

**INFLUENCE OF FINANCIAL INVESTMENT, UTILIZATION PATTERNS,
PERCEIVED VALUE AND SUPPORT SERVICES ON MAXIMIZING
ELECTRONIC RESOURCES USAGE AT TECHNICAL UNIVERSITY OF
MOMBASA AND KENYA METHODIST UNIVERSITY**

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**A THESIS SUBMITTED TO THE SCHOOL OF SCIENCE AND
TECHNOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR CONFERMENT OF THE DEGREE OF MASTERS OF SCIENCE IN
INFORMATION SCIENCE OF
KENYA METHODIST UNIVERSITY**

SEPTEMBER, 2024

DECLARATION AND RECOMMENDATION

Declaration

I declare that this thesis is my original work and has not been presented at any other university.

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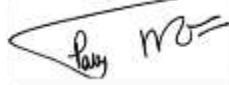
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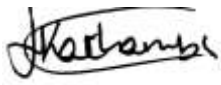
We confirm that the work reported in this thesis was carried out by the candidate under our supervision.

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Kenya Methodist University

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Date 24th September 2024

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DEDICATION

This thesis is dedicated to my parents, siblings and friends who have supported me throughout this academic journey.

ACKNOWLEDGEMENT

First, I would like to thank the almighty God for giving me resilience to complete this work.

My sincere gratitude goes to my supervisors, Prof. Gichohi Paul Maku (PhD) and Dr. Nkoroi Lillian (PhD), for their patience, encouragement, guidance and expert advice throughout this period. Their timely response and insightful comments made this work a success. I also wish to thank Madam Catherine Mueni, the CoD Information Science Department – KeMU, for believing in me, the staff at Kenya Methodist University - Mombasa Campus for their kindness and support, my classmates for their encouragement and the library staff, students and faculty members from TUM and KeMU for taking part in the study

I extend special thanks to my colleagues Dr. Egessa M., Dr. Wandera C., Dr. Adem A., Dr. Jitta H., Dr. Madiha S., Aggrey Shitsukane, Beryll Oyolla, and Claudine Mwaka from Technical University of Mombasa, for their unwavering support, inspiration, and reassurance throughout my studies. I am also deeply grateful to my parents, Mr. and Mrs. Kochumba, my siblings Eric Kochumba and Eunice Kochumba, and my friends Asha Abdallah, Molline Oloo, Emily Nyawira, Mercy Kimberly, and Christine Mailu for their encouragement and support during this journey.

Thank you for believing in me.

ABSTRACT

Academic libraries at Technical University of Mombasa (TUM) and Kenya Methodist University (KeMU) invest heavily in electronic resources to foster academic excellence and enhance research quality. This study assessed the influence of financial investment, utilization patterns, perceived value, and support services in maximizing electronic resources usage at Technical University of Mombasa and Kenya Methodist University with a view to optimize resource allocation and further enhance the benefits of electronic resources. Both universities had increased their financial investments on electronic resources, and introduced digital libraries, social media engagement/ marketing to promote the full maximization of these resources. Despite these efforts, both institutions continued to face challenges such as the misallocation of financial investments, limited usage patterns, low perceived value, and ineffective support services. Additionally, TUM's electronic resource usage was only 32% while KeMU's was 57% in 2022/2023 academic year. This study aimed to evaluate the impact of the strategies implemented by TUM and KeMU in maximizing electronic resource usage. It focused on key objectives, including identifying financial investments, determining utilization patterns, assessing perceived value, and establishing the support services in place to enhance electronic resource usage at both institutions. The findings were intended to guide future budget allocations and customize support services to improve resource utilization, perceived value, and ultimately, the maximization of electronic resources at TUM and KeMU. Guided by Edward Freeman's 1984 Stakeholder Theory and employing a descriptive survey research design with a mixed-methods approach, this study surveyed 426 individuals from a target population of 23,039. The sample included 220 undergraduate and 80 postgraduate students selected through stratified random sampling, 120 faculty members selected through stratified proportional sampling, and 6 library staff selected using purposive sampling. Data was collected through questionnaires and interviews, with pretesting conducted at the University of Nairobi-Mombasa campus to ensure the reliability and validity of the research instruments. Data was analyzed using SPSS for quantitative measures and thematic analysis for qualitative insights. The study achieved a response rate of 91.3% for undergraduate, postgraduate, and faculty members, and 100% for library staff. Findings indicated that 83.3% of library staff were satisfied with budget allocations for electronic resources. Additionally, 75.8% of users engaged actively with these resources, with audiovisual materials being the most utilized and mobile phones being the preferred access device. User satisfaction was reported at 73.1%, and 96.4% expressed contentment with support services. The study highlighted that additional financing and user engagement in resource acquisition improved perceived value and utilization. However, 24.2% of respondents never used the resources, and 23.7% reported dissatisfaction. Both universities had implemented support services to enhance resource use, with user support services, internet access, and feedback mechanisms being the most frequently utilized. The study concluded that financial investment significantly impacts perceived value, while support services influences both perceived value and utilization rates. Frequent utilization, supported by effective services, greatly improves perceived value and maximizes the benefits of electronic resources. Recommendations include engaging users in the acquisition process, enhancing capacity building for librarians, and conducting regular user assessments to tailor support services. These steps will improve perceived value, utilization rates, and overall resource maximization. These findings should guide both libraries in developing policies and strategies to further enhance the return on investment from electronic resources at TUM and KeMU.

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ABBREVIATIONS AND ACRONYMS

CUE	Commission for University Education
E-Resources	Electronic Resources
KeMU	Kenya Methodist University
KLISC	Kenya Library and Information Services Consortium
MyLOFT	My Library on Finger Tips
TUM	Technical University of Mombasa

CHAPTER ONE

INTRODUCTION

This chapter introduced the study and discussed the influence of financial investments, utilization patterns, perceived value and support services in maximizing electronic resources in university libraries in Kenya and globally. It further addressed the gaps the study aimed to fill, focusing on the study objectives: financial investments made by universities in electronic resources, the usage patterns of these resources, their perceived value, and the support services established for maximizing electronic resources. This was followed by the problem statement, the scope, significance, limitations and the assumptions of the study.

1.1 Background of the Study

In recent years, the demand for electronic resources has grown tremendously due to several factors, including accessibility throughout the day and night, compatibility with multiple devices, portability, ease of sharing, and the ability to use them remotely (Gul et al., 2019). The term, electronic resources, refers to information materials stored and accessed digitally, including electronic journals, electronic books, and online databases (Ankrah & Atuase, 2018). According to Merande et al. (2021) the popularity of electronic resources has been on a steady growth, globally, in the past few years. As a result, university libraries have begun investing heavily in them to fully meet their users' demands and to keep up with current information dissemination trends. Fingillah (2023) share the same views and acknowledge that most university libraries have since developed services like online reference desks, call centers, online training sessions,

virtual library tours, and support through email and social media to enhance the use of electronic resources.

A study by Yamani (2023) on the utilization of electronic resources in Saudi Arabian universities, observed that the increasing adoption of electronic resources over the years had led to situations where university libraries had to justify their investments in these resources and explore factors that could further maximize their usage.

According to Ifijeh and Yusuf (2020) universities in Nigeria continue to invest in electronic resources due to their ability to provide a vast range of global information that stimulates research among scholars. They however advice that the universities ought to remain diligent in assessing the effectiveness of the strategies employed for maximizing electronic resources usage. Sahoo et al. (2019) share the same sentiments and explain that universities acquire these resources, their support technology, establish support services and assign librarians to the e-resources functions without completely understanding the influence of all these strategies on electronic resource maximization. They explain that libraries rarely know the influence of financial investments and the established support services in maximizing electronic resources for optimum benefits.

A study by Nyakweba et al. (2022) at Masinde Muliro University of Science and Technology, Jaramogi Oginga Odinga University of Science and technology, Maseno University and Kisii University all in Western Kenya, revealed that with dwindling library budgets all over the world, most academic libraries have had to justify the maximization of electronic resources by proving the value they add to the institutions. Consequently, university libraries had been expected to assess the value of electronic

products and services relative to the total investment to demonstrate the effectiveness and provide strategies to further maximize the utilization of the electronic resources. This study therefore sought to assess the effectiveness of maximizing electronic resources by focusing on the influence of financial investments, utilization patterns, perceived value, and the support services established for these resources at TUM and KeMU.

1.1.1 Electronic Resources

Globally, universities have adopted electronic resources to enhance education and research quality. In Ghana, institutions of higher learning, such as the University of Cape Coast, have seen a steady increase in the integration of these resources over the years, giving students and faculty access to a wealth of information and knowledge (Ankrah & Atuase, 2018). However, Babarinde et al. (2019) note that these resources are relatively expensive, making it challenging for libraries in Nigeria and other parts of Africa to purchase them directly from publishers. This difficulty prompted the formation of consortia, such as the Nigerian University Library Consortium, which has since brought together libraries to acquire resources at negotiated and more affordable prices to allow users maximum access to the information resources they require.

According to Atkinson (2019) a library consortium is collaborative arrangement in which libraries share information resources, services, and expertise for their mutual benefit. Consortia vary in scope, size, population, and structure, with charges for participating libraries depending on factors such as membership fees, subscription fees, service charges, consortium management costs, and additional costs unique to different

consortia. Nche (2022) in his study on resource sharing in Nairobi universities explains that the electronic resource charges per library in a consortium may further vary based on the size and type of the library and the financial arrangements negotiated among member libraries.

Electronic resources are relatively expensive and as noted by Nesta (2019) there are affluent universities that can acquire electronic resources directly from publishers. However majority of universities rely on consortium negotiated resources or free and open access electronic resources. In Kenya, public universities receive funding from the government through the Ministry of Education to complement their budgets including the electronic resources budgets (Winata et al., 2021). However, Nche (2022) indicates that some universities, such as the University of Nairobi, have greater financial capacity which enables them to subscribe to additional resources beyond what is provided through Kenya Libraries and Information Services Consortium (KLISC). Additionally, they have partners and actively seek for grants and donations from international organizations, NGOs, and government agencies to further support the acquisition and provision of electronic resources in their institution (Nche, 2022). Mwai et al. (2014) argue that despite universities like Egerton, Maseno, Moi, and the Technical University of Mombasa having slightly lower financial capacities compared to their counterparts, they should still strive to maximize the utilization of electronic resources received through KLISC and other open access databases to derive greater value.

Technical University of Mombasa (TUM), a public university and Kenya Methodist University (KeMU) a private university both belong to KLISC and they pay an annual

subscription fee of approximately ksh.2 million annually (Kenya Libraries and Information Services Consortium [KLISC], 2023). This is costly, and most universities can only afford to acquire these resources through negotiated consortium discounts, which still amount to millions. Notably, very few universities can afford additional resources beyond what the consortia provide, as most rely on government assistance, internal revenue-generating activities, international agencies, and NGOs to support their budgets (Baada et al., 2023).

1.1.2 Electronic Resources at TUM and KeMU

The Technical University of Mombasa, located in Mombasa County, has a population of 14,400, comprising 14,000 students and 400 teaching staff. The library is a modern hybrid facility with 30 staff members, a seating capacity of 800, and a collection of 25,000 physical books, magazines, newspapers, as well as millions of e-books and e-journals subscribed to through the Kenya Libraries and Information Service Consortium (KLISC). The resources are accessible both on campus and off campus using RemoteXs software (Technical University of Mombasa [TUM], 2024). The library also features a digital center that offers access to information, an e-resources section, and a reference section that addresses queries and conducts information literacy training. The training equips users with the skills to access both physical and electronic resources. Additionally, the library uses social media for marketing and communication, announcing new book acquisitions, database subscriptions, training schedules, and events (TUM, 2024)

Kenya Methodist University (KeMU) is a private chartered Christian university with 3 campuses in Nairobi, Meru and Mombasa. The libraries core functions include: supporting teaching, learning, research, offer community service and consultancy services. Similar to TUM, KeMU library is an ultra-modern facility serving over 8,000 students at its main campus in Meru. It also boasts a collection of over 40,000 physical titles and millions of e-resources through the KLISC consortium. To maximize resource utilization, KeMU offers physical and virtual orientations, information literacy sessions, and various library trainings throughout the year. Additionally, KeMU provides a user-friendly digital library platform on their website, supported by MyLOFT software, enabling users to access e-resources on and off campus. KeMU offers a variety of courses online, making electronic resources and the digital library crucial for teaching and learning, as these students cannot access the physical library. As a result, KeMU has made substantial investments in providing electronic resources by subscribing to KLISC resources, adopting new technologies, and using software like MyLOFT to ensure access to these resources.

Additionally, the library staff undergo continuous training to offer online support to all users of electronic resources, helping them achieve their academic goals. To further enrich the collection of electronic resources, KeMU maintains an Institutional Repository managed by the library, which collects, preserves, and disseminates research theses, projects, and conference papers from its staff, students, and community members (Kenya Methodist University [KeMU], 2024).

The discussion above shows that academic libraries like TUM and KeMU invest heavily in maximizing electronic resources to meet their users' needs through various methods, including acquiring electronic resources and adopting support strategies to enhance the perceived value and utilization of these resources (Francis, 2023). In their study, Webster and Gardner (2019) reveal that universities such as TUM and KeMU, often invest heavily in maximizing their electronic resource usage without understanding the factors that influence this process such as financial investments, utilization patterns, perceived value and support services on maximizing electronic resources.

Haleem et al. (2022) concur with these views and explain that while electronic resources offer many benefits, universities must understand their effectiveness and impact on the institution to establish strategies that enhance their maximization. They further advise universities to consider evaluating the effectiveness of their electronic resources maximizing strategies and establish factors that hinder their success and in turn develop other strategies to ensure maximum utilization of the resources.

1.1.3 Maximization of Electronic Resources

Electronic resource maximization is not a new concept. It has been in existence for quite some time and it refers to the strategies university libraries adopt to ensure optimum utilization of electronic resources in line with the university's objectives and for increased benefits on academic outcomes (Rafiq et al., 2021). According to Daramola (2022) these measures include strategies such as managing costs, integrating with other existing systems in the university, constantly improving electronic resources systems, having a user feedback mechanism, and training users also contribute significantly to

the maximization of electronic resources and return on their investment. These strategies have indeed boosted academic excellence, research output, and in some cases attracted more funding, partnerships, and collaborations for universities (Blagg & Blom, 2018).

Conducting an assessment on the maximization of electronic resource is relatively new in libraries, which have previously attempted to assess the benefits they derive from electronic resources by analyzing usage statistics, user satisfaction surveys, feedback, cost savings, academic excellence, research output, and the ability to attract partners and collaborators (Sahoo et al., 2019). The two studies both present the same conclusion that above methods do not offer a conclusive exhaustive, or comprehensive findings on the benefits derived from the maximization of electronic resources.

Both studies agree that when assessing the maximization of electronic resources in a library, in addition to the cost of acquiring the resources, libraries should also consider factors such as resource usage patterns, perception of users on the resources and the support services established to support the provision of electronic resources. It is only through this holistic approach that libraries can successfully conduct comprehensive and conclusive assessment on the influence of financial investments, utilization patterns, perceived value and support services in the maximization of electronic resources.

Other researcher like Pandey and Kumar (2022) concur with these views and emphasize that such holistic assessments crucial for libraries as it serves as a tool for strategic planning, budgeting, product and service development, IT infrastructure development, marketing, human resource development, and monitoring and evaluation to maximize the use of electronic resources in libraries.

1.2 Statement of the Problem

In recent years, university libraries, including those at the Technical University of Mombasa (TUM) and Kenya Methodist University (KeMU), have made significant investments and developed strategies to maximize the usage of electronic resources. These efforts have been aimed at addressing the growing demands of users, enhancing academic performance, and improving research output at both institutions. However, such investments have often been implemented without fully assessing the key factors that influence the maximizing of these resources, such as financial investments, usage patterns, perceived value, and support services (O'Flynn et al., 2019). According to Daramola (2022) universities often implement strategies such as increasing funding and developing various support services like information literacy programs, user-friendly web pages, online reference services and user support mechanisms without a comprehensive understanding of how they interrelate or their combined influence in maximizing electronic resource usage. Both O'Flynn et al. (2019) and Daramola (2022) studies agree that these strategies should be guided by a comprehensive understanding how the factors interrelate and their combined influence in maximizing electronic resources. However this is not the case as clearly evident in TUM and KeMU libraries, which still grapple with misallocation of funds, limited usage patterns, limited perceived value, and ineffective support services, as reflected in TUM and KeMU Library reports from 2022-2023, despite investing approximately Ksh. 2 million on electronic resource subscription fees and implementing various support services and strategies to promote the maximization of these resources. In addition both institutions still face challenges in

achieving optimal utilization with TUM's 2023 electronic resource usage report revealing 32% usage out of its 14,400 users (TUM, 2024) and KeMU reporting a slightly better usage rate of 57% out of its 8000 users for the 2022/2023 academic year (KeMU, 2024). These usage figures remain relatively low compared to the extensive efforts put forth by both libraries, highlighting the need for further investigation into the influence of financial investments, utilization patterns, perceived value and support services in maximizing electronic resources usage at TUM and KeMU.

Several studies have examined different aspects of electronic resource maximization in academic libraries, including usage statistics (Kaba et al., 2023), user satisfaction surveys (Noh, 2020), learning outcomes (Wagay & Dutta, 2024) and research productivity (Ebijuwa & Mabawonku, 2019). However, they do not provide comprehensive insight into the combined relationship between the factors that influence the maximization of electronic resources in universities.

This study, therefore, sought to assess the influence of factors such as financial investments, usage patterns, perceived value, and support services in maximizing electronic resource usage at TUM and KeMU with an aim of developing effective strategies for budget allocation and support services to improve usage patterns, perceived value, and the overall success of electronic resource maximization at both TUM and KeMU.

1.3 Purpose of the Study

The purpose of this study was to assess the influence of financial investment, utilization patterns, perceived value, and support services in maximizing electronic resource usage at TUM and KeMU libraries with an aim to develop effective strategies for budget allocations and support services to improve utilization and overall success of maximizing electronic resource usage.

