that having access to ICT programmes and infrastructure would help and encourage teaching and learning.

Kwafoa's (2019) qualitative study, conducted in various educational institutions across Ghana, explored the challenges faced by students with visual impairments in accessing educational facilities. Using interviews and observational methods, the study revealed that many institutions lack adequate infrastructure and inclusive design to support the needs of students with impairments. Kwafoa highlighted that students who are visually impaired often attend schools or use facilities that are structurally inaccessible, thereby limiting their ability to fully participate in academic activities. According to Okoro et al (2021), a library's layout, furnishings, technology, and services provided all depend on its goals. Information can only be accessed and used effectively with the support of communication tools like computers, the internet, printers, scanners, phones, fax machines, and a sufficient supply of electricity. Imoro, and Saurombe, (2023) opined that library infrastructure in Ghana has been developing to support educational and informational needs, yet challenges such as funding and accessibility remain. Enhancing these facilities can significantly contribute to the country's literacy and knowledge economy.

In sum, while all these studies affirm the centrality of library infrastructure in advancing education and meeting the evolving needs of library users, they highlight different regional challenges and solutions. Libraries in both developed and developing contexts face significant infrastructure challenges, but the studies suggest that continued investment in both physical and digital infrastructure is key to ensuring libraries remain

relevant and effective in supporting SDG 4. The studies also emphasize that a comprehensive approach, combining well-maintained physical spaces with advanced digital resources, is essential for libraries to meet the diverse needs of their users and contribute meaningfully to educational development.

2.6. Specialized Services at Academic Libraries

Kart and Kart's (2023) qualitative study, conducted at Ohio State University in Columbus, examined library support services for people with disabilities. Using interviews and document analysis, the study found that specialized services cater not only to individuals with common disabilities but also to those with uncommon and complex health conditions. This suggests that such services are thoughtfully designed to meet the diverse needs of users, thereby promoting inclusivity and ensuring equitable access to library resources for all. In the same way, Walsh and Rana's (2020) qualitative descriptive study conducted at the University of Toronto explored the role of specialized library services in supporting individuals with rare cancers, genetic disorders, or complex medical or surgical conditions. Using case study methods, the researchers highlighted the importance of subject specialists and qualified librarians, those with deep knowledge in specific disciplines and actively involved in information selection and service delivery, in providing tailored support to these users. Katz, Sokal, and Wu's (2020) mixed-methods study, conducted at a consortium of academic libraries across Canada, investigated the goals and outcomes of library instruction for individuals with disabilities. Using a combination of surveys and follow-up interviews with librarians and users, the study found that the objectives of such instruction are aligned with those for abled users—to enable effective use of library resources and to promote both immediate and lifelong

learning. The findings emphasize the importance of ensuring equitable access to information and instructional support for all users, regardless of ability. By focusing on learning efficiency and independence, libraries play a vital role in empowering users with diverse needs to navigate information environments effectively

In a study conducted by Decker (2020) in United States of America, it was revealed that academic libraries are not just repositories of knowledge but dynamic centers for learning and innovation. By offering specialized services and resources, they empower users to explore, discover, and create in ways that extend beyond traditional library functions. Their adaptability and commitment to meeting the evolving needs of the academic community make them indispensable to higher education. Zhou (2024) conducted a study in China on leveraging specialized resources to develop innovative library services and it was revealed that specialized collections and resources form the essential basis of a specialized library. These collections provide targeted information and materials that cater to specific fields of study or professional practices, ensuring that users have access to relevant and high-quality resources. As a result, specialized libraries can effectively support research, education, and professional development within their designated areas. During the COVID- 19 pandemic, most libraries around the world showed their creativity and resourcefulness by coming up with new services and resources, such as virtual programming, online access to databases, contactless book delivery, and curbside pickup, to continue serving their communities and reach both able-bodied and disabled people. This made sure that everyone could still access education, research, and culture (IFLA, 2020).

Few libraries in Botswana offer specialized services such as research assistance, information literacy programs, data management, technology support, interlibrary loan and document delivery, special collections and archives, and accessibility services. These services help users access expert knowledge, improve research quality, and enhance academic performance and critical thinking skills. They also provide guidance on organizing, preserving, and sharing research data, enabling users to leverage advanced technologies, expand the range of materials available, and ensure equitable access to resources for users with disabilities (Mushi, Mwantimwa & Wema, 2023). Izu and Fombad (2024) found that Delta State institutions have improved their resources and services for individuals from diverse backgrounds in Nigeria. Recently, Nigeria State University has made significant progress toward creating an inclusive and resource-rich learning environment. The increase of resources and services has improved learning and helped diverse pupils succeed. Despite these advances, many colleges still lack facilities and funds, thus impacting education. Concerns exist that not all institutions are suited to support students from diverse backgrounds, resulting in educational inequities.

Ayoung, Baada, and Baayal (2020) found that a few Ghanaian university libraries offer specialized services and resources for all types of people. In the study, the library provides specialized support such as research assistance, access to unique databases, and tailored workshops aimed at enhancing information literacy for disabled users and researchers seeking specific academic resources. Libraries emphasize inclusion and community needs with this strategy. This approach ensures that the library meets the varied needs of its community, fostering an inclusive environment for learning and research. However, the study continues to argue that even with these specialized services,

many Ghanaian university libraries still struggle with limited funding and outdated resources, which can hinder their ability to fully support all users. Additionally, the lack of awareness about these services among certain demographics may result in underutilization, ultimately undermining the intended inclusive environment.

In conclusion, while specialized services are increasingly recognized as vital to inclusive education and lifelong learning, their effectiveness varies by context. Libraries in resource-rich settings are often better positioned to offer comprehensive and innovative services, whereas those in developing regions continue to face barriers that limit the full realization of these goals. Bridging this gap requires investment, training, user outreach, and policy-level commitment to inclusivity.

2.7. Skills and Competence of Academic Librarians

Kautonen and Gasparini (2024) describe skill as the acquired ability to achieve specific outcomes reliably, typically using the least amount of time and energy. In a study examining the skills listed in 441 Australian job advertisements for information professionals, Sharyn, Henninger, and Anne (2021) found that while reference skills were most often mentioned, the most highly ranked skills were what they called "generic," such as interpersonal skills, IT skills, and behavioural traits. The need for continuous skill development among library professionals has never been more pressing. AI technologies, while offering a plethora of benefits, also present new challenges and require a different set of competencies (Cox, 2022). Grgic and Zivkovic (2022) assert that competency is the behavior that consistently and successfully distinguishes high performers from average performers. Furthermore, competency was defined by the Council of Europe as "the set

of knowledge and skills that enable an employee to solve problems that are linked with their professional role and to orient themselves easily in a working field" (Webber, 2019). Adekoya Fasae, and Alade (2024) included teaching, teamwork, marketing library services, entrepreneurship, leadership, change management, and innovation as professional librarian competencies. They also encompass skills such as Internet usage and conventional online services, as well as the ability to select and utilise information sources effectively.

Hamad et al. (2023) found that the implementation of smart information services and the level of digital competencies and skills among librarians at academic libraries in Jordan are generally moderate. In the study, it was noted that librarians rated their IT skills, computing, web and mobile skills, digital content management skills and ability to work with art applications database searching skills as high. In 2021, Fisher carried out a study with a particular focus on the fundamental abilities needed by an acquisition librarian. The author examined job advertisements for roles related to acquisitions to ascertain the competencies and proficiencies that libraries were seeking. The competencies listed in the job announcements and other information on competencies for the work of acquisitions and collection development were determined to be significantly consistent with one another. As a result, a list of core competency categories was presented. Four categories were created from these competencies: acquisition, management, technology, and personal.

A 2022 study by Shatona and Mwiliyale (2024) in Namibia found that the most important skills for subject librarians were customer service skills, search skills, pedagogic skills, and assessment and evaluation skills; they also need to be familiar with online and paper

reference sources and to have knowledge of traditional reference interviews, current events, social media, software troubleshooting, and web maintenance. These competencies not only enhance the effectiveness of subject librarians in supporting their patrons but also ensure they remain relevant in an ever-evolving information landscape. As technology continues to advance, ongoing training and adaptability become crucial for librarians to meet the diverse needs of their users. However, Sinha, and Ugwulebo (2024) argue that an overemphasis on technology can detract from the fundamental skills that librarians have traditionally possessed, such as critical thinking and personal interaction. Moreover, the reliance on digital resources may lead to a neglect of the rich, physical collections that many libraries still maintain and which provide unique value to users.

Eze (2022) examined Nigerian library professionals' workplace information literacy. The study found that library professionals are excellent at searching, providing information to users, marketing, and administrative skills, but they are poor at library module services, copyrights, and research-supporting software like plagiarism, reference management, and others. This indicates a significant gap in the skills required for effective library management and support services. Asogwa's findings highlight the need for targeted professional development programs to enhance these critical areas and ensure that library professionals can fully meet the evolving demands of their roles. Mushi, Mwantimwa, and Wema. (2024) conducted a similar study on the competencies and skills of academic librarians in Kenya. The study revealed that librarians excel \utilizing advanced library technologies, intellectual property management, and specialized research support tools, such as citation tracking and open-source data analysis platforms. The study suggests that librarians need to enhance their skills in advanced technologies and intellectual property

to better support research and innovation in modern academic environments.

Information professionals, especially librarians, use computers to make knowledge accessible and digestible, according to Ebong and Ogwo Nwachukwu (2020). They suggest that academic librarians can deliver services more efficiently and at a lower cost if they are proficient in computer use. To remain relevant in this information-driven age, librarians must develop strong computer skills. This proficiency not only enhances their ability to manage and disseminate information efficiently but also ensures they can meet the evolving needs of users in a digital landscape. As technology continues to advance, their skills will be crucial for maintaining their role as key facilitators of knowledge access. Librarians can develop their skills and become prepared by working as a team with their colleagues. Similar arguments were made by Ezeani (2023), who stated that as technology advances, librarians must be conscious of the possible advantages and disadvantages of big data sets and use this information to help their clients choose the right tools. The evolution of librarian skills in the modern information landscape underscores the vital role of teamwork and data literacy in enhancing professional preparedness. By collaborating effectively, librarians can leverage diverse expertise to navigate complex resources and meet the varied needs of their clientele. Ezeani's (2023) insights into the advantages and disadvantages of big data equip librarians with a nuanced understanding that is essential for guiding patrons toward the most suitable tools and technologies. Ultimately, these competencies not only elevate the quality of service provided but also empower librarians to adapt to an ever-changing digital environment, ensuring they remain indispensable partners in their clients' information journeys.

Edekor et al. (2023), in a study in Ghana, concluded that today's collection managers handle a wide range of complex responsibilities; therefore, a diverse set of skills and competencies are required of their team. There has been a major shift even in traditional acquisition and selection activities. This shift reflects the evolving landscape of collection management, where technological advancements and changing user needs demand new approaches to sourcing and curating collections. As a result, collection managers must adapt their strategies to remain effective in their roles. While the competencies and skills of academic librarians are vital for the functioning and evolution of academic institutions, they come with challenges that require resilience, adaptability, and advocacy to overcome. Strengthening awareness of their value and securing institutional support are essentials for maximizing their impact (Koteikor Baidoo, and Nwagwu, 2024)

2.8. Policies or Legal Framework on Academic Libraries

Policy, according to McClure and Jaeger (2018), is a set of guidelines intended to affect the decisions and actions of individuals, organisations, and governmental entities. Ohegbu (2019) claims that it merely refers to the regulations that control involvement. Rubin (2010) offers a more thorough definition, stating that although policies typically pertain to laws or regulations passed by governments, they can also refer to locally adopted rules or customs. Here's the corrected and refined version of your paragraph:

According to Martzoukou (2021) library and information policy refers to the laws, regulations, and practices designed to facilitate the creation and dissemination of knowledge across society. In addressing library and information challenges, national policy is expected to guide the development of both physical infrastructure—such as

computers, telecommunications networks, and library buildings—and informational content, including physical documents and copyright agreements. Case explored this using a qualitative case study design, focusing on how national policies shape infrastructure and content development in libraries. The study population included library policymakers, institutional administrators, and information professionals. The research was conducted across selected academic libraries in Australia to provide a comprehensive understanding of policy influence at different levels. According to Braman (2021), twenty provisions in the U.S. Constitution—written more than 200 years ago—could be considered library and information regulations. Policies also have a temporal component that varies depending on a country's current issues and stage of development. As political leaders change, policies shift as well. As a country develops, the components that are prioritized may also evolve. This is a strong generalization made by Nicholson (2022), but it could be applicable to other regions as well. For this reason, industrialized countries should place particular emphasis on human resource policy goals.

According to Solomon-Uwakwe and Anich (2023) practice and in this case, scholarly thought should be anchored in legislative and policy frameworks in order to avert any crises in information management, and in this case, in the LIS profession. However, laws have "a direct" impact on how commitments are fulfilled in a certain sector, he argues. Therefore, it may be argued that in order for a profession to be respected, laws specifying its scope of practice and service must exist. Additionally, the legislation gives any particular field some credibility. The same holds true for the library and information science related fields of records, information, archives, archaeology, and museum studies. According to Maruping (2024) the interdisciplinary convergence of multiple fields, the

emergence of new sub- disciplines, and the introduction of new technologies like the internet have all contributed to the historical development of the legal issues surrounding information and library work into a complex phenomenon. Furthermore, Maruping (2024) contend that prior to 1960, social responsibility was the main objective of LIS legislation. But nowadays, the legislation focuses on several different areas. The various subjects covered by the rules governing libraries and information services are addressed by Maruping (2024) and Solomon-Uwakwe and Aniche (2023). These themes include information and record generation, information access, legal deposit, Standards of behaviour and ethics; information importation; information censorship; information publication; information expression; intellectual property and copyright protection; and admissibility in court decorum and children's safety, societal development, equality and equity (against discrimination), professional accountability; Globalisation All of these seek to prevent abuse by establishing standards and boundaries for thought and behaviour.

Kaddu et al (2024) reports that a national library act was passed in 2003, superseding all earlier laws pertaining to public and academic libraries in Uganda. The following are some of the main provisions of the Act: it establishes a National Library to take the role of the Public Libraries Board. The Act also specifies the National Library's responsibilities, which include, among other things, setting professional standards for all Ugandan public libraries and offering direction to them. Additionally, the Act establishes the official Library as the official repository for Ugandan- published works. Penalties for defaulters are also outlined in the Act.

2.9. Challenges confronting academic librarians in service delivery to achieve SDG4

Academic librarians play a pivotal role in advancing Sustainable Development Goal 4 (SDG 4), which emphasizes inclusive, equitable quality education and lifelong learning. However, their efforts are often constrained by challenges such as limited funding, inadequate infrastructure, rapid technological change, and disparities in digital access. Overcoming these barriers is essential for libraries to effectively support the realization of SDG 4 (Vercelli, 2024). Rehman (2022) examined how academic library leaders in Pakistan view leadership, highlighting key challenges and needed skills. Through interviews with 15 senior leaders, the study found major issues such as identity crises, poor communication, financial limits, lack of CPD, and administrative difficulties. Leaders also struggled with raising awareness, limited self-development culture, and tech-related problems. Essential skills identified included communication, vision, teamwork, and knowledge sharing. The study offers practical insights for library leaders, institutions, and educators in shaping leadership development and training.

A study conducted by Sahabi and Otobo (2021) examined the challenges faced by academic libraries in Nigerian universities in delivering services during the digital era. The study emphasizes the importance of digital development in enhancing access to information and highlights the need for librarians to adopt new technologies to remain effective. Key challenges identified include inefficiency, limited technological capacity, and inadequate power supply. The authors advocate for librarians to pursue ICT training to stay relevant and uphold the profession. Furthermore, the study recognizes academic libraries as vital learning centers that play a crucial role in supporting teaching, learning,

and research within a digital society. The study conducted by Ajani et al. (2022) explored Nigerian librarians' views on the awareness, readiness, and challenges of academic libraries in adopting artificial intelligence (AI). Data was collected from six libraries across Nigeria's geopolitical zones using mailed open-ended questionnaires and analyzed thematically. Findings showed that while librarians are aware of AI's global application in libraries, its integration in Nigeria remains limited. Librarians expressed mixed feelings about readiness, acknowledging AI's potential to improve efficiency but also raise concerns about job security. Key challenges include inadequate funding, lack of expertise, unreliable power supply, and insufficient resources for training and maintenance. The study recommends increased funding and the recruitment of skilled personnel to support AI integration. According to Enweani and Eke (2020), academic librarians face several challenges, including poor funding, indifferent attitudes of library managers, lack of clear and consistent library policies, and inadequate adoption of ICT. Their study, which investigated three academic libraries in Imo State, Nigeria using a survey method, identified these factors as major barriers to the effective transformation of library and information services (LIS). The authors emphasize that transforming LIS is crucial for improving service delivery and enabling libraries to meet the demands of a knowledge- driven society.

Ankrah, Agbodza, and Atuase (2019) conducted an insightful study aimed at investigating the implementation and utilization of Library Management Systems (LMS) in public academic libraries in Ghana. The primary focus of the study was to understand the extent to which LMS contributes to effective library service delivery, as well as to uncover the major obstacles limiting its full adoption and efficiency in academic

environments. The findings of the study revealed several pressing challenges that significantly hinder the successful deployment and operation of LMS in these institutions. Among the most critical issues were poor network connectivity, which often results in slow or interrupted access to digital library systems; frequent power fluctuations, which compromise the reliability and availability of electronic resources and equipment; and an acute shortage of library staff with the necessary Information and Communication Technology (ICT) competencies required to operate, manage, and troubleshoot LMS platforms effectively. Acheampong and Dei (2020) identified several challenges that prevent effective library services in academic institutions. They found that poor ICT infrastructure is a major issue, limiting the ability to use digital tools and resources in library operations. Bureaucratic delays also slow down decision-making and the adoption of new solutions. The study highlighted slow internet speeds, which restrict access to online resources, and a shortage of qualified IT staff, making it difficult to manage digital systems. Additionally, the lack of clear policies leads to inconsistency in library operations. Unstable power supply was another challenge, often disrupting library services. The study also pointed out that university management does not provide enough support for library development, and financial constraints limit the ability to upgrade technology or hire skilled staff. Acheampong and Dei stress that these challenges must be addressed through investment in infrastructure, clear policies, staff training, and stronger institutional support to improve library services.

2.10. Conclusion

The chapter examines pertinent literature that is directly related to the field of research. It became clear from the conversations that university libraries are essential to achieving

SDG 4. The concept of SDG 4 and the idea of academic libraries were also examined in the literature review. The infrastructure supporting the delivery of library services, academic libraries' specialised services, academic librarians' qualifications and abilities, and academic library policies and legal frameworks were all examined. A void was found in the literature review on the adoption and application of ICT in private universities. The next chapter discusses the research methodology used in a study, focusing on the research paradigm, design, setting, population selection, sample size, data collection instruments, analysis methods, and ethical considerations.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

A framework that a researcher uses to carry out research is known as a research methodology. This is connected to a collection of particular tools and methods for collecting and analysing data that will be gathered in accordance with the chosen research methodology (Boateng, 2022). This chapter, therefore, discusses the various ways of carrying out the study to achieve its aims and objectives. This comprises the research paradigm, research design/strategy, selected cases/study setting, and selection of subjects (population, selection of sample size). It went on to discuss data collection instruments, data collection procedure, and presentation of data and analysis as well as ethical considerations. It then ends with a summary of the chapter.

3.2. Research Paradigm

A paradigm, often referred to as a worldview, encompasses a coherent set of beliefs and methodological principles that shape the researcher's decisions regarding the selection of research questions and the appropriate methods for investigation (Ugwu, Ekere, & Onoh, 2021). Sturmbier (2015) indicates that a paradigm refers to how members of a society view the world that guides the subject, the activity, and the outputs of the research they engage in. A research paradigm is, therefore, the philosophical assumptions that guide a researcher regarding the research approach to adopt, and the type of methodology to employ in undertaking the study. Positivism (objective, quantitative methods), interpretivism and constructivism (subjective, qualitative methods), pragmatism (using

mixed methods to solve the research problem), and critical theory (identifying power dynamics and inequalities) are the four research paradigms (Turin, Raihan, and Chowdhur, 2024).

Positivism is a research paradigm grounded in the belief that reality is objective, measurable, and independent of human perception. It draws heavily from the natural sciences and emphasizes quantitative methods, hypothesis testing, and statistical analysis (Creswell, 2014; Cohen, Manion, and Morrison, 2018). Interpretivism (or Constructivism) is a research paradigm that assumes reality is socially constructed and subjective. Researchers adopting this approach aim to understand the meanings individuals or groups ascribe to social phenomena, often using qualitative methods like interviews or observations (William, 2024). Pragmatism focuses on solving practical problems and is not committed to any single system of philosophy or reality. It supports the use of mixed methods (quantitative and qualitative) based on what works best to answer the research questions (Creswell & Plano Clark, 2018). Critical theory is concerned with power structures, social justice, and emancipation. It seeks to uncover and challenge inequalities, often by giving voice to marginalized groups and advocating for change (Kincheloe & McLaren, 2005).

The reasons why the researcher chose not to use other research paradigms but instead adopted the positivist paradigm are as follows: Although interpretivism helps to deeply understand people's views, its findings are often difficult to generalize to other contexts. This study aimed to compare how different institutions operate, which required a broader and more objective analysis. While pragmatism allows the use of multiple methods, the study prioritized detailed personal views within the specific context of the institutions,

aligning better with a primarily qualitative approach. Critical research focuses on issues such as power and inequality with the intent to bring about change; however, that was not the objective of this study. Rather, the goal was to understand current practices and perceptions in academic libraries services and these services promote SDG4.

This study adopted the positivist paradigm approach. The positivist paradigm assumes that a single, tangible reality exists, one that can be identified, understood, and measured. A positive approach to research typically emphasizes objectivity, measurement, and quantifiable observations, often leading to the use of experimental and other quantitative methods. It is rooted in the belief that reality is stable and can be observed and described from an objective standpoint (Creswell & Creswell, 2018). This approach is particularly suited to studies aiming to measure variables, test hypotheses, and establish relationships between phenomena. In the context of this study, the positivist paradigm is appropriate because it allows for the systematic collection and statistical analysis of quantifiable data related to users' experiences and satisfaction with academic library services. These aspects can be objectively measured through structured questionnaires and analyzed to determine trends and correlations. Although interpretivist and critical approaches provide useful insights into personal experiences and social factors, they are not ideal for studies that focus on producing general, consistent, and measurable results (Ryan, 2018).

Moreover, choosing a positivist approach does not imply that alternative paradigms lack rigor. Each research paradigm carries its own philosophical assumptions and methodological strengths. The nature of this study focused on assessing the effectiveness of library services in supporting educational outcomes necessitates a framework that supports empirical observation, replication, and comparison across populations, all of

which are central to positivism (Cohen, Manion, & Morrison, 2018). Thus, the positivist approach provides a rigorous and structured framework to objectively examine and quantify the phenomenon under investigation, making it the most suitable choice for the research questions being addressed. Several studies by Ezeani et al. (2017), Cottafava et al. (2022), and Cem Işık (2023) have employed the positivist paradigm to explore various Sustainable Development Goals (SDG) topics. This paradigm, emphasizing objective measurement and observable phenomena, has been instrumental in their quantitative research approaches.

3.3. Research Method

Research methods are used to acquire and analyse data or evidence to learn more about a topic. There are different types of research methods that use different tools for data collection: qualitative methods, quantitative methods, and mixed methods. Interviews, focus groups, observation, document analysis, and oral history or life stories are qualitative methods, while surveys or questionnaires, observation, document screening, and experiments are quantitative. Mixing these two methodologies in a research study is called mixed methods (Creswell 2019, Petropoulos et al. 2023). This study employed the quantitative research. According to Creswell (2019), quantitative research is "an inquiry into a social or human problem, based on testing a theory composed of variables, measured with numbers, and analyzed with statistical procedures" (p. 4). This method is particularly useful for researchers who wish to test hypotheses, establish cause-and-effect relationships, and measure the extent of a phenomenon within a population. The quantitative method was selected because it allows for the collection and analysis of numerical data from a broad sample, enabling the researcher to identify patterns,

relationships, and differences across institutions with a high degree of objectivity and generalizability (Creswell and Creswell, 2018).

The study's objectives such as identifying available infrastructure, specialized services, librarian competencies, institutional policies, and service delivery challenges require the measurement of variables across multiple institutions. The quantitative approach is well-suited for this because it uses structured instruments such as questionnaires or surveys that can systematically gather data from respondents (Babbie, 2020). The researcher chose not to use qualitative or mixed methods because qualitative data, while rich in detail, is more subjective and difficult to generalize across a larger sample, which is essential for comparing multiple institutions on specific, measurable indicators. Mixed methods, though comprehensive, require significant time and effort to integrate both qualitative and quantitative data, which could complicate the analysis and reduce focus. Since the study's objectives, such as comparing infrastructure, services, and librarian competencies are best suited for quantifiable measures, a quantitative approach was the most efficient and effective way to gather consistent, reliable data from the institutions. This approach allowed for a clear, objective comparison between the universities, making it more suitable for addressing the study's goals of identifying patterns and trends across institutions (Creswell, 2019).

3.4. Research Design

Research design is a critical framework for conducting a study, as it provides clear guidelines for the processes of data collection, analysis, and interpretation (Creswell, 2019). It ensures that the research is structured in a way that aligns with the objectives,

questions, and methodology chosen for the study. The choice of a research design depends on the study's objectives, problem nature, and appropriate methodologies. By carefully selecting and justifying the design, researchers can align their approach with the study's goals, resulting in meaningful and actionable results (Ary, Jacobs, Irvine, and Walker 2019; Creswell 2019; McKinney, 2020). A research design serves as a structure for gathering and presenting data analysis (Neuman, 2019). Ary, Jacobs, Irvine, and Walker (2019) further state that a research design is a comprehensive approach selected to logically integrate several study components in order to address a research problem. According to Fraenkel and Wallen (2018), a descriptive survey often consists of a large number of questionnaires with the same set of questions (what, why, which, and how) answered. In order to test theories or provide answers to research questions on the current state of the study's subject, a descriptive research design entails the methodical collection of data about people and collectives (Ary, Jacobs, Razavieh and Sorensen, 2019). According to Saunders, Lewis, and Thornhill (2019), this design is wholesome when information is required regarding circumstances or relationships that exist; prevalent practices; and held views, points of view, or attitudes Both qualitative and quantitative research approaches offer a variety of study designs, each suited to different research questions and paradigms. Each type guides researcher's investigation. Qualitative designs are less strictly defined. This approach is about gaining a rich, detailed understanding of a specific context or phenomenon, and one can often be more creative and flexible in designing your research.

Four common types of qualitative design are case study, ethnography, grounded theory, and phenomenology. A case study is a detailed study of a specific subject (e.g., location,

event, organization, etc.) that uses a variety of sources and methods to gain a holistic understanding of the case. Ethnography is the study of a community or group's culture through immersion and close observation. It describes and interprets beliefs, conventions, social dynamics, etc. Grounded theory analyses qualitative data to create a theory inductively. Phenomenology uses individuals' experiences to understand a phenomenon (Berg, 2009). Quantitative designs include four main categories. Experimental and quasi-experimental designs allow one to test cause-and-effect relationships, while descriptive and correlational designs allow one to measure variables and describe relationships between them (Creswell and Creswell 2018). The researcher chose a survey research design because it effectively assists in providing a precise description of a given circumstance in a real-world environment. This methodological choice allows for a clearer understanding of the participants' experiences and behaviors. By using these quantitative designs, researchers can derive insights that not only inform theory but also guide practical applications in various fields. The design enables the collection of numerical data, which can be systematically analyzed to draw objective and general conclusions about the study population.

3.5. Selected Case(s)

The Sam Jonah Library at the University of Cape Coast and the John Kofi Borsah (JKB) Library at the Cape Coast Technical University served as the study's locations. The selection of the Sam Jonah Library at the University of Cape Coast and the John Kofi Borsah (JKB) Library at the Cape Coast Technical University was influenced by the desire to compare two different types of institutions in Ghana. The study aimed to assess how academic libraries contribute to achieving SDG 4, with one library representing a

public traditional university (UCC) and the other representing a technical university (CCTU). This institutional diversity allowed for a broad range of perspectives on the role of libraries in supporting educational goals. The two universities, UCC and CCTU, represent different models of higher education, with UCC being a prominent traditional university and CCTU focusing on vocational and technical education. This contrast makes the libraries of both institutions ideal for a comparative analysis of their services and contributions to SDG 4. Furthermore, both libraries may have been selected due to their active involvement in supporting SDG 4, as well as their accessibility in terms of resources and willingness to participate in the study.

3.6. Study Setting

3.6.1 Sam Jonah Library

The University of Cape Coast was established in October 1962 as a University College and placed in a special relationship with the University of Ghana, Legon. On October 1, 1971, the College attained the status of a full and independent University, with the authority to confer its degrees, diplomas, and certificates by an Act of Parliament - The University of Cape Coast Act, 1971 [Act 390] and subsequently the University of Cape Coast Law, 1992 [PNDC Law 278].