1.4 Research Objectives

1. To determine the financial investment made by the libraries at TUM and KeMU in maximizing electronic resources
2. To determine the utilization patterns of electronic resources at TUM and KeMU libraries in maximizing their usage
3. To assess the perceived value of electronic resources in maximizing their usage at TUM and KeMU libraries
4. To establish the support services available at TUM and KeMU libraries for maximizing the use of electronic resources

1.5 Research Questions

1. What financial investment have TUM and KeMU libraries made in maximizing electronic resources?
2. How do the utilization patterns influence maximizing electronic resource usage at TUM and KeMU libraries?
3. How does the perceived value of electronic resources influence maximizing electronic resource usage at TUM and KeMU libraries?
4. What support services have TUM and KeMU put in place for maximizing electronic resources usage?

1.6 Justification of the Study

This study sought to address the current gaps in understanding the influence of financial investments, utilization patterns, perceived value and support services in the maximizing electronic resource usage in Kenyan Universities with focus on TUM and KeMU. The findings were beneficial to the following:

For university administrators, the findings aimed to provide a comprehensive assessment and evidence-based data on the influence and impact of financial investments, utilization patterns, perceived value and support services in maximizing electronic resources. This could help guide budget allocations for electronic resources and the establishment of policies to further promote the use of electronic resources in the teaching curriculum to enhance overall teaching, learning and research at TUM and KeMU.

Secondly, a thorough assessment on users' perceived value and utilization patterns of the resources would illuminate how users view the electronic resources and their impact on student learning, faculty research, and overall academic performance. This insight will help librarians enhance electronic products and services to increase perceived value and utilization, thereby maximizing the use of electronic resources and ultimately the academic outcomes at TUM and KeMU.

Finally, the findings of this study would offer a valuable contribution to the literature on the influence of financial investments, utilization patterns, perceived value and support services in maximizing electronic resources thereby expanding knowledge on the

strategies that can be used by universities to fully maximize the utilization of their electronic resources for maximum benefits on academic outcomes and research output.

1.7 Scope of the Study

The primary focus of this study was to assess the impact of financial investments, utilization patterns, perceived value and support services in the maximization of electronic resources in Kenya, specifically at one public university (TUM) and one private university (KeMU). The study was conducted at the main campuses: TUM in Mombasa and KeMU in Meru and it took place during the 2023/2024 financial year, spanning from July 1, 2023, to June 30, 2024.

This study did not include other factors such as the students' academic capabilities, information technology, library staff capabilities and the university curriculum as factors that influence the maximization of electronic resources at TUM and KeMU. This would require separate studies to assess their correlation with the maximization of electronic resources.

1.8 Significance of the Study

This study aimed to evaluate the effectiveness of maximizing electronic resources by assessing the relationships and impacts of financial investments, utilization patterns, perceived value, and support services at TUM and KeMU. It offered a comprehensive evaluation of how financial investments influenced the maximization of electronic resources, providing insights into the effectiveness of resource allocation strategies which could aid decision-making on budget allocations and the prioritization of support

services expenditures, with the goal of increasing the perceived value and usage of electronic resources at both institutions.

By evaluating the impact of perceived value and support services on the maximization of electronic resources, the study provided university administrators, librarians, faculty members, and students with evidence on the effectiveness of these resources which included enhanced academic outcomes, improved teaching and learning experiences, increased research output, and progress towards institutional goals related to knowledge creation and dissemination.

Ultimately, the findings contributed to a better understanding of the relationships and impacts of financial investments, support services, perceived value, and utilization in maximizing electronic resources in Kenyan universities. This addresses a gap in the literature concerning the assessment of factors affecting the effectiveness of electronic resource maximization in Kenyan academic libraries.

1.9 Limitations

The study was underpinned by limited literature, as most university libraries seldom performed assessments on the factors that influence the maximizing of electronic resources in Kenyan academic libraries. Moreover, quantifying the benefits of electronic resources, such as academic excellence and research output, solely on the utilization and maximization of electronic resources proved challenging because in most cases they could be influenced by other factors, such as the expertise of teaching staff and students' academic abilities, which were not addressed in this study.

1.10 Assumptions of the Study

Firstly, the study was based on the assumption that financial investments, utilization patterns, perceived value and support services influence the maximization of electronic resources. Secondly, it assumed that electronic resources enhanced teaching, learning, and research in university libraries and that students and staff actively use the electronic resources provided by their institutions.

1.11 Operational Definition of Terms

This section outlines the meaning of terms as applied in the context of this study.

E-Resources

Information materials that are accessed, and transmitted digitally (Ibrahim & Tukur, 2023)

Financial Investment

Money put in a business or an asset to appreciate for better returns (Zhang & Zheng, 2020)

Maximization

Raising value to the highest possible point, condition, and position (Battilana et al., 2022)

Perceived value

User's opinion on a service's merit or desirability (El-Adly, 2019)

Perception

User's opinions about the library and its information resources and services (Lee et al., 2019)

Satisfaction

This is a fulfillment of a user's expectations having been met (Brill et al., 2022)

Support services

Services established to encourage the use of electronic resources (Paulina et al., 2019)

Utilization of electronic resources

Active engagement with e-books, e-journals, databases and webpages for learning, teaching and research (Winata et al., 2021)

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provided a comprehensive review of the literature on maximizing electronic resources in Kenyan university libraries by assessing financial investments, utilization patterns, perceived value and support services. It began with a discussion on maximization of electronic resources followed by a review of literature on the study's variables, which included financial investment on electronic resources, utilization patterns of electronic resources, users' perceived value of electronic resources and electronic resource support services. The chapter then concluded with the theoretical and conceptual frameworks that guided the study's methodology.

2.1 Maximizing Electronic resources in University Libraries

In recent years, the academic library landscape has undergone a significant transformation, with the increasing prominence of electronic resources. According to Francis (2023) electronic resources have become vital tools in universities for teaching, learning, and research, providing a broad range of information in easily accessible formats on various devices such as mobile phones, tablets, and computers. The impact of these resources on learning and research has been evident, prompting universities to increase their investment and adopt strategies to maximize their use for increased benefits.

Electronic resource maximization is not a new concept. It has been in existence for quite some time and it refers to the strategies university libraries adopt to ensure optimum

utilization of electronic resources in line with the university's objectives and for increased benefits on academic outcomes (Rafiq et al., 2021). According to Daramola (2022) these measures include adequate strategies such as managing costs, integrating with other existing systems in the university, constantly improving electronic resources systems, having a user feedback mechanism, and training users also contribute significantly to the maximization of electronic resources. These strategies have indeed boosted academic excellence, research output, and in some cases attracted more funding, partnerships, and collaborations for universities (Blagg & Blom, 2018).

Globally, many universities have enhance the utilization of electronic resources by joining consortiums. Machovec (2020) supports this approach, emphasizing the need for universities to adopt strategies that extend beyond their institutions, such as partnering with collaborators and joining consortia. Chisita and Fombad (2020) explain that consortia enable libraries to provide users with essential information for teaching, learning, and research at affordable prices. This financial efficiency allows libraries to invest in other areas, such as training and marketing of electronic resources, thus improving their utilization and user perception. A notable example is the Canadian Association of Research Libraries consortium, which has used collective purchasing power to significantly reduce licensing and subscription costs. This approach had allowed libraries to allocate their budgets more efficiently and invest in additional resources / services to enhance the utilization of electronic resources (Breeding, 2020)

Belbin et al. (2021) explain that with increased access to electronic resources, universities under the Australian National Data Service consortium enhanced their

research output and attracted numerous scholarships in 2022, demonstrating the value of these resources. Belbin et al. (2021) further explains that the increased perceived value and access to a wide range of electronic resources resulted in greater utilization. As a result, researchers and scholars in Australia increasingly engaged in interdisciplinary collaboration, which fostered a culture of innovation within the academic community and advanced knowledge across various fields throughout the country.

Closer home, in Africa, the value of electronic resources is demonstrated by initiatives such as the Consortium Madrono in Spain (Pereira & Franco, 2020). This initiative has enabled universities to access a wide range of teaching and learning materials that complement traditional textbooks and course materials. As a result, educators have maximized the potential of electronic resources by integrating current research findings and diverse perspectives into their curricula. Fasae et al. (2021) confirms that such consortia do indeed transcend national borders, fostering regional and international collaboration among universities, libraries, and research institutions. This is exemplified by the South African Library and Information Consortium and Ghana's Consortium of Academic and Research Libraries, which offer access to a wide range of information materials, promoting cross-cultural exchange and cooperation among scholars globally.

Additionally, Rabi (2020) notes that in Nigeria, the Nigerian University Libraries consortium facilitates the sharing of best practices and expertise in offering electronic resource services among member institutions, promoting knowledge sharing and professional development among librarians for better service delivery that leads to high utilization of electronic resources. In West Africa, francophone countries like Benin,

Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Mali, Niger, and Senegal have established a consortium to promote collaborative exchange, capacity building, and ongoing improvement in health research. This initiative underscores the significant value of electronic resources in the health sector just like in the education sector (Aidam & Sombié, 2016).

In East Africa, the Kenya Education Network (KENET), a national research and education network, provides technical infrastructure and support services to member institutions, such as high-speed internet connectivity, hosting platforms, and digital repositories. This allows Kenyan academic libraries to effectively manage and maximize the dissemination of electronic resources, offered under the Kenya Library and Information Services Consortium, ensuring seamless access and usability to enhance the utilization of electronic resources in Kenya.

The above findings indicate that universities worldwide have adopted various strategies for maximizing electronic resources, with joining a consortia being the most popular strategy. The findings show that joining consortia has enabled libraries to offer more resources at reduced costs, allowing them to direct finances towards other activities aimed at designing new support services, increasing utilization patterns, and improving user perceptions of the library all aimed at increasing the return on investment in electronic resources.

In addition to collaborating in consortia, academic libraries worldwide have implemented various other strategies to maximize electronic resources. Gadd et al.

(2019) highlights the adoption of open access initiatives as a significant approach to enhancing user perception and utilization of electronic resources. Open access initiatives enable faculty to publish in open-access journals and repositories, fostering a sense of ownership and pride in their work. This, in turn, increases the perceived value of these resources, as faculty members take pride in the work they have made publicly accessible. The authors commend initiatives such as the Directory of Open Access Journals, PubMed Central, Open Access Button, BioMed Central, and Public Library of Science for providing unrestricted access to scholarly literature and research outputs, thereby maximizing the use of millions of information resources.

In Zimbabwe, according to Chisita and Fombad (2020) open access initiatives have significantly enhanced the utilization of electronic resources in education and research, contributing to a more equitable and inclusive knowledge ecosystem that promotes innovation across various fields. Similarly, Akintunde and Afolabi (2017) credit these initiatives for the creation of the African Digital Library and the African Virtual University, which offer affordable distance learning opportunities to Africans.

In Kenya, Ocholla and Evans (2019) explains that an effective approach to maximize the utilization of electronic resources is through a user-centered strategy, where libraries tailor their offerings based on users' needs and preferences. This approach guarantees that libraries deliver the exact information materials users seek, resulting in high levels of user satisfaction and efficient resource utilization. In his study at JKUAT, Ndungu (2016) explains that marketing through newsletters, magazines, and social media to raise

awareness significantly increased resource utilization. Similarly, Tenya et al. (2024) employed a survey research design in selected Kenyan universities; Nairobi, Kenyatta, Moi, and Egerton, to investigate the challenges faced by academic staff in public universities when accessing and utilizing digital resource platforms. They found that enhancements like redesigning websites to improve search capabilities, visual design, and navigation led to higher user satisfaction and increased utilization of electronic resources.

These findings confirm that developing marketing strategies based on utilization reports and user perceptions of electronic resources enhances their use and ultimately boosts their benefits derived from them.

Ojukwu (2020) observes that amid constrained budgets, academic libraries must carefully assess their strategies for maximizing electronic resources to achieve more benefits. According to Habib et al. (2022) universities are evaluating obstacles that could hinder the maximization of electronic resources and are adapting dissemination strategies. This approach aims not only to optimize usage but also to maximize the value of their investment while meeting users' information needs.

Several studies highlight various obstacles that libraries face in maximizing electronic resources. These include quantifying the intangible benefits of electronic resources (Rafi et al., 2019) the influence of external factors on resource utilization (Kutu & Olajide, 2020), inadequate infrastructure or expertise to assess maximization of the resources (Smith, 2019), the need for sophisticated tracking systems and analytical tools (Lynch et

al., 2021), challenges in distinguishing between fixed and variable costs (Kutu & Olajide, 2020), and the dynamic nature of electronic resources, technology, and user needs, which complicate the development of evaluation tools and standardized assessment parameters (Enweani, 2018). Nonetheless, libraries should seek solutions to mitigate these challenges and ensure maximum utilization of their electronic resources for more benefits on academic outcomes and research output (Deja et al., 2021).

2.2 Financial Investment in Electronic Resources

Financial investment refers to putting money into an asset to gain more over some time. Sahoo et al. (2019) explain that financial investment in electronic resources refers to the allocation of money by libraries to acquire and maintain electronic resources, licensing agreements, technological systems and library support services. Studies show that offering electronic resources is not cheap and libraries invest a decent amount of money to acquire and offer these resources (Lewis et al., 2022). It is known that libraries are not profit making institutions, nonetheless, they still need money to run their daily operations and at the end of a financial year they need to justify their spending and demonstrate value addition to the university on the funding they received for electronic resources.

Libraries have faced budget cuts since time immemorial, Otike and Barát (2021) attribute this to the perception that libraries are free of charge but in reality, that is not the case as libraries strongly depend on institutional funding more so during these current times when libraries are investing heavily on technological infrastructure to offer

electronic resources. Savova and Price (2019) add that the shift to electronic resources has increased the libraries' budget tremendously as libraries are forced to invest more to create an effective electronic resource ecosystem that can satisfy their users' needs and ultimately maximize on the benefits offered by these resources on teaching learning and research.

Rubin and Rubin (2020) explain that libraries all over the world including those in the United States of America, rely on diverse sources of funding to sustain their operations. They explain that the universities fund their libraries through various channels including student fees, dedicated library fees, proceeds from income-generating initiatives, cost-recovery services, and allocations from the university's general fund.

A study conducted in five European countries Germany, Romania, Finland, the UK, and Norway indicated that most libraries relied on government funding despite concerns about dwindling resources due to the adoption of New Public Management theory and practice. However, the libraries committed to exploring alternative funding sources, such as engaging in collaborative partnerships, to address these challenges (Duren et al., 2019).

In Asia the funding of libraries is also predominantly from the government and just like in Europe, the funding is not adequate and as such sponsorship from partners and NGOs has enabled the countries in South Asia such as Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam to carry on their efforts on

social development through enhancing access to information literacy in libraries, strengthening communities and preserving cultural heritage.

In Africa, the trend is still the same with government funding being the number one source of funding for academic libraries (Anyuki et al., 2023). Studies conducted by Mwangi et al. (2021) and Ubogu (2019) shed light on other forms of funding such as partnerships and donations for university libraries in Kenya and Nigeria, respectively. They both agree that while partnerships and donations provide valuable resources, there may be limitations or challenges associated with reliance on external funding sources. For instance, the sustainability of these partnerships and donations over time may be uncertain, particularly if they are contingent on specific individuals or entities. Additionally, there could be questions regarding donors' potential influence or agendas on the library's operations and collection development policies. Furthermore, while Ubogu (2019) outlines altruistic and strategic motivations behind such support, it is important to recognize that these motivations may vary across different donors and organizations, and may not always align perfectly with the long-term goals and mission of the university library. As such, thorough examination of the implications and sustainability of partnerships and donations is essential to fully understand their impact of their investments on university libraries.

In light of the potential challenges associated with overreliance on external aids from partners, donors and NGOs, Leonard et al.'s (2020) study on the use of electronic resources in Namibian Academic libraries advocated for libraries to explore alternative funding streams to achieve their electronic resource provision goals. He suggests that

excessive dependence on parent organizations and governmental support may result in dependency issues and long-term sustainability challenges. He advised on cost-saving measures as a solution to curb long-term expenses to reduce overdependence on external resources to run libraries (Leonard et al., 2020).

Additionally, Mwangi et al. (2021) recommends that libraries implement initiatives such as joining consortiums, fundraising campaigns, utilizing open-source software and open-access content, soliciting alumni support, establishing friends of the library groups, creating endowment funds, and exploring commercialization of university services as strategies to reduce reliance on external funding sources. Furthermore, Namugera et al. (2023) express that by embracing innovative initiatives and exploring unconventional avenues, libraries could maximize their electronic resource utilization and ensure lasting sustainability and expansion of their digital collections, thereby achieving a sustainable benefits on these resources. .

According to Gregory (2019) in his study *Collection Development and Management for 21st Century Libraries*, the total cost of offering electronic resources transcends mere acquisition expenses and extends to system upkeep, online security measures, and staff development. His findings implore libraries to assess these investment costs to make informed decisions regarding electronic resource acquisition and overall prudent financial stewardship in providing them.

A study conducted by Harrison et al. (2022) using a descriptive survey, divulges the need for libraries to restructure and align their budget plans with the university's strategic plan to ensure effective and efficient utilization of funds to provide high-quality

services that could lead to maximum utilization of these resources. They further explain that by following a strategic plan that caters to all the financial aspects of the library, including the provision of and support of electronic resources, libraries can enhance their capacity to acquire the required electronic resources, establish measures to maximize their utilization such as training and marketing for increased benefits on academic outcomes and research output.

Conducting assessment on the impact and relationship of financial investments, in maximizing electronic resources, is a fairly new application within the library realm, which has in the past relied on user statistics and expenditure reports to determine the value derived from offering library services. According to Sahoo et al. (2019) the assessment of financial investments can provide libraries with a wider scope to report their activities in terms of financial inputs and expenditure costs on support services and their impact and relationship in maximizing electronic resources which could guide the libraries in the development of strategies to further enhance and maximize the utilization and benefits of the resources.

International Federation of Library Associations (IFLA, 2022) reported that most libraries lacked a clear understanding of the actual costs of their investments in maximizing electronic resources and hence could not exhaustively determine if the benefits they were gaining outweighed the expenses of offering these resources. The report advised that universities assess the financial investments in maximizing electronic resources to help them determine if indeed they are getting value on their investments.

Gilpin et al. (2024) explain that assessing the financial investments involves comparing the net profit or loss to the cost of the investment. They further clarify that this assessment evaluates the performance of an investment relative to other opportunities by assessing the effectiveness of the investment in generating returns. Consequently, financial investments assessment enables libraries to make informed budget allocations, establish support services that enhance perceived value for higher rate of maximization of electronic resources.

2.3 Utilization Patterns of Electronic Resources at University Libraries

A pattern is a repeated arrangement and in electronic resource utilization, a pattern refers to how users interact with and utilize digital materials (Singh & Gupta, 2020). By monitoring these ways the libraries can identify trends such as the most used resources, time spent on the resource databases, category of users who frequently use the resources, and the type of information sought among others. By understanding the utilization patterns for electronic resources, libraries can assess the effectiveness of their electronic resource collections, optimize resource allocation, establish effective support services and enhance user satisfaction. Memusi (2022) explains that monitoring and analyzing the utilization patterns of electronic resources is a key component in maximizing the usage of the resources. He further adds that this allows the libraries to optimize their usage through additional financial investments, establishment of user friendly webpages/databases, support services such as orientation, training and marketing of the resources. This infers that there is a direct correlation between utilization patterns and the financial investments made on electronic resources in university libraries.

In the recent years, electronic resources have gained significant popularity in universities worldwide. A study conducted in Pakistani medical college libraries showed that over 60% of users, including both students and faculty, utilized electronic resources for various purposes such as learning, completing assignments, preparing lectures, conducting research, and staying updated on current knowledge (Habib et al., 2022). In India, all university libraries in the North Eastern Region have subscribed to electronic resources. A 2019 study revealed that 47.2% of users in the 11 universities surveyed were satisfied with these resources, using them for research, assignments, and seminars (Roy & Hussain, 2019). The findings of these studies significantly impact institutional efforts to maximize the use of electronic resources. The low satisfaction rates in India could guide libraries to establish more effective support systems and services to increase the perceived value and utilization of the resources. The findings in Pakistan, on the other hand, could help libraries justify their current financial allocation for electronic resources and potentially request additional funding to further enhance their utilization. Conversely, if the uptake of resources remains low, libraries may face reduced funding. Therefore, they should consistently address challenges that hinder the maximum use of electronic resources. Implementing measures to improve user perception and overall utilization of these resources is essential (Roy & Hussain, 2019).

A study at Mzuzu University in Mozambique, the use of electronic resources among postgraduate students was high, with 83.7% expressing high satisfaction levels. The study used the Unified Theory of Acceptance and Use of Technology Model, combined with a mixed-method approach and purposive sampling, to establish usage patterns

among postgraduate students (Abdullah et al., 2023). In contrast, in Tanzania, Ruzagea and Msonde (2021) used regression analysis and one-way ANOVA to examine electronic resource usage. Their study revealed that undergraduate students utilized these resources more than postgraduate students, which is contrary to findings from other studies. These results suggest that utilization patterns differ between institutions and each university should thus implement a variety of electronic support services to cater to the different user groups to ensure higher perception and increased utilization patterns of electronic resources among the different user groups. Bwalya and Ssebbale (2017) support these findings and further explain that the use of electronic resources in libraries is significantly influenced by factors such as users' information needs, awareness of the resources, information literacy skills, education level, and past experiences in seeking information. They advise that libraries to focus on addressing these factors to develop support services that could further enhance user perception, increase utilization patterns and ultimately the maximization of electronic resources.

According to Memusi (2022) electronic support services, such as information literacy skills and awareness of resources, can significantly improve user perception and utilization patterns of electronic resources. Kimanga and Namande (2021) agree and emphasize that by addressing challenges such as digital illiteracy, libraries can redirect budgets to establish support services to such as digital and information literacy to boost users' confidence in accessing and utilizing electronic resources effectively.

Several studies show that electronic resources are quite popular in universities, with both students and faculty favoring those that are familiar, convenient, and easy to use. Sisimwo (2016) found similar results, noting that users tend to stick with electronic resources they have previously used rather than exploring new ones. These findings are consistent with the study by Adenariwo and Sulyman (2022). Such findings provide libraries with vital information that they can use to design, finance and implement support strategies that can create more awareness of the resources to the users and further enhance the maximization of the resources.

According to Ali and Jan (2020) the presence of high-speed internet and access to computers, laptops, and smartphones significantly boosted the utilization of electronic resources, underscoring the crucial role of technological infrastructure in enhancing their usage. They also note that insufficient searching and retrieval skills markedly hindered the utilization of these resources. As a remedy, they recommend that libraries conduct frequent orientation, training, and information literacy sessions to improve the utilization of electronic resources and thereby enhance their perceived value.

Based on the above discussions, it is clear that libraries must recognize the factors influencing utilization patterns and impeding their maximization to develop strategies that enhance usage and consequently improve users' perceived value of the resources. Francis (2023) supports this view by explaining that such strategies also inform the budgeting process for electronic resources and their associated support services and systems, all aimed at maximizing electronic resources for better return on investments.

She further suggests that libraries should adopt strategies such as utilizing electronic resource reports from individual databases or collective systems, conducting citation analyses, implementing surveys and feedback forms, organizing focus groups, conducting observations, monitoring social media, and conducting interviews. These approaches, combined with regular usage reports, provide a comprehensive understanding of users' dynamic needs, enabling more informed decision-making regarding budget allocations and service delivery.

2.4 Perceived Value of Electronic Resources

Perceived value is a subjective evaluation of a resource's benefits, usefulness, and relevance. According to Oluwaseun (2023) perceived value reflects library users' opinions on the quality, accessibility, and benefits of electronic resources. They suggest that universities can assess the perceived value of their resources by evaluating their relevance, reliability, currency, and ease of access. Additionally, Almahasees et al. (2021) explain that accessibility is a crucial factor in users' perception of the value of electronic resources, with users placing high value on resources that are readily available and accessible. De-Sarkar (2021) further add that for resources to be perceived as highly valuable, they should allow for easy navigation and retrieval of the information users seek.

Over the years, the adoption of electronic resources has seen steady growth. As Rafiq et al. (2021) explains, during the COVID-19 pandemic in 2020, libraries played a crucial role in disseminating COVID-19 information electronically, paving the way for the

education sector to embark on successful online education. In the United States, for example, the Association of College and Research Libraries developed a manual in 2020 to assist academic and research libraries in distance education during the pandemic. Since then, American libraries have continued to offer digital services, with notable events such as the American Library Association canceling their 2021 annual conference for the first time in 75 years and transitioning to virtual conferences.

This underscores the significant value American libraries place on electronic resources and digital information dissemination in recent years. Brown (2020) confirms that American libraries have indeed continued to utilize electronic resources extensively, noting a 75% increase in electronic and online resource usage since 2019, reflecting users' growing appreciation of their value and benefits. Brown's study suggests that electronic resources perceived value has enhanced their utilization since 2019.

In Pakistan, a study by Younus and Dilshad (2022) in eight universities in Punjab confirmed that the institutions lacked adequate electronic resources, leading users to prefer resources from the World Wide Web. The findings indicated that Punjabi universities needed to enhance their electronic resource collections by allocating sufficient budgets based on utilization reports and user requirements. This approach would meet the information needs and expectations of users, thereby improving their perception of the electronic resources.

In Africa, research by Oluwaseun (2023) revealed that university students' perception of electronic resources was below average. Their study at the National Open University of Nigeria library identified power outages and slow internet speeds as key challenges

affecting access to electronic resources, contributing to the low perception and subsequent low usage of these resources. They suggest that with adequate budgeting, university libraries could address these challenges, improve user experience, enhance perception, and ultimately increase the utilization of electronic resources, leading to a more benefits in academic outcomes. Similarly, in Ghana, Ankrah and Atuase (2018) found that postgraduate students at the University of Cape Coast were aware of the electronic resources offered by their university. However, only 42.1% of them preferred to use these resources, with 57.9% opting for search engines instead. These findings highlight the need for libraries to assess utilization patterns and develop strategies to attract users to utilize their electronic resources more effectively.

According to Patricia and Sibanda (2021) in their study at Arrupe College Library in Zimbabwe, revealed that the uptake for electronic resources was high as the users found the resources to be very useful and were satisfied with the support services offered by the library. However, the users experienced certain challenges such as inadequate electronic resources, lack of searching and retrieval skills and inadequate computers which the library could mitigate by establishing support services such as trainings, orientation and computer labs. In additions this particular study adopted The Technology Acceptance Model and a descriptive survey to try to understand the user's perceptions of electronic resources and found that there was indeed a correlation between ease and frequency of use of the resources created by adequate training and available technological device and the overall perception and utilization of electronic resources.

In Kenya, research conducted at Aga Khan University library found that users' expectations of the electronic resources exceeded their perceptions. The study utilized SERVQUAL, a measurement tool designed to gauge users' expectations and perceptions against defined quality criteria. It focused on utilization patterns and available support services to identify ways the library could enhance its services and increase electronic resource usage by aligning with high user expectations. The study revealed several recommendations: improving staff training to enhance user service skills, reducing turnaround times for user services, continuously upgrading computer facilities, and providing adequate bandwidth for seamless and rapid access to electronic resources. These initiatives aimed to bridge the gap between users' high expectations and the user's perceptions of the resources (Gathoni & Van, 2019).

A study by Hunt et al. (2023) explains that despite the value derived from electronic resources in teaching, learning, and research, as discussed above, it is prudent to note that the quality of teaching, learning, and research can indeed be influenced by various factors beyond the scope of the library and its resources. Hutchison et al. (2019) notes that while the perceived value of electronic resources is subjective and influenced by various internal and external factors, the library should find ways to mitigate these influences to ensure users continue to value and use the electronic resources. Smith (2019) suggests that libraries should conduct regular user assessments to gauge their users' satisfaction level and identify areas for improvement to enhance their perception of electronic resources, thereby boosting their utilization. Hutchison et al. (2019) acknowledges that evaluating users' perceptions of the value of electronic resources is

crucial for libraries. Regular assessments can guide budget allocations and the development of support systems, optimizing resource use and ultimately increasing the benefits derived from electronic resources.

Several studies on the perceived value of electronic resources and other library services reveal that it varies among different user groups based on their unique needs, preferences, and experiences (Rafique et al., 2020). According to Brown (2020) these differences are also apparent across disciplines; for example, students in medical or engineering programs may require more information due to the nature of their studies, while those in practical fields like culinary programs may use fewer electronic resources due to the lower emphasis on theoretical knowledge. Smith (2019) agrees, noting that users in STEM fields may need access to specialized databases and research tools, while those in the humanities may prioritize access to archival collections and primary sources. Jones and Harrison (2019) add that these perceptions can also vary based on research interests and professional backgrounds.

The findings highlight the importance of understanding the diverse information needs of users when evaluating the effectiveness of library services and electronic resources. This understanding is crucial for developing budgets and support strategies that can enhance users' perceptions of these resources, improve utilization patterns, and ultimately increase the maximization of electronic of resources.

As study by Moorthy et al. (2019) bring a different perspective on the utilization patterns and he adds that awareness and familiarity with the library's policies and procedures can

impact users' perception of the library's value. He argues that well informed users derive greater value from their library experience as it gives them confidence in seeking for information. Furthermore, Moorthy et al. (2019) adds that users with positive experiences at the library, users who have access to the library due to their proximity to it, and users who engage in library programs and events hold the library in high regard, thus having a higher perceived value of the library and its resources. Furthermore, Smith (2019) explains that having a feedback and communication mechanism also enhances the perceived value for users. Users who have had the opportunity to provide feedback, suggestions, and input into library decision-making have a higher perception of the library and its resources.

In addition, Nguyen et al. (2019) explains that the utilization patterns reports can guide libraries to customize their services and allocate budgets to market the resources to further meet the diverse needs and preferences of their patrons and ultimately boost user satisfaction, perception of the library, usage and the maximization of the resources.

Overall, electronic resources have transformed teaching, learning, and research in academic settings, enabling educators, learners, and researchers to access, create, and share knowledge in unprecedented ways. These studies suggest that with appropriate support systems and services, users develop greater confidence in the library and its resources, leading to more effective utilization. Libraries should, therefore, aim to enhance users' perceptions of the library and its resources to encourage increased use and maximize their value within universities.

2.5 Support Services for Electronic Resources

Electronic resources require hardware, software, services, and personnel to facilitate their access, discovery, utilization, and management and in this study, they shall be referred to as electronic resources support services. One common misconception is that only computers, the internet, and databases are necessary for providing electronic resources. However, this is far from the truth as electronic resources require a diverse array of services and personnel, in addition to the hardware and software, to facilitate their provision (Sejane, 2017).

A study by Nguyen et al. (2019) emphasizes that developing the technological infrastructure for electronic resources in libraries requires several key components, including management systems that facilitate these resources' seamless and efficient delivery. This is exemplified in South Africa, where libraries have adopted OCLC's World Share Management Services to enhance the management of their electronic resources, offering advanced features for overseeing their digital collections. These improvements attract more users, leading to high utilization rates. Additionally, the interactive features enhance the user experience, resulting in high satisfaction levels (Molaudzi, 2020).

In Kenya, libraries have adopted digital library models similar to those in America, Asia, and other parts of Africa, where collections have been digitized thereby further boosting remote access of these resources. These initiatives have enabled African libraries to modernize their services, making them more attractive to users and resulting in high perceived value and utilization of the resources (Harker et al., 2022).

A study by Abdullah et al. (2023) explains that confidence in using electronic resources leads to ease of use, a higher perceived value and high utilization rates. This sentiments are evident in a Study conducted at Lilongwe University of Agriculture and Natural Resources in Malawi where 75.5% of students were able to search and retrieve online information resources comfortably. The findings of this particular study revealed that support services like orientation, information literacy training, user manuals, and reference services boosted users' confidence which ultimately increased their utilization rates. Zgambo and Chawinga (2019) shares the same statements and adds that in addition to user-centered support services, libraries should pay attention to competency training for librarians to enable them get skills that are required to facilitate the support services mentioned.

In the same light, Abiero and Amunga (2024) assert that the university librarian, electronic resources librarian and systems librarians must thoroughly understand electronic resource acquisitions, licensing, legal frameworks, budget management, utilization patterns, user perceptions, and electronic support services. This knowledge enables them to manage these resources effectively, leading maximization of these resources. With a comprehensive understanding of these factors, librarians gain a holistic view of electronic resources and can better comprehend financial investments and their potential. This insight guides the development of strategies to maximize resource usage for an improved benefits on academic outcomes.

In other studies, the availability of an electronic resources policy is highlighted as an important element in guiding all electronic resources implementation and maximization

efforts. According to Sejane (2017) an electronic resource usage policy should address both the infrastructure and services related to electronic resources. This policy guides libraries in acquiring, managing, and marketing electronic resources to maximize their use and achieve more benefits on academic outcomes and research output. They further explain that the policies outline mechanisms for offering various support services, including virtual help desks, personalized research assistance, online usage guides, tutorials, training sessions, workshops, and webinars to promote electronic resources.

In recent years, electronic resource policies have embraced inclusivity to better accommodate the diverse users in universities, including those who are visually impaired or deaf (Smith & Smith, 2021). These policies can guide and promote the adoption of modern technologies, such as voice prompts and enhanced visual content on electronic resource websites and databases, to ensure accessibility for all users, including those with disabilities. Smith and Smith (2021) note, however, that implementing such additional features may be costly in the initial stages. Nevertheless, these features improve the perceived value of the resources and ultimately increase utilization rates.

A study by Aregbesola and Nwaolise (2023) in Nigeria highlights online security as a crucial factor significantly affecting the utilization of electronic resources. They emphasize that robust cybersecurity practices are essential for enhancing the use of electronic resources in libraries. They explain that all libraries should implement measures to protect electronic resources from data breaches and cyber threats to build user trust and encourage resource use. Ensuring the security of these resources is vital, as users are more likely to use resources they perceive as safe. If users do not feel secure

online, utilization rates will be very low. Additionally, Aregbesola and Nwaolise (2023) recommend that libraries allocate adequate budgets for secure systems and provide online security training for all users.

A study by Borgman (2018) adds that, in addition to cybersecurity measures, libraries should ensure compliance with relevant regulations and standards, such as copyright laws and data privacy regulations, to promote the legal and ethical use of their electronic resources. He argues that users are unlikely to engage with resources acquired through unscrupulous means, which significantly reduces their perceived value and ultimate utilization. Borgman suggests that libraries should strive to adhere to the law in providing electronic resources.

A deeper exploration into electronic resources systems and support services reveals some challenges and constraints in their establishment and implementation. Firstly, e-resources infrastructure entail significant costs associated with initial purchase, licensing, maintenance, and upgrading (Ali & Jan, 2020). Secondly, access barriers resulting from the digital divide hinder some users from accessing the resources (Jamil & Muschert, 2024). Thirdly, unexpected technical issues such as downtime, access disruptions, and compatibility issues are prevalent (Sejane, 2017). Lastly, information overload due to the massive content available in databases is a concern and the inevitable online security threats from viruses, hackers, and crackers (Ngonga et al., 2019). Libraries should thus promptly address these challenges so that they can focus on capitalizing on other opportunities associated with providing electronic resource usage at their institutions (Sejane, 2017).

To address these challenges Wamalwa et al. (2019) suggests that libraries should establish clear administrative policies and procedures for managing electronic resources, protecting user rights, and ensuring compliance with legal and ethical standards. He adds that by doing so, libraries will maintain user trust, enhance the perceived value of their resources, and increase utilization, ultimately maximizing the usage and benefits on academic outcomes.

The above discussions shed light on the significance of electronic resource support services and their impact on utilization patterns, user-perceived value, and financial investments by libraries. They all support the idea that effective support services can enhance the user experience with electronic resources and empower users to leverage these resources for their academic, research, professional, and personal needs. This leads to maximum utilization of the electronic resources and an increased benefits on academic outcomes.

2.6 Summary of Research Gaps

Libraries lack standardized comprehensive methods for evaluating the effectiveness of maximizing electronic resources which include the assessment of the influence of financial investments, utilization patterns, perceived value and support services. This study, sought establish a method of assessing these factors with regard to maximizing electronic resources to provided strategies to further increase maximization of the resources for increased benefits on academic outcomes and research output at Technical University of Mombasa and Kenya Methodist University.

Several studies conducted to assess the maximization of electronic resources focused on the utilization of these resources by students, but there was limited research on how faculty and university administrators perceived and used these resources. This study therefore aimed to reveal the faculty and administrators' perspectives on the effectiveness of maximizing electronic resources which further revealed additional benefits such as cost saving, enhanced collaborative work and increases learning and teaching experiences.