There is currently a draft Bill to amend the University of Cape Coast Law, 1992 (PNDC Law 278) which repealed the University of Cape Coast, Act 1971 (Act 390), the University of Cape Coast (Amendment) Law, 1990 (P.D.C.L. 241) and the University of Cape Coast (Interim Administration Committee) Law, 1990 (P.N.D.C.L. 243) which established the University as an institution of higher learning. It was expected that, when the Bill is subsequently passed into law, the original mandate of the University would be reviewed

to make room for the training of personnel in other disciplines to ensure that the focus of the University is widened. The University of Cape Coast Library was established in 1962 with an initial collection of about 650 books. The books were transferred from the erstwhile Kumasi College of Arts and Education, now Kwame Nkrumah University of Science and Technology.

The collection was first housed in one of the lecture rooms in the then Faculty of Arts. The UCC library system comprises the main library (Sam Jonah Library) and 31 other satellite libraries located in the colleges, faculties, schools, departments, and halls. In April 1963, the Library was moved into a temporary building with a capacity for 40 readers and 20,000 volumes. The Sam Jonah Library, University of Cape Coast is currently one of the largest academic libraries in Ghana. The collections are housed in a magnificent four-story library complex at the heart of the University's new site. It has the capacity for holding 750,000 volumes excluding pamphlets and journal collections. The library can seat 2000 users at a time. It is the most frequently utilized facility in the University, with approximately 5000 visits per day. The library supports colleges, schools, faculties, departments, and hall libraries.

3.6.2. John Kofi Borsah Library

The Cape Coast Technical University is a unique University that is committed to the training of highly skilled human resources in Engineering, Applied Sciences and Technology, Applied Arts, and Business in close collaboration with industries and commerce. The Cape Coast Technical University (CCTU), formerly Cape Coast Polytechnic was established in 1984 as a second-cycle institution. In 1986, it operated

under the Ghana Education Service (GES) to offer intermediary courses leading to the award of non-tertiary certificates. Following the enactment of the Polytechnic Law (PNDCL 321) in 1992, the University was upgraded to a tertiary level to run programmes in various disciplines leading to the award of the Higher National Diplomas (HND) in Engineering, Business and Applied Sciences and Arts awarded by the National Board for Professional and Technician Examination (NABPTEX).

The John Kofi Borsah Library of the Cape Coast Technical University is a four-story building complex (including a basement). The basement houses the ICT center and Bookbindery. On the ground floor are the General Reference, Research, and Digital Libraries. The Business Library is on the second floor while the third floor houses the Engineering, Applied Sciences, and Arts Library. The facility has space for 386,000 volumes, including pamphlets and journals. The Conference, Presentation Hall, and Distance Learning Centre are located on the fourth floor and are used for conferences, lectures, and related activities. The JKB library is open during the semester from Monday to Friday from 9.00 a.m. to 8.00 p.m. and on Saturdays from 9.00 a.m. to 2.00 p.m. During examination periods the library closes at 10.00 pm from Monday to Friday.

3.7. Selection of Subjects

The following have been discussed in this section: selection of cases, population, selection of sample size, and data collection instrument.

3.7.1. Population

According to Alreck and Settle (2004, cited in Ankrah, 2014), respondents in the population ought to possess the same information that a researcher would want for a study. Rahman (2023) describes a population as a broad group of individuals or cases from which a sample is selected, and to which the findings from that sample are intended to be applied or generalized. The focus group that the researcher wishes to examine and analyze is referred to as the population (Kuranchie, 2016). There are 103 library employees working at both campuses, with 71 from Sam Jonah Library and 32 from John Kofi Borsah Library.

Table 3.1 summarizes the library staffing structure at Sam Jonah Library and John Kofi Borsah Library in Cape Coast. It compares the numbers of senior members, senior staff, and junior library assistants in both institutions. At the time of the study, there were 16 senior members, 41 senior staff, and 14 junior library assistants at UCC. CCTU had 7 senior members, 15 senior staff, and 10 junior library assistants. Compared to CCTU, UCC has a larger workforce across all categories. Both institutions rely more on senior staff than junior library assistants for library operations. The focus on library staff at the Sam Jonah Library at University of Cape Coast (UCC) and John Kofi Borsah Library at Cape Coast Technical University (CCTU) was chosen because it is important to look at and compare the staffing structures of these libraries, which are crucial for academic activities. Libraries are central to the quality of education and research, and examining their staffing levels provides insights into how resources are allocated to meet the needs of students and faculty.

Including both senior and junior library staff was essential for a comprehensive analysis because their combined roles directly influence the delivery of quality education, which is the focus of Sustainable Development Goal 4 (SDG 4). Senior staff, who are often responsible for middle-level management and specialized functions, play a critical role in strategic planning, policy implementation, and the development of programs that enhance access to knowledge and support teaching and research. Their insights help assess how academic libraries align their services with institutional and global educational goals, such as equitable access to learning resources and improved educational outcomes.

Junior staff, on the other hand, are responsible for the daily execution of library services—such as shelving, cataloging, and assisting users—which are foundational to maintaining the accessibility and functionality of library resources. Their role ensures that all users, regardless of background, can continuously benefit from available educational materials, which is central to achieving inclusive and equitable access to quality education as emphasized in SDG 4.

By including both groups, the study captures how academic libraries function as systems where leadership, planning, and hands-on service delivery work together to promote lifelong learning and inclusive education. This comprehensive view enables a more accurate evaluation of how well libraries contribute to SDG 4 in both policy and practice.

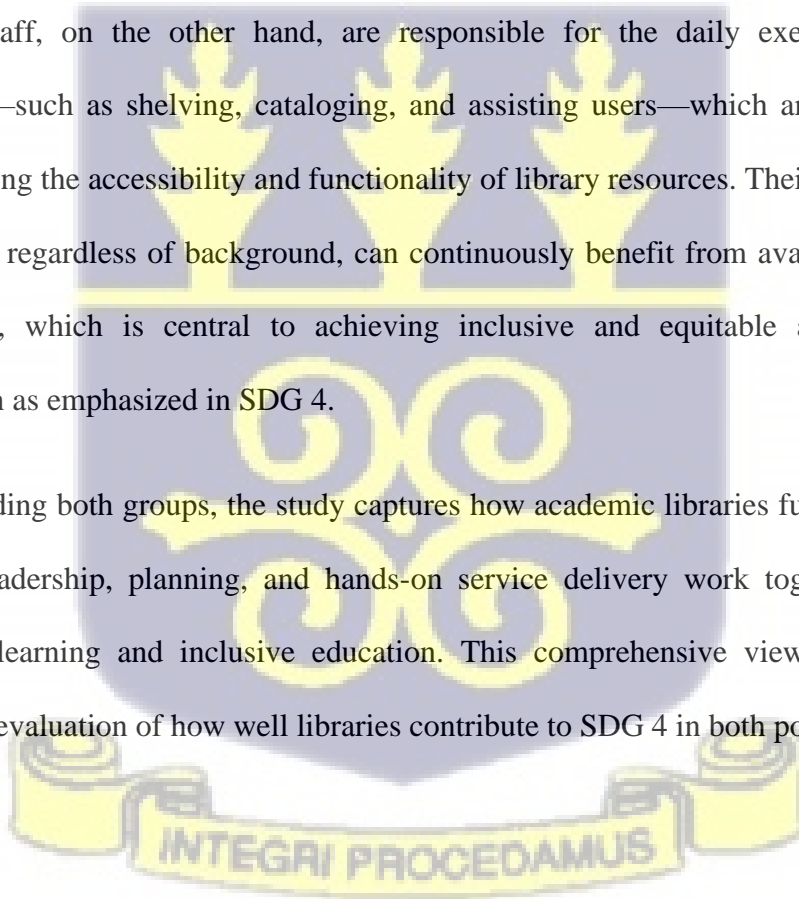
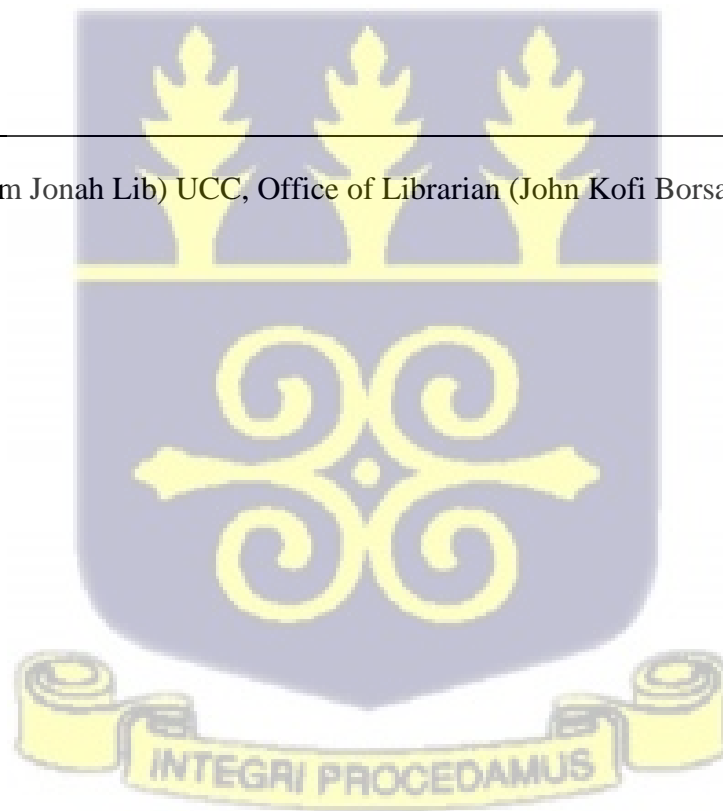


Table 3.1 Population of library staff

Name of Institution	Senior Members	Senior Staff (Chief, Principal and Library Assistants)	Junior Library Assistants	Total
Sam Jonah Library	16	41	14	71
John Kofi Borsah Library.	7	15	10	32
				N= 103

Source: Assist Reg. Office (Sam Jonah Lib) UCC, Office of Librarian (John Kofi Borsah Lib) CCTU. 2023



3.7.2. Sampling Size

According to Osuala (2005), collecting data from each and every possible respondent makes research expensive and time-consuming. The sample size is "one element of research design that investigators must consider as they plan their study," according to Rajput, Wang, and Chen, (2023). He continued, saying that "the bare minimum of participants needed to detect, if any, a statistically significant difference is known as an adequate sample. According to Singleton and Straits (2010), a sample size is a subset of the population that enables the researcher to choose which examples to observe. The researcher selected the entire population of 103 library staff members for this study due to their small and manageable size. The decision to study the entire library staff of the selected academic libraries is in line with the assertion of Leedy and Ormrod (2019), who agreed that if a population is less than 200, then the entire population can be studied. This approach allows for a comprehensive understanding of the staff's perspectives and experiences, ensuring that the findings accurately represent the views of all members. By including everyone, the researcher can gather richer and more nuanced data.

3.7.3. Sampling Technique

In order to systematically select a smaller number of representative items or individuals (a subset) from a pre-defined population to serve as subjects (data sources) for observation or experimentation in accordance with the goals of one's study, a researcher uses a sampling technique (procedure or device) (Gaganpreet, 2019). Gronmo (2020) explained sampling technique as the process of selecting a unit from the population of a study for investigation. A sampling process, according to Creswell and Creswell (2019),

is one in which the researcher has access to the population and is able to take a sample of the individuals. The study employed the Census sampling technique, a comprehensive approach in which the entire population is included in the analysis. Unlike other sampling methods that involve selecting a subset of individuals to generalize findings to a larger group, census sampling ensures that data is gathered from every individual within the specified population. Census sampling eliminates sampling bias by including the entire population, ensuring accurate and reliable results that reflect the true characteristics of the group. It provides comprehensive coverage, ensuring no subgroup is overlooked, which is particularly useful for specialized populations. However, it can be time-consuming, resource-intensive, and challenging to manage large datasets, especially when the population size is large. Despite these challenges, census sampling offers a complete and unbiased representation of the population.

3.8. Instrumentation

Devices used to collect data from respondents are known as data collection instruments (Creswell, 2019). These are the methods and tools used to gather information about a phenomenon (Kuranchie, 2016). Instrumentation was defined by Canals (2017) and Khairuddin, Omar, Krauss, and Ismail (2018) as the tools or means by which researchers seek to measure items or variables of interest during the data gathering process. Research instruments, according to Wilkinson and Birmingham (2003), are tools or equipment that researchers use to gather data for their studies. Depending on the sort of data being gathered and the nature of the research, these instruments can take on a variety of shapes. Questionnaires, interviews, focus groups, observation, and content analysis are typical types of instruments. The instrument the researcher used to gather information from

respondents was a questionnaire and it was adapted from article by Ezeani et al (2017). The questionnaire had both closed- and open-ended questions. Respondents were able to write down their opinions in response to the open-ended questions. This was done to make sure that all of the information that the closed ended questions were unable to collect was collected. The respondents had a variety of options to choose from while answering the closed-ended questions. The questionnaire was chosen above other instruments, such as interview, since it is quick and simple to complete. Finally, the questionnaire is the most effective and suitable method for working with a large number of respondents. For the study, the questionnaire had sections like "A," which asked about the respondents' demographics; "B," which asked about the infrastructure that supports library service; "C," which asked about the library's specialized services and resources; and "D," which asked about the skills and abilities of the library staff. Section 'E' sought established institutional policies of the libraries in the study. Lastly, Section F sought challenges faced by the library staff.

3.8.1. Pilot Testing of Instruments

Wilkinson and Birmingham (2003) note that it is typical for surveys to be created with imprecise forms and erroneous questions. In a similar vein, Awanta and Asiedu-Addo (2020) warn that inconsistent responses and the inability to accurately measure what the scales are intended to evaluate can result in a survey that is trustworthy but inaccurate. A pilot test involves the researcher distributing study instruments to a limited sample of respondents and making necessary modifications based on their feedback (Creswell, 2019). During the pre-test involving ten employees of the University of Education Library, Winneba, several important observations were made that helped refine the

questionnaire and improve the overall study design. Some respondents found certain questions to be ambiguous or too technical, particularly those related to library policy frameworks and specialized services. As a result, the wording of these questions was revised for clarity and simplicity to ensure all participants, regardless of their role or academic background, could understand and respond accurately.

Additionally, the pre-test revealed that the original structure of the questionnaire lacked logical flow in some sections, causing confusion and delays during completion. Based on this feedback, the arrangement of questions was reorganized to follow a more coherent sequence. This improved the usability and reduced the completion time of the questionnaire. The pre-test also confirmed that some response options were too narrow, limiting participants' ability to fully express their experiences or opinions. To address this, more open-ended fields and broader multiple-choice options were included where appropriate. Overall, the pre-test was instrumental in identifying and correcting flaws in the data collection tool, thereby enhancing its validity and reliability for the main study.

3.8.2. Reliability of the Instrument

According to West (2020), testing a research tool is necessary to ensure the dependability and internal validity of the information gathered. The degree to which an independent administration of the identical research instrument yields the same or comparable results under comparable conditions is referred to as reliability (Middleton, 2020). The data collected from the pilot test were analyzed to determine the internal consistency of the instrument using Cronbach's alpha coefficient. A reliability coefficient of, (0.75) was obtained, indicating that the instrument had an acceptable level of internal consistency for

the purposes of the study.

3.9. Data Collection Procedures

Data collection procedures refer to the systematic processes and techniques employed by researchers to gather information or evidence to answer research questions or test hypotheses. These procedures involve deciding on the methods of data collection (such as surveys, interviews, observations, or document analysis), selecting the sample or participants, and ensuring the accuracy, reliability, and ethical considerations during the collection process (Creswell, 2014). The data collection process for this study involved several carefully planned steps to ensure that the data gathered was both reliable and ethically collected. To begin, the researcher sought formal approval from the authorities at both the University of Cape Coast (UCC) and the Cape Coast Technical University (CCTU). This included submitting an introductory letter and an ethical clearance letter, which were intended to inform the university officials of the purpose of the study and to ensure compliance with ethical standards, particularly regarding respondents' consent and confidentiality.

Once permission was granted, a questionnaire was developed to gather the necessary data. The questionnaire was designed with a brief preamble that outlined the goal of the study, ensuring that participants understood the purpose and scope of the research. To uphold ethical standards, the questionnaire included a clause that guaranteed respondents' confidentiality, emphasizing that their responses would be kept anonymous and used solely for the purposes of the study. Next, the researcher worked closely with the library administrators at both UCC and CCTU. The administrators helped facilitate the

distribution of the questionnaires by either handing them out directly to available participants or assisting in organizing the respondents. The target population consisted of library staff members at both universities, with an open invitation extended to any available member of the population at the time of data collection. This approach helped ensure that the sample represented the diverse range of staff working in the libraries.

The data collection took place over the course of two weeks, within the library premises at both universities. Respondents were approached individually, and their participation was voluntary. Upon their agreement to participate, the researcher provided them with a questionnaire to complete. Respondents were given sufficient time to fill out the questionnaire, and the researcher was available to answer any questions or clarify instructions if needed. In total, the study relied on the collaboration of library administrators and the availability of respondents during the data collection period. The questionnaires were distributed and completed on-site, which allowed for direct supervision of the process and ensured that the data collection followed the pre-established ethical and methodological guidelines.

3.10. Data Presentation and Analysis

According to Kothari (2004), “data analysis involves a number of closely related operations that are performed with the purpose of summarizing the collected data and organizing these in such a manner that they answer the research questions” (p. 122). Data presentation and analysis, therefore, are essential components of the research process, providing the bridge between raw data and meaningful conclusions. For the data, the researcher employed quantitative data analysis tools. The purpose of data analysis is to

arrange and interpret the data. Researchers usually use both generic analysis stages and steps found within a specific design for data analysis, which is an ongoing process that entails analysing participant information (Creswell, 2019). In order to accurately characterise the many properties of a set of data, descriptive statistics deal with the description, presentation, and summation of that set of data.

The version 25 of the Statistical Package for Social Sciences (SPSS) was used to analyse the questionnaire data. SPSS is the software which was used in statistical analysis, which includes tables showing frequency and pie charts. First, all questionnaire responses were entered manually into SPSS using the Variable View and Data View interfaces. Each question in the survey was assigned a corresponding variable name, and appropriate value labels were created to represent the various response options. For example, responses to the question on gender were coded numerically, with “Male” represented as 1 and “Female” as 2. Similarly, for the question on current department or section, each listed unit (e.g., Acquisition, Cataloguing, Readers Services) was assigned a distinct numeric code.

Likert-scale items, such as those found in Section B (which focused on the availability of infrastructure that supports library services), were coded on a five-point scale: 1 for “Strongly Disagree,” 2 for “Disagree,” 3 for “Neutral,” 4 for “Agree,” and 5 for “Strongly Agree.” Each statement was entered as a separate variable (e.g., the availability of study space, printing facilities, or assistive technology), allowing for analysis of individual items as well as composite scoring where necessary. Questions that required binary responses, such as “Yes” or “No,” were also coded using numeric values 1 for “Yes” and 2 for “No.” For questions that involved multiple options or check-all-that-

apply formats (such as those in the section on challenges and strategies), each option was treated as a separate dichotomous variable, coded as 1 if selected and 0 if not selected.

Text responses to open-ended questions were entered as string variables and reviewed qualitatively. These responses were not subjected to statistical tests but were thematically analyzed to identify patterns, ideas, or recommendations provided by respondents. Before conducting analysis, data cleaning procedures were performed. This included checking for missing values, verifying consistent coding, and confirming the accuracy of the data entries. Frequency tables and descriptive statistics were used to identify any irregularities or outliers. The data analysis began with descriptive statistics, such as frequencies and percentages, which were used to summarize the demographic characteristics of respondents and their responses to various questions. Bar charts and pie charts were also generated to visually represent the distribution of key variables

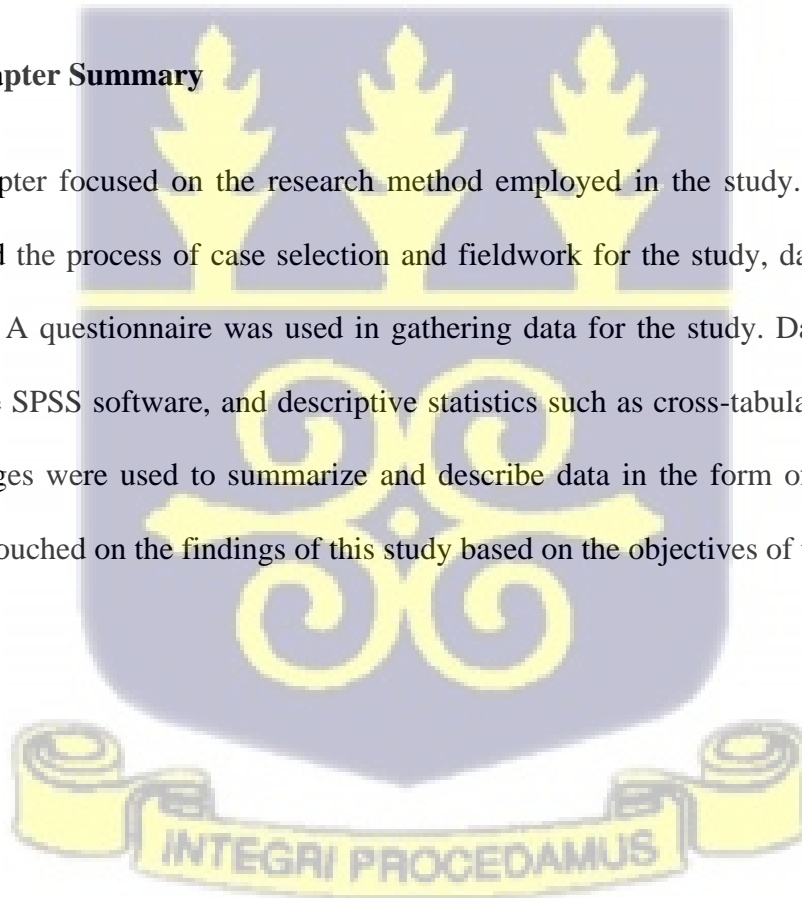
3. 11. Ethical Consideration

Ethics are norms or standards of behavior that guide moral choices about the researcher's behavior and relationship with others (Ankrah, 2014). Permission was sought from the Ethical Review Board (ERB) of the University of Ghana which has an important gate-keeping role in ensuring that the researcher has gone through all the relevant issues and has conformed to required codes of practice and the demands of the Ethical Review Board. Respecting the privacy of respondents, the researcher diligently adhered to and acknowledged the individual's right to privacy throughout the study. The researcher obtained informed consent from those who received the questionnaire. In the use of data and its analysis, the researcher, in reporting the research work, ensured confidentiality

and anonymity of the respondents. Consent for the administration of the instrument. Before administering research instruments, the researcher explained the purpose of the questionnaire to respondents and assured them that their responses would be used for academic purposes only and that the researcher would take personal responsibility for any shortcomings that may arise from the responses they offer. Additionally, the researcher collected official letters of introduction from the Department of Information Studies to the various institutions; and the two selected university libraries. Concerning data manipulation, the researcher gave the assurance that data would not be manipulated to suit the objectives of this study.

3.12 Chapter Summary

This chapter focused on the research method employed in the study. The chapter also discussed the process of case selection and fieldwork for the study, data collection, and analysis. A questionnaire was used in gathering data for the study. Data were analyzed using the SPSS software, and descriptive statistics such as cross-tabulations, means, and percentages were used to summarize and describe data in the form of tables. The next chapter touched on the findings of this study based on the objectives of the study.



CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1. Introduction

This chapter focused on analysis of data collected from the research respondents and presentation of findings. “A response rate in survey research refers to the number of people who answered the survey divided by the number of people in the sample” (Ankrah, 2014, p.141). Similarly, Babbie (2021, p265) defined a response rate as “The number of people participating in a survey divided by the number selected in the sample, in the form of a percentage”. The response rate allows the researcher to determine the number of questionnaires that were successfully completed and returned, compared to those that were not. At the Sam Jonah Library and John Kofi Borsah Library, a total of 90 questionnaires were distributed. Of this number, 52 were completed and returned, representing a response rate of 57.8%. According to Fincham and Glaser (as cited by Onyimbi et al 2018, p 8), “acceptable response rates vary by how the survey is conducted, for mail, 60–70% is very good, phone: 70–80%, e-mail: 40–60%, questionnaire: 50-60%, online: 30% average and for face-to-face: 80–85% response rates were acceptable”. Therefore, it can be inferred that the response rate of 57.5% for this survey is acceptable for analysis. Findings were presented according to the specific objectives of the study under the following

- Demographics of respondents
- Library infrastructure availability
- Specialized Library service and resources of the library

- Skills and Competencies of Library Staff
- Established Institutional Policies
- Challenges libraries faced in providing access to information.

4.2. Respondent Demographics

Demographic data provides a snapshot of a population or group and is used across disciplines. This data enables researchers, politicians, corporations, and organizations to make educated decisions, customize tactics, and solve different community concerns. Questionnaires demand demographic data from study respondents; therefore, each participant must be able to understand and answer the questions. Thus, respondents' educational data was needed. The study requested demographic data from respondents to aid discussion and analysis. The results are depicted in the table 4.1:

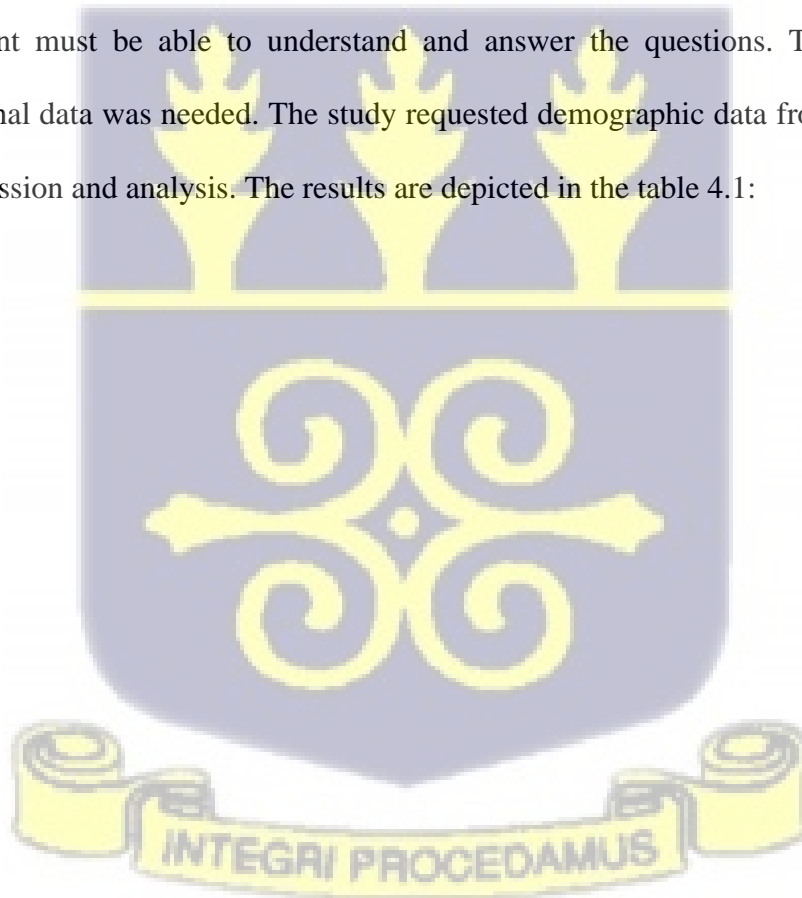
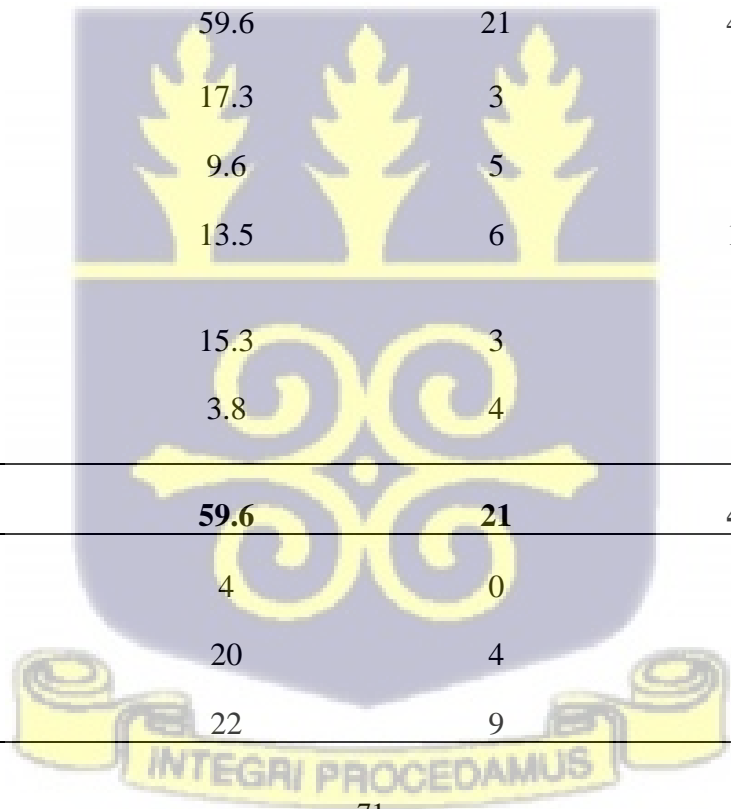


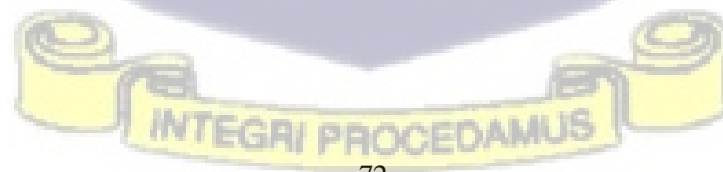
Table 4.1: Respondents Demographics

Variables	Sam Jonah Lib		John Kofi B. Lib		TOTAL		
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	
Gender	Male	14	26.9	12	23.1	26	50.0
	Female	17	32.2	9	17.3	26	50.0
	Total	31	59.6	21	40.4	52	100
Department	Acquisition	9	17.3	3	5.8	12	23
	Cataloging	5	9.6	5	9.6	10	19.2
	Reader's service	7	13.5	6	11.5	13	25
	Periodicals	8	15.3	3	5.8	11	21.2
	Special collection	2	3.8	4	7.7	6	11.5
	Total	31	59.6	21	40.4	52	100
Highest Qualification	PhD	2	4	0	8	2	4
	Masters	10	20	4	8	14	28
	Bachelors	11	22	9	18	20	40



	Diploma	9	18	5	10	14	28
	Total	30	60	20	40	50	100
Designation	Senior Member	10	19.2	5	9.6	15	28.8
	Senior staff	16	30.2	13	25	29	55.8
	Junior staff	5	9.6	3	5.8	8	15.4
Total		31	59.6	21	40.4	52	100
Level of Experience	less than 5 years	5	9.6	0		5	9.6
	6-10 years	20	38.5	4	7.7	24	46.2
	11-15 years	6	11.5	10	19.2	16	30.8
	More than 15 years	0		7	13.5	7	13.5
Total		31	59.6	21	40.4	52	100

Source: Field data, 2023



As shown in Table 4.1, the dataset comprises 26 males (50%) and 26 females (50%), totaling 52 respondents (100%) and indicating equal gender representation. This gender parity reflects the diversity of the sample. In addition to gender, the table presents the distribution of respondents across various departments, highlighting the institutional organizational structure. This section offers a detailed comparative analysis of the library staff demographics and professional characteristics at the Sam Jonah Library and John Kofi Borsah Library. The analysis covers key variables including gender, departmental placement, academic qualifications, staff designation, and years of professional experience.

Gender Distribution

The gender distribution of respondents across Sam Jonah Library and John Kofi Borsah Library indicates a balanced representation of both males and females. At Sam Jonah Library, female respondents form the majority with 17 (32.2%), while male respondents total 14 (26.9%), making up a total of 31 (59.6%) respondents. In contrast, John Kofi Borsah Library has fewer female respondents, with 9 (17.3%) compared to 12 (23.1%) males, totaling 21 (40.4%) respondents. The data reveals that while overall gender parity is achieved (50% male and 50% female), Sam Jonah Library shows a slightly higher representation of female respondents, whereas John Kofi Borsah Library exhibits a more male-dominated staff composition.

Departmental Distribution

The departmental distribution of library staff respondents across Sam Jonah Library and John Kofi Borsah Library reveals distinct patterns in staffing priorities. The Periodicals

Unit at Sam Jonah Library has the highest number of respondents among the departments, with 8 (15.3%), while John Kofi Borsah Library has only 3 (5.8%) in the same unit. The Acquisition Department closes at Sam Jonah Library with 9 (17.3%) respondents, whereas John Kofi Borsah Library has 3 (5.8%), indicating a stronger emphasis on collection development at Sam Jonah Library. In the Reader's Service Department, Sam Jonah Library records 7 (13.5%) respondents and John Kofi Borsah Library has 6 (11.5%), making this the most balanced department between the two libraries and highlighting its importance in user engagement at both institutions. The Cataloguing Unit is equally staffed in both libraries, with 5 (9.6%) respondents each, showing a shared recognition of its critical role in organizing library resources. Notably, John Kofi Borsah Library has more respondents in the Special Collection Unit, with 4 (7.7%) compared to 2 (3.8%) at Sam Jonah Library. This suggests a more pronounced institutional focus on preserving and managing unique or archival resources at John Kofi Borsah Library.

Academic Qualifications

The analysis of respondents' highest academic qualifications across the two libraries indicates notable differences in educational attainment. Bachelor's degree holders form the largest group, with a total of 20 respondents: 11 (21.2%) from Sam Jonah Library and 9 (17.3%) from John Kofi Borsah Library. This is followed by master's degree holders, accounting for 14 respondents in total: 10 (19.2%) from Sam Jonah Library and 4 (7.7%) from John Kofi Borsah Library. Diploma holders are also significantly represented, comprising 9 (17.3%) respondents from Sam Jonah Library and 5 (9.6%) from John Kofi Borsah Library, totaling 14 respondents overall. Notably, PhD holders are only found at

Sam Jonah Library, where 2 (3.8%) respondents possess doctoral degrees, while John Kofi Borsah Library reported none in this category. This suggests that while Sam Jonah Library has a slightly higher proportion of respondents with postgraduate qualifications (Master's), John Kofi Borsah Library distinguishes itself with the presence of doctoral-level staff. The distribution reflects both libraries' commitment to academic qualification, with a dominant reliance on first-degree and postgraduate-level professionals.

Designation of Staff

The distribution of staff respondents based on designation reveals significant differences between Sam Jonah Library and John Kofi Borsah Library in terms of professional hierarchy. The largest group of respondents in both libraries are Senior Staff, with a total of 29 respondents: 16 (30.2%) from Sam Jonah Library and 13 (25.0%) from John Kofi Borsah Library. This indicates that both libraries rely heavily on experienced and senior-level professionals in their library systems. The Senior Member category, representing higher-level library staff, has a total of 15 respondents: 10 (19.2%) from Sam Jonah Library and 5 (9.6%) from John Kofi Borsah Library. This shows a stronger presence of senior academic staff at Sam Jonah Library compared to John Kofi Borsah Library. In contrast, the Junior Staff category consists of the smallest group, with 8 respondents overall: 5 (9.6%) from Sam Jonah Library and 3 (5.8%) from John Kofi Borsah Library. This suggests that both libraries have a more senior-dominated staff structure, with fewer junior staff members supporting day-to-day operations. Overall, Sam Jonah Library has a higher proportion of both Senior Members and Senior Staff, indicating a stronger focus on experienced personnel in leadership and specialized roles, while John Kofi Borsah Library has a more balanced mix but with fewer Senior Members in particular.

Years of Experience

With regard to professional experience, the largest group across both libraries is the 6–10 years range, comprising 24 staff members: 20 (38.5%) from Sam Jonah Library and 4 (7.7%) from John Kofi Borsah Library. This is followed by the 11–15 years category with 16 individuals, of whom 10 (19.2%) are from John Kofi Borsah Library and 6 (11.5%) from Sam Jonah Library. Staff with more than 15 years of experience are only found at John Kofi Borsah Library, accounting for 7 (13.5%) individuals, while Sam Jonah Library has none in this category. On the other hand, 5 (9.6%) individuals at Sam Jonah Library have less than 5 years of experience, whereas John Kofi Borsah Library has no staff in this group. These figures reveal that Sam Jonah Library has a predominantly mid-career workforce, while John Kofi Borsah Library has a relatively more experienced team, with a significant proportion of long-serving staff

4.3. Library infrastructure availability for SDG4

The study first examined library infrastructure for SDG 4 library services. To achieve this goal, the researcher investigated if the libraries of study have infrastructure to support SDG 4 library services. The data was obtained using a Likert scale to assess respondents' opinions from "Strongly Agree" to "Strongly Disagree." The table below shows respondents' answers to the question.

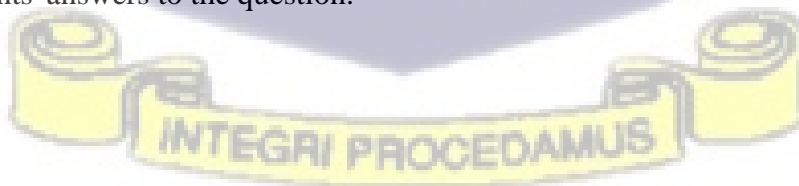
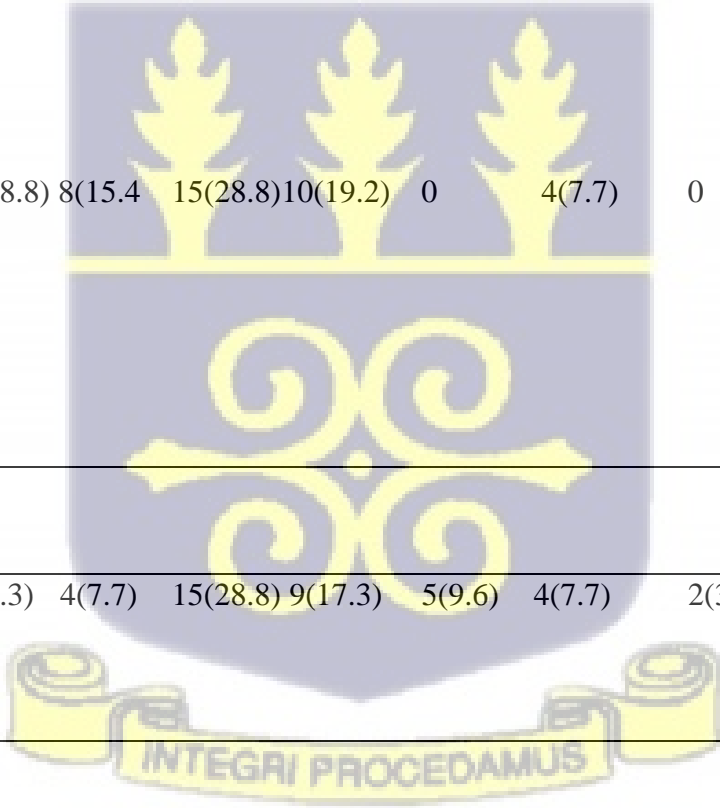
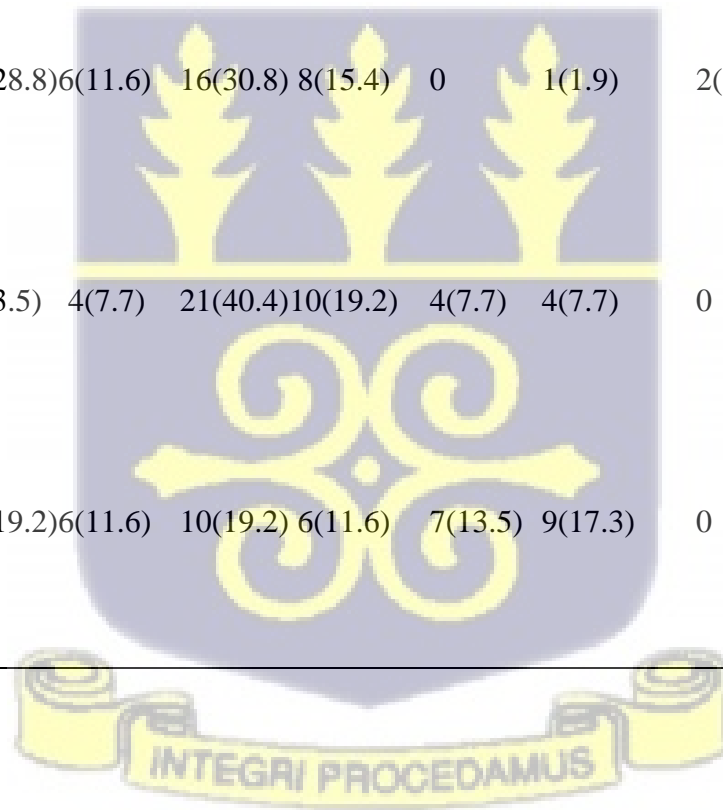


Table 4.2; Availability of library infrastructure

Variable	SJL	JKBL	SJL	JKBL	SJL	JKBL	SJL	JKBL	SJL	JKBL
	Strongly	agree	Agree	Frequency	Neutral	Frequency	Disagree		Strongly	
	Frequency (%)	(%)	(%)	(%)	(%)	(%)	Frequency (%)	disagree	Frequency (%)	(%)
The library provides sufficient space for studies and reading	5(9.6)	2(3.8)	10(19.2)	6(11.5)	5(9.6)	6(11.5)	7(13.4)	11(21.2)	0	0
There are adequate shelves with convenient heights for all students to accommodate	15(28.8)	8(15.4)	15(28.8)	10(19.2)	0	4(7.7)	0	0	0	0
The library offers printing, scanning, and photocopying services	9(17.3)	4(7.7)	15(28.8)	9(17.3)	5(9.6)	4(7.7)	2(3.8)	4(7.7)	0	0

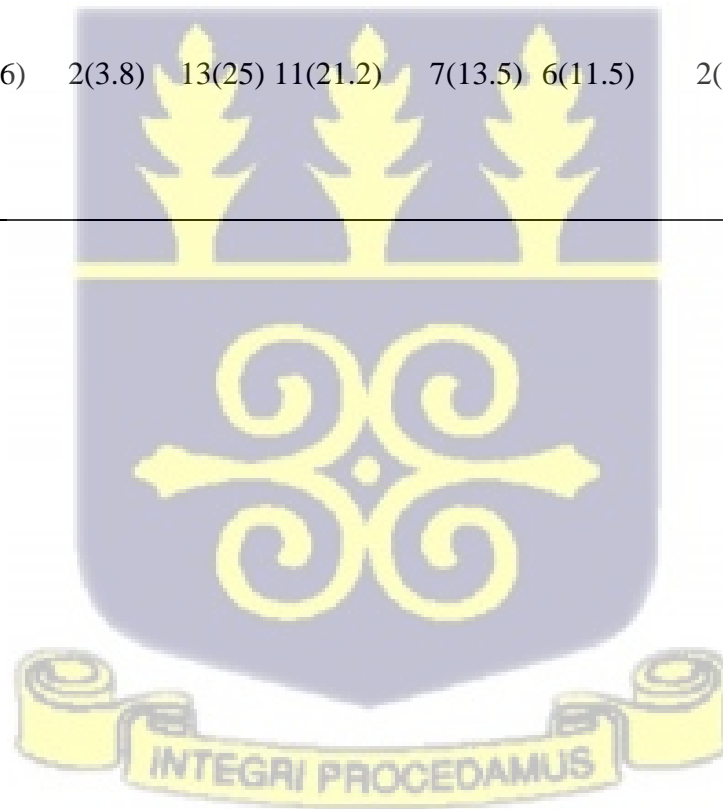


The library provides reliable internet access	10(19.2)	8(15.4)	9(17.3)	9(17.3)	2(3.8)	7(13.4)	1(1.9)	6(11.5)	0	0
There are designated areas for group study	12(23)	6(11.6)	9(17.3)	7(13.3)	3(5.8)	7(13.4)	2(3.8)	6(11.5)	0	0
The library offers assistive technology for physically challenged people	10(19.2)	6(11.6)	6(11.6)	10(19.2)	0	3(5.8)	2(3.8)	12(23)	0	0
My library provides a secure area for storing personal belongings while using the library	15(28.8)	6(11.6)	16(30.8)	8(15.4)	0	1(1.9)	2(3.8)	4(7.7)	0	0
The library has location and way- finding systems for all students	7(13.5)	4(7.7)	21(40.4)	10(19.2)	4(7.7)	4(7.7)	0	0	0	0
The library offers online resources and databases for research	10(19.2)	6(11.6)	10(19.2)	6(11.6)	7(13.5)	9(17.3)	0	4(7.7)	0	0



There are designated accessibility features such as ramps and elevators within the library building	8(15.4)	6(11.6)	13(25)	10(19.2)	4(7.7)	7(13.5)	0	1(1.9)	0	0
There are designated areas for specialized collections or archives within the library	8(15.4)	1(1.9)	15(28.8)	13(25)	4(7.7)	5(9.6)	2(3.8)	2(3.8)	0	0
The library provides sufficient space for studies and reading	5(9.6)	2(3.8)	13(25)	11(21.2)	7(13.5)	6(11.5)	2(2.3)	6(11.5)	0	0

Source: field data, 2023



The study looked at library infrastructure in relation to SDG 4 library services. Specifically, it sought to find out if the libraries at UCC and CCTU have the right infrastructure to support these services.

Data was gathered using a Likert scale, with respondents' opinions ranging from "Strongly Agree" to "Strongly Disagree." The following analysis presents the frequency of responses from both universities.

At Sam Jonah Library, an overwhelming 21 (40.4%) of respondents agreed that the library has effective location and wayfinding systems, and an additional 7 (13.5%) strongly agreed. This indicates that over half—28 (53.9%)—were satisfied with the navigational aids. On the other hand, at the John Kofi Borsah Library, only 10 (19.2%) agreed and 4 (7.7%) strongly agreed, totaling just 14 (26.9%). This suggests that signage or directional systems at John Kofi Borsah Library may be insufficient, leading to lower user satisfaction. Notably, 4 (7.7%) respondents from each library selected 'neutral', and none selected 'disagree' or 'strongly disagree'.

Regarding secure storage areas for personal belongings, 16 (30.8%) of respondents from Sam Jonah Library agreed and 15 (28.8%) strongly agreed—totaling 31 (59.6%) positive responses, indicating strong confidence in safety measures. At John Kofi Borsah Library, only 8 (15.4%) agreed and 6 (11.6%) strongly agreed. While just 1 (1.9%) respondent from John Kofi Borsah Library was 'neutral', none were from Sam Jonah Library. Disagreement came from 2 (3.8%) respondents at Sam Jonah Library and 4 (7.7%) at John Kofi Borsah Library. No respondents from either library selected 'strongly disagree'.

With regard to shelf-height convenience, Sam Jonah Library had 15 (28.8%) respondents agree and another 15 (28.8%) strongly agreed, totaling 30 (57.6%). At John Kofi Borsah Library, 10 (19.2%) agreed and 8 (15.4%) strongly agreed. Additionally, 4 (7.7%) from John Kofi Borsah Library were neutral, and no respondents from either library expressed disagreement, indicating general satisfaction, though Sam Jonah Library was more positively rated.

In terms of designated areas for specialized collections or archives, 15 (28.8%) respondents at Sam Jonah Library agreed and 8 (15.4%) strongly agreed—totaling 23 (44.2%). Meanwhile, John Kofi

Borsah Library had 13 (25%) agreement and just 1 (1.9%) strong agreement, summing to 14 (26.9%). This gap suggests that Sam Jonah Library is perceived to offer stronger support for unique or research- focused resources. Neutral responses were slightly higher at John Kofi Borsah Library 5 (9.6%) respondents; than Sam Jonah Library (4 respondents; 7.7%), while both libraries had 2 (3.8%) respondents express disagreement and none selecting 'strongly disagree'.

For access to printing, scanning, and photocopying services, 15 (28.8%) respondents at Sam Jonah Library agreed and 9 (17.3%) strongly agreed—totaling 24 (46.1%). In contrast, only 9 (17.3%) agreed and 4 (7.7%) strongly agreed at John Kofi Borsah Library, amounting to 13 (25%). Neutral responses were comparable: 5 (9.6%) at Sam Jonah Library and 4 (7.7%) at John Kofi Borsah Library. Disagreement was expressed by 2 (3.8%) from Sam Jonah Library and 4 (7.7%) from John Kofi Borsah Library. Again, no respondents selected 'strongly disagree'.

Assessing physical accessibility features such as ramps and elevators, 13 (25%) of Sam Jonah Library respondents agreed and 8 (15.4%) strongly agreed, totaling 21 (40.4%). At John Kofi Borsah Library, 10 (19.2%) agreed and 6 (11.6%) strongly agreed, showing generally positive feedback. However, neutrality was higher at John Kofi Borsah Library 7 (13.5%) respondents; compared to Sam Jonah Library 4 (7.7%) respondents. Notably, none from Sam Jonah Library selected 'disagree' or 'strongly disagree', while 1 respondent (1.9%) from John Kofi Borsah Library disagreed.

On internet reliability, 10 (19.2%) respondents at Sam Jonah Library strongly agreed and 9 (17.3%) agreed—totaling 19 (36.5%) satisfied users. At John Kofi Borsah Library, 8 (15.4%) strongly agreed and 9 (17.3%) agreed, totaling 17 (32.7%). However, John Kofi Borsah Library had more neutral responses of 7 (13.4%) respondents; compared to Sam Jonah Library (2 respondents; 3.8%). Dissatisfaction was more pronounced at John Kofi Borsah Library, with 6 (11.5%) selecting 'disagree', compared to only 1 (1.9%) at Sam Jonah Library. No respondents at either library selected 'strongly disagree'.

Concerning designated group study areas, 12 (23%) respondents at Sam Jonah Library strongly agreed, compared to only 6 (11.6%) at John Kofi Borsah Library. Additionally, 9 (17.3%) at Sam Jonah Library and 7 (13.3%) at John Kofi Borsah Library agreed. Neutrality was higher at John Kofi Borsah Library 7 (13.4%) respondents; than Sam Jonah Library 3 (5.8%) respondents;. Disagreement was also higher at John Kofi Borsah Library (6 respondents; 11.5%) than at Sam Jonah Library (2 respondents; 3.8%). Neither library had any respondents who selected 'strongly disagree'.

On assistive technology availability, John Kofi Borsah Library had 12 (23%) respondents disagree with the statement, whereas only 2 (3.8%) from Sam Jonah Library did. At Sam Jonah Library, 10 (19.2%) strongly agreed and 6 (11.6%) agreed. At John Kofi Borsah Library, 6 (11.6%) strongly agreed and 10 (19.2%) agreed. Neutral responses came from 3 (5.8%) at John Kofi Borsah Library and 2 (3.8%) at Sam Jonah Library. Neither library had any responses under 'strong disagree'.

Finally, on the sufficiency of study and reading space, 13 (25%) respondents at Sam Jonah Library agreed, compared to 11 (21.2%) at John Kofi Borsah Library. Neutral responses were 7 (13.5%) at Sam Jonah Library and 6 (11.5%) at John Kofi Borsah Library. Disagreement was higher at John Kofi

Borsah Library 6 (11.5%) respondents; than at Sam Jonah Library 2 (2.3%) respondents;. Strong agreement was noted by 5 (9.6%) at Sam Jonah Library, compared to only 2 (3.8%) at John Kofi Borsah Library. No respondents from either institution selected 'strongly disagreed'.

4.4. Specialized Library service and resources of the library

The second objective of the study was to examine specialized services available at academic libraries towards achieving SDG4. Table 4,3 illustrates the responses of the respondents of the study.



Table 4.3. Specialized Services and Resources

Variable	Sam Jonah		John Kofi Borsah		Total
	Library		Library		
	Frequency (%)	Frequency (%)	Frq. (%)	Frq. (%)	
Highly resourced	11 (21.2)	4 (7.7)	15 (28.9)		
Moderately resourced	12 (23)	5 (9.6)	17 (32.6)		
Less resourced	6 (11.5)	7 (13.4)	13 (24.9)		
Not resourced	2 (3.9)	5 (9.6)	7 (13.5)		
Total	31 (59.9)	21 (40.1)	52 (100)		

Source: field data, 2023

The study evaluated the level of specialized services provided by academic libraries in support of SDG 4. When examining the overall responses across both institutions, the most frequently reported category was moderately resourced, accounting for 17 (32.6%) respondents. This was followed by highly resourced services at 15 (28.9%) respondents, less resourced at 13 (24.9%) respondents, and non-resourced services, which made up 7 (13.5%) of the total. At the institutional level, Sam Jonah Library reported higher perceptions of service adequacy. Twelve (23%) respondents at Sam Jonah Library described the library as moderately resourced, compared to 5 (9.6%) respondents from John Kofi Borsah Library. Likewise, 11 (21.2%) respondents at Sam Jonah Library rated the library as highly resourced, whereas only 4 (7.7%) respondents of John Kofi Borsah Library did the same. In contrast, John Kofi Borsah Library had a slightly higher proportion of respondents 7 (13.4%) who rated services as less resourced, compared to 6

(11.5%) at Sam Jonah Library. Similarly, more respondents from John Kofi Borsah Library 5 (9.6%) felt the library was not resourced at all, as opposed to 2 (3.9%) respondents at Sam Jonah Library.

4.4.1. Effectiveness of current specialized resources and services

The researcher inquired about the effectiveness of the current specialised resources and services available at the libraries of study. The table below captures the data as depicted:

Table 4.4: Effectiveness of specialized resources and services

Variable	Sam Jonah Library		John Kofi Borsah Lib		TOTAL	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
excellent	10	19.2	0		10	19.2
very good	15	28.8	6	11.5	21	40.3
good	6	11.5	8	15.4	14	26.9
bad	0		7	13.5	7	13.5
Total	31	59.6	21	40.4	52	100

Source: field data, 2023

As depicted in Table 4.4, the overall response patterns indicate a generally positive sentiment among respondents, with some notable distinctions between the Sam Jonah Library and the John Kofi Borsah Library. At Sam Jonah Library, the most frequent rating category was "very good," with 15 (28.8%) respondents expressing satisfaction at this level. Although this rating was also present at the John Kofi Borsah Library, only 6 (11.5%) respondents selected it, indicating that users at Sam Jonah Library found the

library's offerings more consistently effective or satisfactory. Following closely, 10 (19.2%) respondents at Sam Jonah Library rated their experience as "excellent," showcasing a strong degree of satisfaction—an assessment that received no responses from John Kofi Borsah Library. This unique excellence rating at Sam Jonah Library contributes significantly to the overall narrative of user satisfaction.

In the "good" category, 8 (15.4%) respondents from John Kofi Borsah Library rated their experience at this level, compared to a lower figure of 6 (11.5%) respondents from Sam Jonah Library. This suggests varied perspectives on the usefulness of specialized resources and services, possibly reflecting differences in what is offered or expected at the respective libraries. A notable contrast emerged in the "bad" rating: while no Sam Jonah Library respondents reported dissatisfaction, 7 (13.5%) respondents from John Kofi Borsah Library did. This disparity highlights potential areas for improvement at John Kofi Borsah Library and underscores the more consistently positive experiences reported by users of Sam Jonah Library.

4.4.2. Availability of trained personnel for specialized services

The researcher sought to inquire from the respondents if their libraries had people trained to handle students with special needs in accessing library services. The responses of the participants are captured in table 4.5.

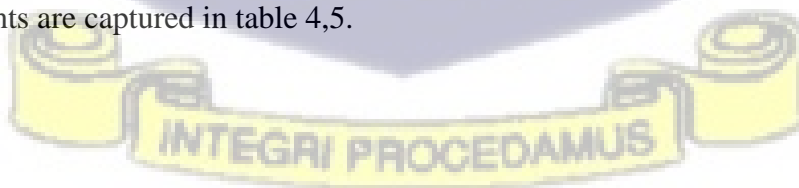


Table 4.5: Availability of trained personnel for specialized services

Variable	Sam Jonah Library		John Kofi Borsah Lib		TOTAL	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
YES	9	17.3	5	9.6	14	26.9
NO	22	42.3	16	30.8	38	73.1
Total	31	59.6	21	40.4	52	100

Source: field data, 2023

In Table 4.5, the intent of the study was to determine whether or not the library aided students with special needs through the presence of trained staff. A significant finding was that a substantial majority of respondents, accounting for 38 (73.1%), reported a lack of trained personnel for specialised services within their libraries. This indicates a notable gap in support for students with special needs. In this category, respondents raised specific concerns, with 22 (42.3%) of Sam Jonah Library participants and 16 (30.8%) of John Kofi Borsah Library respondents expressing dissatisfaction or worry about the lack of trained personnel capable of attending to specialised needs.

Contrastingly, a portion of respondents totaling 14 (26.9%) across both Sam Jonah and John Kofi Borsah libraries expressed confidence in the presence of trained personnel for specialised services. Within Sam Jonah Library, 9 (17.3%) respondents responded affirmatively, signifying their belief in the availability of trained personnel. In this subset of respondents, there is a positive perception that Sam Jonah Library adequately addresses the needs of students with special requirements. Conversely, at John Kofi Borsah Library, a smaller percentage 5 (9.6%) responded positively, indicating a

comparatively lower level of confidence in the availability of trained personnel to cater to specialised services.

These findings underscore a notable discrepancy in perceptions regarding the availability of trained personnel for students with special needs between the two libraries. While a substantial portion of respondents expressed concerns about the absence of specialised support at both Sam Jonah and John Kofi Borsah libraries, the varying degrees of confidence in the presence of trained personnel highlight potential differences in the actual provision or communication of specialised services at each library. This information is crucial for both institutions to address concerns and enhance support services for students with special needs within the library context.

4.5. Skills and Competencies of Library Staff

Determination of the skills and competencies of librarians in providing services to achieve SDG4 was one of the objectives of the study. With this objective in mind, the researcher posed questions on the skills and competencies assessments of librarians in the study. The data below represents the responses of the participants.

Table 4.6. Availability of well-qualified staff

Variable	Sam Jonah Library		John Kofi Borsah Lib		TOTAL	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	30	57.7	17	32.7	47	90.4
No	1	1.9	4	7.7	5	9.6
Total	31	59.6	21	40.4	52	100

Source: field data, 2023

The data from table 4.6 sheds light on the confidence of respondents in the presence of qualified staff to ensure quality information services at both the Sam Jonah Library and John Kofi Borsah Library. At the Sam Jonah Library, 30 (57.7%) of respondents answered "yes," signifying their confidence in the availability of qualified staff. This suggests a prevailing positive perception among Sam Jonah Library staff regarding the competence of the library's personnel in delivering quality information services. In stark contrast, at the John Kofi Borsah Library, a lower percentage of respondents, specifically 17(32.7%), provided affirmative responses, indicating a comparatively lower level of confidence in the availability of qualified staff.