Most studies conducted in this area focused on single academic libraries. This study, selected two university libraries: Technical University of Mombasa (TUM), a public university, and Kenya Methodist University (KeMU), a private university. This selection provided an institutional perspective and geographical perspectives to assess the influence of financial investments, utilization patterns, perceived value and support services in maximizing electronic resource offered in Kenyan universities.

Finally there was limited studies conducted on the assessment of the influence of financial investments, utilization patterns, perceived value and support services in maximizing electronic resources. This study served as a stepping stone for other universities in Kenya to conduct similar assessments using other variables such as human resources employed in the library, information technology infrastructure and even specific academic programs' impact on electronic resources maximization Kenyan universities. The study's findings helped to contextualize the findings and identify best practices and common challenges experiences in maximizing electronic resources Kenyan universities.

2.7 Theoretical Framework

This study was based on Edward Freeman's 1984 Stakeholder Theory, which highlights the relationships between an organization and its customers, suppliers, employees, investors, communities, and others with a stake in the organization. This theory states that an organization's success is determined by the value delivered to stakeholders through the benefits generated from maximizing their operations (Freeman et al., 2021). The theory posits that for organizations to be successful and to deliver maximum value to their stakeholders, they should identify the stakeholders, consider their interests and influences, engage them in decision-making processes then evaluate their interests to identify challenges and opportunities. This study identified the stakeholders as the students, faculty members, library staff and the university management.

The theory has been adopted in various fields that deal with maximizing value, such as business management (Freudenreich et al., 2020), project management (Zarghami & Dumrak, 2021), strategic management (Jones & Harrison, 2019), higher education (Langrafe et al., 2020), and knowledge management (Shahzad et al., 2020).

This study aimed to evaluate the influence of financial investments, utilization patterns, perceived value, and support services in maximizing electronic resources. To achieve this, the Stakeholder Theory was employed to guide the research, as it allowed the study to identify all the stakeholders, explore how their needs and perceptions influence financial investments, utilization patterns, support services and perceived value of electronic resources and TUM and KeMU's efforts in maximizing electronic resources. Moreover it allowed the study to identify avenues of engaging all stakeholders in

decision making to fully establish the challenges and opportunities that exist in maximizing electronic resources.

According to Freeman et al. (2021) the theory was based on the premise that institutions can only maximize on the value of their investment and gain more benefits from their operations by engaging stakeholder in decision making processes. The study identified stakeholders as people who have interest in a business or institution and are affected by the business's operations. They explain that stakeholders significantly influence an organization's success, by determining financial investments, product development strategies, sale of products, marketing strategies, organizational expansion, staffing, and ultimate success of the business (Freeman et al., 2021).

According to Laplume (2021) the Stakeholder Theory emphasizes the importance of analyzing stakeholders' interests and developing strategies to cater to them, thus enhancing institutional longevity, reducing risks, and maximizing value addition and gains. Specifically, in the context of Kenya, this theory facilitated a holistic approach to addressing the needs and interests of all parties involved in maximizing the utilization of electronic resources in universities.

Moreover, it allowed the study to analyze the factors that influence the maximizing of electronic resources, starting from the users' information needs, financing of the resources, the support services required to enhance perceived value and utilization of the electronic resources. This critical examination enabled the study to develop strategies to

improve stakeholder engagement decisions dealing with maximizing electronic resources usage at TUM and KeMU (Kivits & Sawang, 2021).

Firstly, the theory provided a foundation for this study to identify all stakeholders involved in the decision-making process and their perceptions of financial investments in maximizing electronic resources. Students' feedback on the quality, availability, and relevance of these resources directly influences decisions related to financial investment. Faculty perceptions of the resources' relevance to the curriculum can significantly impact their advocacy for increased investment and utilization. University administrators and library staff play a crucial role in ensuring appropriate budget allocations and acquiring the necessary resources for users at TUM and KeMU. The interests and authority of these stakeholders directly influence the financial investments made by the universities. By focusing on this, the study successfully achieved its first objective which was determining the financial investment made by academic libraries in the provision of electronic resources (Freeman et al., 2021).

Secondly, the theory recognized the interests and influence of stakeholders in the utilization of electronic resources at TUM and KeMU. Students and faculty are likely to use resources that are readily available, easy to use, and relevant to teaching, learning, and research. By understanding the factors that affect users' information-seeking behaviors, utilization patterns, and perceived value of the resources, libraries can develop strategies for financial investments and support services that enhance the maximization of electronic resources (Kivits & Sawang, 2021).

To address the third objective on the perceived value of electronic resources, which connects stakeholders' interactions and engagement to their perceptions and expectations, the theory provided a framework for understanding users' views on electronic resources and their impact on academic excellence. It enabled the library to assess user feedback on the perceived value of these resources through mechanisms such as usage statistics, user needs assessments, surveys, and academic success. This guided the development of strategies to enhance user perception (Langrafe et al., 2020). Library staff could use this information to evaluate users' interests and develop strategies that further engage them in decision-making regarding electronic resources. Aligning financial investments and support services with the needs of students and faculty would enhance the perceived value of electronic resources, leading to increased usage, satisfaction, and ultimately the maximization of these resources.

Finally, for the fourth objective, the theory emphasized the importance of evaluating and balancing stakeholder's interest so as to identify challenges and opportunities to maximize value. In doing so libraries are required to conduct user needs surveys to guide in the development and modification of support services such as training and technical support that can improve perceived value and utilization of the electronic resources, thereby increasing benefits derived from maximizing electronic resources for the universities (Freeman et al., 2021). This information can be used to optimize budget allocations and to develop long term sustainable support services that could have significant benefits on teaching learning and research.

According to Barney and Harrison (2020) just like any other theory, the theory had some shortcomings. The theory lied on the premise of catering to stakeholders' interests who included shareholders, employees, customers, the local community, environmental groups, and regulators. These stakeholders had different needs, expectations, concerns and catering to all their interests was an uphill task. Barney and Harrison advised that to mitigate these, the institution should have a strategic plan that allowed for the implementation of projects in phases and thus cater to these needs in sustainable phases over a period of time.

Despite the observation by (Barney & Harrison, 2020) the theory still addressed all the objectives of the study and enabled the study to fulfill its ultimate goal of assessing the influence of financial investments, utilization patterns, perceived value, electronic resource support systems in maximizing electronic resources usage at university libraries in Kenya.

2.8 Conceptual Framework

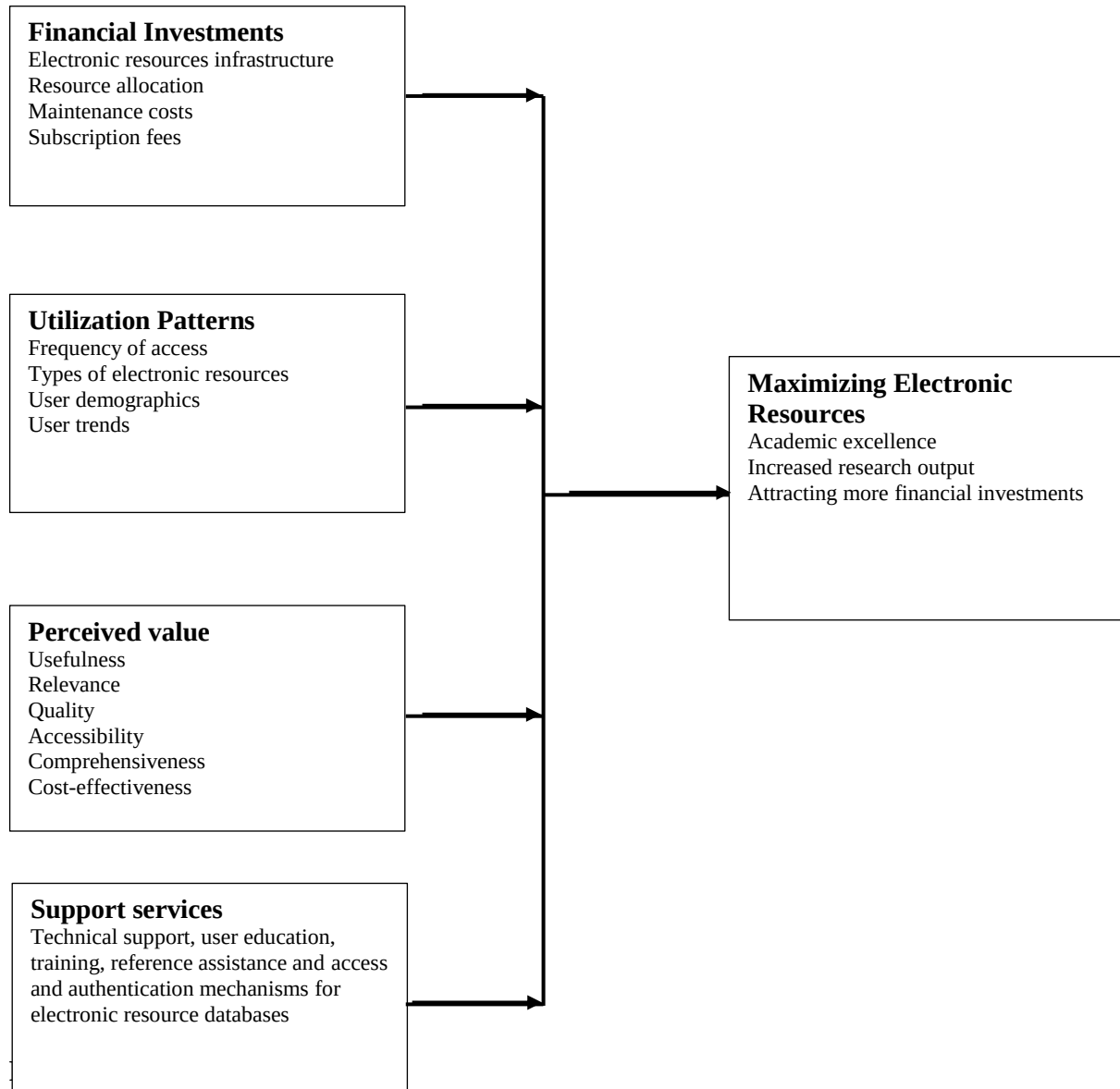
The conceptual framework is a model highlighting the ideas in a particular study also referred to as independent and dependent variables. The independent variables included elements aimed to maximize the electronic resources such as; determining the financial investment made by universities, establishing the utilization patterns of electronic resources, determining the perceived value of electronic resources and establishing the support services available at TUM and KeMU. The dependent variable was maximizing electronic resources as shown below. Figure 2.1 illustrates the relationship between the objectives of this study.

Figure 2.1

Conceptual Framework for Maximizing Electronic Resource Usage

Independent variables

Dependent variable



2.9.1 Description of Variables

Financial investments involve sourcing for funds and allocating the funds to various functions such as the acquisition of electronic resources, electronic resource infrastructure, maintenance of the resources, subscription fees and financing support services.

Utilization patterns refer to the users' interaction with electronic resources; it involves assessing the frequency of access for the resources, types of resources accessed, user demographics, and usage trends over time.

Perceived value refers to users' subjective assessment of the resources' benefits such as the usefulness, and relevance of electronic resources that are assessed through the quality of the content, ease of access, and cost-effectiveness.

Support services include services and tools that facilitate the access, discovery, utilization, and management of electronic resources. They include technical support, user education, training, reference assistance and access and authentication mechanisms.

Maximizing electronic resources, the dependent variable in this study referred to the extent to which university libraries optimized the value they derived from the utilization of electronic resources such as academic excellence, increased research output and attracting more funds.

CHAPTER THREE

RESEARCH METHODOLOGY

3. 0 Introduction

This chapter presented the methodology that was adopted to assess the influence of financial investments, utilization patterns, perceived value, electronic resource and support services in maximizing electronic resources at Technical University of Mombasa (TUM) and Kenya Methodist University (KeMU). The chapter commenced with an in-depth discussion of the research design, the population, the sample and sampling procedure followed by the data collection methods, and data analysis procedures that were used to fulfill the study's objectives.

3. 1 Research Design

A research design is an outline of an empirical study that details the methods and approaches used in data collection and analysis (Coy, 2019). This study will employed a mixed-method approach and a descriptive survey research design. Quantitative and qualitative data were needed to achieve the study's objectives; the approach therefore allowed for in depth understanding of the influence of financial investments, utilization patterns, perceived value, electronic resource and support systems on the maximization of electronic resources at TUM and KeMU.

Research undertaken by Harrison et al. (2022), Tenya et al. (2024), Patricia and Sibanda (2021) and Deja et al. (2021) on similar topics all used a descriptive survey research design, as it allowed for gathering data on users' opinions and perceptions regarding electronic resources in libraries. According to Hirose and Creswell (2023), descriptive

survey research establishes the "what," "where," and "how" of phenomena. In this case, the study sought to establish the financial investments on electronic resources, usage patterns, perceived value, and support services.

This research design enabled the study to achieve its objectives by facilitating the collection of detailed insights into practices and strategies used for maximizing electronic resources by assessing financial investments, utilization patterns, perceived value, electronic resource and support services to establish more strategies to increase the effectiveness of maximizing the resources.

3.2 Location of the Study

This study's data was collected from TUM's main campus in Mombasa County and KeMU's main campus in Meru County. Firstly, TUM specializes in applied sciences, technology, and engineering, providing the study with a unique perspective on how e-resources were utilized in technically oriented academic programs and research activities. Conversely, KeMU offers subjects in humanities, social sciences, business, and technical courses, allowing for a comparative analysis of the usage of electronic resources across various subject areas.

Secondly, TUM, located in the coastal city of Mombasa, provided insights into how e-resources are utilized in a coastal urban setting, while KeMU, located in Meru, and offered a contrasting perspective from a more rural setting. This allowed the research to address varying regional information needs, technological infrastructure, and

accessibility concerns, which were crucial for understanding the maximization of electronic resources.

Lastly, by choosing a public and private university, TUM and KeMU respectively, the study was able to establish the existing electronic resource user needs, budget allocations, utilization patterns, perceived value and maximization strategies of the two universities in order to establish best practices and identify areas for improvement in maximizing electronic resources.

3.3 Target Population

A study by Hennink and Kaiser (2022) explains that a population is a collection of people with homogeneous characteristics. They further explain that the target population describes the specific group for which the study findings are intended. The target population for this study was Technical University of Mombasa and Kenya Methodist University. The respondents who provided the data included the library staff, faculty, postgraduate students, and undergraduate students from the two universities, as shown below.

Table 3.1

Target Population

		Library staff	Faculty	Postgraduate students	Undergraduate students
1.	TUM	30	400	150	14000
2.	KeMU	9	200	250	8000
	Total	39	600	400	22000
	Total population				23039

The library staff responsible for providing electronic resources and implementing strategies to maximize the usage of electronic resources provided insights into the investments made on electronic resources, their utilization patterns, perceived value, and the support services employed by libraries to maximize electronic resource utilization. On the other hand, faculty and students, who are the primary consumers of electronic resources in universities provided insights into their perceptions of the value of electronic resources and the effectiveness of the support services implemented by the library to facilitate maximum utilization of electronic resource in universities.

3.4 Sampling Procedure

The sample size for a particular study is the total number of participants known as respondents selected for a study Allen et al. (2020). It is the total number of individuals who have an equal probability of being included in the study and have been selected from the study's target population through a sampling technique. According to Murithi (2020) a sampling technique ensures that subgroups within a population are well-represented in the sample, leading to more accurate and generalizable results for the study.

This study adopted a stratified random sampling technique for selecting students. First, the students were categorized as undergraduate or postgraduate. Undergraduates were further divided according to their year of study; years 1, 2, 3, and 4, while postgraduates were divided into year 1 and year 2. The respondents were then randomly selected from each stratum to form the final sample thereby ensuring fair representation from the

different levels of study. This further guaranteed that the random sampling provided a balanced representation of various areas of specialization among the students.

For the faculty, the respondents were categorized into departments using a stratified sampling technique first, followed by, proportional sampling using a ratio of the sample size. The approach ensured fairness as it considered the varying sizes of departments in TUM and KeMU. The final respondents were then selected randomly from the portions to increase the chances of diverse perceptions and fair representation of all areas of specialization and departments from the faculty.

The library staff were selected using purposive sampling, to select key informants such as the university librarians and administrators. This category of respondents provided valuable information on library budgets, utilization patterns in the library, perceived value of the resources and the support services used in maximizing electronic resources.

3.5 Sample Size

The sample size is a critical factor in research as it determines the accuracy and dependability of the study findings (Dubey & Kothari, 2022). A sample can be defined as the number of items in the sample or individuals to be selected from a population (Bougie & Sekaran, 2019). The sample size for this study was 426 out of the target population of 23039. The library staff respondents were selected using purposive sampling, while the faculty and postgraduate student respondents were selected using the $n = \frac{N}{1+N(e)^2}$ formula (Ngiam et al., 2021). Lastly, the sample size for the undergraduate students was 1% of their total number. This was to enable the study

obtain a reasonable and manageable number of respondents for the study from the 23039 total target population.

3.5.1 Faculty and Postgraduate Sample Size

$$n = \frac{N}{1+N(e)^2}$$

Where

n = minimum returned sample size

N = the population size

e = the degree of accuracy expressed as a proportion

(Ngiam et al., 2021)

This formula allowed the study to calculate the appropriate sample size (n) from a given population (N) while considering a margin of error (e). Due to the large target population, this formula allowed the study to adjust the population size by accounting for the level of acceptable error to ensure that the sample was not too large nor too small (Ngiam et al., 2021). The final sample size, for faculty and postgraduate students, calculated from the above formula was as follows;

Table 3.2***Faculty and Postgraduate Sample Size***

	TUM	KeMU	Total
Postgraduate	$30 = \frac{150}{1 + 150(0.05)^2}$	$50 = \frac{250}{1 + 250(0.05)^2}$	80
Faculty	$80 = \frac{400}{1 + 400(0.05)^2}$	$40 = \frac{200}{1 + 200(0.05)^2}$	120
Total	110	90	200

3.5.2 Undergraduate Sample Size

For the undergraduate student, the study selected 1% of 14000 from TUM and 1% from KeMU to get a sample size that was appropriate, reasonable and manageable for the study. 1% offered a reasonable sample size from the huge number.

$$n = 1\% N$$

Table 3.3***Undergraduate Sample Size***

	TUM	KeMU	Total
Undergraduate	$140 = 1\% * 140000$	$80 = 1\% * 8000$	220
Total	140	80	220

The sample size for this study was as follows;

Table 3.4

Sample Size

	Library staff	Faculty members	Postgraduate students	Undergraduate students
TUM	3	80	30	140
KeMU	3	40	50	80
Total	6	120	80	220
			Sample size	426

3.6 Data Collection Instruments

A data collection instrument is a tool or method used in research to gather data or to collect information from the respondents (Dubey & Kothari, 2022). This study employed two data collection tools; questionnaires and interviews.