In aggregate, when considering responses from both Sam Jonah and John Kofi Borsah Library respondents, a significant proportion of 47 (90.4%) expressed trust in the availability of qualified staff for quality information services. This shared confidence level points to a general positive perception of the expertise and capabilities of library personnel across both institutions. However, it is noteworthy that there are variations in the degree of confidence between the two libraries, suggesting differences in the perceived competence of staff in delivering quality information services.

On the other hand, a small minority of respondents, constituting 5 (9.6%), expressed doubts about the presence of qualified staff for quality information services. Within this category, a minimal 1 (1.9%) of Sam Jonah Library respondents indicated concerns about staff qualifications, while a slightly higher percentage of 4 (7.7%) of John Kofi Borsah Library respondents expressed similar doubts. The observed disparity in the doubt category suggests that although a minority of respondents at both establishments harbor reservations, the majority maintains a favorable opinion concerning the expertise of

library personnel.

Table 4.7: Knowledge of computing

Variable	Sam Jonah Library		John Kofi Borsah Lib		TOTAL	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Yes	18	35.3	17	33.3	35	68.7
No	12	23.5	4	7.8	16	31.4
Total	30	58.8	21	41.2	51	100

Source: field data, 2023

The survey conducted at both the Sam Jonah Library and the John Kofi Borsah Library provides valuable insights into the computing literacy levels among library staff. The data reveals interesting patterns in respondents' self-reported knowledge of computing, allowing for a detailed comparison between the two institutions.

Firstly, the overall findings indicate that a significant proportion of respondents possess some degree of knowledge of computing. Specifically, 18 (35.3%) of respondents at the Sam Jonah Library and 17 (33.3%) at the John Kofi Borsah Library affirmed their familiarity with computing. When combined, these figures amount to 35 (68.7%) of respondents across both libraries who claim to have a certain level of expertise in computing. This suggests that a substantial majority of library respondents are well-versed in computing-related concepts and skills.

However, it is important to note that the survey also reveals a subset of respondents who acknowledged their limited knowledge of computing. A notable of 16 (31.4%) of

respondents fell into this category. When it broke down, 12 (23.5%) of Sam Jonah Library respondents and 4 (7.8%) of John Kofi Borsah Library respondents confessed to a deficiency in computing knowledge. This discrepancy between the two institutions raises interesting questions about the factors influencing computing literacy levels among library staff.

The contrast between the proportions of those who claim knowledge and those who admit a lack thereof adds detail to the overall picture. While a majority of 35 (68.7%) expresses confidence in their computing skills, a substantial minority, 16 (31.4%), acknowledges a gap in knowledge. This duality suggests a diverse user base with varying levels of familiarity with computing, reflecting the heterogeneous nature of library patrons.

Additionally, the disparity in the "no" responses between Sam Jonah Library and John Kofi Borsah Library staff may be indicative of differences in the academic or technological focus of the institutions.

4.5.2. Information Retrieval Skills

Table 4.8: Information retrieval skills

Variable	Sam Jonah Library		John Kofi Borsah Lib		TOTAL	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
excellent	2	3.9	4	7.8	6	11.8
very good	14	27.5	5	9.8	19	37.3
good	14	27.5	10	19.6	24	47.1
bad	0		2	3.9	2	3.9
Total	30	58.8	21	41.2	51	100

Source: field data, 2023

The study assessed respondents' ratings of specialized library services with SDG 4 across both institutions. The results from table 4.8 show that overall, the most common rating was "good," reported by 24 (47.1%) respondents, with 14 (27.5%) from Sam Jonah Library and 10 (19.6%) from John Kofi Borsah Library. This was followed by "very good," selected by 19 respondents (37.3%), including 14 (27.5%) from Sam Jonah Library and 5 (9.8%) from John Kofi Borsah Library. These findings suggest a generally favorable perception of specialized services, especially among Sam Jonah Library respondents.

The rating "excellent" was recorded by 6 (11.8%) respondents in total, 2 (3.9%) from Sam Jonah Library and 4 (7.8%) from John Kofi Borsah Library, indicating a slightly stronger endorsement from John Kofi Borsah Library respondents in this category. At the lowest end of the scale, the "bad" rating was selected only by 2 (3.9%) respondents, both from John Kofi Borsah Library, while no Sam Jonah Library respondents rated the services as bad. This suggests that negative perceptions were minimal and limited to John Kofi Borsah Library respondents.

In summary, Sam Jonah Library respondents leaned more towards "very good" and "good" ratings, whereas John Kofi Borsah Library responses were more distributed, including a higher proportion rating the services as "excellent" and the only ones to rate them as "bad."



4.6. Established Institutional Policies

The researcher sought to ascertain established institutional policies toward achieving SDG4 as one of the objectives of the study. This analysis aims to provide insights into librarians' perceptions regarding the library's policies and their alignment with inclusive quality education, staff awareness, communication, and implementation. The Table below represents the data on the established policies towards achieving SDG4.



Table 4.9: Established Institutional Policies

Variable	SJL	JKBL	SJL	JKBL	SJL	JKBL	SJL	JKBL	SJL	JKBL
	Strongly Agree		Agree		Neutral		Disagree		Strongly disagree	
	Frequency (%)		Frequency (%)		Frequency (%)		Frequency (%)		Frequency (%)	
The library has an established policy toward the attainment of inclusive quality and equitable education	3(5.8)	1(1.9)	15(28.8)	8(15.4)	14(26.9)	7(13.5)	2(3.8)	- (-)	1(1.9)	1(1.9)
The staff are aware of the policy	1(1.9)	- (-)	10(19.2)	6(11.5)	14(26.9)	7(13.5)	2(3.8)	- (-)	1(1.9)	1(1.9)
Policy is communicated to staff	2(3.8)	- (-)	9(71.3)	5(9.6)	19(36.5)	10(19.2)	3(5.8)	2(3.8)	1(1.9)	1(1.9)
Library staff follow the policy	1(1.9)	- (-)	9(71.3)	5(9.6)	21(40.4)	8(15.4)	4(7.7)	2(3.8)	- (-)	2(3.8)
The policy prioritizes the acquisition of relevant educational resources for all students	1(1.9)	- (-)	11(21.2)	6(11.5)	20(38.5)	6(11.5)	4(7.7)	2(3.8)	- (-)	2(3.8)

Source: field data, 2023



The results in Table 4.9 suggest a noticeable contrast between the Sam Jonah Library and the John Kofi Borsah Library in terms of staff awareness and agreement regarding the library's inclusive education policy. The overall tendency toward neutrality, particularly in responses from John Kofi Borsah Library, highlights a potential gap in policy implementation or communication at that institution.

The fact that "neutral" was the most common response across all five statements indicates a general uncertainty or lack of clarity regarding the policy's presence or effectiveness. Respondents from Sam Jonah Library showed more awareness and were more likely to agree that the policy existed, that it prioritized relevant educational resources, and that staff were aware of it. This suggests that Sam Jonah Library might have had better communication or more effective implementation of the policy compared to John Kofi Borsah Library.

The relatively low number of "strongly agree" responses across both libraries also points to a lack of strong endorsement or enthusiasm for the policy's current state. At John Kofi Borsah Library, this lack of strong agreement is even more pronounced, with no strong agreements recorded for several statements. Additionally, the minimal levels of disagreement or strong disagreement—while still present at John Kofi Borsah Library could point to a lack of engagement or dissatisfaction with the policy, but without a more definitive rejection. Given the overall trends, it seems that the Sam Jonah Library is doing a better job in fostering awareness and support for the policy, while the John Kofi Borsah Library may need to take further steps to enhance staff knowledge, communication, and implementation to ensure a more uniform understanding of and commitment to inclusive

education practices.

4.7.1. Challenges libraries faced in providing access to information

An assessment was done to establish the challenges academic libraries face in providing access to information to all students. The figure 4.10 captures the responses of the respondents of this study.



Table 4.10; Challenges libraries faced in providing access to information

Variable	Sam Jonah Library		John Kofi Borsah Lib		Total	
	Frequency	(%)	Frequency	(%)	Frequency	(%)
Limited funding and resource	4	7.7	5	9.6	9	17.6
Insufficient space and facilities	4	7.7	7	13.4	11	21.1
Lack of qualified staff	3	5.8	6	11.5	9	17.3
Difficulty in keeping up with technological advancements	4	7.7	6	11.5	10	19.2
Inadequate collection of books and materials	3	5.8	10	19.2	13	25.0
Total	18	34.7	34	65.2	52	100

Source: Field data, 2023

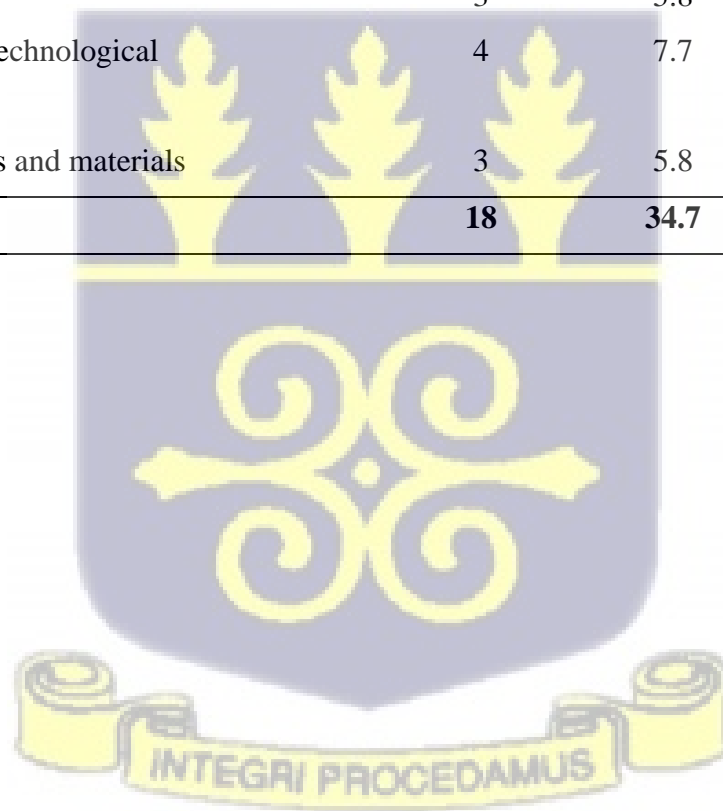


Table 4.10 highlights the key challenges impeding library service delivery at Sam Jonah Library and John Kofi Borsah Library. Overall, John Kofi Borsah Library respondents reported a higher incidence of challenges, 34 (65.2%), compared to Sam Jonah Library 18 (34.7%). The most frequently identified challenge overall was “Inadequate collection of books and materials,” reported by 13 (25.0%) respondents, with a notably higher proportion from John Kofi Borsah Library 10 (19.2%) than from Sam Jonah Library 3 (5.8%). This indicates a significant gap in resource availability, particularly at John Kofi Borsah Library.

“Insufficient space and facilities” were the second most reported challenge, accounting for 11 (21.1%) of responses. Again, more John Kofi Borsah Library respondents 7 (13.4%) identified this issue than their Sam Jonah Library counterparts 4 (7.7%), reflecting infrastructural constraints more prominent at John Kofi Borsah Library. “Difficulty in keeping up with technological advancements” ranked third, selected by 10 (19.2%) of respondents, with 6 (11.5%) from John Kofi Borsah Library and 4 (7.7%) from Sam Jonah Library — suggesting a shared concern, though slightly more pressing at John Kofi Borsah Library.

“Limited funding and resources” were also a common concern, mentioned by 9 (17.6%) of respondents overall. This challenge was almost evenly split between the two institutions, though slightly more respondents from John Kofi Borsah Library 5 (9.6%) cited it compared to Sam Jonah Library 4 (7.7%). Lastly, “Lack of qualified staff” was the least reported issue, identified by 9 (17.3%) of respondents. While it ranked lowest, it was still more commonly mentioned by John Kofi Borsah Library 6 (11.5%) than Sam

Jonah Library 3 (5.8%).

4.7.2. Strategies to address limited access to technology and internet connectivity

Limited access to technology and internet access serves as one of the major challenges to providing access to information by librarians and libraries. The researcher sought answers from the participants as to which strategies to adopt to address this challenge, the responses provided are captured table 4.11. Multi-choice was allowed.



Table 4.11: Strategies to address limited access to technology and Internet connectivity

Variable	Sam Jonah Library		John Kofi Borsah Lib	
	Frequency	(%)	Frequency	(%)
Establish mobile libraries to reach areas without internet connectivity.	20	38.5	12	23.0
Partnering with telecommunication companies to provide low-cost internet services	18	34.6	14	26.9
Offering offline resources and tools	21	40.1	15	28.9
Organizing digital literacy programs to empower members of the institution with basic internet skills	22	42.3	15	28.9

Source: Field data, 2023

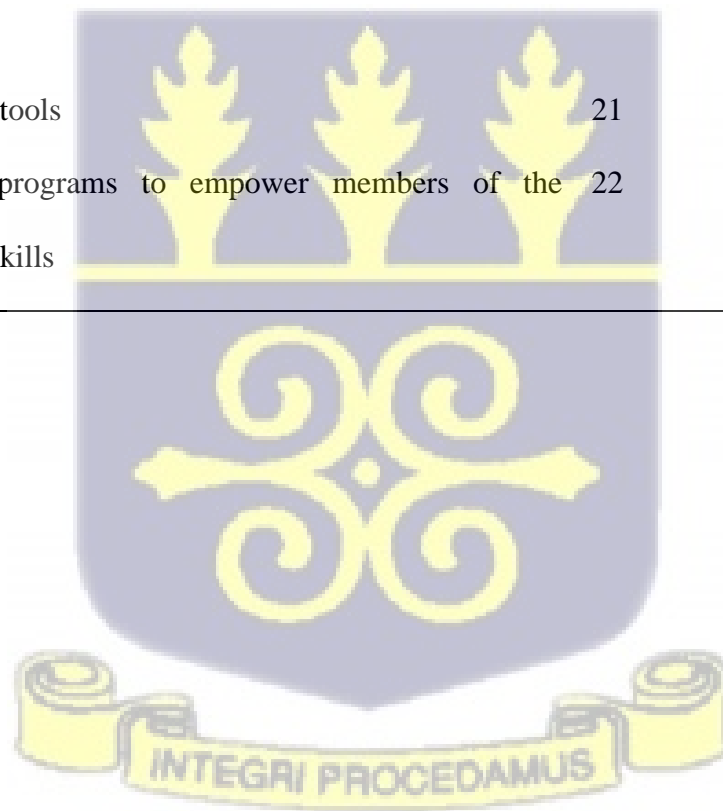
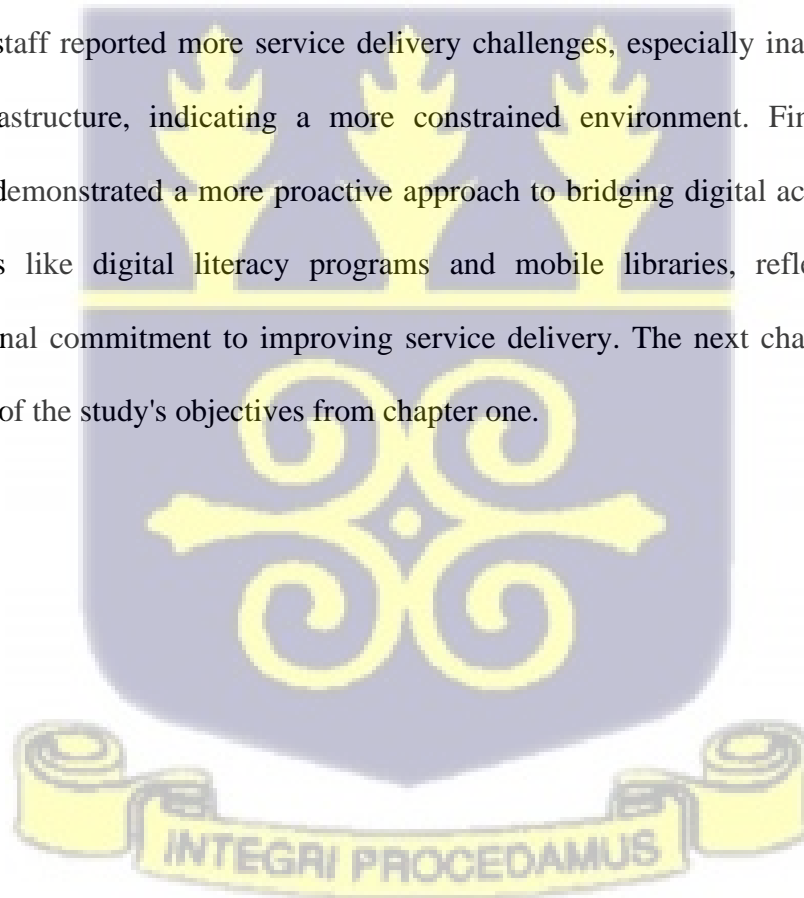


Table 4.11 illustrates the strategies adopted by Sam Jonah Library and John Kofi Borsah Library to improve access to internet services and bridge the digital divide. Across all four strategies, Sam Jonah Library reported higher levels of implementation or support compared to John Kofi Borsah Library, suggesting a more proactive or advanced approach. The most commonly reported strategy among Sam Jonah Library respondents was “organizing digital literacy programs to equip members with basic internet skills,” identified by 22 (42.3%) respondents, compared to 15 (28.9%) respondents at John Kofi Borsah Library. This was closely followed by “Offering offline resources and tools,” with 21 (40.1%) respondents from Sam Jonah Library selecting this option. John Kofi Borsah Library respondents also indicated support for these strategies, though at lower rates, 15 (28.9%). This indicates that while both institutions acknowledge the importance of digital empowerment and offline access, Sam Jonah Library has a stronger emphasis on these efforts. “Establishing mobile libraries to reach areas without internet connectivity” was chosen by 20 (38.5%) respondents from Sam Jonah Library as compared to 12 (23.0%) respondents from John Kofi Borsah Library, highlighting Sam Jonah Library’s more active role in extending outreach to underserved areas. Additionally, “Partnering with telecommunication companies to provide low-cost internet services” was reported by 18 (34.6%) Sam Jonah Library respondents and 14 (26.9%) from John Kofi Borsah Library. Although the gap here is narrower, it still reflects slightly greater collaboration efforts on the part of Sam Jonah Library.

In conclusion, this chapter reveals that while there is overall gender parity among library staff at Sam Jonah Library and John Kofi Borsah Library, Sam Jonah Library shows broader departmental diversity and higher postgraduate qualifications. In terms of

infrastructure, Sam Jonah Library consistently received higher satisfaction ratings, particularly in areas such as signage, shelving, and internet reliability, suggesting better facilities than John Kofi Borsah Library. Specialized services and resources aligned with SDG 4 were rated more favorably at Sam Jonah Library, with more respondents describing them as "highly resourced" and "excellent," while John Kofi Borsah Library had lower ratings. Confidence in staff qualifications and computing literacy was generally high, but Sam Jonah Library respondents expressed greater assurance than their John Kofi Borsah Library counterparts. Policy awareness for inclusive and equitable education was low at both institutions, with high neutrality responses. John Kofi Borsah Library staff reported more service delivery challenges, especially inadequate resources and infrastructure, indicating a more constrained environment. Finally, Sam Jonah Library demonstrated a more proactive approach to bridging digital access gaps through strategies like digital literacy programs and mobile libraries, reflecting a stronger institutional commitment to improving service delivery. The next chapter discusses the findings of the study's objectives from chapter one.



CHAPTER FIVE

DISCUSSION OF MAJOR FINDINGS

5.1. Introduction

This chapter is devoted to the discussion of the findings about the various objectives in Chapter One of the study. The study investigated factors influencing academic library services in achieving UN Sustainable Development Goal 4. The demographic data in chapter four provided a snapshot of the population, serving as a key tool across various disciplines. It will enable researchers, politicians, corporations, and organizations to make informed decisions, tailor strategies, and address community concerns.

The major findings are discussed under the following sub-headings.

- 5.2. Respondent Demographics
- 5.3. Available Infrastructure that Supports Library Services
- 5.4. Specialized Library service and resources of the library
- 5.5. Skills and Competencies of Library Staff
- 5.6. Established Institutional Policies
- 5.7. Challenges libraries faced in providing access to information

5.2. Respondent Demographics

The table 4.1 in chapter 4 presented the distribution of responses across departments, reflecting the institutional structure. The most prominent department was the Readers Service, while other departments like Cataloguing and Special Collections had smaller representations within the dataset. It also examined respondents' educational

backgrounds. The institution's educational makeup was diverse, with a significant portion of respondents holding bachelor's degrees, followed by those with master's degrees and a smaller group with Ph.D. degrees.

The professional designations of respondents were shown in the table, indicating a clear hierarchy within the institution. Most respondents held the title of Senior Staff, followed by Senior Member and Junior Staff. Additionally, the table analyzed respondents' professional experience. A substantial proportion of respondents had between 6 and 10 years of experience, with another large group having between 11 and 15 years of experience. There were also respondents with fewer than 5 years or more than 15 years of experience. This distribution highlighted the presence of both seasoned professionals and newer entrants within the institution, suggesting a balanced and diverse workforce. This mix of experience levels contributed to a collaborative environment, fostering knowledge sharing across different levels of expertise

5.3. Available infrastructure that supports library services

The study sought to find out the level of available infrastructure that supports library service delivery. It was established that there is a mixture of viewpoints among the respondents concerning the library's infrastructure and services.

The data reveals a clear contrast in the perceptions of library staff at Sam Jonah Library and John Kofi Borsah Library regarding the adequacy of library study space. At Sam Jonah Library, staff reported a generally positive assessment, with a small proportion strongly agreeing and a slightly higher percentage agreeing that the library provides sufficient space for study and reading. Although this suggests that staff believe the

facilities meet basic standards, the relatively low proportion of strong agreement implies that the satisfaction is moderate and not necessarily robust.

In contrast, feedback from John Kofi Borsah Library staff indicated a substantial level of dissatisfaction. A significant number of respondents disagreed or strongly disagreed that the library offers adequate study space, highlighting serious concerns about the institution's ability to meet the study needs of its academic community. Several underlying factors could explain this disparity in staff perception. Sam Jonah Library, as a well-established university library, may have benefited from greater investment in physical infrastructure, including library facilities. This could enable the library to better support its academic functions, including providing conducive study environments. Conversely, John Kofi Borsah Library may be facing budgetary or spatial limitations, which constrain its ability to provide adequate facilities. It is also likely that the mismatch between student population size and available space contributes to overcrowding, a common challenge in under-resourced academic settings.

Furthermore, library staff might be evaluating not only the quantity of space but also its quality, such as layout, lighting, noise levels, and comfort, all of which influence their professional assessment of the library environment. These contrasting staff perspectives have significant implications for institutional planning and service delivery. For Sam Jonah Library, the feedback indicates that the current facilities are generally functional, but further improvements are needed to enhance satisfaction levels. Upgrading study spaces, incorporating modern furniture, or creating more specialized areas (e.g., quiet zones or collaborative workspaces) could contribute to a higher level of staff endorsement. For John Kofi Borsah Library, the findings point to critical infrastructural

deficiencies that may be hindering the library's ability to effectively support academic success. If library staff themselves express concern over study space, it reflects deeper institutional shortcomings that could affect the library's performance and its contribution to teaching and learning.

The concept of inclusive library buildings and facilities stresses the importance of designing libraries that cater to the diverse needs of all users, providing spaces that are flexible, accessible, and conducive to different forms of learning. This framework emphasizes creating library environments that support not only individual study but also group work, collaboration, and social interaction. The positive responses from Sam Jonah Library suggest that the library aligned with this framework, providing spaces that support various learning needs. The dissatisfaction at John Kofi Borsah Library is a clear indication that the library may not be fully inclusive in terms of its design. To align with the inclusive framework, John Kofi Borsah Library's library might need to redesign its spaces to better support both collaborative and individual learning, ensuring all users have access to environments conducive to their educational success.

Choy and Goh (2019) emphasize the significance of library spaces as crucial environments that foster both individual and collaborative learning. They argue that libraries should not only provide enough space but should also create flexible environments that can support various academic activities. This aligns with the findings at Sam Jonah Library, where a generally positive but not overwhelming response was received about the sufficiency of study space. The researcher can infer that Sam Jonah Library's library might meet the basic needs of its users. John Kofi Borsah Library's study space discontent supports Choy and Goh's claim that libraries fail to meet users' demands.

The respondents' dissatisfaction shows that the library does not provide Choy and Goh's flexible, user-centered settings for individual and collaborative learning.

Adequate and functional library spaces are crucial to student satisfaction and academic success, and when library facilities fail to meet students' educational needs, it results in dissatisfaction and poor academic performance (Omeluzor et al., 2020). At John Kofi Borsah Library, the dissatisfaction expressed by a significant portion of respondents reflects this issue, suggesting that the library does not provide the spaces necessary to support students' academic activities effectively. This aligns with Omeluzor et al.'s assertion that library facilities must meet the educational needs of students to foster a positive learning experience. The dissatisfaction at John Kofi Borsah Library suggests that improvements are needed in the library's design to better support academic goals, such as creating more versatile study areas that accommodate both individual and group study. At Sam Jonah Library, the positive but moderate response indicates that the library provides sufficient space, but perhaps not enough to fully meet the diverse academic needs of students.

Omeluzor et al.'s work suggests that Sam Jonah Library could enhance its library spaces to improve student satisfaction further by offering a broader range of study environments, thus aligning more closely with the diverse needs of its users.

The data reveals a notable contrast between Sam Jonah Library and John Kofi Borsah Library regarding the perceived convenience of library shelf heights. Sam Jonah Library respondents reported a higher level of satisfaction, with a significant portion strongly agreeing or agreeing that the shelves were of convenient height and adequately

accommodated the collection. In contrast, responses from John Kofi Borsah Library reflected a lower level of agreement, with fewer staff members expressing strong approval. While both institutions followed a similar pattern, with most respondents agreeing to some extent, Sam Jonah Library staff were distinctly more positive in their assessment, suggesting that shelving arrangements at Sam Jonah Library are more aligned with user expectations.

These differences in perception may reflect broader institutional disparities in infrastructure planning and user-centered design. Sam Jonah Library's higher satisfaction levels could indicate a more deliberate effort to align library furniture and layout with ergonomic standards and user needs. This may involve prior consultations with stakeholders, adherence to library design best practices, or periodic assessments and adjustments to shelving configurations.

In contrast, the lower satisfaction at John Kofi Borsah Library may signal a lack of such considerations, resulting in shelves that are either too high, too low, or inconsistently arranged, creating accessibility challenges, especially for students with varying physical abilities. The implications of these findings extend beyond mere convenience. In an academic environment, poorly designed shelving can affect ease of access to resources, reduce user motivation to engage with print collections, and contribute to overall dissatisfaction with library services. For John Kofi Borsah Library, the relatively negative perception could undermine the effectiveness of the library as a learning resource hub, particularly if students and staff find it physically difficult to retrieve materials. This highlights the importance of viewing library furniture not only as functional assets but as essential components of inclusive and user-friendly learning environments.

Sam Jonah Library's higher levels of agreement with the convenience of shelf heights align with the framework of inclusive library buildings and facilities, ensuring that the library environment meets the needs of all students. The fact that a significant portion of Sam Jonah Library respondents felt the shelves were positioned appropriately suggests a design that prioritizes accessibility and usability, key elements in creating inclusive library spaces. Conversely, John Kofi Borsah Library's lower levels of agreement may point to potential gaps in the inclusivity of their library facilities, possibly indicating that the shelf heights do not adequately meet the needs of all students. This disparity reflects the importance of considering diverse user needs when designing library spaces to foster an inclusive environment that supports everyone equally.

The findings of the studies by Majidi, Saradj, and Khanmohammadi (2023) and Yucel (2021) align with user-centered design in library spaces. Majidi, Saradj, and Khanmohammadi (2023) highlight the importance of designing library facilities that accommodate the diverse needs of users, particularly in relation to accessibility. This is reflected in Sam Jonah Library's higher levels of satisfaction with the convenience of shelf heights, as respondents felt that the shelves were better suited to their needs.

Similarly, Yucel (2016) underscores the importance of considering user preferences and ensuring that library spaces are inclusive, which is evident in Sam Jonah Library's more favorable response compared to John Kofi Borsah Library.

Sam Jonah Library's design appears to reflect these principles by creating an environment where the shelf heights meet the accessibility needs of a broad range of students, aligning with both Majidi, Saradj, and Khanmohammadi (2023) and Yucel's perspectives on

inclusive design. Conversely, John Kofi Borsah Library's lower satisfaction levels reflect a gap in meeting user needs, a concern that both studies emphasize as crucial for fostering inclusive library environments. This re-echoes the need for institutions to prioritize user feedback in designing library spaces, as suggested by both Majidi, Saradj, and Khanmohammadi (2023) and Yucel, ensuring that shelves and other features support the varied needs of all students.

Both universities showed favorable reactions to the availability of printing, scanning, and photocopying services, with both Sam Jonah Library and John Kofi Borsah Library respondents expressing strong support for these services. Sam Jonah Library respondents also viewed reliable internet access more favorably compared to John Kofi Borsah Library, suggesting a slightly higher level of satisfaction with internet services at Sam Jonah Library. In terms of group study areas, Sam Jonah Library respondents were generally more satisfied, indicating that Sam Jonah Library's group study spaces met their needs more effectively. On the other hand, John Kofi Borsah Library respondents showed lower satisfaction with group study areas, pointing to a potential area for improvement in their library facilities. In fact, while both universities received positive feedback on various services, Sam Jonah Library respondents tended to express greater satisfaction across the board.

The positive feedback from both universities regarding the availability of printing, scanning, and photocopying services corresponds with the framework of inclusive library buildings and facilities by ensuring that essential services are accessible to all students. Both Sam Jonah Library and John Kofi Borsah Library respondents expressed strong support for these services, reflecting an inclusive design that accommodates diverse

student needs. Sam Jonah Library respondents viewed reliable internet access more favorably compared to John Kofi Borsah Library, suggesting a slightly higher level of satisfaction with internet services at Sam Jonah Library, which emphasizes the importance of providing reliable and equitable technological resources in creating an inclusive library environment. This aligns with Kumar and Sanaman's (2022) findings on the importance of well-maintained physical and digital infrastructure in supporting library services. According to their study, both the quality and availability of supporting infrastructure, including robust digital resources, play a critical role in meeting the diverse needs of users.

Sam Jonah Library's group study spaces were more effectively designed to meet the needs of students, which aligns with the framework's focus on creating collaborative, accessible spaces. On the other hand, John Kofi Borsah Library respondents showed lower satisfaction with their group study areas, underscoring the need for improvement in their library facilities to better support collaborative learning environments. This finding stands in contrast to Ezeani and Igwesi's (2021) view, which advocates for inclusive design principles that should be universally applied to ensure equal access to functional and comfortable study spaces. Thus, John Kofi Borsah Library's library space does not seem to fully align with these inclusive design principles, highlighting a potential gap between theory and practice in the design of their study areas. An examination of the data reveals distinct levels of satisfaction between Sam Jonah Library and John Kofi Borsah Library concerning the availability of assistive technology and secure storage facilities. At Sam Jonah Library, respondents expressed moderate support for the availability of assistive technologies designed to aid physically challenged individuals. While this

suggests a generally positive perception, the lack of strong satisfaction indicates that the existing provisions may be functional but not fully comprehensive or user-friendly. The moderate rating may reflect limitations in the range, quality, or accessibility of assistive tools such as screen readers, adaptive keyboards, or magnification software. In contrast, respondents from John Kofi Borsah Library were notably less favorable in their assessment, signaling a more pronounced gap in services for physically challenged individuals. This lower level of satisfaction points to potential deficiencies in both the availability and usability of assistive technologies. The data suggests that John Kofi Borsah Library may lack sufficient infrastructure or resources tailored to users with special needs, which could hinder their ability to participate fully in academic activities. Such shortcomings not only affect inclusivity but also challenge the institution's capacity to uphold the rights of all students to equitable access to information and learning spaces. The disparity between the two institutions underscores differences in strategic prioritization and investment in inclusive education technologies. Sam Jonah Library's moderate satisfaction levels suggest that some attention has been paid to supporting students with disabilities, even if further enhancement is required. John Kofi Borsah Library's results, however, imply a more critical need for intervention. Addressing this gap may require institutional commitment to disability-inclusive policies, budget allocations for adaptive technologies, staff training, and regular engagement with users to understand their needs.

There are varying levels of support between Sam Jonah Library and John Kofi Borsah Library. Sam Jonah Library's moderate support for assistive technology agrees with the framework's stress on creating environments that cater to the needs of physically

challenged individuals. However, the relatively low satisfaction at Sam Jonah Library, coupled with John Kofi Borsah Library's even lower support for such technology, suggests that there is a gap in fully implementing inclusive design principles. The framework calls for libraries to provide adequate assistive technology to ensure equal access for all users. This indicates that both institutions, especially John Kofi Borsah Library, have room to improve in aligning their facilities with inclusive design standards, particularly for students with physical disabilities. Kwafoa (2016), Hill (2022), and Okwu and Oporum (2021) conferred this position in their studies, where they suggested that a substantial emphasis should be placed on creating environments that not only accommodate but also empower these students. By investing in adaptive technologies and training staff in inclusive practices, institutions can significantly enhance the educational experience for all learners.

An analysis of the responses concerning secure storage areas reveals a general consensus across both Sam Jonah Library and John Kofi Borsah Library that such facilities are available. However, the degree of satisfaction differed noticeably between the two institutions. Sam Jonah Library respondents expressed a higher level of satisfaction, suggesting that the library's secure storage options are not only present but also effectively meet user expectations in terms of accessibility, security, and convenience. This may indicate that Sam Jonah Library has implemented well-maintained, strategically located, and user-friendly storage facilities that instill confidence in their use among students and staff.

On the other hand, respondents from John Kofi Borsah Library demonstrated comparatively lower satisfaction with secure storage facilities. While acknowledging their existence, the lower rating implies that the current provisions may fall short in key areas such as capacity, ease of access, or security standards. These shortcomings could lead to underutilization of the facilities or concerns over the safety of personal belongings, particularly in a shared academic environment where trust in infrastructure is critical. The results highlight a mismatch between what is provided and what users expect, signaling the need for targeted enhancements in both design and communication regarding available storage options.

The differences in satisfaction levels point to broader institutional disparities in infrastructure planning and user-centered service delivery. Sam Jonah Library's higher ratings reflect an apparent commitment to anticipating and addressing practical student needs, whereas John Kofi Borsah Library's results suggest that secure storage is an area requiring strategic review and investment. Addressing these gaps could involve expanding storage capacity, improving visibility and access to existing facilities, and incorporating user feedback into future upgrades.

The agreement of both Sam Jonah Library and John Kofi Borsah Library generally on the availability of secure storage facilities aligns with the framework's objective of creating functional, accessible, and inclusive environments for all students, including within library spaces and other campus facilities.

Okoro et al. (2021) recommend that a proper and secure area for storing personal belongings while using the library be established to ensure the safety and security of

users' possessions. This would not only enhance the overall user experience but also encourage more visitors to utilize the library's resources without the worry of theft or loss. However, this recommendation does not seem to reflect the situation at John Kofi Borsah Library, where there is a lower level of satisfaction with the secure storage area. This highlights the need for an urgent review of the current safety measures. Implementing effective storage solutions could significantly improve patrons' confidence and create a more welcoming environment for all.

The comparative findings on location and wayfinding systems reveal a significant disparity in librarian satisfaction between Sam Jonah Library and John Kofi Borsah Library, pointing to broader implications for operational efficiency and inclusive library design. Sam Jonah Library's higher satisfaction ratings suggest that its library facilities are more effectively structured to support the daily functions and navigation needs of library staff. Well-designed wayfinding systems featuring clear signage, logical layouts, and possibly features like color-coded zones enable librarians to perform their duties more efficiently while also supporting service delivery to diverse student populations. Conversely, the lower satisfaction reported by librarians at John Kofi Borsah Library indicates shortcomings in the spatial organization and navigational infrastructure of the library environment. This may hinder staff movement, reduce workflow efficiency, and ultimately impact on the quality of services provided. Such limitations also suggest a broader gap in institutional commitment to accessibility and inclusive design, which not only affects staff performance but can compromise the library's ability to meet the diverse needs of its academic community. Addressing these challenges is essential for creating an inclusive and supportive environment in line with the objectives of SDG 4.

An inclusive library building framework advocates for designing navigational aids that are universally accessible, ensuring that all users, regardless of their needs or backgrounds, can easily find their way around the space. This involves incorporating features such as tactile signage for visually impaired users, multilingual signs to support non-native speakers, and clear, simple visual cues for users with cognitive or learning disabilities. The findings of the study are in sync with a study conducted by Su et al. (2022), which observed that informational signage had the best visual navigating competence. Wayfinding systems are vital in ensuring that every student, regardless of their physical ability or familiarity with the space, can easily navigate the library. Clear signage, intuitive layout, and accessible routes help students with disabilities, those who are new to the library, or those who might feel disoriented within a large campus. De Villiers (2022) and Beecher (2019) both shared a similar perspective, emphasizing that when students can easily navigate the library, it significantly enhances their overall experience. This ease of navigation reduces frustration and confusion, allowing students to feel more confident and independent. A well-designed location and wayfinding system not only fosters a welcoming atmosphere but also encourages students to engage with the library more frequently. This increased comfort and accessibility lead to greater utilization of available resources and services, ultimately enhancing the overall library experience for students.

Regarding online resources and databases for research, Sam Jonah Library respondents expressed a moderate level of satisfaction. Although John Kofi Borsah Library respondents reported slightly lower satisfaction, both libraries seem to have room for improvement in their online research resources and database offerings. The differences

between the two institutions imply that Sam Jonah Library may be doing better in providing online resources that meet students' research needs. However, both libraries could benefit from enhancing their digital infrastructure to ensure better support for students' academic work. In line with the principles of an inclusive library building and facilities framework, it is essential that these online resources and databases are designed to be universally accessible to all students, including those with disabilities or limited access to technology. Ensuring that resources are available in multiple formats (e.g., screen-reader-friendly, multilingual options, and adaptive technologies) helps create a more inclusive learning environment, where every student, regardless of background or ability, can fully access and utilize library resources to support their academic success. This finding supports Iroaganachi and Izabel (2018) results. They observed that online resources and databases provide students with broader and quicker access to scholarly articles, journals, e-books, and other academic materials. But it's important to add that inclusive research environments benefit greatly from online databases, as they offer features like text-to-speech, customizable font sizes, and translation options to meet the needs of students with disabilities. These resources ensure that all students, including those with visual, auditory, or learning disabilities, have equal access to academic materials.

When respondents were asked about the availability and adequacy of accessibility features such as ramps and elevators, both Sam Jonah Library and John Kofi Borsah Library showed moderate levels of satisfaction. This suggests that while these features are present and generally functional, they may not fully meet the expectations or needs of all users, particularly individuals with physical disabilities or those requiring mobility

support. Sam Jonah Library respondents reported a higher degree of satisfaction, indicating that the university has made relatively more effective efforts in implementing accessible infrastructure. The comparative responses highlight a key difference in institutional responsiveness to inclusive design. Sam Jonah Library's higher satisfaction levels may be attributed to more systematic investments in accessibility planning, such as better ramp gradients, strategically placed elevators, or adherence to universal design principles. In contrast, John Kofi Borsah Library's lower ratings could reflect gaps in coverage, maintenance issues, or less thoughtful integration of accessibility within the overall library infrastructure. This results in a disparity in how both institutions prioritize inclusive access and the extent to which accessibility is embedded into their library development strategies. The presence of only moderately satisfactory accessibility features at both institutions indicates that compliance with accessibility standards may be treated as a minimum requirement rather than a proactive commitment to inclusivity. Enhancing these features is not just a matter of infrastructure but a reflection of institutional values related to equity and inclusion.

To address these concerns, both Sam Jonah Library and John Kofi Borsah Library should consider conducting comprehensive accessibility audits, consulting with persons with disabilities, and investing in upgrades that go beyond basic compliance, such as tactile signage, automated doors, and inclusive furniture. Improving physical accessibility in academic libraries is essential for ensuring equitable participation in education and aligns directly with the objectives of SDG 4, which calls for inclusive and equitable quality education for all. Institutions that strengthen their commitment to accessible learning environments not only remove barriers for students with disabilities but also contribute to

a more supportive and diverse academic community.

An inclusive library building and facilities framework emphasizes the importance of ensuring that all students, regardless of physical ability, have equal access to library spaces and resources. This involves not only providing basic accessibility features such as ramps and elevators but also ensuring that the overall design of the library is universally accessible, creating an environment where all students can move freely and comfortably while accessing the resources they need. Both Sam Jonah Library and John Kofi Borsah Library would benefit from a more comprehensive approach to accessibility that aligns with this inclusive framework, ensuring that all students, including those with disabilities, feel fully supported and welcomed in their academic environment. The findings of the study are not incongruent with the works of Idiodi & Urhiewhu (2023), who undertook a study on the survey of library and information services access to physically challenged students in academic libraries in Ogun State, Nigeria, where less than half of the respondent's showed satisfaction with accessibility features like ramps and elevators and other essential infrastructure. The study further contradicts the works of Idiodi & Urhiewhu (2023), where less than half of respondents believe their libraries do not have an inclusive library building and facilities that support diverse needs.

The analysis of staff responses regarding the availability of specialized collections or archives reveals a noteworthy distinction between Sam Jonah Library and John Kofi Borsah Library. At Sam Jonah Library, respondents expressed a generally favorable view, indicating that the presence of specialized resources, such as rare collections, subject-specific materials, or archival holdings, is recognized as a valuable asset supporting student research. This level of satisfaction suggests that Sam Jonah Library

has invested in curating resources that align with the academic and research priorities of its student body, thereby enhancing the library's role as a center for in-depth scholarly inquiry. In contrast, while John Kofi Borsah Library respondents also viewed the specialized collections positively, the slightly lower level of satisfaction points to limitations in scope, accessibility, or relevance of these resources. This may reflect a narrower range of subject coverage, limited archival development, or underinvestment in special collections tailored to the institution's academic programs. The feedback implies that, although appreciated, the current collections at John Kofi Borsah Library may not fully meet the evolving research demands of its students, particularly in emerging or technical fields that require more targeted resources.

An inclusive library building and facilities reinforce the importance of offering specialized collections that are not only comprehensive but also accessible to all students. This includes ensuring that materials are available in various formats (e.g., digital, braille, audio) and that the library is equipped with the necessary support to help students with different abilities and learning styles fully engage with these resources. By aligning with an inclusive approach, John Kofi Borsah Library could enhance its specialized collections and archives, ensuring that all students, regardless of their needs, have equal access to critical research materials. The outcome of this research aligns with the study by Fritz (2018), where she notes that the majority of her respondents believe that specialized collections and archives play a pivotal role in enhancing academic libraries. These collections provide unique resources that are specifically tailored to meet the research needs of both students and scholars. By offering access to rare materials and specialized knowledge, they not only enrich the learning experience but also promote a deeper

understanding of diverse subjects, ultimately contributing to the advancement of scholarship.

Across the indicators, such as study and reading space, shelf height, assistive technologies, signage and navigation systems, online resources, and physical infrastructure, Sam Jonah Library was more positively rated by respondents. This suggests that Sam Jonah Library's facilities more effectively embody the principles of inclusivity, flexibility, and accessibility that are central to user-centered library design. Sam Jonah Library's facilities support both individual and collaborative learning, provide more usable shelf arrangements, and offer more satisfactory services such as internet access, secure storage, and specialized collections.

By contrast, John Kofi Borsah Library's facilities reflect significant gaps in inclusivity and usability. Respondents expressed consistent dissatisfaction with key features like study space, group areas, shelf accessibility, assistive technologies, and navigational systems. These weaknesses underscore that the library environment may not fully support the academic success of all users, particularly those with disabilities or specific learning preferences. This shortfall is especially critical when considering the inclusive library building framework, which emphasizes equitable access, user satisfaction, and the capacity of physical and digital infrastructures to support varied educational needs.

Inclusivity and Accessibility: Sam Jonah Library's higher ratings on accessibility features (e.g., ramps, elevators, signage) suggest more thoughtful architectural and functional planning, aligning with frameworks by Su et al. (2022), Beecher (2019), and De Villiers (2022). John Kofi Borsah Library needs significant improvements to meet even basic

accessibility standards.

Flexible Learning Environments: As noted by Choy and Goh (2019), flexible and user-oriented learning spaces are key to academic success. Sam Jonah Library partially fulfills this ideal, but John Kofi Borsah Library lags considerably behind, especially in group study areas and adaptive technologies.

User-Centered Design: The varying satisfaction with shelf heights, storage, and navigational aids between the two institutions illustrates how Sam Jonah Library reflects a more user-centered design philosophy, in line with the recommendations of Majidi et al. (2023) and Yucel (2016”).

Technological Support and Specialized Resources: Although both institutions performed reasonably well in offering services like printing and databases, Sam Jonah Library’s stronger digital infrastructure and specialized collections provide better support for research, in agreement with the work of Kumar and Sanaman (2022) and Fritz (2018).
Assistive Technologies and Support for Disabilities: Both universities show a significant gap in fully accommodating physically challenged users, indicating an urgent need to invest in inclusive technologies and infrastructure as stressed by Kwafoa (2016), Hill (2022), and Okwu and Oporum (2021).

Overall, Sam Jonah Library’s system, while not perfect, is closer to meeting the inclusive, accessible, and user-centered benchmarks advocated by global best practices and scholarly literature. John Kofi Borsah Library, on the other hand, demonstrates notable deficiencies that require structural, technological, and service-level reforms. For both institutions to fully support the goals of equitable quality education (SDG 4), they must adopt a more inclusive design approach, prioritize user feedback, and enhance both

the physical and digital infrastructure of their libraries to serve the diverse needs of all learners effectively.

Implications of the Findings to the Achievement of UN SDG 4: The findings demonstrate that adequate physical infrastructure, such as study spaces, accessible shelving, assistive technologies, and wayfinding systems are prerequisites for achieving SDG 4. At Sam Jonah Library, relatively higher levels of satisfaction suggest that students have access to environments conducive to individual and collaborative learning. This supports Target 4.1 (free, equitable, quality primary and secondary education) and Target 4.3 (equal access to affordable quality technical, vocational, and tertiary education) by creating an academic environment where learning can flourish.

In contrast, dissatisfaction at John Kofi Borsah Library, particularly with study spaces, shelf heights, assistive technologies, and group study areas, suggests barriers to inclusive and equitable education. If students lack quiet spaces or accessible resources, their right to quality education is compromised, especially for students with disabilities or special needs, directly contradicting Target 4.5 (eliminating gender disparities and ensuring access to vulnerable populations). Inclusive design features such as ramps, elevators, and appropriate shelf heights, as observed more prominently at Sam Jonah Library, create equitable access to resources. This aligns with Target 4.a, which urges the building and upgrading of education facilities that are child, disability, and gender-sensitive and provide safe, inclusive, and effective learning environments for all. The shortcomings at John Kofi Borsah Library in this regard expose gaps that can exacerbate inequalities, making it difficult for physically challenged students or those with different learning preferences to thrive. Libraries that fail to meet inclusive design standards may

inadvertently exclude students, hindering national and institutional progress toward SDG4. Sam Jonah Library's relatively higher satisfaction with internet access and online databases suggests better support for lifelong learning opportunities, aligning with Target 4.4 (increasing relevant skills for employment, decent jobs, and entrepreneurship) and Target 4.7 (global citizenship and sustainable development education). The digital divide reflected in John Kofi Borsah Library's lower satisfaction indicates an obstacle to equity, especially as online and hybrid learning becomes central in modern education. Access to digital resources is critical not only for current students but also for non-traditional learners, adult learners, and part-time students, making digital inclusivity vital to lifelong learning.

Positive responses regarding specialized collections and archives, especially at Sam Jonah Library, demonstrate how well-resourced libraries support research excellence. These collections deepen students' engagement with their disciplines, enhancing critical thinking and research competencies, core components of quality education under SDG 4. However, John Kofi Borsah Library's lower satisfaction highlights missed opportunities to foster advanced scholarship and innovation, particularly for postgraduate students and researchers. Inadequate access to such resources limits the institution's capacity to contribute to knowledge generation and sustainable development, central to SDG 4's holistic vision. The disparities between Sam Jonah Library and John Kofi Borsah Library in library facilities have direct implications for students' educational experience and outcomes. Inadequate infrastructure and non-inclusive design undermine the realization of SDG 4's promise of inclusive, equitable, and quality education. Academic libraries, when equipped and inclusively designed, become powerful enablers of learning, equity,

and lifelong opportunity, hallmarks of sustainable development.

5.4. Specialized Library service and resources of the library

Analyzing specialized services offered at academic libraries in the context of reaching SDG4 was the study's second goal.

5.4.1. How well is your library resource

The study focused on evaluating the specialized services provided at academic libraries in connection with SDG4, drawing on the theoretical framework of specialized services and resources. This framework stresses the importance of tailored, resource-rich services to support students' learning needs and promote equitable access to quality education. According to the framework, specialized services in academic libraries should be adequately resourced to meet the diverse and evolving demands of users, facilitating their engagement with knowledge and supporting their academic success.

The data highlights a notable disparity in resource allocation between the libraries at Sam Jonah Library and John Kofi Borsah Library, with Sam Jonah Library emerging as better resourced across key service areas. The higher proportion of respondents at Sam Jonah Library reporting access to both highly and moderately resourced services suggests a stronger institutional capacity to deliver specialized library support aligned with academic demands. This indicates that Sam Jonah Library is more capable of offering targeted resources such as subject-specific databases, research support services, and updated collections, thereby enhancing academic productivity and user satisfaction.

However, the lower percentages reported at John Kofi Borsah Library reflect a constrained resource environment, limiting the library's ability to fulfill the specialized services criteria embedded within the academic library service framework. These resource gaps may hinder the library's responsiveness to emerging research needs and discipline-specific learning goals. As such, John Kofi Borsah Library may struggle to provide equitable academic support, underscoring the broader systemic issue of uneven resource distribution and its implications for achieving inclusive and quality education, as envisioned under SDG 4.

This disparity points to the need for further investment in resources at John Kofi Borsah Library to ensure that specialized services can be effectively offered, thereby contributing to the broader objective of achieving SDG 4 and promoting inclusivity in education. Ullah and Usman (2023) confirmed in their studies that a significant number of respondents from Riphah International University (Pakistan) indicated that the library offered highly resourced services, recognizing the importance and value of these services in promoting quality education and lifelong learning. Further, the findings on one hand are consistent with the works of Cox (2021), and Okunlaya et al. (2022) as they observed that a substantial number of their respondents reported that their libraries lacked equipment or resources that promote inclusive education, signaling a significant gap in the support for students with diverse needs, such as those with disabilities or those from underrepresented groups. This absence hinders the library's ability to foster an inclusive academic environment, limiting access to essential resources that would enable all students to thrive academically.

5.4.2. Effectiveness of Specialized Resources and Services

The overall response patterns indicate a generally positive sentiment among respondents, with some notable distinctions between the Sam Jonah Library and John Kofi Borsah Library. At Sam Jonah Library, a significant proportion of respondents rated their experience as outstanding, showcasing a high level of satisfaction that was not mirrored in responses from John Kofi Borsah Library. The differences in satisfaction levels between Sam Jonah Library and John Kofi Borsah Library regarding specialized services can be attributed to several interrelated factors. Sam Jonah Library likely benefits from stronger institutional support and more consistent funding, which allows it to acquire up-to-date resources and invest in advanced library technologies. This unique rating at Sam Jonah Library contributes significantly to the overall narrative of librarian satisfaction, particularly in relation to the library's specialized services and resources. These services, tailored to meet the diverse needs of users, seem to be perceived as highly effective at Sam Jonah Library, which may explain the higher level of satisfaction reported. A highly positive rating emerged as the most frequent, with a large portion of Sam Jonah Library respondents expressing satisfaction at this level. While this same level of satisfaction was also present at John Kofi Borsah Library, the proportion was noticeably lower, suggesting that staff at Sam Jonah Library found the library's specialized offerings more consistently effective.

Sam Jonah Library respondents rated their experience more positively compared to John Kofi Borsah Library, with fewer Sam Jonah Library users rating their experience as satisfactory. This suggests that Sam Jonah Library's specialized services better meet users' needs, while John Kofi Borsah Library's offerings are perceived as less accessible

or relevant, leading to moderate satisfaction. The absence of poor ratings from Sam Jonah Library contrasts with John Kofi Borsah Library's dissatisfaction, particularly regarding specialized resources. This brings to the forefront areas for improvement at John Kofi Borsah Library, suggesting a need to enhance its specialized services to better satisfy user expectations.

The generally positive sentiment among Sam Jonah Library respondents regarding whether the library has effective specialized resources and services established in this study can be corroborated with the findings of Tsang and Chiu (2022) and Anyim and Mole (2021), who also found that the majority of their respondents gave positive responses regarding specialized resources for people with disabilities or physically challenged individuals. This is because their respective academic libraries have effective and accessible resources, including adaptive technologies, specialized learning materials, and support services, which ensure that individuals with disabilities can fully participate in academic activities and have equal access to library services. These resources not only address the physical needs of users but also contribute to creating an inclusive and supportive learning environment for all students. Dillon (2021) also found that library staff at Texas Woman's University agree with the fact that lack of effective specialized resources hinders service delivery, particularly for marginalized groups. The absence of resources, including access to relevant databases and targeted outreach programs, has contributed to the perception that libraries are not fully meeting the diverse needs of their user base.

5.4.3. Availability of trained personnel for specialized services

The intent of the study was to evaluate whether libraries provided adequate assistance to students with special needs, particularly through the presence of trained staff. The theoretical framework of adaptive and assistive technologies plays a key role in this evaluation, as it emphasizes the importance of the role of libraries in creating inclusive learning environments tailored to meet the unique needs of diverse student populations, particularly those with special requirements. The absence of trained personnel suggests a limited integration of these technologies, which are essential for ensuring that students with disabilities can access information equitably. Without specialized staff, the implementation and effective use of assistive tools—such as screen readers, Braille resources, and adaptive learning software—may be inadequate, further marginalizing students who rely on them.

The findings reveal a significant gap in the availability of trained personnel to support students with special needs at both Sam Jonah Library and John Kofi Borsah Library, underscoring the need for improvement in these specialized services. A substantial majority of respondents from both Sam Jonah Library and John Kofi Borsah Library expressed concerns about the lack of trained personnel capable of attending to specialized needs, reflecting a critical deficiency in specialized services and resources.

This lack of adequately trained staff directly impacts the library's ability to fulfill its role in providing equitable support to all students, particularly those with disabilities or other special needs. According to the framework of adaptive and assistive technologies, these deficiencies highlight a failure in the provision of the necessary resources—whether

human, technological, or information that are essential for effectively supporting students with special requirements.

While dissatisfaction was noted at both institutions, it was more pronounced at Sam Jonah Library, where a larger portion of respondents noticed concerns regarding the absence of trained staff. This reflects an institutional challenge in meeting the specialized demands of students with special needs, which is a key component of the framework.

In contrast, a smaller segment of respondents at both Sam Jonah Library and John Kofi Borsah Library indicated that they believed trained personnel were available to provide specialized services. At Sam Jonah Library, some respondents felt confident in the library's ability to meet the needs of students with special requirements, suggesting that there are pockets of success where specialized services are provided. However, the level of confidence was notably lower at John Kofi Borsah Library, where fewer respondents expressed trust in the presence of trained personnel, signaling a weaker alignment with the framework's emphasis on resource availability and the need for trained staff to ensure these services are accessible and effective.

This finding is inconsistent with the study by Awogbami, Opele, and Adeoye (2021), in which the majority of respondents agreed that their libraries had qualified and skilled individuals trained to provide specialized services. They attributed this to the libraries' implementation of structured training programs, recruitment policies, and continuous learning opportunities to maintain high service standards. The works of Abubakar and Saka (2021), in which respondents were generally satisfied with the quality of special services provided by library personnel, also do not align with this finding. However, a

small group expressed the opinion that trained personnel for special library services are inadequate to ensure effective service delivery.

The findings collectively underscore both progress and persistent gaps in the provision of specialized services in academic libraries at Sam Jonah Library and John Kofi Borsah Library, particularly in their alignment with Sustainable Development Goal 4 (SDG 4), which emphasizes inclusive and equitable quality education and lifelong learning opportunities for all.

Resource Allocation and Infrastructure:

The data illustrates a notable disparity in resource availability between Sam Jonah Library and John Kofi Borsah Library, with Sam Jonah Library appearing better resourced. This suggests that Sam Jonah Library is more capable of delivering tailored, specialized services to its users, supporting the theoretical framework that emphasizes resourced service provision as a prerequisite for promoting educational equity. However, John Kofi Borsah Library's relatively under-resourced state reflects a barrier to achieving SDG 4 goals, particularly regarding inclusiveness and equitable access. These findings are consistent with prior literature indicating that a lack of appropriate resources undermines the ability of libraries to serve diverse user needs, especially those from marginalized groups.

Effectiveness of Specialized Services:

User satisfaction data reveals a clear difference in perceived effectiveness, with Sam Jonah Library users reporting a higher level of satisfaction and effectiveness of the specialized services. This reflects

a stronger alignment with inclusive service principles and indicates that well-resourced libraries are more likely to deliver effective, user-centered services. In contrast, John Kofi Borsah Library's lower ratings point to perceived limitations in service quality and effectiveness, underscoring the need for improvement. The literature supports this relationship between service quality and user satisfaction, especially in libraries with adaptive technologies and accessible learning materials.

Availability of Trained Personnel:

A critical gap was identified in the availability of trained personnel to deliver specialized services at both institutions, with particular concern expressed at Sam Jonah Library. The lack of adequately trained staff is a major obstacle to fully implementing assistive technologies and specialized learning services, undermining efforts to create inclusive learning environments. This issue challenges the achievement of SDG 4, as equitable access depends not only on physical resources but also on the human capacity to deliver and manage them. While there were pockets of success, particularly at Sam Jonah Library, the overall shortfall in trained staff is inconsistent with the best practices reported in other contexts, where structured training and professional development ensure higher standards of service.

In sum, Sam Jonah Library demonstrates a stronger institutional capacity to support SDG 4 through specialized services in its academic library, due to better resourcing and more effective service delivery. However, both institutions fall short in providing adequately trained personnel, revealing a critical weakness in human resource development that undermines the full realization of inclusive and equitable library services. These findings underscore the need for targeted investment in training, infrastructure, and inclusive

technologies, particularly at John Kofi Borsah Library, to close the service gap and ensure that both libraries can fully support the achievement of SDG 4 for all students.