3.6.1 Questionnaires

The questionnaires were administered online to both students and faculty to collect quantitative data from the faculty and students. The questionnaire consisted of 6 sections with both closed-ended and open-ended questions, allowing respondents to freely express their thoughts on the value of electronic resources. Each questionnaire was divided as follows; section 1: demographic data of the respondents, section: 2-6, financial investment of electronic resources, utilization patterns, perceived value of electronic resources, support services for the resources and the maximization of the electronic resources. Additionally, a five-point Likert scale was utilized to structure the

questionnaire and measure responses as described in the study's research objectives (See Appendix III).

3.6.2 Interviews

Physical interviews were conducted with TUM library staff, while phone interviews were conducted with KeMU staff. The interview schedule included both open-ended and closed-ended questions to facilitate follow-up questions and provide an opportunity for clarifications. The schedule consisted of six sections; section 1 contained demographic information while sections 2-6 contained questions that addressed the objectives of the study which included; the financial investments on electronic resources, utilization patterns of electronic resources, perceived value of electronic resources, electronic resources support services and the maximization of the electronic resources. Moreover, a five-point Likert scale was utilized to structure the questionnaire and measure responses as described in the study's research objectives (See Appendix IV).

3.7 Pretesting

The data collection tools, including the interview guide and questionnaires, were evaluated in a pretest conducted at the University of Nairobi – Mombasa Campus to ascertain their effectiveness from the respondents' viewpoint. The pretest participant number was derived by calculating 10% of the total sample of 426, resulting in 43 participants (Hertzog, 2008) . The 43 participants were distributed as follows: 1 librarian, 10 faculty members, 7 postgraduate students, and 25 undergraduate students. The participants were selected using a stratified random sampling technique. The

lecturers were categorized into department while the students were categorized into year of study. This was then followed by random sampling within the strata to finally come up with the 43 pretest participants. The feedback obtained from the pretest were assessed to establish if the respondents comprehended the questions on the questionnaires and interview guides.

3.8 Validity of the Research Instruments

Validity checks for the quality of data generated by the research instruments used in a study in terms of accuracy, credibility, and transferability to other groups (Hirose & Creswell, 2023). A pretest was conducted to assess the content validity to ensure that that the questionnaire and interview guide were clear and aligned with the study's objectives. Supervisors, who are experienced library professionals oversaw the pretest to confirm that the questions adequately covered all aspects of the study (Coy, 2019). Feedback from participants in the pretest were considered to evaluate the relevance and comprehensiveness of the questions from the data collection tools.

To assess face validity, feedback from students, library staff, and faculty involved in the pretest were collected which aided in determining whether the questions measured the factors that influenced the maximization of electronic resources. To examine construct validity, the study relied on thorough literature review to ensure that the formulation of questions addressed all the objectives outlined in the study (Ryan, 2018).

3.9 Reliability of Research Instruments

Reliability is crucial for testing the consistency of data collection tools. The selected tools must ensure that data can be consistently gathered from a similar sample under identical conditions. The responses from the pretest study were analyzed using the Cronbach's alpha coefficient of 0.8 and above for all the four variables to attain a satisfactory and acceptable reliability score. Cronbach's alpha coefficient is a statistical measure used to verify that the questions within the data collection tools measure the same underlying construct (Kennedy, 2022). In addition, a test-retest method was conducted during the pretest at the University of Nairobi- Mombasa Campus to assess the consistency of responses.

3.10 Data Collection Procedure

A structured interview was conducted with the library staff, university librarian, electronic resources librarian and systems librarian, from TUM and KeMU. At TUM, the interviews were conducted in person. The researcher scheduled appointments for the 3 respondents, and sought permission from the interviewees to record audio of the interview before the date. At KeMU, the researcher conducted the interview online using Google Meet. Permission to record the audio of the conversation was sought before the interview as well. In addition to notes, a mobile phone was used to record the audio from both TUM and KeMU interviews.

All the questionnaires for the undergraduate students, postgraduate students, and faculty were administered online using Google Forms for easy management and to accommodate respondents at KeMU in Meru. An introduction letter and a consent form

was shared with all respondents two days before the questionnaires were distributed to prepare them for the exercise.

3.11 Data Analysis and Presentation

The goal for data analysis is to derive meaning from data by concluding, giving suggestions, and aiding in decision making.

3.11.1 Analysis of Quantitative Data

Quantitative data from the questionnaires were analyzed using statistical software SPSS, version 26, to generate descriptive statistics and inferential tests including frequencies, percentages, and mean scores, to summarize electronic resource usage patterns and perceived value among respondents. The findings were then tabulated and presented as graphs and charts for clear understanding and to show patterns, trends, and relationships within the collected data.

3.11.2 Analysis of Qualitative Data

Qualitative data from interviews were analyzed along thematic areas to uncover key patterns, trends and insights related to financial investments and electronic resource support systems. The process involved systematic coding, categorization and interpretation of the data to derive meaningful findings. The results were then tabulated, coded, and categorized into thematic areas for clarity and organization.

3.12 Ethical Considerations

The respondents were informed that participation in the study was voluntary, and their anonymity was to be maintained in addition to observing confidentiality and privacy. Consent was sought from all participants, and measures were implemented to safeguard sensitive information and uphold data confidentiality. Furthermore, the study adhered to strict professionalism by ensuring that research goals remained objective and not exaggerated. Ethical approval was obtained from KeMU and The National Commission for Science, Technology, and Innovation (NACOSTI).

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter presented the study's findings on the assessment of financial investments, utilization patterns, perceived value of the electronic resources and the support services in maximizing electronic resources usage at TUM and KeMU. The study further adopted a mixed-method approach using descriptive survey research design to enable the collection of both quantitative and qualitative data from questionnaires and interview schedules. The chapter begun with an in depth presentation and discussions on the reliability statistics, demographic information followed by the findings of the study variables.

4.1 Reliability Statistics

The validity and reliability of data for this study were determined using an internal consistency measure that is Cronbach's Alpha, which was computed using the SPSS software as presented below in Table 4.1.

Table 4.1

Reliability Statistics

Main variables of the study	Cronbach's Alpha
Financial investment (X1)	0.890
Utilization Patterns (X2)	0.880
Perceived value (X3)	0.892
Support Services (X4)	0.902
Maximization of Electronic Resources (Y)	0.891

The study revealed a Cronbach's Alpha value of more than 0.8 for each guiding variable for the study. A correlation of 0.7 and above indicates dependability of data in capturing the required data in a study. (Kennedy, 2022). Therefore, the items in the questionnaires and interview were well-designed and consistently captured the intended dimensions of electronic resources' utilization, perceived value, and related factors (Mugenda & Mugenda, 2003).

4.2 Response Rate

The study aimed at collecting data from 426 respondents; comprising 420 users who were the undergraduate students, post graduate students and faculty members; and 6 library staff. A total of 420 questionnaires were distributed to undergraduate students, postgraduate students, and faculty members from TUM and KeMU and 6 interviews were conducted for the library staff. 384 questionnaires were correctly completed and returned, yielding a response rate of 91.43% while all the 6 library staff were interviewed yielding a response rate of 100%. These response rates were considered highly desirable, as noted by Sataloff and Vontela (2021) who state that in social sciences, a response rate above 50% is sufficient for data collection and analysis. The high response rate enhanced the study's reliability and validity, indicating that the findings represented the sampled population's views as shown in Table 4.2 and Table 4.3.

Table 4.2

Response Rate: Questionnaires

		Frequency	Percentage
Valid	KeMU	143	37.2
	TUM	241	62.8
	Total	384	100.0

Table 4.3

Response Rate: Interviews

		Frequency	Percentage
Valid	KeMU	3	50
	TUM	3	50
	Total	6	100.0

4.3 Background Profiles of the Respondents

Respondent profiling aims to evaluate and understand the backgrounds of participants in a study. For this research, the respondent profile included demographic attributes such as gender, university affiliation, faculty, and age, which could help understand their engagement and provision of electronic resources respectively as shown in Table 4.4 and Table 4.5.

Table 4.4

Background profiles of undergraduate students, postgraduate students and faculty members.

Demographic Attribute	Level	Frequency	Percentage
Gender	Female	148	38.5
	Male	232	60.4
	Male, Female	4	1.0
	Total	384	100
University Name	KeMU	143	37.2
	TUM	241	62.8
	Total	384	100
Faculty Name	Engineering and Technology	82	21.4
	Humanities and Social Sciences	56	14.6
	Institute of Computing and Informatics	18	4.7
	Science and Technology	63	16.4
	Total	384	100
Age	18-24	198	51.6
	25-34	86	22.4
	35-44	6	1.6
	45-54	62	16.1
	55 and above	32	8.8
	Total	384	100

The study was conducted in two universities, TUM and KeMU with responses detailed in Table 4.3: KeMU (37.2%, n = 143) and TUM (62.8%, n = 241). The findings in Table 4.4 revealed that the respondents were predominantly male (n = 232, 60.4%), indicating a notable gender disparity among the participants while still meeting the gender constitutional requirement of at least a third representation from each gender.

Regarding faculty distribution, respondents were fairly spread across various faculties: Engineering and Technology (21.4%, n = 82), Humanities and Social Sciences (14.6%, n = 56), Institute of Computing and Informatics (4.7%, n = 18), and Science and Technology (16.4%, n = 63). Most studies categorize users based on level of study such as undergraduate and post graduate students alone however this study went further to

categorize them into faculties to enable the study get a broader representation of all academic disciplines, which enhanced the comprehensiveness of the study's insights into electronic resource utilization among users in the universities (Ruzegea & Msonde, 2021). In support of this Brown (2020) and Smith (2019) explain that with such categorizations, the study got data from an equal representation of all faculties.

In terms of age, the majority of respondents were young adults, with 51.6% (n = 198) aged between 18-24 years and 22.4% (n = 86) aged between 25-34 years. This suggested that the sample predominantly consisted of younger individuals who were more engaged with digital technologies and electronic resources. Additionally, 16.1% (n = 62) of the respondents were aged between 45-54 years, and 8.8% (n = 32) were 55 years and above, providing insights from more experienced and potentially more established individuals in their academic and professional careers.

The gender distribution, combined with the broad representation from various faculties and a wide age range, ensured a diverse sample, contributing to a more comprehensive understanding of electronic resource utilization and perceived value at TUM and KeMU. According to Murithi (2020) a sample should encompass all subgroups to allow for more accurate and generalizable results for a study. This study's demographic diversity enriched the study by incorporating a range of perspectives, blending the fresh outlook of younger respondents with the seasoned insights of older, more experienced individuals in various disciplines in the universities.

This study also included the library staff as respondents to provide information to on the financial investment in electronic resources and the support services the libraries had put

in place to increase user perception and the maximization of electronic resources. The respondent's profile included demographic attributes such as gender, age, university affiliation and level of education as shown in Table 4.5.

Table 4.5

Background Profiles of Library Staff

Variable	Category	Frequencies	Percentage
Gender	Male	2	33.33
	Female	4	66.67
	Total	6	100.00
Age	25-34	2	33.33
	35-44	3	50.00
	45-54	1	16.67
	Total	6	100.00
University	TUM	3	50.00
	KeMU	3	50.00
	Total	6	100.00
Level of Education	Bachelors	1	16.67
	Masters	4	66.67
	PhD	1	16.67
	Total	6	100.00
Role	University Librarian	1	16.67
	Systems Librarian	2	33.33
	E-resources Librarian	3	50.00
	Total	6	100

The structured interview for library staff members at TUM and KeMU included a total of six respondents. The gender distribution was predominantly female, with 66.33% (4 respondents) being female and 33.33% (2 respondents) male. The age distribution varied, with 33.33% aged 25-34, 50% aged 35-44, and 16.67% aged 45-54. Regarding the level of education, 4 respondents had a Master's degree (66.67%), while 1 (16.67%) had Bachelor's degree, and another 1 (16.67%) had a PhD. The demographic analysis of

the respondents revealed that they held various roles within the library, including positions related to 3 (50.00%) E-resources Librarians who provided information the provision of electronic resources, utilization patterns, support services implemented by the universities and users perception on electronic resources; 2 (33.33%) Systems Librarians who provided information on electronic resources infrastructure; and 1 (16.67%) University librarian who provided information of the financial investments and budget allocation for electronic resources.

This category of respondents comprised of the library's management and they provided the records and statistics for the financial investments, utilization patterns, user perception and the support systems they provide to maximize on the utilization of electronic resources in their universities.

4.4 Results on Financial Investment in Electronic Resources

The first objective of this study sought to examine the financial investments made by TUM and KeMU in electronic resources. This included identifying the sources of library funding, the budgets allocated to various electronic resource functions, and changes in electronic resources expenditure. Additionally, the objective aimed to understand how budget allocations were perceived by undergraduate students, postgraduate students, and faculty members at both universities.

The responses from the library staff member's interviews regarding the library's sources of funds indicated that the primary sources of library funding were largely tied to the university budget, with additional funding came from donations, fines, and fees from

students. Further analysis revealed that TUM and KeMU utilized the allocated budget to facilitate various electronic resource functions as shown in Table 4.6.

Table 4.6

Budget Allocation for various Electronic Resource Functions

Electronic resource functions	N	Total (Ksh)	Mean(Ksh)
Total Budget allocation for Electronic resources	6	27000000	4500000
Annual electronic resources subscription fees	6	16000000	2666667
Purchase of additional electronic resources	6	600000	100000
Purchasing Electronic resources infrastructure	6	12000000	200000
E-resources staff training	6	0	0
E-resources infrastructure servicing	6	3000000	500000

The responses from the interviews shown in Table 4.6 revealed that both TUM and KeMU made significant financial investments in electronic resources amounting to Ksh.27 million, collectively which gave a mean score of Ksh. 4.5 million per university. The subscription fees was the highest ranked expenditure for both TUM and KeMU at Ksh.16 million with a mean score of Ksh. 2.67million followed by purchase of electronic resources infrastructure at Ksh. 12 million with a mean score of ksh.200,000. The investment in purchasing additional electronic resources was relatively low at Ksh. 600,000 giving a mean score of ksh.100, 000 while Ksh. 3 million with a mean score of Ksh. 500,000 was allocated for servicing electronic resources infrastructure. The findings also revealed that there were no funds allocated for training staff handling electronic resources.

The findings from the interview on the budget allocation for electronic resources at TUM and KeMU showed a strong emphasis on the provision of electronic resources with a mean score Ksh. 4.5 million being allocated for electronic resources per university confirming Merande et al. (2021) findings that Kenyan universities indeed spend a significant amount of money on electronic resources. Each institution further spent approximately Ksh. 2.67 million on subscription fees, underscoring their priority in maintaining essential content. Additionally, around Ksh. 2 million per institution was invested in infrastructure to support the technology and systems needed for electronic resources. However, the budget for acquiring additional electronic resources was modest, averaging Ksh. 100,000 per institution, and no funds were allocated for staff training, indicating a gap in capacity building. There was also a moderate investment of Ksh. 500,000 per institution for servicing existing infrastructure. While the focus on subscriptions and infrastructure was clear, a more balanced approach that includes additional investments in resource acquisition and staff development could further enhance the effectiveness of electronic resource management in both universities (Greer, 2021).

Regarding budget satisfaction, 83.3% of the library staff were content with the allocation for electronic resources, indicating that the current budget largely met the stakeholders' needs. However, the 16.7% who were dissatisfied believed that additional funding could enhance the purchase of more electronic resources from expensive yet highly requested publishers like Elsevier.

They also suggested allocating more money for electronic resource support services, including marketing, user needs assessments, staff and user training, acquiring modern computers, increasing internet bandwidth, and maintaining other ICT related issues to effectively optimize the provision of electronic resources.

In terms of changes in electronic resource expenditure, the library staff interviews revealed that both TUM and KeMU reported a significant increase in electronic resource expenditure over the past five years. The staff explained that the subscription costs for the electronic resources had risen from Ksh. 1.2 million in 2020 to Ksh. 2 million in 2024 attributing it to the increasing number of published electronic resources and the rising prices of hardware, and software needed to support electronic resources (Khatri, 2019).

The questionnaires on the other hand aimed to understand how budget allocations were perceived by undergraduate students, postgraduate students, and faculty members in both universities. The questions thus examined the level of awareness among students and faculty regarding budget allocations for electronic resources, their involvement in the decision-making processes for acquiring electronic resources, their involvement in purchase of additional resources, purchase of resources not provided by the library and investment in apps to facilitate access to the library's electronic resources. Respondents were asked to rate their agreement with statements on the above mentioned aspects on a 5 point Likert scale where (1) was Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) was Strongly Agree, as indicated in Table 4.7.

Table 4.7***Financial Investment in Electronic Resources***

Budget allocation for electronic resources at your university library	N	Mean	Std. Deviation
Students and Faculty members are aware of the budget allocations for e-resources.	384	2.57	1.218
Students and faculty members participate in the decision-making process of acquiring electronic resources.	384	2.34	1.172
The library purchases additional electronic resources based on students and faculty member's suggestions.	384	2.62	1.201
I have purchased additional electronic resources not provided by my library.	384	2.72	1.336
I have invested in apps to aid with accessing the library's e-resources	384	2.83	1.323
Aggregate Mean		2.62	1.25

The findings in Table 4.7 shows the respondents' perception with an aggregate mean score of 2.62 and a standard deviation of 1.25 on several statements on their awareness and involvement in the libraries' decisions on financial investments in electronic resources in their universities.

The aggregate mean score of 2.62 in this study was the mean rating given by respondents suggesting that on average, respondents perceived the libraries' financial investments in electronic resources as slightly below the midpoint of 3, indicating a generally low overall assessment with many responses falling in the Disagree and Strongly Disagree categories. The standard deviation of 1.25 indicates the amount of variation in the ratings, showing that the ratings were spread out around the mean of 2.62. This means that despite the generally low perception, some respondents gave

higher ratings on their awareness and involvement in the libraries' decisions on financial investments in electronic resources in their universities

The participant's responses were as follows; Awareness of Budget Allocations among the respondents had varied ratings with a mean score of 2.57 and standard deviation of 1.218. This suggested that awareness among students and faculty members was relatively low as most responses indicated that they were not aware of the how much the library spent on electronic resources.

In terms of Participation in Decision-Making, the respondent's ratings ranging was a mean score of 2.34 and standard deviation of 1.172 indicating a low perceived involvement in the acquisition of electronic resources users in the two universities.

When asked whether the library purchased additional electronic resources based on their suggestions, the ratings were a mean score of 2.62 and standard deviation of 1.201. This suggested a moderate level of responsiveness from the library. Respondents also rated whether they had purchased additional electronic resources not provided by the library. The ratings revealed a mean score of 2.72 and standard deviation of 1.336 indicating that the library did not fully meet its users' needs making them purchase additional resources.

Finally, respondents rated their investment in apps to aid with accessing the library's electronic resources, with ratings having a mean score of 2.83 and standard deviation of

1.323 indicating a slightly higher tendency to invest in such apps, reflecting users' efforts to enhance their access to electronic resources.

The ratings of the above statements had mean scores ranging from 2.34 to 2.83, all below the 3-point mark. This showed a very low perception and awareness among students and faculty regarding budget allocations for electronic resources, their involvement in the decision-making process for acquiring these resources, the purchase of additional resources based on their suggestions, individual purchases of resources not provided by the library, and investment in apps to facilitate access to the library's e-resources by both universities.

These findings indicate that there was very little stakeholder input in investment decisions regarding electronic resources at universities. According to Freeman et al. (2021) stakeholder input is crucial for maximizing resources and achieving optimum benefits. In this context, stakeholders include university management, library staff, and users, all of whom significantly influence the provision and utilization of electronic resources. Stakeholders determine financial investments, product/service development, marketing strategies, utilization growth, staffing, and daily electronic resources support services. If users are not involved in selecting and purchasing relevant electronic resources, the money spent on unnecessary resources will result in losses. Moreover, if users do not find value in the electronic resources provided, the library will have wasted its financial resources, as the users will not utilize what they don't find valuable. In addition with the user involvement the library could easy develop an electronic

resources portal that does not require the users to further invest in Apps to enable them utilize the electronic resources.

From the above findings, it was clear that both TUM and KeMU had invested significant portions of their budgets to subscription fees and infrastructure showing that they prioritized maintaining access to essential content and supporting technology. Data from the interview further revealed that the library staff expressed high satisfaction with the current budget allocation at (83.3%). However the findings also revealed that even with an increase in electronic resources expenditure over the years, the undergraduate students, post graduate students and faculty members' perceptions of budget awareness and involvement in decision-making were generally low. The findings suggested that a more balanced approach, which included increased investment in resource acquisition and staff development, alongside greater stakeholder input, could significantly enhance the effectiveness and utilization of electronic resources at these universities. Zgambo and Chawinga (2019) support this by emphasizing that investing in competency training for librarians to equip them with the necessary skills for facilitating electronic resource support services could substantially improve user perception, resource utilization.

Further assessment of the impact of financial investment in maximizing electronic resources was also conducted to establish their exact benefits to further support the findings in Table 4.6 and Table 4.7.

The respondents were asked to rate several statements, including: electronic resources have attracted more funding to the university, electronic resources had facilitated better

collaboration with colleagues and students, the universities spending on electronic resources was justified by the benefits they provided, electronic resources had improved the quality of teaching, learning, and research and the universities had an excellent return on investment in electronic resources. These statements were rated on a 5-point Likert scale, where (1) indicated Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree, as shown in Table 4.8

Table 4.8

Benefits / Return on Investment on Electronic Resources

Metric on Library's return on investment on electronic resources	N	Mean	Std. Deviation
Electronic resources have attracted more funding to the university	384	3.39	1.063
Electronic resources have facilitated better collaboration with colleagues and students.	384	3.48	1.108
The university's spending on electronic resources is justified by the benefits they provide.	384	3.42	1.071
Electronic resources have improved the quality of teaching, learning and research.	384	3.52	1.047
The university has an excellent Return on investment electronic resources.	384	3.21	1.120
Aggregate Mean		3.40	1.082

Table 4.8 showed that the respondents' views on the benefits/ return on investment in maximizing electronic resources. Majority of the respondents agreed that electronic resources had attracted more funding to the universities with a mean score of 3.39, indicating a positive but not overwhelming perception of their role in securing financial support. There was a slightly stronger agreement that these resources had facilitated better collaboration among colleagues and students, mean score of 3.48, highlighting

their benefits in enhancing communication and cooperative work. Respondents generally believed that the university's spending on electronic resources was justified by the benefits they provide, mean score of 3.42, reflecting a positive view of the expenditure.

The highest agreement with mean score of 3.52 was that electronic resources had improved the quality of teaching, learning, and research, suggesting significant value in academic outcomes. This means that the respondents believed that the financial investment of the two universities had led to significant gains and both TUM and KeMU had gained benefits on the Ksh.27 million they had invested in acquiring and subscribing to electronic resources as shown in Table 4.6.

However, the overall perception of benefits / return on investment was relatively lower at a mean score of 3.21, indicating some reservations or perceived shortcomings in the overall benefits among the undergraduate student, postgraduate and faculty members despite recognizing the electronic resources' benefits.

According to the interview, when asked on the methods they used to determine benefits and return on investment in their libraries, the library staff explained that they used usage statistics generated from various systems and databases, including RemoteXs for TUM and MYLOFT for KeMU. They also gathered statistics from individual databases such as ProQuest Central and BUKU. These practices aligned with McKeever et al. (2021) findings, which indicated that university libraries rarely conducted return on investment analysis due to lack of expertise in such analysis and they often relied on

traditional methods, such as evaluating the cost of providing the resources, which do not offer a comprehensive calculation of return on investment (Yamani, 2023).

4.5 Results on Utilization Patterns of Electronic Resources

The second objective of this study sought to establish the utilization patterns of electronic resources at TUM and KeMU. It begun by establishing the methods employed by librarians to track the utilization of electronic resources as shown on Table 4.9. Followed by an assessment on the frequency of utilization of the electronic resource, utilization among different user groups, frequency of utilization of various electronic resource formats, frequency of utilization on various devices, uses of electronic resources, optimization of electronic resources and the satisfaction levels of the users with regards to electronic resources.

4.5.1 Tracking the utilization patterns of electronic resources

Data on the methods used to track utilization of electronic resources at TUM and KeMU was collected using interviews. The library staff were asked about the frequency of utilization of the following tracking methods which included; usage statistics, surveys, feedback, web analytics or search logs. They were to rate these methods on a 5-point Likert scale where (1) was Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily, the following insights were gathered, as shown in Table 4.9

Table 4.9*Methods of Tracking the Utilization of Electronic Resources*

Method	Mean
Usage statistics from database	4
Survey (Questionnaire, Interviews, Focus groups)	2.17
Feedback (Compliments, complaints and suggestion)	3.33
Web analytics tools - Tools like Google Analytics	2.5
Search Logs (Database)	3.3
Aggregate Mean	3.06

Table 4.9 presented the methods for tracking the utilization patterns of electronic resources at TUM and KeMU and it showed that the usage statistics was the most common tracking method for both universities, with a mean score of 4, suggesting that librarians made reference to them several times a week. This was followed closely by the use of feedback through, compliments, complaints, and suggestions with a mean score of 3.33 and Search logs from databases at 3.3. In contrast, surveys such as questionnaires, interviews, and focus groups and web analytics were less frequently used, with a mean rating of 2.17 and 2.5 respectively indicating they were used several times a month.

The above methods were beneficial in providing various information that helped libraries to understand the utilization patterns of their resources. Usage statistics, web analytics and search logs provide the statistics but they rarely explain the statistics. According to Francis (2023) focus groups, conducting observations, monitoring social media, and conducting interviews help shed light on such statistics. In addition web analytics could further help the library conduct analysis on the data it generated which could help in establishing future utilization trends in the libraries.

From the interviews, the library staff admitted to using all the above methods at different points in time and alongside each other to get conclusive data on the utilization of electronic resources. Research shows that users who have had an opportunity to provide feedback, suggestions and input into library decision-making had a higher perception of the library and its resources. Smith (2019) explains that having a feedback and communication mechanism indeed enhanced the perceived value for users.

4.5.2 Frequency of Utilization of Electronic Resources

In line with the previous section, questionnaires were used to further assess the frequency of the utilization of the electronic resources. Respondents were asked to rate the frequency of use on a 5-point Likert scale—where (1) was Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily as shown in Figure 4.1.

Figure 4.1

Frequency of Use of Electronic Resources

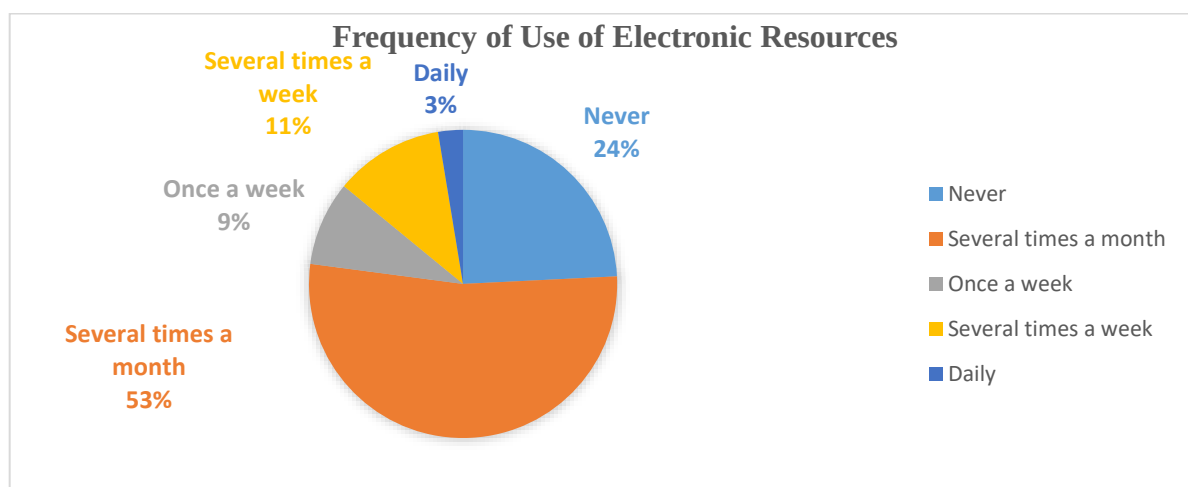


Figure 4.1 shows that 291(75.8%) respondents admitted to using electronic resources from a daily basis to several times a month, indicating a high utilization rate at TUM and KeMU. The majority, 203(52.9%) respondents, reported using electronic resources several times a month. Meanwhile, a significant portion, 93(24.2%), admitted to never using these resources, and only 10(2.4%) reported daily usage. This study's findings were similar to Habib et al. (2022) findings on electronic resource usage in Pakistan which registered high usage at 60% and Patricia and Sibanda (2021) findings in Zimbabwe which registered high uptake of electronic resources because the users found them very useful.

The findings in Figure 4.1 further revealed that while a substantial number of respondents engaged with electronic resources periodically, there was a notable group that did not use them at all, and daily usage was relatively rare. This distribution could indicate varying levels of awareness, need and preference for electronic resources among the respondents. This confirms Memusi (2022) findings which explain that monitoring and analyzing the utilization patterns of electronic resources was a key component in maximizing the usage of the resources as it allowed the libraries to establish why 93(24.2%) of users did not utilize the electronic resources. Through the usage of the various tracking methods as presented in Table 4.8, a library can use feedback mechanism, focus groups and interviews to understand why 93(24.2%) users were not utilizing the electronic resources. This information could guide in the development of strategies and services that could reduce this number and ultimately increase the overall utilization and benefits derived from maximizing electronic

resources at TUM and KeMU. According to Memusi (2022), libraries should analyze such usage statistics to further understand the user behavior which could inform service delivery and the development of support services in libraries.

Upon further assessment, the study found that there were distinct differences in the utilization rates of electronic resources among the different user groups at TUM and KeMU, with undergraduate students having the lowest mean rating of 1.83, indicating poor utilization, as shown in Table 4.10.

Table 4.10

Utilization Rates of Electronic Resources among Different User Groups

Category of uses	Mean
Undergraduate students	1.83
Postgraduate students	2.83
Faculty members	2.83
Aggregate Mean	2.49

The findings in Table 4.10 indicate that both postgraduate students and faculty members had a higher mean rating of 2.83, reflecting better utilization of electronic resources compared to undergraduate students. This suggested that postgraduate students and faculty members were more effectively engaged with these resources, while undergraduate students demonstrated lower usage levels.

These results align with Abdullah et al. (2023), who also found that postgraduate students were frequent users of electronic resources at 83.7%, while Ankrah and Atuase (2018) registered 42.1% usage by postgraduate students. These findings reveal mixed usage rates and as Bwalya and Ssebbale (2017) explain, libraries must address factors

that influence or hinder electronic resource utilization in order to enhance support services, perceived value and resource usage among all user groups.

4.5.3 Frequency of Utilization of Different Electronic Resources Formats

When respondents were asked to rate the frequency of using different electronic resource formats; E-books, E-journals, Databases and Open Educational Resources, on a 5 point Likert scale where (1) was Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily, the following insights were gathered as shown in Table 4.11.

Table 4.11

Frequency of Use of the Different Electronic Resources Formats.

Electronic Resources Formats	Never	Several times a month	Once a week	Several times a week	Daily
Frequency of using E-Books	93 (24.2%)	172(44.8%)	62(16.1%)	43(11.2%)	14(3.6%)
Frequency of using E-Journals	74 (19.3%)	174(45.3%)	76(19.8%)	45(11.7%)	15(3.9%)
Frequency of using Databases	63 (16.4%)	157(40.9%)	83(21.6%)	60(15.6%)	21(5.5%)
Frequency of using Audiovisual	53 (13.8%)	148(38.5%)	79(20.6%)	66(17.2%)	38(9.9%)
Frequency of using Open Educational Resources	77 (20.1%)	159(41.4%)	71(18.5%)	45(11.7%)	32(8.3%)

The findings in Table 4.11 align with those in Figure 4.1 regarding the frequency of usage of electronic resource at TUM and KeMU. Table 4.11 shows that among these formats, audiovisual resources had the highest daily to weekly usage, with 183

respondents (47.7%) reporting frequent use, followed by databases 164 respondents (42.7%), open educational resources 148 respondents (38.5%), e-journals 136 respondents (35.4%), and e-books 119 respondents (30.9%). Audiovisual resources were significantly more utilized than other formats, as they provided more interactive learning experiences. The library staff attributed this to the investment in reading Apps that converted e-books and e-journals into audio content. Younus and Dilshad (2022) study in Punjab and Ankrah and Atuase (2018) study in Ghana revealed that users also preferred information from the search engines and the World Wide Web. Both studies explained that there were users who didn't use the libraries electronic resources but instead preferred to use information resources from the internet. Such findings highlight a potential disconnect between available resources and user needs. From the interviews, the librarians admitted to overall low usage of the resources as noted by one library staff member, who indicated that only 20 out of 14,000 users accessed the electronic resources portal daily in their university. This indicated that in as much as the users admitted to using the electronic resources, the actual usage of the resources was quite low based on the usage statistics derived from the e-resources platform. To address these findings, libraries could conduct regular user assessments and strategic adjustments, such as increasing the availability of interactive content and enhancing awareness and training, which are essential to improve engagement and maximize the utilization of electronic resources (Hutchison et al., 2019).

4.5.4 Frequency of Utilization of the Electronic Devices

When respondents were asked to rate the frequency of using different electronic resource devices; personal desktop computers, library computers, laptops, tablets/palm tops and mobile phones, on a 5 point Likert scale where (1) was Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily, the following insights were gathered as shown in Table 4.12.

Table 4.12

Frequency of Using Various Electronic Resource Devices.

Category	Never	Several times a month	Several times a month	Several times a week	Daily
Frequency of Access of E-Resources: Personal Desktop Computer	39 (10.2%)	109 (28.4%)	109 (28.4%)	33 (8.6%)	121 (31.5%)
Frequency of Access of E-Resources: Library's Computers	56 (14.6%)	107 (27.9%)	107 (27.9%)	74 (19.3%)	47 (12.2%)
Frequency of Access of E-Resources: Laptop	126 (32.8%)	67 (17.4%)	67 (17.4%)	81 (21.1%)	50 (13.0%)
Frequency of Access of E-Resources: Tablet / Palm Top	71 (18.5%)	106 (27.6%)	106 (27.6%)	63 (16.4%)	55 (14.3%)
Frequency of Access of E-Resources: Mobile Phone	24 (6.3%)	59 (15.4%)	59 (15.4%)	17 (4.4%)	250 (65.1%)

The results indicated varied usage patterns for accessing electronic resources, with mobile phones being the most frequently used device. Specifically, 65.1% (250) of respondents use mobile phones daily, underscoring their importance and convenience for accessing e-resources. In contrast, personal desktop computers had the least frequent use, with 31.5% (121) of respondents never using them. This highlighted a shift from traditional desktop computers to more portable and accessible devices.

The high daily usage of mobile phones suggested a trend towards mobile accessibility, while the low usage of desktop computers reflected changing preferences in accessing digital information. This confirmed Gul's (2019) findings that the demand for electronic resources had grown due to factors like 24/7 accessibility, compatibility with multiple devices, portability, ease of sharing, and remote use. Mobile phones offered better access to electronic resources than desktop computers due to their ease of use and portability. Although tablets and palm tops were more compact than computers, they are bulkier than mobile phones and have experienced a decline in usage in recent years.

Both Tum and KeMU universities provide campus wide Wi-Fi, allowing users to easily connect their mobile phones and other devices to the internet and access resources from anywhere on campus. This supported Ali and Jan's (2020) findings that high-speed internet and access to various devices significantly boosted the utilization of electronic resources.