The analysis of specialized services and resources offered in academic libraries reveals a complex interplay of resource adequacy, service effectiveness, and the availability of trained personnel, all of which are critical to the realization of SDG 4. These factors do not function in isolation; rather, they collectively shape the capacity of academic libraries to support inclusive, equitable, and quality education. Therefore, improving specialized services in academic libraries is not merely an institutional issue; it is a strategic imperative for advancing SDG 4. Targeted efforts such as budget prioritization for inclusive technologies, structured training programs for library staff, and continuous monitoring of service effectiveness are necessary to transform libraries into truly inclusive learning hubs that contribute meaningfully to global education goals education goals.

5.5. Skills and competencies of library staff

The study sought to determine the skills and competencies of librarians in delivering services that align with SDG 4 in Ghana. A key aspect examined was the expertise of staff to provide quality information services. The findings indicate a generally positive outlook of library personnel across the two institutions, though with notable variations. While respondents from Sam Jonah Library demonstrated stronger confidence in the competence of librarians, respondents from John Kofi Borsah Library reflected a comparatively lower level of trust. This variation suggests potential differences in staff expertise, training, or available resources.

From a theoretical perspective, adaptive and assistive technologies play a crucial role in enhancing the competencies of librarians and the overall effectiveness of information services. Libraries serve as essential knowledge hubs, and their ability to integrate technological advancements determines how efficiently they cater to diverse user needs. If library staff are well-versed in adaptive and assistive technologies, they can support a broader range of users, including individuals with disabilities, by providing accessible learning materials and tailored services.

The presence of qualified staff is crucial for leveraging these technologies effectively. A highly skilled workforce ensures that information services are inclusive, supporting different learning abilities and needs. In contrast, technology-driven services are less accessible and inclusive when staff expertise is low. The findings further highlight that while most respondents trust the expertise of library personnel, a small proportion expressed concerns about staff qualifications. This underscores the need for continuous professional development, particularly in digital literacy and the application of assistive technologies, to maintain and enhance service quality.

Ultimately, the study emphasizes the importance of librarians' skills in utilizing adaptive and assistive technologies to improve information access. Strengthening librarian competencies in these areas will not only enhance user confidence but also contribute to achieving educational goals by ensuring equitable access to quality information services.

The finding of respondents from Sam Jonah Library demonstrating stronger confidence in the competence of librarians is similar to the finding of Yadav (2022), who reported that library staff at Banaras Hindu University (BHU), Varanasi, expressed greater

confidence in the librarians' expertise. They felt that the librarians were well-equipped to assist students with their research needs and provided valuable guidance in navigating the vast array of resources available. Akakpo (2024) mentioned that present and future library professionals need skills and competencies to make the library run smoothly. Ensuring this requires a combination of learning, practice, and real-world application. Akakpo (2024) further observed that incorporating technologies into library operations is essential in developing these competencies, as these technologies enhance accessibility, improve service efficiency, and support a diverse range of users. By gaining expertise in implementing and managing such technologies, library professionals can create more inclusive and user-friendly environments, ensuring libraries remain effective and relevant in the modern era.

5.5.1. Computer Knowledge

Librarians' computer knowledge and abilities were also evaluated to determine their degree of computer proficiency. Computer knowledge and abilities of librarians at Sam Jonah Library and John Kofi Borsah Library revealed a generally higher level of proficiency among the respondents. A significant majority across both institutions reported having some degree of computing expertise, suggesting a strong foundational knowledge in digital skills. However, a slight difference in computing proficiency levels was observed between Sam Jonah Library and John Kofi Borsah Library librarians, which could be influenced by factors such as institutional focus, academic programs, or access to technological resources. While most respondents expressed confidence in their computing abilities, a notable portion admitted to having limited knowledge in this area. The variation in the number of respondents acknowledging a lack of computing skills

between Sam Jonah Library and John Kofi Borsah Library brings attention to a potential gap in training or exposure to digital tools.

Sam Jonah Library had a higher proportion of librarians reporting limited knowledge compared to John Kofi Borsah Library, indicating differences in technological emphasis or professional development opportunities. The findings suggest that while a majority of librarians are familiar with computing, there remains a segment that may benefit from further training and skill development. This finding is consistent with the studies by Borbély (2022) and Hamad et al. (2024). They indicated that although most librarians have a grasp of computing, a portion still requires additional training and skill enhancement to fully embrace the evolving technological landscape. Institutions need to invest in professional development initiatives that address these gaps, ensuring that all staff are equipped with the latest digital competencies required to support library users effectively. Further, the finding agrees with previous research by Ugwulebo (2022), where the researcher observed that almost all the library staff from the three libraries in Nigeria, Ghana, and Sierra Leone were computer literate and have computer skills to provide quality services to clients.

5.5.2. Information Retrieval Skills

The analysis of information retrieval skills among library staff at Sam Jonah Library and John Kofi Borsah Library reveals a generally high level of confidence, with most respondents rating their abilities as "very good" or "good." This suggests a strong foundation in information literacy across both institutions. However, differences in self-assessed proficiency levels between the two libraries offer deeper insights into the

academic and technological orientations of each institution. At John Kofi Borsah Library, a relatively higher number of respondents rated their skills as "excellent," which may indicate a stronger emphasis on information retrieval within the institution's curriculum or a more technologically driven environment. This could suggest that John Kofi Borsah Library librarians have greater exposure to digital tools and information systems, potentially benefiting from specialized training or technological integration in their roles. This finding resonates with the studies by Tella, Ajani, and Ailaku (2023) and Ahmed and Sheikh (2021), which noted that a comparatively larger proportion of respondents evaluated their information retrieval skills at a higher level, while a smaller minority possessed little or no skills. However, Ahmed and Sheikh (2021) observed that it is important to consider that the perception of one's skills does not always correlate with actual proficiency. Some respondents may overestimate their abilities due to a lack of awareness regarding the complexities involved in effective information retrieval.

In contrast, Sam Jonah Library had a higher concentration of respondents in the "very good" and "good" categories, pointing to a broader base of staff with varying degrees of proficiency. This diversity in skill levels reflects a more heterogeneous academic environment, where librarians come from different backgrounds and may have different levels of formal training in information retrieval. A small portion of respondents from both institutions acknowledged weaknesses in their information retrieval skills, emphasizing a potential need for targeted training. The findings concur with the study by Baro and Zuokemefa (2019), which reported that librarians in well-funded universities often demonstrate stronger digital literacy skills due to greater access to advanced technologies, continuous professional development opportunities, and institutional

support for training programs. Anunobi and Ogbonna (2020) observed that institutions with structured digital literacy programs produce librarians with more consistent skill levels.

The study assessed the skills and competencies of librarians in delivering services aligned with UN Sustainable Development Goal 4 (SDG 4), focusing on three core areas: professional expertise, computer literacy, and information retrieval skills. The findings collectively underscore that while the overall outlook is positive, meaningful disparities exist between the two institutions, emphasizing the varying capacity of academic libraries to support inclusive and quality education.

Respondents from Sam Jonah Library expressed stronger confidence in the expertise of library personnel compared to those from John Kofi Borsah Library. This suggests that Sam Jonah Library staff may benefit from more robust professional development, better institutional support, or greater exposure to emerging technologies. From a theoretical lens, staff competence, especially in utilizing adaptive and assistive technologies, is a pillar in enabling academic libraries to serve diverse learning needs, including those of students with disabilities. Skilled librarians can leverage such tools to create accessible learning environments, a key requirement of SDG 4. However, the presence of a minority of respondents raising concerns about qualifications highlights a crucial gap. Continuous professional development in digital literacy, adaptive technology, and inclusive service delivery is essential to closing this skills gap. A workforce that lacks confidence or competence in these areas risks perpetuating exclusion, thereby hindering equitable access to quality education.

The study revealed that most librarians across both institutions possess at least a basic level of computing knowledge, though some variation was observed. Notably, Sam Jonah Library reported a higher number of librarians with limited computer skills compared to John Kofi Borsah Library, indicating potential institutional differences in technological emphasis or access to training. While foundational computer literacy is present, the persistence of knowledge gaps signals a need for structured training programs. As technology becomes central to education and information delivery, librarians must be equipped with advanced digital competencies. Without this, libraries may struggle to support students in a digital-first learning environment. The absence of such competencies undermines the library's potential to serve as an inclusive and effective resource hub, which is fundamental to achieving SDG 4.

Information retrieval skills were generally rated as high across both institutions, with John Kofi Borsah Library showing a slight edge in "excellent" self-assessments. This suggests that librarians at John Kofi Borsah Library may have more targeted training or better exposure to digital information systems. However, a small segment at both institutions acknowledged weak skills, and the variability in self-assessment reflects differences in actual versus perceived proficiency. Strong information retrieval skills are essential for helping users access accurate, relevant, and high-quality information, a cornerstone of lifelong learning. In the context of SDG 4, these skills enable librarians to support students in navigating vast information landscapes, making learning more inclusive, personalized, and effective. Gaps in this area compromise the ability to deliver tailored services that meet the needs of all students, especially those requiring more guidance.

Together, the findings emphasize that librarians' skills and competencies are fundamental to the realization of SDG 4. The ability of academic libraries to promote equitable and quality education is not merely dependent on infrastructure or resources, but on the human capital—staff who are technologically literate, professionally competent, and confident in their ability to support a diverse student population.

5.6. Established Institutional Policies

When assessing the claim that "the library has an established policy to ensure inclusive, high-quality, and equitable education," it became evident that the viewpoints of the respondents spanned a broad range. Few respondents strongly believe that the library has a strong policy on inclusive education, with more respondents at Sam Jonah Library agreeing that such a policy exists compared to John Kofi Borsah Library. A significant number of respondents, especially at Sam Jonah Library, are uncertain about the policy's presence. Only a small proportion at both institutions explicitly disagreed or strongly disagreed. This variation in perception underscores the importance of inclusive rights-based policies and standards in ensuring equitable access to educational resources and opportunities for all individuals, regardless of background or institutional affiliation.

Jain and Jibril (2017) disagree with the findings of the study regarding the fact that a few respondents strongly believe the library has a strong policy on inclusive education, with respondents at Sam Jonah Library agreeing that such a policy exists compared to those at John Kofi Borsah Library. They opined that the lack of a structured policy at university libraries across Gaborone in Botswana hinders efforts toward achieving inclusive quality

education. Farid, Warraich, and Iftikhar (2023), Shah et al. (2022), and Gyimah et al. (2020), however, present a differing perspective that aligns with the findings of this study. They emphasize that the successful implementation of library policies for inclusive education is not uniform but varies significantly across different educational institutions and is significantly shaped by several key factors.

The statement about the staff's awareness of the policy between Sam Jonah Library and John Kofi Borsah Library was examined. Very few respondents at Sam Jonah Library strongly agreed, while none at John Kofi Borsah Library do, more staff at Sam Jonah Library agree they are aware of the policy compared to John Kofi Borsah Library. A large portion remains neutral at both institutions. Disagreement is slightly higher at John Kofi Borsah Library than Sam Jonah Library, with a small percentage at John Kofi Borsah Library strongly disagreeing. Communication of the policy to staff is limited at both institutions. A slightly higher percentage of staff at Sam Jonah Library agree compared to John Kofi Borsah Library. A significant number remain neutral, while disagreement is slightly higher at Sam Jonah Library than John Kofi Borsah Library, with a small percentage at both institutions strongly disagreeing. This limited awareness and communication highlight the need for stronger institutional frameworks that align with inclusive rights-based policies to enhance staff engagement and understanding of the policy's objectives. Generally, this study found that awareness and communication of the policy between Sam Jonah Library and John Kofi Borsah Library are low among staff at both institutions. Ampiah and Adu-Yeboah (2009) and Atta-Obeng and Dadzie (2020) lend credence to this latest finding, as they established that librarians failed to perform well due to a lack of awareness of library policies regarding the achievement of quality

and equitable education for all. They further indicated that for academic libraries to effectively champion this agenda, a well- structured policy must be in place. Omisore et al. (2017) posit that the varying levels of awareness and understanding of inclusive education among librarians further complicate policy implementation. The lack of necessary training or exposure to inclusive education principles among some librarians leads to inconsistencies in service delivery and policy enforcement.

Sam Jonah Library and John Kofi Borsah Library respondents showed differing views on the policy's focus on acquiring educational resources. More Sam Jonah Library respondents agreed, while many remained neutral. Disagreement was minimal in both groups, with only a small percentage of John Kofi Borsah Library respondents strongly disagreeing. Few respondents strongly agreed that library staff adhere to the policy, with no such responses from John Kofi Borsah Library. Agreement was more common among Sam Jonah Library respondents than those from John Kofi Borsah Library. A notable portion of Sam Jonah Library respondents remained neutral, whereas fewer from John Kofi Borsah Library chose this stance. Regarding disagreement, a small percentage of Sam Jonah Library respondents expressed it, with an even lower percentage from John Kofi Borsah Library. While none from Sam Jonah Library strongly disagreed, a small fraction of John Kofi Borsah Library respondents did. Overall, these findings suggest varying perceptions of institutional policy adherence between Sam Jonah Library and John Kofi Borsah Library respondents. While agreement was more prevalent at Sam Jonah Library, neutrality and minimal disagreement indicate the need for clearer policy implementation and communication to ensure consistent adherence across institutions. Omisore et al. (2017) and Salmi et al. (2021) support this finding, emphasizing that

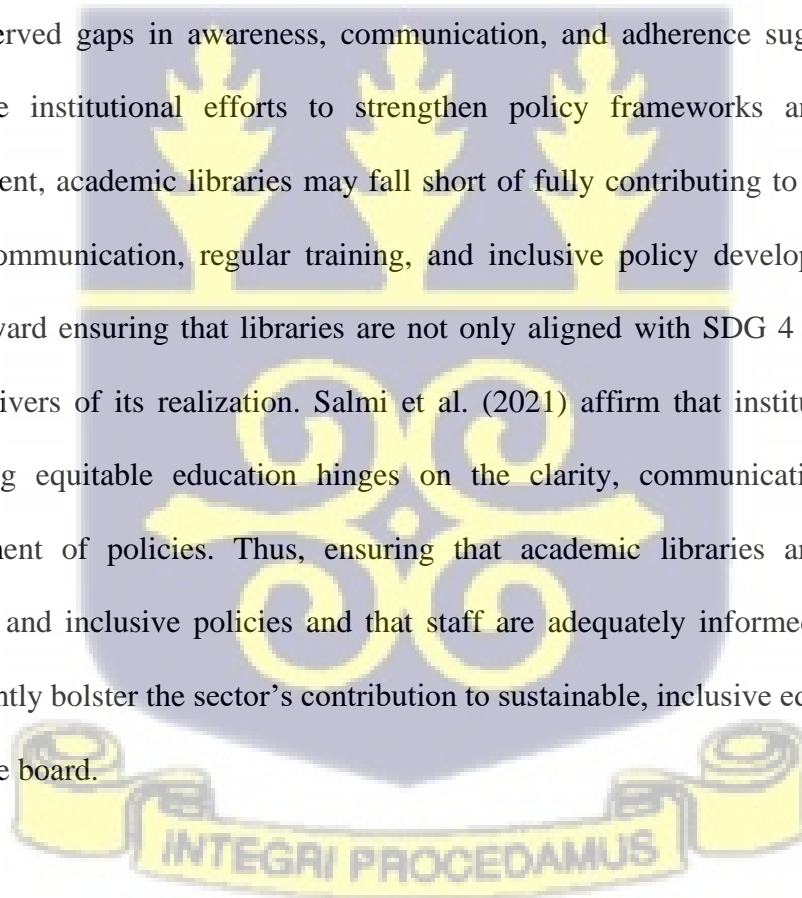
institutional policy adherence is crucial for an establishment's success. They highlight the need for enhanced information sharing and uniform implementation strategies to ensure consistent compliance across institutions globally.

The findings across the various dimensions of policy awareness, communication, and adherence reveal a broader pattern of inconsistency in how inclusive, high-quality, and equitable education policies are perceived and implemented between Sam Jonah Library and John Kofi Borsah Library. While agreement on the existence and implementation of such policies is relatively stronger at Sam Jonah Library, overall responses are marked by neutrality and limited disagreement at both institutions. This pattern suggests that, although some frameworks may be in place, there is a lack of clarity and uniform understanding among library staff regarding the policies' objectives and operationalization. The limited awareness and weak communication of inclusive education policies indicate gaps in internal information dissemination and training. This, as observed by Ampiah and Adu-Yeboah (2009) and Atta-Obeng and Dadzie (2020), significantly hampers librarians' ability to support the broader goal of delivering inclusive and equitable education (SDG 4). Furthermore, the findings affirm Omisore et al.'s (2017) observation that inconsistent understanding of inclusive education principles among librarians, often due to inadequate training, undermines policy enforcement and service consistency. The contrasting perspectives from Jain and Jibril (2017), who found that the absence of structured library policies impedes inclusive education in Botswana, highlight the broader challenges academic libraries face in operationalizing such policies effectively. Conversely, the alignment of this study's findings with those of Farid, Warraich, and Iftikhar (2023), Shah et al. (2022), and Gyimah et al. (2020) underscores

that implementation success varies and is influenced by institutional culture, administrative commitment, and staff capacity.

These findings have direct implications for the achievement of UN Sustainable Development Goal 4, which emphasizes inclusive and equitable quality education and the promotion of lifelong learning opportunities for all. Libraries serve as essential enablers in this agenda, particularly in their role of facilitating access to educational resources. However, the effectiveness of libraries in this role depends heavily on the existence of well-defined, rights-based policies and their consistent implementation.

The observed gaps in awareness, communication, and adherence suggest that without deliberate institutional efforts to strengthen policy frameworks and enhance staff engagement, academic libraries may fall short of fully contributing to SDG 4. Effective policy communication, regular training, and inclusive policy development are crucial steps toward ensuring that libraries are not only aligned with SDG 4 principles but are active drivers of its realization. Salmi et al. (2021) affirm that institutional success in promoting equitable education hinges on the clarity, communication, and uniform enforcement of policies. Thus, ensuring that academic libraries are equipped with coherent and inclusive policies and that staff are adequately informed and trained can significantly bolster the sector's contribution to sustainable, inclusive education outcomes across the board.



5.7. Challenges libraries faced in providing access to information

An evaluation was conducted to determine the difficulties libraries encounter in allowing all students to access information.

5.7.1. Equal access to information

An assessment was carried out to explore the various challenges academic librarians at Sam Jonah Library and John Kofi Borsah Library encounter in their efforts to provide equitable access to information for all students. This study gathered insights from both institutions, offering a comparative perspective on the difficulties they face. The findings suggest disparities in the accessibility of information resources between Sam Jonah Library and John Kofi Borsah Library, highlighting issues related to inclusivity and resource distribution. The emphasis on "equal access" indicates that certain groups of patrons at Sam Jonah Library and John Kofi Borsah Library encounter barriers that hinder their ability to fully utilize library resources. These barriers perhaps are influenced by factors such as socioeconomic status, geographic location, and other demographic characteristics. Inclusive challenges could manifest in various ways, including limited physical access to libraries, inadequate digital resources, or cultural and linguistic obstacles that affect students' engagement with information.

This finding aligns with the research of Roberts, Crittenden, and Crittenden (2019), who observed that economic disparities significantly impact access to educational resources, libraries, and other information hubs. They noted that individuals from more affluent backgrounds tend to have greater access to information through paid digital platforms and private resources, while those from lower-income backgrounds rely more heavily on

institutional libraries. This dynamic further emphasizes the need for Sam Jonah Library and John Kofi Borsah Library to implement strategies that promote inclusivity and bridge the gap in resource accessibility for all students.

5.7.2. Insufficient Collections

The financial strain at John Kofi Borsah Library creates significant challenges in maintaining and improving its library services. From the findings of the study, it was clear that limited funding hinders the institution's ability to update book collections regularly, acquire new editions, and expand subject coverage to meet evolving academic needs. Additionally, budget constraints make it difficult for John Kofi Borsah Library to subscribe to essential academic journals, restricting students' and faculty members' access to the latest research and scholarly publications. Furthermore, inadequate financial resources slowed down the integration of modern digital tools, such as e-books, online databases, and research management software, which are crucial for enhancing learning and research capabilities.

As a result, these financial limitations ultimately impact the overall quality of library services at John Kofi Borsah Library, creating disparities in resource availability and accessibility. Addressing these challenges requires increased funding, strategic resource allocation, and investment in digital transformation to ensure students and faculty have equitable access to high-quality academic materials. This finding corresponds with the outcome of a study by Hussain and Ismail (2023) who contended that library professionals must carefully curate a balanced collection that meets the evolving needs of users. Regular assessment of materials ensures alignment with curricula and academic

standards. By updating resources, embracing digital advancements, and replacing outdated materials, libraries can enhance quality, support equitable access, and foster a strong learning and research environment. Agyakum (2018) holds a similar view to the findings of this study. He observed that some library materials are severely inadequate and inappropriate due to significant financial constraints.

Additionally, excessive use and outdated content unrelated to the teaching and learning curricula have resulted in the deterioration of most books.

5.7.3. Staffing Shortages

According to the findings of the study, the shortage of qualified staff is a more significant challenge at John Kofi Borsah Library compared to Sam Jonah Library. This disparity may be attributed to differences in institutional resources, recruitment capabilities, and retention strategies. A lack of adequately trained personnel negatively impacts the quality of education by limiting students' access to expert guidance and specialized knowledge. Addressing this issue requires targeted efforts such as professional development programs, competitive incentives, and improved working conditions to attract and retain skilled educators in both institutions.

In some cases, institutions face two possibilities: either there is no qualified librarian, or only one qualified librarian is available. The absence of professional staff in the library leads to challenges such as an irrelevant collection, uncatalogued materials, and poorly organized books. Ashiq, Rehman, and Mujtaba (2021) support this finding, stating that unqualified library staff often result from inadequate funding, limited professional development, and a lack of emphasis on library science education. Consequently, this

leads to poor resource management, reduced user support, and diminished library effectiveness in facilitating research and learning.

Similarly, Malanga (2017) asserts that understaffing negatively affects students' information literacy. Furthermore, the lack of professional library staff contributes to inadequate promotion of library services and a general lack of awareness regarding their significance in academic development. Again, this finding aligns with the studies conducted by Ezeani et al. (2017) and Abata-Ebire et al. (2018), which highlight inadequate staffing as a result of insufficient emphasis on staff training. Despite its crucial role in enhancing librarians' skills and equipping them to effectively disseminate information, staff training has not received the necessary attention. Strengthening training initiatives is essential for empowering librarians to contribute meaningfully toward achieving SDG 4.

5.7.4. Library Financing Constraints

Both Sam Jonah Library and John Kofi Borsah Library face challenges related to limited funding and resources, which significantly impact their ability to provide quality education and essential institutional support. John Kofi Borsah Library appears to experience this issue more severely than Sam Jonah Library, potentially due to differences in budget allocation, institutional priorities, and external funding opportunities. Insufficient financial resources lead to inadequate infrastructure, outdated learning materials, and a lack of investment in modern technology and faculty development. This finding corresponds with Mojapelo (2018), who reported that the majority of his respondents identified a lack of funding as a major obstacle to school

library development. Abata-Ebire et al. (2018) and Samantaray (2017) support this finding, identifying financial constraints as the most significant challenge faced by academic libraries.

5.7.5. Technological Advancements

The respondents were asked how technological advancements pose a challenge to librarians in service delivery, particularly in achieving quality and equitable education. Both Sam Jonah Library and John Kofi Borsah Library face challenges in keeping up with technological advancements, which impact teaching, research, and overall institutional efficiency. However, these difficulties appear to be more pronounced at John Kofi Borsah Library, possibly due to differences in funding, infrastructure, and access to modern technological resources. The rapid pace of technological change requires institutions to continuously upgrade their systems, provide regular training for staff and students, and invest in digital resources to enhance learning and academic productivity. Without sufficient support and adaptation, the digital divide between institutions may widen, further affecting the quality of education and research output.

This finding aligns with previous research by Gul and Bano (2019), Okwu et al. (2024), and Atanda et al. (2021), which emphasizes the necessity for librarians in the 21st century to develop technological literacy. In a rapidly evolving and competitive technological landscape, these studies highlight that some modern librarians lack essential technological skills and competencies, underscoring the need to bridge this gap.

The study reveals that academic libraries at Sam Jonah Library and John Kofi Borsah Library are confronted with a convergence of structural, financial, and operational challenges that significantly hinder their ability to support equitable access to quality education, a central goal of UN SDG 4. These challenges include disparities in resource accessibility, insufficient and outdated collections, staffing shortages, chronic underfunding, and difficulties in adapting to technological advancements. The findings point to a systemic under-resourcing of academic libraries, particularly at John Kofi Borsah Library, which compromises their capacity to function as drivers of inclusive educational opportunities. Structural inequalities and institutional limitations not only perpetuate the exclusion of vulnerable student populations but also jeopardize the libraries' role as essential hubs for learning and research. Without steady funding, clear policies, and efforts to build capacity, these institutions may worsen rather than reduce educational inequalities.

5.8. Strategies to Address Limited Access to Technology and Internet

Connectivity

There is a significant challenge in providing information access due to limited technology and internet connectivity. The researcher sought responses from respondents regarding strategies to address the challenges faced by libraries. Limited access to technology and internet connectivity remains a significant obstacle in providing information access. Findings indicate that Sam Jonah Library demonstrates a stronger commitment to addressing this issue compared to John Kofi Borsah Library. Sam Jonah Library prioritizes establishing mobile libraries to serve underserved areas, forming partnerships with telecommunication companies for affordable internet, and offering offline resources

and tools. Additionally, Sam Jonah Library places greater emphasis on organizing digital literacy programs, underscoring its dedication to equipping students with essential internet skills for the digital era.

5.9. Chapter Summary

The discussions of findings were done with respect to the objective of the study. The study analyzed library services at Sam Jonah Library and John Kofi Borsah Library, focusing on infrastructure, specialized services, professional expertise, established institutional policies, and challenges faced by librarians in relation to quality and equitable education for all (SDG 4). Findings revealed that Sam Jonah Library had better library infrastructure, study spaces, and accessibility features than John Kofi Borsah Library, which faced resource limitations. Specialized services were more developed at Sam Jonah Library, while John Kofi Borsah Library struggled with inadequate resources and staffing shortages. Both institutions lacked sufficient trained personnel to support students with special needs, impacting the implementation of assistive technologies.

Librarians at both universities demonstrated strong digital skills, but gaps remained, particularly in computing and information retrieval. Sam Jonah Library respondents showed greater confidence in librarian expertise, suggesting differences in training and professional development. The study emphasized the need for continuous training in digital literacy, assistive technologies, and information retrieval. Institutional policies on inclusive and equitable education were not well communicated, with many respondents uncertain about their existence. Sam Jonah Library staff showed slightly more awareness than John Kofi Borsah Library staff. The study highlighted the need for clearer policies,

better communication, and stronger institutional frameworks to enhance equitable access to information.

Addressing these challenges requires strategic investments in funding, infrastructure, staff training, and policy implementation to improve library services and support inclusive education.



CHAPTER SIX

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

This chapter was the concluding chapter of the study. The chapter presented the summary of key findings, the conclusion of the study, recommendations, and lessons for policy recommendations and future research. The study looked at factors influencing academic library services in achieving UNSDG 4 in Ghana.

6.2. Summary of Major Findings

The major findings of the study examined available infrastructure that supports the provision of library services towards achieving United Nations Sustainable Development Goal 4 in Ghana. Again, the study looked at specialized services available and the skills and competence of librarians in providing services to achieve UNSDG 4. Additionally, the study examined established institutional policies towards achieving UNSDG 4 in Ghana. A summary of the major findings of the study is presented below as follows.

6.2.1. Demographic characteristics of respondents

The dataset exhibits gender diversity with an equal distribution of males and females. Across departments, the organizational structure is reflected, with Readers Service being prominent, while Cataloging and Special Collections have lower representations.

Educational backgrounds vary, with most participants holding bachelor's degrees,

followed by those with master's degrees, and a smaller number possessing Ph.D. degrees.

Professional designations highlight senior staff as the most prevalent, while professional experience varies, with a significant portion having 6-10 years of experience, followed by those with 11-15 years, fewer with less than 5 years, and some with more than 15 years.

6.2.2. Availability of Infrastructure that Supports Library Services

The study examined the adequacy of infrastructure supporting library services at Sam Jonah Library and John Kofi Borsah Library. Findings revealed varied perceptions among respondents, particularly concerning study spaces, shelving convenience, assistive technology, and digital resources. At Sam Jonah Library, respondents generally had a more favorable view of the library's infrastructure, including study spaces, shelf height suitability, and navigational systems. In contrast, John Kofi Borsah Library students expressed dissatisfaction with study spaces, suggesting the need for improvements to meet diverse learning needs. Both institutions received positive feedback regarding printing, scanning, and photocopying services, though Sam Jonah Library reported higher satisfaction with internet access and group study areas.