4.5.5 Utilization of Electronic Resources

This section analyzed the frequency of utilization of the electronic resources for various purposes. The respondents were asked to rate the following statements focusing on various electronic resource uses such as, coursework and assignments, CATs and exams, teaching and preparing lecture notes and research and collaboration. The rating were done on a 5 point Likert scale where (1) was Never, (2) Several times a month, (3) Once a week, (4) several times a week and (5) Daily as shown on Table 4.13.

Table 4.13*Utilization of Electronic Resources*

Category of uses	N	Mean	Std. Deviation
Coursework and Assignments	384	4.01	1.045
CATs and Exams	383	3.64	1.102
Teaching / preparing lecture notes	384	2.93	1.702
Research and collaborations	383	4.06	1.149
Aggregate Mean		3.66	

Table 4.13 revealed that there was varying frequencies in the use of electronic resources among the users. Coursework and assignments had a mean score of 4.01, suggesting they were used several times a week, indicating regular but not daily use. CATs and exams had a mean score of 3.64, reflecting weekly use. Preparing lecture notes had a mean score of 2.93, indicating a higher frequency of several times a month, making it a key activity supported by electronic resources. Research and collaborations had the highest mean rating of 4.06, implying they were used several times a week. Overall, the respondents used electronic resources for various purposes with the coursework and assignments and research and collaborations having the highest frequencies.

Apart from the uses highlighted in this study, other studies indicate that electronic resources were used for an array of purposes such as offering full online educational programs (Akintunde & Afolabi, 2017), for fostering innovation (Chisita & Fombad, 2020) and capacity development (Rabiu, 2020). In support of this Belbin et al. (2021) explains that in Australia, electronic resources had indeed increased research output and

allowed interdisciplinary collaboration, which fostered a culture of innovation within the academic community.

Another key observation from Table 4.13 was that the utilization of electronic resources by faculty member for teaching and preparing lecture notes had a really low mean score of 2.93. This could have been due to the fact that the respondents (faculty members) were quite few. However studies show that faculty members could greatly benefit from using electronic resources as it can allowed them to integrate current research findings and diverse perspectives into their curricula to compliment textbooks and enrich the knowledge they provided (Pereira & Franco, 2020).

These finding present a very limited use of electronic resources at both TUM and KeMU. Furthermore the usage of the different elements such as use of CATs and Examinations; and preparing lecture notes were quite low yet the main purpose for libraries to offer the resources is to support teaching and learning. TUM and KeMU should further investigate this and establish strategies that can encourage the use of the resources for the users in these two areas to get maximum value from the electronic resources.

4.5.6 Satisfaction Levels of the Electronic Resources

In line with the above finding on the various uses of electronic resources among the different respondents, the study further sought to establish the satisfaction levels of the users with regards to the electronic resources offered at their institutions. Respondents were asked to rate their satisfaction levels on a 5 point Likert scale where (1) was very

dissatisfied, (2) dissatisfied, (3) neutral, (4) satisfied and (5) very satisfied as shown in Table 4.14.

Table 4.14

Satisfaction Levels of the Electronic Resources

Variable	Frequency	Percentage
Very Dissatisfied	12	3.1
Dissatisfied	31	8.1
Neutral	60	15.6
Satisfied	219	57.0
Very Satisfied	62	16.1
Total	384	100.0

The analysis of satisfaction levels with electronic resources at TUM and KeMU, as presented in Table 4.14, showed that a significant majority of users were content with the resources provided by their libraries. Specifically, 57.0% of respondents reported being satisfied, while 16.1% were very satisfied, indicating that nearly three-quarters of users (73.1%) hold a positive perception of the electronic resources. However, a notable portion of respondents were either neutral (15.6%) or dissatisfied (8.1%), with a small minority (3.1%) expressing strong dissatisfaction. This distribution suggested that while the majority were pleased with the electronic resources, there was still room for improvement, particularly in addressing the concerns of the less satisfied users.

These findings were consistent with Abdullah et al. (2023), who reported that 83.7% of users in Mozambican universities were highly satisfied with their electronic resources. The overall satisfaction rates point to a generally favorable return on investment in electronic resources. However, there is always room for improvement, as evidenced by

Habib et al. (2022), where only 47.2% of users in Pakistani universities were satisfied with their resources.

The respondents in this study recommended increasing access by adding more e-resources, expanding the range of digital materials, and ensuring timely database updates as one way of increasing their satisfaction levels. They also recommended that the libraries upgrade their electronic resources webpages, upgrade the physical library, internet reliability and increase the number of computers to enhance the user experience and general user satisfaction. Additionally, Molaudzi (2020) confirms that improving user support through better customer service, continuous feedback mechanisms, staff training, awareness campaigns, and information literacy programs were also crucial in increasing user experience and satisfaction levels.

4.6 Results on Perceived Value of Electronic Resources

The third objective of this study sought to understand the perceived value of electronic resources among the users at TUM and KeMU. The study begun by assessing the strategies the library staff had put in place to assess the perceived value of electronic resources as shown in Figure 4.2, followed by the users' perception of the electronic resources and their benefits as shown in Table 4.15 and Table 4.16 respectively.

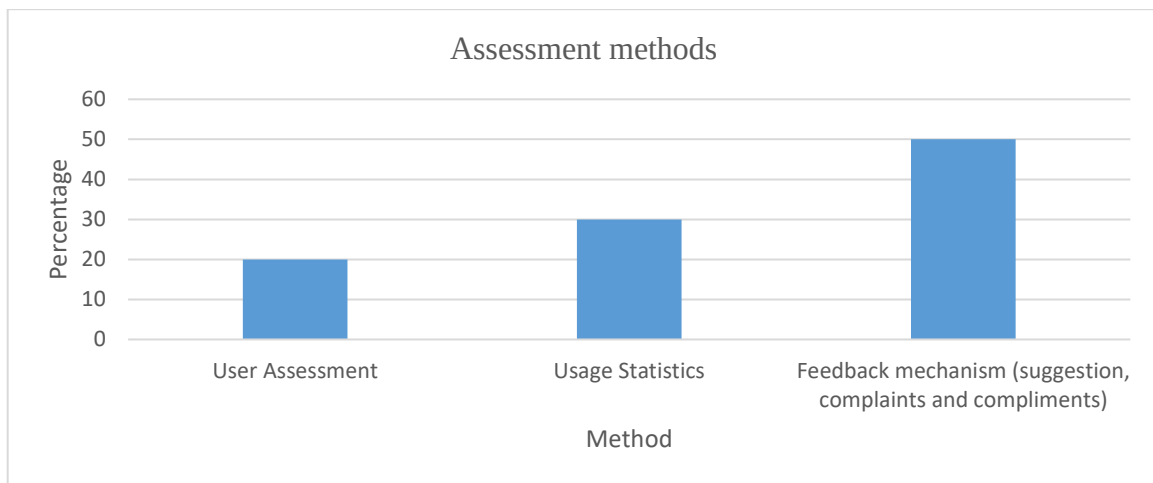
4.6.1 Assessment of Perceived Value of Electronic Resources

To assess the perceived value of electronic resources, both libraries had implemented three strategies namely; feedback mechanisms, usage statistics and user assessment, to evaluate user perception. Data from the interviews revealed that the libraries primary

assessment method for user perception was through feedback mechanisms (50%), followed by usage statistics (30%) and user assessments (20%) as shown in Figure 4.2.

Figure 4.2

Assessment of the user perception



The analysis in Figure 4.2 mirror the findings in Table 4.9 which showed the methods the library had employed to track the utilization patterns of the electronic resources where the usage statistics were the most frequently used method followed by feedback, search logs and survey.

Figure 4.2 revealed that both TUM and KeMU placed a strong emphasis on user feedback (50%) through suggestions, complaints, and compliments, demonstrating a user-centered approach to service delivery and electronic resource evaluation. By prioritizing feedback, the libraries gained valuable insights into user satisfaction and dissatisfaction, which could inform future planning and improvements. The use of usage statistics (30%) was also a significant component in evaluating user perception among

librarians. Ultimately the adoption of the three methods provides the libraries with structured data on user experiences, giving the libraries a more comprehensive understanding of user engagement and the perceived value of electronic resources.

However, the relatively low reliance on user assessments, such as surveys and questionnaires (20%), highlights an underutilization of data-driven insights in assessing resource utilization and user behavior. Surveys could offer more objective and quantifiable data crucial for accurately measuring user perceptions in both libraries. The limited use of this tool may suggest a gap in the libraries' approach to fully capturing and analyzing user engagement patterns.

Despite the differing levels of utilization, the combined use of all these methods enables both TUM and KeMU to gather comprehensive qualitative feedback and quantitative data. This holistic approach allows them to enhance services, increase utilization, and ultimately improve the maximization on electronic resources. This aligns with Hutchison et al. (2019) assertion that regularly evaluating user perceptions is essential for libraries, as it can inform budget allocations and the development of support systems, thereby optimizing resource use and boosting overall maximization on electronic resources.

4.6.2 Users' Perception of the Electronic Resources

The study also sought to understand respondents' perceptions on the electronic resources provided by their libraries. Respondents were asked to rate their level of agreement with various statements about electronic resources, including Electronic resources are essential for teaching, learning, and research, Access to electronic resources has

positively impacted my academic/lecturing performance, Electronic resources improve learning/teaching experiences, Electronic resources enhance critical thinking and problem-solving skills, Electronic resources boost research capabilities, and Electronic resources help save time and reduce costs associated with academic activities. These statements were rated on a 5-point Likert scale, where (1) indicated Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree, as detailed in Table 4.15.

Table 4.15

Perceived Value of Electronic Resources

Electronic resources	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Electronic resources are essential for teaching, learning and research	34(8.9%)	21(5.5%)	54(14.1%)	179(46.6%)	96(25.0%)
Access to electronic resources has positively impacted my academic/lecturing performance	22(5.7%)	35(9.1%)	45(11.7%)	202(52.6%)	80(20.8%)
Electronic resources improve learning/teaching experiences	17(4.4%)	33(8.6%)	55(14.30 %)	172(44.8%)	107(27.9%)
Electronic resources improve critical thinking and problem-solving skills	25(6.5%)	32(8.3%)	62(16.1%)	173(45.1%)	92(24.0%)
Electronic resources enhance research capabilities	22(5.7%)	30(7.8%)	130(33.9 %)	115(29.9%)	87(22.7%)
Electronic resources help save time and costs associated with academic activities	26(6.8%)	26(6.8%)	53(13.8%)	176(45.8%)	103(26.8%)

Table 4.15 reveals a generally positive perception of electronic resources among respondents at TUM and KeMU. Most participants agreed or strongly agreed that these resources are essential for teaching, learning, and research, citing their significant impact on academic performance, learning experiences, and cost savings. Specifically, 274 respondents (71.6%) considered electronic resources vital for their academic activities, 73.4% acknowledged their positive effect on performance, and 279 respondents (72.7%) believed these resources enhanced their learning experiences. However, opinions were

more varied regarding their influence on critical thinking and research capabilities; while 265 respondents (69.1%) recognized the benefits, 159 respondents (41.6%) remained neutral about research enhancement.

These findings generally indicate a positive perception of the benefits of electronic resources. Table 4.15 shows that fewer than 14% of respondents disagreed or strongly disagreed with the positive statements, suggesting that only a small number of users did not perceive the resources as beneficial. This positive perception could be attributed to previous findings, which show that both TUM and KeMU have implemented measures to maximize the use of electronic resources, such as allocating adequate funds, establishing support services, and frequently conducting user and resource evaluations. These efforts likely contributed to the increased utilization of electronic resources, aligning with Daramola (2022) findings that effective support strategies can greatly enhance users' perceptions of library resources.

Moreover, these findings align with previous results in Figure 4.1 and Table 4.13, showing a close correlation between perceived value and actual usage of the resources. High mean ratings for statements like “electronic resources are essential for teaching, learning, and research” and “they improve learning experiences” reflect frequent usage, indicating that users both appreciate and actively utilize these resources. The prevalent use of mobile phones and laptops, as shown in Table 4.12, for accessing e-resources at both universities further highlights their convenience and accessibility, supporting statements such as “electronic resources help save time and costs associated with

academic activities.” This alignment demonstrates that respondents value these resources and rely on them heavily due to their convenience.

Additional findings from Table 4.6, which revealed respondents’ willingness to invest in new tools and the responsiveness of libraries to user suggestions, underscore a strong alignment between perceived value and actual investment. These findings collectively indicate a positive perception of electronic resources among users at TUM and KeMU, as shown in Table 4.14.

Affirming Oluwaseun (2023) findings, the financial investments detailed in Table 4.7 explain the high perceived value in Table 4.15, as users expressed that they were actively involved in budget allocation and decision-making processes through feedback. Such efforts reflect the universities’ commitment to fully meeting user needs while also showing goodwill towards their opinions and preferences.

Overall, these discussions demonstrate that both universities have shown significant awareness and engagement in ensuring that electronic resources are adequately funded and utilized. By conducting user assessments to track utilization patterns and using feedback to develop strategies for further enhancement, the universities stand a better chance of increasing the perceived value of these resources among users.

4.6.3 Users' Perception of the Benefits Electronic Resources

To evaluate the perceived benefits of electronic resources, respondents were asked to rate several statements, including electronic resources provide access to current information, allow for flexible learning and teaching, enhances collaboration in teaching and learning, improve academic performance, allow for remote access and were convenient and easy to access. The respondents were asked to rate these statements on a 5-point Likert scale, where (1) indicated Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly Agree, as shown in Table 4.16.

Table 4.16

Users' Perception on the Benefits of Electronic Resources

Level	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
They provide access to current information	26(6.8%)	27(7.0%)	47(12.2%)	178(46.4%)	106(27.6%)	384(100%)
They allow for flexible learning and teaching	19(4.9%)	28(7.3%)	57(14.8%)	184(47.9%)	96(25.0%)	384(100%)
Enhancing collaboration teaching and learning	24(6.3%)	28(7.3%)	63(16.3%)	180(46.9%)	89(23.2%)	384(100%)
Improves academic performance	24(6.3%)	28(7.3%)	62(16.1%)	181(47.1%)	87(22.7%)	384(100%)
Allow for remote access	24(6.3%)	28(7.3%)	58(15.1%)	186(48.4%)	88(22.9%)	384(100%)
Convenient and easy to access	20(5.2%)	31(8.1%)	55(14.3%)	185(48.2%)	93(24.2%)	384(100%)
They provide access to a variety of multimedia resources	20(5.2%)	25(6.5%)	65(16.9%)	182(47.4%)	92(24.0%)	384(100%)
They provide interactive and engaging learning materials	17(4.4%)	37(9.6%)	67(17.4%)	180(46.9%)	89(23.2%)	384(100%)

Table 4.16 results revealed a strong positive perception of the benefits of electronic resources among respondents from TUM and KeMU. A significant majority, 284 respondents (74.0%), agreed or strongly agreed that these resources provide access to current information. When asked to rate similar statements, 179 respondents (72.9%) believed electronic resources enabled flexible learning and teaching, and 269 respondents (70.1%) saw them as enhancing collaboration in these areas. Additionally, 268 respondents (69.8%) thought electronic resources improved academic performance, 273 respondents (71.3%) appreciated their support for remote access, 278 respondents (72.4%) found them convenient and easy to access, 274 respondents (71.4%) valued the variety of multimedia resources available, and 269 respondents (70.1%) felt they offered interactive and engaging learning materials.

Similar to the findings of Belbin et al. (2021), respondents noted that electronic resources offered significant benefits, particularly in terms of convenient access and easy retrieval of diverse, up-to-date information. Some also mentioned that these resources saved time in information retrieval and further streamlined research processes, making them both efficient and cost-effective.

Although there was general agreement on the benefits of electronic resources, some neutral responses indicated variability in experiences, highlighting potential areas for improvement. As presented in the satisfaction levels findings in Table 4.14, these areas could be addressed by conducting user needs assessments and developing strategies to mitigate these challenges. While Hutchison et al. (2019) point out that the perceived

value of electronic resources was subjective and influenced by various internal and external factors, the library should nonetheless find ways to address these influences to ensure users continue to value and utilize the resources.

Data from interviews revealed that library staff observed a correlation between the use of electronic resources and academic success, citing evidence such as personal testimonials, pass rates for specific programs and units, postgraduate research output, information literacy programs, and user feedback reports. These findings aligned with previous studies that confirmed the positive impact of information resource on academic outcomes (Blagg & Blom, 2018). Finally, respondents recommended that the library improve its information technology infrastructure by ensuring reliable internet access, modernizing technology including updating electronic resource webpages and upgrading library computers and investing in qualified staff and exceptional customer service to enhance users' experiences with the resources.

4.7 Results on Electronic Resources Support Services

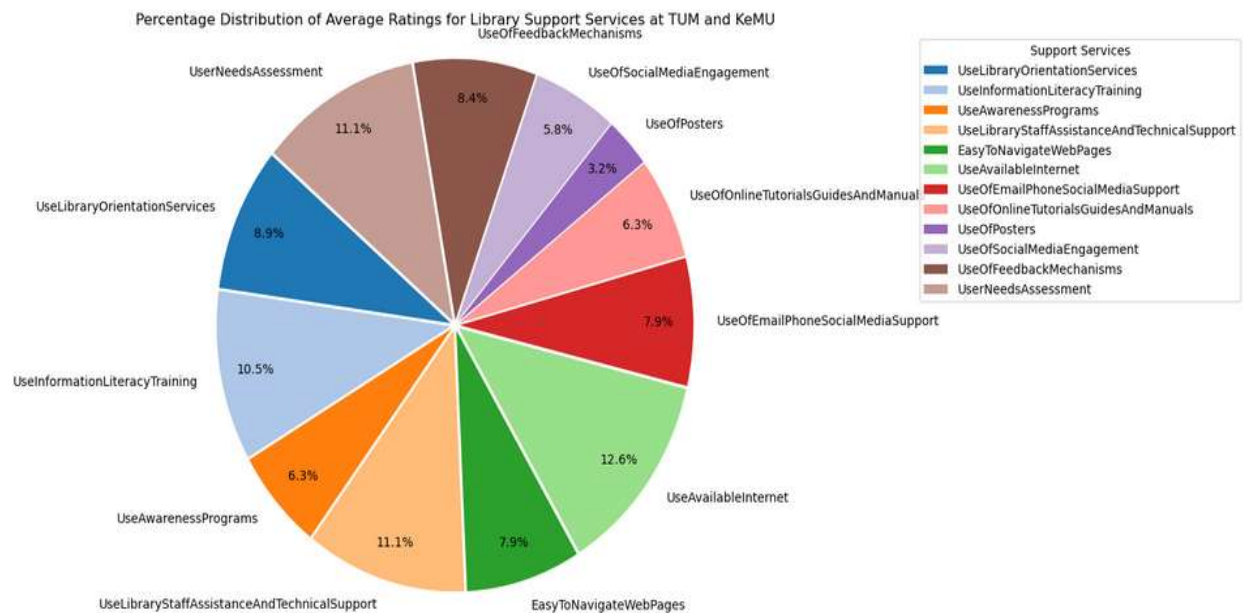
The fourth objective of this study sought to establish the support services available at TUM and KeMU libraries for maximizing the use of electronic resources as discussed below. This section presented the analysis aimed at establishing the engagement levels of students and faculty with various support services established to maximize the utilization of electronic resources at TUM and KeMU.