Assistive technology for physically challenged individuals received moderate support at Sam Jonah Library but lower satisfaction at John Kofi Borsah Library, indicating the need for enhancements. Secure storage facilities were rated more favorably at Sam Jonah Library, while John Kofi Borsah Library students expressed a need for better safety measures. Accessibility features like ramps and elevators were considered adequate at both institutions, though Sam Jonah Library respondents were more satisfied. Regarding specialized collections and archives, Sam Jonah Library respondents expressed greater

satisfaction, highlighting the institution's ability to meet diverse research needs. In contrast, John Kofi Borsah Library respondents suggested room for expansion in this area. Overall, the study underscores the need for improvements at John Kofi Borsah Library to enhance study spaces, accessibility features, and digital infrastructure, aligning with inclusive library design principles.

6.2.3. Specialized Library Service and Resources of the Academic Library

The study analyzed specialized services in academic libraries concerning SDG4, emphasizing the need for resource-rich, tailored support to promote equitable access to quality education. Findings revealed disparities in resource allocation between Sam Jonah Library and John Kofi Borsah Library, with Sam Jonah Library offering better-resourced services and higher user satisfaction. In contrast, John Kofi Borsah Library faced challenges in providing specialized resources, highlighting the need for further investment to enhance inclusivity. A key concern at both institutions was the lack of trained personnel to support students with special needs, limiting the effective use of assistive technologies. While some Sam Jonah Library respondents acknowledged the presence of specialized staff, confidence was lower at John Kofi Borsah Library, reflecting gaps in resource availability. These findings contrast with studies indicating that well-trained library personnel significantly improve specialized service delivery.

Overall, the study underscores the importance of increased investment in resources, trained staff, and assistive technologies to strengthen library services and support inclusive education, particularly at John Kofi Borsah Library. Addressing these

deficiencies is essential for achieving SDG4 and ensuring equitable access to academic resources.

6.2.4. Skills and Competencies of Academic Library Staff

The study assessed the skills and competencies of librarians in supporting SDG 4, focusing on user confidence in the availability of qualified staff at Sam Jonah Library and John Kofi Borsah Library. Respondents at Sam Jonah Library expressed significantly higher confidence in their library staff's qualifications compared to those at John Kofi Borsah Library, where confidence levels were notably lower.

Overall, the majority of respondents from both institutions trusted that their libraries had qualified personnel to provide quality information services. However, there was a clear variation in the degree of confidence, with Sam Jonah Library users demonstrating a stronger positive perception of staff competence than their John Kofi Borsah Library counterparts.

A small percentage of respondents at both universities expressed doubts about staff qualifications, with skepticism being more pronounced at John Kofi Borsah Library. While concerns were minimal at Sam Jonah Library, John Kofi Borsah Library showed a slightly higher level of uncertainty regarding the expertise of its library personnel. This suggests that while overall perceptions remain positive, John Kofi Borsah Library may need to strengthen efforts in enhancing staff qualifications or addressing users' concerns to improve confidence levels.

The study evaluated the computer knowledge and skills of librarians at Sam Jonah

Library and John Kofi Borsah Library to compare their computing literacy levels. A majority of respondents at both institutions demonstrated familiarity with computing, though Sam Jonah Library showed a slightly higher proportion of confident users.

Despite the general proficiency observed, a significant minority of respondents admitted to having limited computer knowledge, with Sam Jonah Library reporting a larger percentage of staff acknowledging gaps in their skills compared to John Kofi Borsah Library. This contrast suggests potential differences in institutional focus, academic background, or access to computing resources. Regarding information retrieval skills, most respondents from both libraries rated their abilities as "very good" or "good," indicating a strong baseline competency. A small fraction considered their skills "bad," while a modest percentage rated them as "excellent." Notably, John Kofi Borsah Library had a slightly higher percentage of respondents who rated their skills as "excellent," suggesting a stronger emphasis on information retrieval within their curriculum or work environment. In contrast, Sam Jonah Library showed a broader distribution of respondents across different skill levels.

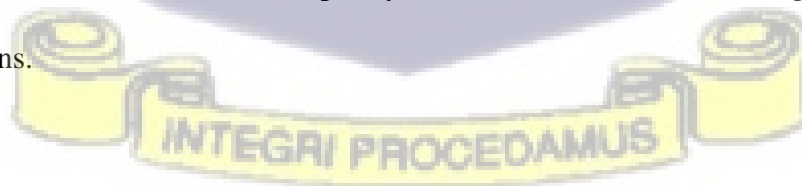
6.2.5. Established Institutional Policies of Academic Library

The study examined institutional policies supporting SDG 4, focusing on librarians' perceptions of policy implementation, staff awareness, communication, and adherence. Findings indicate that more respondents at Sam Jonah Library believe their library has a policy ensuring inclusive, high-quality education compared to John Kofi Borsah Library. However, uncertainty remains significant, especially at Sam Jonah Library, where a notable proportion of respondents were unsure about the policy's existence.

Disagreement regarding the presence of such a policy was minimal at both institutions.

Staff awareness of the policy is higher at Sam Jonah Library than at John Kofi Borsah Library, but a considerable number at both institutions remain neutral, indicating a gap in policy communication. Disagreement with the claim of staff awareness was slightly more pronounced at John Kofi Borsah Library. Similarly, communication of the policy to staff was more acknowledged at Sam Jonah Library, though both institutions showed limited engagement in this area. Adherence to the policy varied, with Sam Jonah Library showing higher agreement than John Kofi Borsah Library, though a significant number of respondents remained neutral at both institutions. Disagreement was relatively low, but John Kofi Borsah Library had a small proportion strongly disagreeing.

Regarding the acquisition of educational resources, Sam Jonah Library respondents were more likely to agree that it was prioritized, whereas John Kofi Borsah Library respondents were less convinced. Neutral responses were again prevalent, suggesting a lack of clarity or awareness regarding resource acquisition policies at both institutions. Overall, Sam Jonah Library respondents exhibited more confidence in the existence and implementation of policies supporting SDG 4 than their John Kofi Borsah Library counterparts. However, widespread neutrality and limited communication efforts highlight the need for clearer policy dissemination and staff engagement at both institutions.



6.2.6. Challenges Academic Librarians Face in Providing Access to Information

The study evaluated the obstacles academic libraries face in providing access to information for all students, comparing responses from Sam Jonah Library and John Kofi Borsah Library. Both institutions struggle with limited funding and resources, though John Kofi Borsah Library experiences these difficulties more frequently than Sam Jonah Library. Space and facility constraints are more pronounced at John Kofi Borsah Library, as is the shortage of qualified staff, indicating greater staffing challenges compared to Sam Jonah Library.

Technological advancements pose difficulties for both institutions, but John Kofi Borsah Library reports a higher impact. The inadequacy of books and materials is a particularly significant issue at John Kofi Borsah Library, with a much greater frequency of concern compared to Sam Jonah Library. Overall, while both universities face similar challenges, John Kofi Borsah Library is more affected across multiple areas, highlighting a greater need for investment in resources, staffing, and infrastructure improvements.

6.2.7. Strategies to Address Limited Access to Technology and Internet Connectivity

Both Sam Jonah Library and John Kofi Borsah Library acknowledge limited access to technology and internet connectivity as a significant barrier to information access. However, Sam Jonah Library demonstrates a stronger commitment to addressing this issue through various strategies. Sam Jonah Library places greater emphasis on establishing mobile libraries to reach underserved areas and is more proactive in

advocating partnerships with telecommunication companies to provide affordable internet services. Additionally, Sam Jonah Library prioritizes offering offline resources and tools at a higher rate than John Kofi Borsah Library. The university also leads in organizing digital literacy programs to equip users with essential internet skills, indicating a more active approach toward preparing students for the digital age.

6.3. Conclusion

In conclusion, this study sought to examine the factors influencing academic library services in contributing to the achievement of United Nations Sustainable Development Goal 4 (UNSDG 4) in Ghana, with a focus on Sam Jonah Library and John Kofi Borsah Library. The findings reveal notable differences between the two institutions across several areas, including infrastructure development, the availability and scope of specialized services, librarian competencies, institutional policy frameworks, and the various challenges encountered in providing equitable access to information.

Sam Jonah Library is distinguished by its stronger and more modern infrastructure, which includes better-equipped physical spaces, more extensive collections, and more reliable technological systems. Its range of specialized services, such as research support, information literacy training, and outreach programs, is also broader and more systematically delivered compared to John Kofi Borsah Library. Moreover, Sam Jonah Library librarians exhibit higher levels of professional confidence and competency, supported by regular capacity-building initiatives and opportunities for continuous professional development. Institutional policies at Sam Jonah Library further demonstrate a clearer alignment with UNSDG 4 goals, emphasizing inclusivity, digital access, and

community engagement. By contrast, while John Kofi Borsah Library has shown commendable efforts to support SDG 4, it faces greater limitations. Infrastructure remains relatively underdeveloped, specialized services are fewer and less consistent, and staff often lack access to the same level of training and development opportunities available at Sam Jonah Library. Institutional policies at John Kofi Borsah Library also tend to be less robust, affecting the strategic direction and operational effectiveness of the library in advancing educational access.

Both institutions confront common challenges such as limited funding, inadequate resources, and persistent technological barriers. However, these challenges are significantly more pronounced at John Kofi Borsah Library, where budgetary constraints and outdated systems hinder the delivery of modern library services. Notably, Sam Jonah Library has adopted more proactive and innovative strategies to mitigate these obstacles. Efforts such as expanding campus-wide internet access, establishing digital literacy programs, integrating emerging technologies, and fostering partnerships with external stakeholders have helped to strengthen Sam Jonah Library's ability to support UNSDG 4 more effectively.

Overall, the study highlights the crucial role that strategic investment in infrastructure, staff development, policy enhancement, and technological innovation plays in enabling academic libraries to contribute meaningfully to the achievement of quality education for all, as envisioned in UNSDG

4. Future efforts to strengthen library services, particularly in institutions facing greater constraints like John Kofi Borsah Library, will be essential to ensuring more equitable

educational outcomes across Ghana's higher education landscape.

6.4. Recommendations

In light of the study's results, the following suggestions have been put forth to address the factors influencing academic library services in attaining SDG 4 in Ghana. These recommendations center on aspects such as the supporting infrastructure for library services, the availability of specialized services, the proficiency of librarians, established institutional policies, and the challenges faced by academic librarians.

6.4.1. Provision of More Inclusive Infrastructure for the Library

The following strategies are recommended to address major infrastructure gaps at John Kofi Borsah Library:

- Improve Way finding Systems at John Kofi Borsah Library
- John Kofi Borsah Library should install clearer signage and navigation aids to enhance library accessibility. This will help users locate resources more efficiently and increase satisfaction.

Upgrade Secure Storage Facilities

- The library at John Kofi Borsah Library needs better personal storage options to match Sam Jonah Library's standards. Secure storage builds user confidence and supports a safer library environment.

Enhance ICT and Assistive Technologies

- John Kofi Borsah Library should invest in reliable internet and assistive tools to

support inclusive and modern learning. This aligns with SDG 4 goals on equitable access to quality education.

6.4.2. Improve Specialized Resources and Services and the Engagement of More Qualified Library Staff

Strengthen Specialized Staff Training Programs

- At Sam Jonah Library, 22 (42.3%) of respondents reported a lack of trained staff, indicating a need to improve support for students with special needs.
- Enhance Communication and Visibility of Specialized Services
- Many Sam Jonah Library staff rated services as only “moderately resourced,” suggesting better promotion could increase awareness and usage.
- Invest in Specialized Resources and Service Infrastructure
- At John Kofi Borsah Library, lower satisfaction and a 7(13.5%) “bad” rating show critical gaps in academic support and service resourcing.
- Recruit and Train Staff to Support Students with Special Needs
- Only 5 (9.6%) of John Kofi Borsah Library respondents confirmed trained personnel, underscoring the need to build inclusive service capacity.

6.4.3. Enhancing the Skills and Competencies of Library Staff

- Standardized Specialized Service Delivery at John Kofi Borsah Library
- John Kofi Borsah Library respondents provided the most varied service ratings, including the only “bad” responses, emphasizing the importance of improving and standardizing the quality of specialized library services to support SDG 4.
- Enhance Staff Recruitment and Professional Development at John Kofi Borsah

Library

- Only 17 (32.7%) of John Kofi Borsah Library respondents expressed confidence in staff qualifications, indicating a pressing need for the university to recruit more qualified personnel and invest in ongoing professional development.
- Sam Jonah Library should address gaps in computing literacy among library staff.
- Although Sam Jonah Library performed well overall, 12 (23.5%) of its respondents reported limited computing knowledge, indicating a need for targeted ICT skills development.

6.4.4. Establishment of Policies for SDG 4

Staff Orientation on Inclusive Policy:

- Many John Kofi Borsah Library staff showed uncertainty about the library's inclusive education policy. Orientation sessions will improve awareness and clarify their role in policy implementation.

Improve Policy Communication:

- Making policies more visible and accessible will reduce confusion and increase staff engagement with institutional goals.

6.4.5. Enhancement of Equal Access to Information

- Both Sam Jonah Library and John Kofi Borsah Library should increase investment in digital infrastructure and technology training.
- The challenge of “difficulty in keeping up with technological advancements,” reported by respondents at both universities, emphasizes the need for improved

ICT resources and staff development to ensure modern, efficient library services.

Partner for Better Library Services:

- Academic libraries, especially at John Kofi Borsah Library, should partner with government bodies, NGOs, and global library networks to gain funding, technology, and staff training support to help reduce resource and staffing challenges.

6.5. Areas for further studies

- Assessing User Perspectives on Academic Library Services and Their Role in Achieving Sustainable Development Goal 4 in Ghana.
- Digital Transformation and the Attainment of SDG 4: Evaluating the Impact of Technology Integration in Ghanaian Academic Libraries.
- The Influence of Library Policy Frameworks on Inclusive and Equitable Access to Information in Ghanaian Higher Education Institutions
- Exploring the Relationship Between Librarians' Professional Competencies and the Provision of Quality Education Services Under SDG 4
- Sustainable Funding Strategies for Academic Libraries in Ghana: Implications for Achieving Sustainable Development Goal 4

REFERENCES

- Abata-Ebire, B. A. (2018). "Achieving sustainable development goals (SDGs) in Nigeria: the roles of libraries". *International Journal of Applied Technologies in Library and Information Management*, Vol. 4 No. 2, pp. 89-95.
- Abubakar, L., & Saka, K. A. (2021). "Relationships among ICT Training, Skills Acquisition, Use and Job Performance of Library Personnel in Universities in North-West Nigeria". *Library Philosophy and Practice (e-journal 4917)*.
- Acheampong, E., & Dei, D. G. J. (2020). Investigation into the Challenges Associated with the Delivery of Library Services on Mobile Technology Platform. *IAFOR Journal of Literature & Librarianship*, 9(1).
- Adegoke, K. A. (2019). Marketing of library and information services in university libraries: A case study of Usmanu Danfodiyo University Library, Sokoto-Nigeria. *Intellectual Property Rights: Open Access*, 3(2), 1–5. <https://doi.org/10.4172/2375-4516.1000143>
- Adekoya, C. O., Fasae, J. K., & Alade, A. V. (2024). Academic libraries, ICT use and sustainable higher education development. *Information Discovery and Delivery*, 52(1), 1-10. 001- 008.
- Adeniran, P. (2020). User satisfaction with academic libraries services: Academic staff and students' perspectives. *African Journal of Library and Information Science*, 6(3), 1–8. Retrieved from <http://www.internationalscholarsjournals.org>
- Adu-Sarkodee, R., Asante, E., & Akussah, M. (2020). Income generation: An alternative source of funding for academic libraries in Ghana: Koforidua Technical University Library in perspective. *IJRDO - Journal of Social Science and*

Humanities Research.

- Ahlin, E. M. (2019). *Semi-structured Interviews with Expert Practitioners: Their Validity and significant contribution to translational research*. New York: SAGE publications.
- Ahmed, S., & Sheikh, A. (2021). "Information and communication technology skills among library and information science professionals: A predictor of enhanced library services". *Journal of Librarianship and Information Science*, 53(3), 444-453.
- Ajani, Y. A., Tella, A., Salawu, K. Y., & Abdullahi, F. (2022). Perspectives of librarians on awareness and readiness of academic libraries to integrate artificial intelligence for library operations and services in Nigeria. *Internet Reference Services Quarterly*, 26(4), 213-230.
- Akakpo, M. Gameli (2024) "Skilled for the Future: Information Literacy for AI Use by University Students in Africa and the Role of Librarians", *Internet Reference Services Quarterly*, 28:1, 19-26, DOI: 10.1080/10875301.2023.2280566
- Alsadah, A., van Merode, T., Alshammari, R., & Kleijnen, J. (2020). A systematic literature review looking for the definition of treatment burden. *Heliyon*, 6(4).
- Ampiah, J.G. and Adu-Yeboah, C. (2009), "Mapping the incidence of school dropouts: a case study of communities in Northern Ghana", *Comparative Education*, Vol. 45 No. 2, pp. 219-232
- Ankrah, E. (2014). *[Unpublished doctoral dissertation]*. University of Ghana, Ghana, West Africa.

- Ankrah, E., Agbodza, R., & Atuase, D. (2019). Library management systems in public academic libraries in Ghana: Situations and challenges. *Journal of Information Science, Systems and Technology*, 2, 22-41.
- Anyim, W. O., & Mole, A. J. C. (2021). "Management control system for effective job performance among librarians in federal and state university libraries: Evidence from south east Nigeria". *International Journal of Creative Business and Management*, 1(1), 80-95.
- Arbale, H., & Mutisya, D. N. (2023). Book Review:" Research Methods for Business Students" by Mark NK Saunders, Philip Lewis, and Adrian Thornhill (Pearson Education, 2019). *African Quarterly Social Science Review*, 1(2), 8-21.
- Arhin, D., & Opoku, B. W. (2020). A Meta-Analysis on Effects of Mastery Learning Strategy (MLS) on Academic Achievements of Learners. *International Journal of Research and Innovation in Social Science*, IV, 102-106.
- Ary, D., Jacobs, L. C., Sorensen, C. K., & Walker, D. A. (2019). Introduction to research in education. *Cengage Learning*.
- Ashiq, M., Rehman, S. U., & Mujtaba, G. (2021). "Future challenges and emerging role of academic libraries in Pakistan": A phenomenology approach. *Information Development*, 37(1), 158- 173.
- Atanda, A. D., Owolabi, K. A., & Ugbala, C. P. (2021). "Professional competence and attitudes of library personnel towards digital services in selected university libraries in Nigeria". *Digital Library Perspectives*, 37(3), 209-222.

- Atta-Obeng, L. and Dadzie, P.S. (2020), “Promoting sustainable development goal 4: the role of academic libraries in Ghana”, *International Information and Library Review*, Vol. 52 No. 3, pp. 177-192.
- Awanta, E. K., & Asiedu-Addo, S. K. (2020). *Essential statistical techniques in research for universities, college and research institutions*. Salt & Light Publication.
- Awanta, E. K., & Asiedu-Addo, S. K. (2020). *Essential statistical techniques in research for*
- Awodoyin, A. F., & Ojo, O. (2021). Sustainable development goals attainment: Examining librarians’ awareness and perception in selected university libraries in Ogun State, Nigeria. *Samaru Journal of Information Studies*, 21(1).
- Awogbami, P. A., Opele, J. K., & Adeoye, R. A. (2021). “Staff development program and service delivery in academic library: Implication for knowledge management in the University of Lagos, Nigeria”. *Global Journal of Applied, Management and Social Sciences (GOJAMSS)*, 21, 273-279.
- Ayoung, Daniel Azerikatoa; Baada, Frederic Naazi-Ale and Baayel Patrick (2022). Access to library services and facilities by persons with disability: Insights from academic libraries in Ghana. Volume 53, Issue 1
<https://doi.org/10.1177/0961000620917723>
- Babbie, E. R. (2021). *The practice of social research* (15th ed.). Cengage Learning.
- Bangani, S. (2024). Academic libraries’ support for quality education through community engagement. *Information Development*, 40(4), 590-601.
- Baro, E. E., & Zuokemefa, T. (2011). “Information literacy programmes in Nigeria: a survey of 36 university libraries”. *New Library World*, 112(11/12), 549-565.

- Beecher, A. B. (2019). “Wayfinding tools in public library buildings: A multiple case study. University of North Texas”.
- Berg, B. L. (2009). *Qualitative research methods for the social sciences* (7th ed.). Pearson.
- Bharti, K. L., & Verma, S. (2021). Use of emerging technologies in the university libraries: A study of review of literature. *Library Philosophy and Practice (e-Journal)*, . <https://digitalcommons.unl.edu/libphilprac/6134>
- Blossfeld, H.-P., Kilpi-Jakonen, E., Vono de Vilhena, D., & Buchholz, S. (. (2014).). *In Adult learning in modern societies: An international comparison from a life-course perspective*. Cheltenham: Edward Elgar.
- Boateng, A., Ameyaw, C., & Mensah, S. (2022). Assessment of systematic risk management practices on building construction projects in
- Boeren, E. (2019). Understanding Sustainable Development Goal (SDG) 4 on “quality education.” *International Review of Education*, 65(2), 277–295.
- Borbély, M. (2022, June). “Public library digital competency mapping 2019: a survey on digital skills of library professionals with different qualifications”. In *Frontiers in Education* (Vol.7, p. 909502). Frontiers Media SA.
- Braman, S. (2021). Ecstasy and entropy: information policy in a punctuated case. In *Research Handbook on Information Policy* (pp. 40-55). Edward Elgar Publishing.
- Canals, L. (2017). Instruments for gathering data. Research-publishing.net. <http://research-publishing.net>
- Charney M, Hauke P (2020) Global action on the urgency of climate change: Academic and research libraries’ contributions. *College & Research Libraries News* 81:

114–117.

- Chewe, P., & Imasiku, I. (2018). The centrality of libraries in the actualization of sustainable development goals in Zambia. *European Journal of Social Sciences Studies*, Vol. 3 No. 4, 1-13.
- Chigwada, J. P. (2021). Opportunities and challenges offered by the effects of the COVID-19 pandemic on academic libraries. *Handbook of research on library response to the COVID-19 pandemic*, 342-357.
- Choy, F.C. and Goh, S.N. (2019), "A framework for planning academic library spaces", *Library Management*, Vol. 37 No. 1/2, pp. 13-28. <https://doi.org/10.1108/LM-01-2016-0001>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
- Cooper, H. (2010). *Applied social research methods series: Vol. 2. Research synthesis and metanalysis*. A step-by-step approach. 4th ed. Los Angeles: SAGE Publications.
- Cooper, R. (2019). Design research—Its 50-year transformation. *Design Studies*, 65, 6-17
- Cowell, J. (2022). *Managing a library service through crisis*. *Library Management*. <https://doi.org/10.1108/LM-10-2020-0158>, Vol. 42 No. 4/5, pp. 250-255.
- Cox, A. (2024). Academic librarian competencies and artificial intelligence. *South African Journal of Libraries and Information Science*, 90(2), 1-9.
- Cox, J. (2021). "The higher education environment driving academic library strategy: A political economic, social and technological (PEST) analysis". *The Journal of Academic Librarianship*, 47(1), 102219

- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approach* (4th ed.). SAGE Publications.
- Creswell, J. W. (2019). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (6th ed.). Pearson.
- Dadzie, P. S. (2014). Impact of electronic resources and usage in academic libraries in Ghana: Evidence from Koforidua Polytechnic & All Nations University College, Ghana. *Journal of Education and Practice*, 5(33), 1–7.
<https://files.eric.ed.gov/fulltext/EJ1083497.pdf>
- De Villiers, G., Costandius, E., Brazier, K., & Perold-Bull, K. (2022). “Towards linguistic inclusivity: An exploration of the wayfinding system at Stellenbosch University, South Africa. *Interdisciplinary Journal of Signage and Wayfinding*, 6(2), 31-42.
- Decker, E. N. (2020). The X-factor in academic libraries: the demand for soft skills in library employees. *College & Undergraduate Libraries*, 27(1), 17-31.
- Dei, D.-G. J., & Asante, F. Y. (2022). *Role of academic libraries in the achievement of quality education as a sustainable development goal*. Retrieved from <https://www.emerald.com/insight/0143-5124.htm>
- Dillon, S., Armstrong, E., Goudy, L., Reynolds, H., & Scurry, S. (2021). Improving special education service delivery through interdisciplinary collaboration. *Teaching Exceptional Children*, 54(1), 36-43.
- Dzandza, P. E. (2017). The preparedness of Ghana’s school libraries towards the achievements of the SDGS: a study of senior high schools in the AKWAPIM North district. *Ghana Library Journal*, 27(1), 17-35.

- Ebong, M., Ogwo, U., & Nwachukwu, V. N. (2022). Continuing professional development as a medium in the empowerment of library and information science educators for effective knowledge delivery and sustainable education in South East, Nigeria. *Library Philosophy and Practice*, 1-21.
- Edekor, L. K., Kumah, M. S., & Abotoworo, S. (2023). Estimating the percentage mediation of ICT utilisation on information literacy and mathematics performance in colleges of education, Ghana. *OA Journal of Applied Science and Technology*.
- Enweani, U. V., & Eke, C. C. (2020). Challenges to library and information services (LIS) delivery in the 21st century: the situation in three academic libraries in Imo State, Nigeria. *Library Philosophy and Practice*, 1.
- Eze Asogwa, B. (2022), "Libraries in the information age: a measure of performance, competencies and constraints in academic libraries in Nigerian universities", *The Electronic Library*, Vol. 32 No. 5, pp. 603-621, doi: 10.1108/EL-07-2012-0097
- Ezeani, C., Eke, H. and Ugwu, F.N. (2023), "Professionalism in library and information science: an examination of current trends, needs, and opportunities in academic libraries in southeast Nigeria", in *Electron. Libr.* Presented at the 50th National Conference and Annual General Meeting, Nigerian Library Association, doi: 10.1108/EL-10-2012- 0134.
- Farid, G., Warraich, N. F., & Iftikhar, S. (2023). Digital information security management policy in academic libraries: A systematic review (2010–2022). *Journal of Information Science*, 01655515231160026.
- Fisher, W. S. (2021). "Core competencies for the acquisition's librarian", *Library Acquisition: Practice & Theory*. Vol. 25 No. 2, 179-90.

- Fombad, M. C. (2024). Reexamining Knowledge Management Education in Higher Institutions of Learning in Africa: A South African Perspective. *Library Trends*, 72(2), 317-337.
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2018). *How to design and evaluate research in education* (8th ed.). McGraw-Hill Education.
- Fritz, A. (2018). From collection silos to digital content hubs: Digital project management in special collections and university archives. In *Project Management in the Library Workplace* (pp. 187-198). Emerald Publishing Limited.
- Gaganpreet, S. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, 3(7), 749–752.
- Garcia-Febo, L. (2017). Advancing the United Nations Sustainable Development Goals: Experiences of international academic and research libraries.
- Giangreco, M. F., & Suter, J. C. (2015). Precarious or purposeful? Proactively building inclusive special education service delivery on solid ground. *Inclusion*, 3(3), 112-131.
- Grgic, I. H., & Zivkovic, D. (2022). *Core competencies for academic reference librarians in Croatia*. *Qualitative and Quantitative Methods in Libraries*, 3: 247 – 256.
- Groenez, S., Desmedt, E., & Nicaise, I. (2017). Participation in lifelong learning in the EU-15: The role of macro-level determinants. *Paper presented at the European Conference for Education Research (ECER)*, held 19–21 September. Ghent, Belgium.

- Hamad, F., Al-Fadal, M. and Shehata, A. M. K (2023), "The level of digital competencies for the provision of smart information service at academic libraries in Jordan", *Global Knowledge, Memory and Communication*, Vol. 73 No. 4/5, pp614 633. <https://doi.org/10.1108/GKMC-06-2022-013>
- Hart, C. (1998). *Doing a literature review: Releasing the social science research imagination*. SAGE Publications.
- Hill H (2022) Disability and accessibility in the library and information science literature: A content analysis. *Library and Information Science Research* 35(2): 137–142.
- Hirose, M., & Creswell, J. W. (2023). Applying core quality criteria of mixed methods research to an empirical study. *Journal of Mixed Methods Research*, 17(1), 12-28.
- Hotsonyame, G. N. (2023). Significance of academic libraries in recent times: A review of articles. <https://www.researchgate.net/publication/372948230>
- Hussain, A., & Ismail, M. (2025). Factors Influencing the Adoption of Mobile Services Among Academic Librarians: Perceived Advantages and Barriers in Islamabad. *Journal of Library & Information Services in Distance Learning*, 1-21.
- Idiodi, E. O., & Urhiewhu, L. O. (2023). Library services for special users in Nigerian academic libraries. *Special Needs Education from the Lens of Interdisciplinary Dialogue: A Festschrift in Honour of Prof. Emeka D. Ozoji*, 2(1).
- IFLA. (2020). *Statement on Libraries and Development*. <http://www.ifla.org/publications/ifla-statement-on-libraries-and-development>.
- Imoro, O., & Saurombe, N. (2023). *Institutional repository infrastructure: a survey of Ghanaian public universities*. <https://doi.org/10.1108/CC-11-2022-0038>.

- Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4. (2019). Available at: http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf (accessed 20 August 2019).
- Iroaganachi, M. A., & Izuagbe, R. (2018). Access to online databases: predicate for faculty research output. *Library Philosophy and Practice*, 1-21
- Iwhiwhu, B., & Okorodudu, P. (2020). Public library information resources, facilities and services: user satisfaction with Edo State Central Library, Benin City, Nigeria. 747. [Online]. *Library Philosophy and Practice e-journal*), <http://digitalcommons.unl.edu/libphilprac/747/>.
- Izu, L. O., & Fombad, M. C. (2024). Knowledge sharing strategies for improved service provision in the academic library at Delta State University Abraka Nigeria. *New Review of Academic Librarianship*, 30(4), 320-344.
- Kaddu, S., Ssekitto, F., Nalunkuma, E., & Masenya, T. M. (2024). Beyond the stacks: Reimagining collection development at the Uganda institute of information and communication technology library to champion SDG 16. *Information Development*, 02666669241299038.
- Kari, S.U. (2004). *Use of Electroni Resources by Undergraduate Students at Perpustakaan tun Abdul Razak I*. Retrieved April 4, 2011 from <http://www.Docstoc.Com/...Use-Of-Electronic-Resources-by-by-undergraduate>
- Kart, Ayse and Kart Mehmet (2023). Academic and Social Effects of Inclusion on Students without Disabilities: A Review of the Literature.

<https://doi.org/10.3390/educsci11010016>

Katz, J.; Sokal, L.; Wu, A. (2020) Academic achievement of diverse K-12 students in inclusive 8(9). 43 No. 2, 101092.

Kautonen, H., & Gasparini, A. A. (2024). B-Wheel–Building AI competences in academic libraries. *The Journal of Academic Librarianship*, 50(4), 102886.

Khairuddin, K. N., Omar, Z., Krauss, S. E., & Ismail, I. A. (2018). A brief review of the history and philosophy of instrument development in the social sciences. *International Journal of Academic Research in Business and Social Sciences*, 8(9).

Kim, J. (2021), “Determining research data services maturity: the role of library leadership and stakeholder involvement”, *Library and Information Science Research*, Vol.

Kincheloe, J. L., & McLaren, P. (2005). Rethinking critical theory and qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (3rd ed., pp. 303– 342). SAGE Publications.

Kosciejew, M. (2020). Public libraries and the UN 2030 Agenda for Sustainable Development. *IFLA Journal*, 46(4), 328–346. <https://doi.org/10.1177/034003521989870>

Koteikor Baidoo, D. and Nwagwu, W.E. (2024), "User and service provider assessment of technology readiness of library commons in selected universities in Ghana", *Library*

Management, Vol. 45 No. 5, pp. 331-361. <https://doi.org/10.1108/LM-12-2023-0132>

- Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.). New Age International.
- Krieglstein, F., Beege, M., Rey, G. D., Ginns, P., Krell, M., & Schneider, S. (2022). A systematic meta-analysis of the reliability and validity of subjective cognitive load questionnaires in experimental multimedia learning research. *Educational Psychology Review*, 34, 2485–2541. <https://doi.org/10.1007/s10648-022-09683-4>
- Kumar, S., & Sanaman, G. (2015). Web challenges faced by blind and vision impaired users in libraries of Delhi: An Indian scenario. *The Electronic Library*, 33(2), 242-25
- Kwafoa, P. N. (2019). Visually impaired access to library services: The role of library infrastructure. *Library Philosophy and Practice*.
- Laporte, G., Aktas, E., Alumur, S. A., Archetti, C., Ayhan, H., ... Zhao, X. (2023). Operational research: Methods and applications. *Journal of the Operational Research Society*, 75(3), 423–617. <https://doi.org/10.1080/01605682.2023.2253852>
- Leal Filho, W., Shiel, C., Paco, A., Mifsud, M., Ávila, L., Brandli, L., . . . Caeiro, S. (2019a). “Sustainable development goals and sustainability teaching at universities: falling behind or getting ahead of the pack?”. *Journal of Cleaner Production*, Vol. 232, pp 285- 294.
- Leedy, P. D., & Ormrod, J. (2019). *Practical research: Planning and design* (12th ed.). Pearson.
- Ma LFH, Ko LY (2022) Supporting the sustainable development goals: The role of the Chinese University of Hong Kong Library. *The Journal of Academic Librarianship* 48(4):

102562.

Majidi, V., Saradj, F. M., & Khanmohammadi, M. A. (2023). Explaining the Quality of the Architectural Space in Academic Libraries Based on User Preferences. *The Monthly Scientific Journal of Bagh-e Nazar*, 20(122), 29-52.

Martzoukou, K. (2021). Academic libraries in COVID-19: a renewed mission for digital literacy. *Library management*, 42(4/5), 266-276.

Maruping, L. (2024). Metadata creation and management in the preservation of digital information in selected libraries in Cape Town

Mashroofa, M. M. (2022). Contribution of academic libraries towards sustainable development goals. In *Proceedings*, 51–58.

Mathiasson, M. H., & Jochumsen, H. (2022). Libraries, sustainability and sustainable development: a review of the research literature. *Journal of Documentation*, 78(6), 1278- 1304.

McKinney, J., & Abbott, M. L. (2020). *Understanding and applying research design*. John Wiley & Sons.

Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent social sciences*, 5(1), 1653531.

Michael, F., & Salleh, S. (2021). “National sustainability planning in Malaysia”. In *The Palgrave Handbook of Global Sustainability* (pp. 1-20.). Cham: Springer International Publishing.

Middleton, F.(2019). Reliability vs validity: What’s the difference? *Scribbr*. <https://www.scribbr.com/methodology/reliability-vs-validity>

Missingham, R. (2021). A new lens for evaluation – Assessing academic libraries using the UN Sustainable Development Goals. *Journal of Library Administration*,

61(3), 293–308. <https://doi.org/10.1080/01930826.2021.1883376>

Moonasar, Anushie. (2024) Continuing professional development and the changing landscape of academic libraries/. <https://www.emerald.com/insight/0143-5124.htm>.

Mushi, Carren; Mwantimwa, Kelefa & Wema, Evans. (2024) Requisite Information and Communication Technology Skills and Knowledge for Fostering Embedded Librarianship Practices in Tanzania. *New Review of Academic Librarianship*.

Nahotko, M., Zych, M., Januszko-Szakiel, A. and Jaskowska, M. (2023), “Big data-driven investigation into the maturity of library research data services (RDS)”, *The Journal of Academic Librarianship*, Vol. 49 No. 1, 102646.

Neuman, L. (2016). *The right of access to information: Exploring gender inequities*.

Nhamo, G., & Malan, M. (2022). Role of libraries in promoting the SDGs: A focus on the University of South Africa. In *Sustainable Development Goals for Society* (Vol. 1).

Nicholson, D. R. (2022) 14 Copyright Reform in South Africa from a Librarian’s Perspective: A Case Study Approach. <https://doi.org/10.1515/9783110732009-016>

Nworie, J., Oziegbe, O., Nworie, H., & Irunegbo, G. (2018). Exploring the roles of libraries in using digital platforms to achieve quality education for sustainable development in Nigeria. *Information Impact: Journal of Information and Knowledge Management*, 9(1), 89–99. <https://doi.org/10.4314/ijikm.v9i1.9>

Ohegbu, A. N. (2008). Globalization and national information policy in Nigeria. *Library Philosophy and Practice* Retrieved June 1, 2010, from

<http://unllib.unl.edu/LPP/lpp2008.htm>.

Okoro, C., Omeluzor, S. U., & Bamidele, I. (2014). Effect of brain drain (human capital flight) of librarians on service delivery in some selected Nigerian universities. *Sage Open*, 1- 11.

Okunlaya, R. O., Syed Abdullah, N., & Alias, R. A. (2022). “Artificial intelligence (AI) library services innovative conceptual framework for the digital transformation of university education”. *Library Hi Tech*, 40(6), 1869-1892.

Okwu, E., Olise, C., & Umahi, B. O. (2024). “Adoption of digital technologies and librarians’ service delivery in federal university libraries in south-east, Nigeria”. *BW Academic Journal*.

Okwu, Emmanuel; Oporum, Augustine Chineme. (2021), “Inadequate Library Services”: *A Challenge to 21st Century Education in a Developing Economy. British Journal of Library and Information Management* 1(1), 39-44. DOI: 10.52589/BJLIM-NJ8CWGZF.

Olawumi O. Sadare, Kapil Moothil & Michael O. Daramola (2022) The Role of the Library in Actualising United Nation Sustainable Development Goals in South Africa

Omar Abbas M, Henry L. Mambo, Athumani Samzugib and Zuhura H. Ali (2024) Assessing the Capacity of Public and School Libraries toward the Attainment of Sustainable Development Goal 4 *International Information & Library Review* 2024, Vol. 56, No 1, 19-37. <https://doi.org/10.1080/10572317.2023.2225695>

Omeluzor, S. U. (2017). *Library Infrastructure, Organizational Culture and Mentoring as Predictors of Turnover Intentions of Academic Librarians in South-South*

and South- East, Nigeria, is an unpublished thesis submitted to the Department of Information Resources Management Resources Management, Babcock University. Omisore, A.G., Babarinde, G.M., Bakare, D.P. and Asekun-Olarinmoye, E.O.(2017), “Awareness and knowledge of the sustainable development goals in a University Community in Southwestern Nigeria”, *Ethiopian Journal of Health Sciences*, Vol. 27 No. 6, pp. 669-676.

Omona, W. (2020). The roles of library and information services in achieving Sustainable Development Goals (SDGs) in Uganda. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/4018>

Onoyeyan, G. A. (2014). A literature review of the role of libraries in the provision of information towards the attainment of the United Nations Millennium Development Goals (MDGs) in Nigeria. *Library Philosophy and Practice*, 1–14.

Onyancha, S., Ondigi, B. A., & Mobegi, F. (2021). Headteachers’ management challenges affecting pupils’ academic performance in public primary schools In Kenyena Sub- County, Kenya. *International Academic Journal of Social Sciences and Education*, 2(2), 354-380.

Onyimbi, J. R., Koeva, M., & Flacke, J. (2018). Public participation using 3D web-based city models: Opportunities for e-participation in Kisumu, Kenya. *ISPRS International Journal of Geo-Information*, 7(12), 454.

Opare-Adzobu, J., Afful-Arthur, P., Layea, K., & Filson, C. (2014). *Libraries*. In Entuah Mensah, C. (Ed). *In information literacy skills: A course Book* (pp. 17-29). Cape Coast: The Library Publication Committee.

Owusu-Ansah, S. (2021). Reshaping strategies of university libraries in Ghana towards

sustainable development goal. <http://ugspace.ug.edu.gh:8080/handle/123456789/40336>

- Oyemike, V. B., & C. C. (2019). Provision of target-specific library services for the realization of Sustainable Development Goals (SDGs) in developing countries. *Information Impact: Journal of Information and Knowledge Management*, 10(1), 74–82. <https://doi.org/10.4314/ijikm.v10i1.7>
- Parbie, S. K., Phuti, R. M., & Barfi, K. A. (2021). Users' Perception of Librarians' Perception of Library Facilities: Evidence from the. *Library Philosophy and Practice* (e-journal), 6- 7.
- Parmar, S. (2019). Role of libraries in higher education system in India in the 21st century. *Library Philosophy and Practice* (e-journal), 2993. <https://digitalcommons.unl.edu/libphilprac/2993>
- Petropoulos, F., Laporte, G., Aktas, E., Alumur, S. A., Archetti, C., Ayhan, H., ... Zhao, X. (2023). Operational Research: methods and applications. *Journal of the Operational Research Society*, 75(3), 423–617. <https://doi.org/10.1080/01605682.2023.2253852>
- Phukubje J, Ngoepe M (2023) Convenience and accessibility of library services to students with disabilities at the University of Limpopo in South Africa. *Journal of Librarianship and Information Science* 49(2): 180–190.
- Psacharopoulos, G., & Patrinos, H. (2018). Returns to investment in education: A decennial Review of the global literature. *Education Economics*, 26(5), 445–458.
- A radical proposal: Evidence- based SDG 4 discussions.
- Rajak, K. K., & Gupta, L. D. P. TEACHERS PREPARATION FOR INCLUSIVE PRACTICES IN CLASSROOM: A SWOC ANALYSIS.

- Rajput, D., Wang, W.-J., & Chen, C.-C. (2023). Evaluation of a decided sample size in machine learning applications. *BMC Bioinformatics*, 24, Article 48. <https://doi.org/10.1186/s12859-023-05156-9>
- Rani, R., & Khan, J. (2022). Awareness and use of electronic resource by visually impaired students at Delhi university.
- Rappleye, J., Silova, I., Komatsu, H., & Takayama, K. (2024). A radical proposal: Evidence-based SDG 4 discussions. *International Journal of Educational Development*, 104, 102930.
- Rehman, S. U. (2022). Academic Library Leaders' Challenges, Difficulties and Skills: An Analysis of Common Experiences. *LIBRI*, 68(4), 301–313.
- Reitz, J. M. (2018). Academic library. In *Online dictionary for library and information science*.
Libraries Unlimited. http://www.abc-clio.com/ODLIS/odlis_A.aspx
- Rubin, R. E., & Rubin, R. G. (2020). *Foundations of library and information science*. American Library Association.
- Ryan, G. (2018). Introduction to positivism, interpretivism and critical theory. *Nurse Researcher*, 25(4), 41–49. <https://doi.org/10.7748/nr.2018.e1466>
- Sahabi, M. K., & Otobo, E. E. (2021). Academic library and challenges of service delivery in Nigerian Universities in the digital era. *Information Impact: Journal of Information and Knowledge Management*, 12(2), 51-61.
- Salawu, R. O., & Shamsuddin, A. O. B. (2023). Theoretical and conceptual frameworks in research: Conceptual clarification. *European Chemical Bulletin*, 12(12), 2103–2117. <https://doi.org/10.48047/ecb/2023.12.12.139>
- Saleem, A., Shabana-Tabusum, S. Z., & Sadik Batcha, M. (2020). Application and uses

of information communication technology (ICT) in academic libraries: an overview. *International Journal of Library Science*, 2 (3), 49 -52.

Salmi, J., & D'Addio, A. (2021). "Policies for achieving inclusion in higher education". *Policy Reviews in Higher Education*, 5(1), 47-72.

Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.

Shah, N. U., Naeem, S. B., & Bhatti, R. (2022). "Digital data sets management in university libraries: challenges and opportunities". *Global Knowledge, Memory and Communication*, 74(1/2), 446-462.

Shatona, M. N., & Mwiiyale, J. M. (2024). Exploring the Library and Information Science Research Landscape in Namibia: A Decennial Reflection (2014

Siakwah, P., Musavengane, R., & Leonard, L. (2020). *Tourism governance and attainment of the sustainable development goals in Africa, Tourism Planning and Development*. pp. Vol. 17 No. 4, p. 383, 355

Sinha, P., & Ugwulebo, J. E. (2024). Digital literacy skills among African library and information science professionals—an exploratory study. *Global Knowledge, Memory and Communication*, 73(4/5), 521-537.

Solomon-Uwakwe, B. M., & Aniche, C. N. (2023) *Information needs and seeking behaviour of lawyers based on gender and location in Imo State*.

Sturmberg, J. P. (2021). Changing the paradigm of research. *Journal of Evaluation in Clinical Practice*. <https://doi.org/10.1111/jep.13828>

Su, W., Lu, Z., Sun, Y., & Liu, G. (2022). "Let eyes tell: experimental research on university library signage system and users' wayfinding behavior". *Library Hi*

Tech, 40(1), 198-221.

Sunday, I. I., & Shehu, A. B. (2020). *Mobile technologies in Nigerian academic based library services: Application, challenges and prospects*. GRIN Verlag. <https://www.grin.com/document/539471>(open in a new window)

Sustainable Development Solutions Network (2020) Accelerating education for the SDGs in universities: A guide for universities, colleges, and tertiary and higher education institutions. *Report, Sustainable Development Solutions Network, New York*. Available at: <https://resources.unsdsn.org/accelerating-education-for-the-sdgs-in-universities-a-guide-for-universities-colleges-and-tertiary-and-higher-education-institutions>

Suzhou Second Library's Experiences with "A Library within a Library" Model. *International Journal of Librarianship*, <https://doi.org/10.23974/ijol.2024.vol9.3>.

Tella, A., Ajani, Y. A., & Ailaku, U. V. (2023). "Libraries in the metaverse: the need for meta literacy for digital librarians and digital age library users". *Library Hi Tech News*, 40(8), 14- 18.

Thorpe C, Gunton L (2022) Assessing the United Nations' Sustainable Development Goals in academic libraries. *Journal of Librarianship and Information Science* 54: 208–215.

Tsang, A. L. Y., & Chiu, D. K. (2022). "Effectiveness of virtual reference services in academic libraries: A qualitative study based on the 5E learning model". *The Journal of Academic Librarianship*, 48(4), 102533.

Turin, T. C., Chowdhury, N., & Raihan, M. M. H. (2024). Decoding research: Philosophical pillars of research paradigms. *Bangabandhu Sheikh Mujib Medical*

University Journal, 17, e73249. <https://doi.org/10.3329/bsmmuj.v17i2.73249>

Ugwu, C. I., Ekere, J. N., & Onoh, C. (2021). Research paradigms and methodological choices in the research process. *Journal of Applied Information Science and Technology*, 14(2), Article 202.

Ullah, A., & Usman, M. (2023). "Role of libraries in ensuring quality education at higher education institutions: a perspective of Pakistan". *Inverge Journal of Social Sciences*, 2(4), 13-22.

Umoh, E. (2017). Information and Services Provision by Academic Libraries in Nigeria. *International Journal of Academic Libraries and Information Science*, 5(5): 153- 159.

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2021). *Sustainable Development Goal 4 and its targets. Building peace in the minds of men and women*. UNDP. (2023) *Breaking down gender biases: Shifting social norms towards gender equality*. https://www.undp.org/sites/g/files/zskgke326/files/202306/gсни202302pdf_0.pdf

United Nations. (2015). *Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development* (A/RES/71/313).

[https://unstats.un.org/sdgs/indicators/indicatorslist/#8203;:contentReference\[oaicite:1\]{index=1}](https://unstats.un.org/sdgs/indicators/indicatorslist/#8203;:contentReference[oaicite:1]{index=1})

United Nations. (2017). *Resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission about the 2030 Agenda for Sustainable*

Development(A/RES/71/313).

United Nations. (2019). *Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development*. Resolution adopted by the General Assembly on the work of the Statistical Commission.

universities, college and research institutions. Salt & Light Publication.

Vercelli, A. H. (2024). Libraries, access to information and artificial intelligences in Latin America and the Caribbean.

Wakwe Lawrence, Anthony, Ihebuzor, Noel , Onyema, Lawrence Damiete. (2020) Challenges Militating against Developing Countries Achieving SDG 4 on Targets: Nigeria as Case Study. Vol.11 No.7, July 2020

Walsh, B. and Rana, H. (2020), “Continuity of academic library services during the pandemic: the University of Toronto libraries' response”, *Journal of Scholarly Publishing*, Vol. 51 No. 4, pp. 237-245.

Webber, S. (2019). Competencies for information professionals. *Bulletin of the American Society for Information Science*, 25, 28–29

West, J. (2020). Assessing research quality. *Research Connections*.<https://www.researchconnections.org/content/childcare/understand/research-quality.html>

Wilkinson, D., & Birmingham, P. (2003). *Using research instruments: A guide for researchers*. Psychology Press.

William, F. K. A. (2024). Interpretivism or constructivism: Navigating research paradigms in social science research. *International Journal of Research*

Publications, 143(1), 134-138.

Williamson, L. D., & Bigman, C. A. (2018). A systematic review of medical mistrust measures. *Patient Education and Counseling, 101(10), 1786–1794.*

Yadav, A. K. (2022). “Key skills and competencies of LIS professionals in the digital library environment: a content analysis of job advertisements”. *Library Management, 43(1/2), 50- 65.*

Yoon HY, Kim SY (2021) A study of collection development policy to strengthen South Korea’s library services for persons with disabilities/Une étude des politiques de développement des collections pour renforcer les services en bibliothèque pour personeshandicapées en Corée du Sud. *Canadian Journal of Information and Library Science 40(2): 162–185.*

Yücel, G. (2021). “Libraries and accessibility: Istanbul public libraries case”. *ICONARP international journal of architecture and planning, 4(2), 81-95.*

Yusoff, M. S. B., Arifin, W. N., & Hadie, S. N. H. (2021). ABC of questionnaire development and validation for survey research. *Education in Medicine Journal, 13(1), 97–108.* <https://doi.org/10.21315/eimj2021.13.1.10>

Zhou, J. (2024). *Leveraging Specialized Resources to Develop Innovative Library*



APPENDIX 1

SCHOOL OF INFORMATION AND COMMUNICATION STUDIES DEPARTMENT
OF INFORMATION STUDIES
UNIVERSITY OF GHANA, LEGON

Factors Influencing Academic Library Services in Achieving Sustainable Development
Goal 4 in Ghana.

Questionnaire

Good morning / afternoon Sir/Madam,

I am Abdul-Razak Awudu, an MPhil Information Studies student of University of Ghana,
conducting research on the above topic. I would be very grateful if you could spare a few
moments (about 10 minutes) to complete the questionnaire to the best of your ability.
Your confidentiality is fully assured and the information you provide will be used for
academic purposes only.

Thank you for your time.

Yours sincerely,

.....

Student/Researcher



Please Tick [] as appropriate

Section A: Demographic Data

1. Gender: a) Male [] b) Female []
2. Current Department/Section/Unit:
 - a) Acquisition [] b) Cataloguing [] c) Readers Service []
 - d) Periodicals/ Serials [] e) Departmental Library [] f) E-Resource / ILLDD []
 - g) Special Collection [] h) Reprographic/ Bindery []
3. Highest Academic Qualification Attained:
 - a) Ph.D. [] b) MPhil/ MA/ M.Sc. [] c) Bachelors [] d) Diploma []
4. Institution you are working for:
 - a) University of Cape Coast []
 - b) Cape Coast Technical University []
5. Designation within the University Library:
 - a) Senior Member [] b) Senior Staff [] c) Junior Staff []
6. Length of service in the University Library:
 - a) Less than 5 years [] b) 6-10 years [] c) 11-15 years [] d) More than 15 years []

Section B: Available infrastructure that supports provision of library service.

7. To what extent do you agree with the following statements on the available infrastructure that supports provision of library service? (Please tick all that apply)

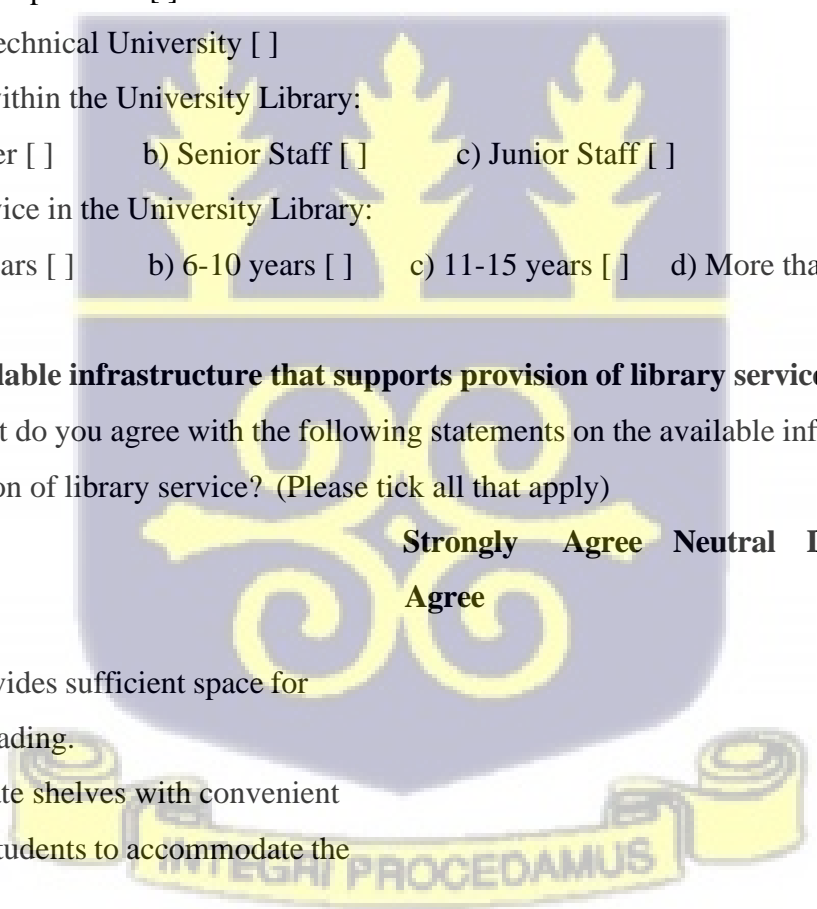
Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
-------------------	-----------------------	--------------	----------------	-----------------	--------------------------

The library provides sufficient space for studying and reading.

There is adequate shelves with convenient heights for all students to accommodate the collection.

The library offers printing, scanning, and photocopying facilities.

The library provides reliable internet access.



There is a designated areas for group study or meetings

The library offers assistive technologies for physically challenge people.

My library provides a secure area for storing personal belongings while using the library.

The library has location and way-finding systems for all students.

The library offers online resources and databases for research.

There are designated accessibility features such as ramps and elevators within the library building.

There are designated areas for specialized collections or archives within the library.

Section C: Specialized services and resources of the library.

8. How well is the library resourced to ensure quality education for all students?

Highly resourced [] Moderately resourced [] Less resourced [] Not resourced []

9. How would you rate the effectiveness of the current specialized services and resources in meeting the needs of all students?

Excellent [] Very good [] Good [] Bad []

10. Can you please mention some of the resources available in the library that contribute to the achievement of quality education?

.....
.....
.....
.....
.....

11. Are there trained personnel to provide services to students with special needs in your library?

Yes [] No []

12. If the answer to Q11 is “Yes” please how many are they?

- a) 1 [] b) 2 [] c) 3 [] d) 4 [] e) more than 5 []

13. Are the resources at the library aligned to the curriculum and programme of your institution?

- Yes [] No []

14. Can you kindly list the other resources that the library would need in order to provide better services to achieve quality education for all (SDG 4)?

.....

.....

.....

.....

.....

.....

.....

.....

.....

Section D: Skills and competences of library staff

15. Are the staff in the library well qualified and equipped to ensure provision of quality information to users of the library?

- Yes [] No []

16. Do you have the knowledge and skills in provision of services to the library users?

- Yes [] No []

17. If yes, which level do you belong to?

- Basic [] Intermediate [] Advance []

18. Do you have the skills and knowledge in use of computer and related technology?

- Yes [] No []

19. If yes, which level do you belong to?

- Basic [] Intermediate [] Advance []

20. How often does the library provide training on provision of services to staff of your library?

- Very often [] Often [] Once a while [] Not at all []

21. How often does the library provide training on the use of computer and other related technology to staff of your library?

- Very often [] Often [] Once a while [] Not at all []

Section F: Challenges

From Q26-Q30, Tick as many as applicable.

26. What are the major challenges facing the library in providing access to information for all students?

- a) Limited funding and resource b) Insufficient space and facilities
c) Lack of qualified staff d) Difficulty in keeping up with technological advancements
e) Inadequate collection of books and materials

27. What difficulties do librarians encounter in promoting literacy and learning through library services engagement from students?

- a) Lack of awareness about the benefits of library services
b) Insufficient support from educational institutions and policymakers
c) Information overload
d) Lack of student engagement

28. How do technological advancements pose challenges to librarians in service delivery to achieve quality and equitable education (SDG4)?

- a) Technological advancements require librarians to constantly update their skills and knowledge and this adaptation can be challenging for librarians who may already have limited time and resources
b) Privacy concerns arise with the use of technology in libraries
c) Copyrights laws and intellectual property rights are complex and ever-evolving, making it challenging for librarians to navigate and comply with these regulation
d) Access and equity can be affected by technology advancements

29. What strategies can librarians adopt to address limited access to technology and internet connectivity?

- a) Establishing mobile libraries or bookmobiles to reach areas without internet access
b) Partnering with telecommunications companies or community organizations to provide free or low-cost internet services
c) Offering offline resources and tools, such as e-books that can be downloaded and read offline
d) Organizing digital literacy programme to empower members of the institution with basic internet skills

30. How can the library address the challenge of limited diversity and inclusivity in library collection

and services?

- a) Conducting institutional needs assessment to identify gaps in representation and ensuring diversity content is acquired []
- b) Collaborating with cultural organisations and community groups to co-create programmes and events that celebrate diversity []
- c) Providing resources and literature in multiple languages and formats to cater to diverse population []
- d) Implementing inclusive policies and training programmes to ensure staff are sensitive and responsive to diverse needs []

31. What do you think can be done to help improve academic library service provision towards the achievement of the SDG 4?



APPENDIX 2



UNIVERSITY OF GHANA
DEPARTMENT OF INFORMATION STUDIES
SCHOOL OF INFORMATION AND COMMUNICATION STUDIES

July 10, 2023

Ref. No.:.....INFS/AC8/ 6/24

The University Librarian
Sam-Jonah Library
University of Cape Coast
Cape Coast-Ghana

Dear Sir/Madam,

LETTER OF INTRODUCTION

This is to introduce to you **Mr. Abdul-Razak Awudu** an MPhil student of the Department of Information Studies. He is researching on the topic: **“Factor influencing academic library services in achieving sustainable development goal 4 (SDG 4).”** Abdul-Razak is expected to submit his thesis as part of the requirement for the MPhil programme.

We would appreciate any support you give him to enable him get data for his research.

Thank you.

Yours faithfully,

Dr. Ebenezer Ankrah
(Head of Department)



COLLEGE OF EDUCATION

APPENDIX 3