The respondents were asked about their engagement with the support services offered by their libraries; library orientation, information literacy training, awareness programs,

technical support, easy to navigate web pages, available internet, email, phone and social media support, online tutorials, guides and manuals, posters, social media engagement, feedback mechanisms, user needs assessment. The respondents rated them on a 5 point Likert scale where (1) was Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily as shown in below in Figure 4.3.

Figure 4.3

Electronic Resources Support Services



The results presented in Figure 4.3 showed the percentage distribution of average ratings for various library support services. The highest-rated service was internet availability, representing 48 respondents (12.6%), followed closely by user needs assessment services with 42 respondents (11.1%), library staff assistance and technical support with 42 respondents (11.1%), and information literacy training with 40 respondents (10.5%). These findings align with Ali and Jan's (2020) research, which revealed that high-speed

internet significantly boosted the utilization of electronic resources in any academic institution underscoring the importance of investing in technological infrastructure to enhance the use of electronic resources.

These findings were consistent with the interview results, which indicated that librarians prioritized support services such as, easy-to-navigate web pages, and reliable internet to maximize the utilization of electronic resources. This aligned with Abdullah et al. (2023) recommendations, which further suggested that libraries should focus on services such as orientation, training, and information literacy tailored to specific user groups to enhance the maximization of electronic resources. The data further revealed notable ratings for services like awareness programs and support via email, phone, or social media. This distributions highlighted the critical role of these support services in facilitating the effective use of library resources, indicating a balanced emphasis across a range of services to ensure comprehensive support for students and faculty.

The results also indicated that insufficient searching and retrieval skills significantly hindered the utilization of these resources. To address this issue, it was recommended that libraries conduct frequent orientation, training, and information literacy sessions to equip users with the necessary skills to effectively search for and retrieve information. This approach would enhance the perceived value of electronic resources, confirming Abdullah et al. (2023) assertion that effective support services boosted users' confidence in accessing and using electronic resources, ultimately increasing their utilization rates and the benefits derived from their maximization.

From the interview, when asked about the support services they had established to maximize the utilization of electronic resources, the library staff rated the following; user support, instructional manuals and guides, user-friendly web pages, accessible internet, social media outreach, posters, feedback mechanisms, and user needs assessments on a 5-point Likert scale, with options ranging from (1) Never to (5) Daily. The average results of these ratings are shown in Table 4.17.

Table 4.17

Maximizing Electronic Resources Usage

Measure for maximizing the usage of electronic resources	Mean
User support	5
User instruction manuals and guides	4.5
Easy to navigate web pages	5
Available internet	5
Social Media Engagement	3.17
Posters	2.17
Feedback Mechanism	3.33
User needs Assessment	3.33
Aggregate mean	3.94

Table 4.17 presented the measures implemented to maximize the usage of electronic resources at TUM and KeMU. The interviews revealed that user support, easy-to-navigate web pages, and available internet were the most frequently implemented support services, each with a mean score of 5. This was followed by the availability of user instruction manuals and guides, which had a mean score of 4.5, indicating their frequent implementation, ranging from daily to several times a week. Feedback mechanisms and user assessments each had a mean score of 3.33, while social media

engagement and posters had mean scores of 3.17 and 2.17, respectively. Posters, with the lowest mean score of 2.17, were the least used measure.

The interviews revealed that library staff prioritized support services such as user support, easy-to-navigate web pages, and internet availability, while respondents emphasized the importance of internet access, user needs assessments, library staff assistance, and technical support, including information literacy training. This indicated that the library staff were indeed implementing support services that aligned with the needs of their users. Both groups recognized the availability of the internet as a key factor, highlighting that the libraries were successfully meeting this particular need. However, respondents identified user needs assessments as a service that would further enhance their utilization of electronic resources, a priority not emphasized by the library staff. These findings suggest that the library should conduct regular user needs assessments or gather feedback from users to ensure that the support services provided are aligned with user expectations and needs.

Overall, both libraries emphasized daily support for electronic resources, with other measures being applied periodically. These findings support Ocholla and Evans (2019) conclusion that such approaches ensured libraries delivered the exact information materials users sought, resulting in high levels of user satisfaction and efficient resource utilization.

Despite these efforts, the interviews revealed that library staff faced challenges in enhancing the utilization of electronic resources at both universities. Some of these

challenges included diverse user needs, users' preference for search engines like Google, limited access to laptops and smartphones, slow internet, and insufficient information reaching target users.

To further boost utilization, the staff suggested increasing sensitization efforts for lecturers to influence students, expanding outreach at the school and department levels, adding more computers in the library, providing university-sponsored affordable laptops for students, increasing bandwidth, and offering more training on access to electronic resources. Finally, they believed that continuous feedback from users would help them continue customizing their services to improve utilization, enhance perception, and ultimately increase the benefits of maximizing electronic resources.

Further analysis was conducted to evaluate the effectiveness of the above support services offered by libraries which included. The respondents were asked rate the effectiveness of the support services on a 5 point Likert scale where (1) was very ineffective, (2) ineffective, (3) Neutral), (4) effective and (5) very effective as shown below in Figure 4.4.

Figure 4.4

Effectiveness of Electronic Resource Support Services

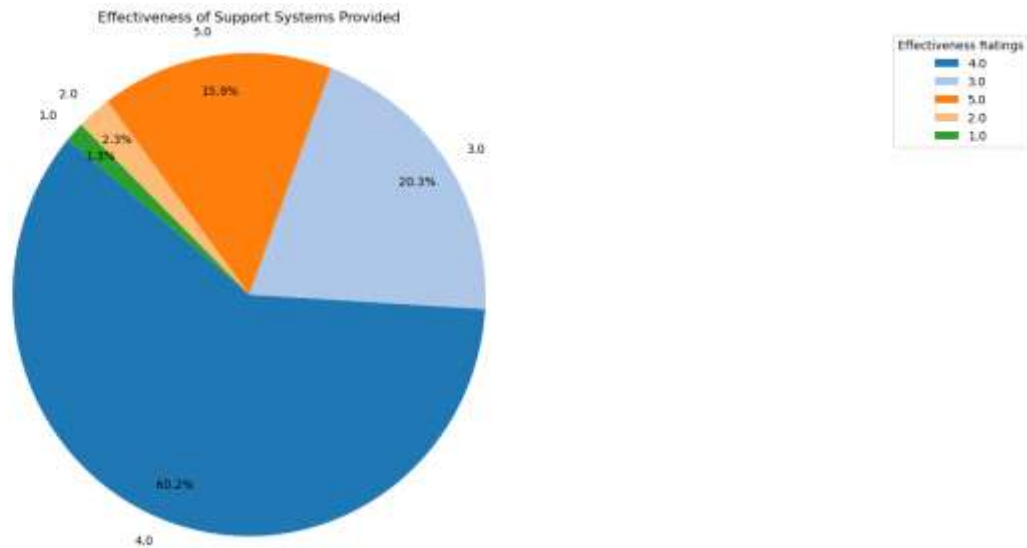


Figure 4.4 shows a generally positive perception of the support services offered by university libraries, with the majority of respondents, 292 (76.1%), indicating high satisfaction by rating the services as effective or very effective. Specifically, 231 respondents (60.2%) rated the support services as effective, reflecting a strong level of satisfaction. This was followed by 77 respondents (20.3%) who gave a neutral rating, and 61 respondents (15.9%) who rated the services as very effective, suggesting that a significant proportion of users were quite satisfied with the support systems. However, smaller percentages 8 respondents (2.3%) and 4 respondents (1.3%) rated the support systems as ineffective and very ineffective, respectively, indicating areas where improvements may be needed. This could be as result of the findings in Figure 4.3 that

revealed that more effort needed to be put in place when offering support services for electronic resources.

This analysis offered valuable insights into how well the support services at TUM and KeMU were meeting the needs of students and faculty, highlighting both strengths and areas for potential improvement in the support infrastructure for electronic resources. Smith (2019) recommends that libraries conduct regular user assessments to gauge satisfaction levels and tailor support services to enhance the perception and utilization of electronic resources. To increase the effectiveness of their support services, both libraries had implemented various feedback mechanisms, such as feedback forms, suggestion boxes, an open-door policy, social media, email, and online Google forms. These channels allowed users to report issues or suggest improvements, thereby helping to enhance the usage of electronic resources.

Similar to the strategies identified for increasing the utilization and perceived value of electronic resources, respondents highlighted several key support services that they believed could further improve their experience with these resources. These include regular information literacy training for students and faculty, increased awareness through marketing and outreach, and the provision of orientation sessions and user manuals/guides. Additionally, respondents noted that improved customer service, the implementation of a feedback mechanism, and the establishment of collaboration forums could substantially enhance the utilization of electronic resources and lead to a better return on investment, as expressed by Patricia and Sibanda (2021).

4.8 Maximizing Electronic Resource Utilization

This section presented the findings related to the dependent variable of this study which was maximizing electronic resources. Maximizing electronic resources refers to the implementation of strategies that enable universities to fully benefit from providing these resources. Studies indicate that some benefits of maximizing electronic resources include increased academic excellence, higher research output, attracting more financial investments, increased utilization rates, and a higher perceived value of the resources (Blagg & Blom, 2018).

Regarding financial investments, which was the first objective, the findings revealed that both TUM and KeMU made significant financial investments in electronic resources, collectively amounting to Ksh. 27 million, with an average of Ksh. 4.5 million per university. The primary allocation was for subscription fees, approximately Ksh. 2.67 million per university, followed by investments in electronic resources infrastructure, the purchase of additional resources, and the servicing of this infrastructure. However, the findings also highlighted a critical issue: there were no funds allocated for training staff responsible for managing electronic resources. This oversight was significant because if the staff who provide support services were not adequately trained, it undermined the effective maximization of electronic resources. This affirmed Gregory (2019) sentiments that explained that when offering electronic resources libraries ought to understand that total cost of offering electronic resources transcended mere acquisition expenses and extended to system upkeep, online security measures, and staff development

The findings further revealed a disparity in perception regarding financial investments in electronic resources. While 83% of library staff expressed satisfaction with the budget allocations, users felt that more funds should be allocated to these resources. Users also expressed a desire to be involved in the acquisition process to better meet their information needs. They acknowledged that this involvement would increase their perceived value of the electronic resources confirming Freeman et al. (2021) sentiments which explain that for an institution goals to be met, the stakeholder had to be involved in decision making.

The second objective focused on utilization patterns, revealing that 291 respondents (75.8%) reported frequently using electronic resources, with postgraduate students and faculty members being the most active users. The library provided daily support, and 73.1% of respondents had a positive perception of the electronic resources, largely due to user support services and the availability of reliable internet. Some users never utilized the resources and were dissatisfied with both the electronic resources and the support services offered. The study found that utilization patterns were significantly influenced by perceived value and the availability of support services. Additionally, higher utilization was linked to increased confidence in using the resources, which in turn enhanced perceived value, leading to greater maximization of electronic resources. This aligned with the findings of Abdullah et al. (2023). While most users were satisfied, the findings suggested there was still room for improvement to further increase user satisfaction.

The third objective, focused on the perceived value of electronic resources, revealed that respondents acknowledged the essential role these resources play in their academic activities, noting their positive impact on performance and learning experiences. This suggested a generally positive perception of electronic resources, with most respondents appreciating their importance for teaching, learning, and research, as well as their significant impact on academic performance, learning experiences, and cost savings.

The study found a strong correlation between support services, perceived value, and the utilization of electronic resources with the library staff reporting that they had records of personal testimonials from respondents regarding the effectiveness of the electronic resources, pass rates for specific programs, postgraduate research output, and feedback from the support services they offered, such as information literacy programs. These findings affirm Hutchison et al. (2019) advice for libraries to continuously evaluate users' perceptions of the value of electronic resources to guide budget allocations and the development of support systems aimed at increasing utilization and maximizing the benefits of electronic resources.

The fourth objective focused on support services, and the findings revealed that the highest-rated service was internet availability, which accounted for 12.6% of the total ratings. This underscored the importance of libraries investing in technological infrastructure to enhance the usage of electronic resources. Overall, the ratings for the effectiveness of these support services indicated a positive perception, with a significant majority (76.1%) reporting high satisfaction. However, a small percentage of

respondents (3.6%) found the support services ineffective, highlighting areas where improvements could be made.

There was generally high satisfaction with the support services offered by both universities, confirming Ali and Jan (2020) assertion that with appropriate support services such as orientation, training, and information literacy customized for different user groups libraries had a better chance of maximizing resource utilization.

4.9 Inferential Analysis

The study employed inferential statistical specifically correlation analysis and regression analysis. Correlation analysis was used to determine the influence of the study variables which included; financial investments, utilization patterns, perceived value, and support services in maximizing electronic resources. The regression analysis was used to explore the primary dependent variable, which was maximizing electronic resources in academic libraries.

These inferential statistical findings could contribute to an improved understanding the influence of financial investments, utilization patterns, perceived value, and support services in maximizing electronic resources as discussed in subsequent sections.

4.9.1 Model Summary

The study aimed at determining the regression relationship between the dependent variable, Maximizing electronic resources usage and the independent variables financial

investments, utilization patterns, perceived values, and support services as shown in Table 4.18.

Table 4.18

Model Summary Results

Model	R	Adjusted R		Std. Error of the Estimate	Durbin-Watson
		R Square	Square		
1	.844 ^a	.713	.703	.48339	1.788

a. Predictors: (Constant), Support services (X₄), Financial investments (X₁), Perceived values (X₃), Utilization patterns (X₂)

b. Dependent Variable: Maximizing electronic resources usage (Y)

The results indicated that 71.3% of the variation in maximizing electronic resources at TUM and KeMU libraries was explained by the factors included in the study. This was a reasonable proportion, especially in social science research, where outcomes are often influenced by numerous variables (Hayadi & El-Emary, 2024). However, 29.7% of the variation remains unexplained, suggesting that other variables not included in the study could also impact the maximization of electronic resources in these university libraries.

In addition the R value of 0.844 indicated high positive correlation between the predictors and the dependent variable, suggesting that the variables included in the study had a meaningful relationship with the maximization of electronic resources. This finding align with Giannakis and Louis (2013) research that reported that financial investments and support services account for a substantial portion of variance in electronic resource maximization in academic institutions. In addition the high explanatory power of this

model echoes Handfield (2019) study that highlighted the significance of comprehensive support services and their influence on technology adoption and usage in teaching learning and research. Cousins (2019) found that adequate financial investments combined with clear utilization patterns, led to better usage of electronic resource thereby boosting the overall maximization of the electronic resources.

4.9.2 ANOVA

An Analysis of Variance (ANOVA) was conducted to assess the statistical significance of a regression model predicting the maximization of electronic resources usage (Y) based on four independent variables: Financial Investments (X1), Utilization Patterns (X2), Perceived Values (X3), and Support Services (X4) as shown in Table 4.19.

Table 4.19

ANOVA Results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	34.930	4	8.733	108.737	.000^b
	Residual	4.256	384	.080		
	Total	39.186	388			

a. Dependent Variable: Maximizing electronic resources usage (Y)

b. Predictors: (Constant), Support services (X₄), Financial investments (X₁), Perceived values (X₃), Utilization patterns (X₂)

Table 4.19 showed the regression sum of squares as 34.930 to represent the variation in the dependent variable, maximizing electronic resources usage, which could be explained by four, financial investments X1, utilization patterns X2, perceived value X3 and support services X4. The residual sum of squares 4.256 indicated the variations in the dependent variable not explained by the model. This is consistent with the results in Table 4.18 that showed that the model only covered 71.3% of the variations that influence maximizing electronic resources. Pandey and Kumar (2022) explains that the remaining variations could encompass, technological usage and human resource capacity that were not featured in this study.

In addition the large F-value (108.737) indicated that the model was significantly better at explaining the variance in maximizing electronic resource usage compared to a model with no predictors. The p-value on the other hand was less than 0.05, indicating that the overall regression model was statistically significant and that the combination of financial investments, utilization patterns, perceived values, and support services could be used to predict the maximization of electronic resource usage at TUM and KeMU. The model echoes Handfield (2019) argument that explains that the degree of financial investments, utilization patterns, perceived value and support services indeed influenced the usage of electronic resources in academic institutions. They further agreed that an assessment of these variable for decision making led to better resource optimization and higher maximization of electronic resources.

4.9.3 Regression Coefficients Results

A regression analysis was conducted to demonstrate how financial investments, utilization patterns, perceived values, and support services contribute to maximizing electronic resource usage at the TUM and KeMU as shown in Table 4.20.

Table 4. 20

Regression Coefficients Results

Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	.088	.171		.517	.608		
Financial investments (X₁)	.433	.107	.307	.444	.022	.120	2.250
Utilization patterns (X₂)	.619	.055	.187	.270	.001	.696	3.709
Perceived values (X₃)	.650	.073	.148	.434	.046	.393	2.359
Support services (X₄)	.897	.114	.418	.528	.002	.120	1.893

a. Dependent Variable: Maximizing electronic resources usage (Y)

$$Y=0.088+0.433X_1+0.619X_2+0.650X_3+0.897X_4$$

Y –Maximizing electronic resources usage

X₁–Financial investments

X₂–Utilization patterns

X₃–Perceived values

X₄–Support services

The regression results presented in Table 4.20 show that financial investments (X1) had a coefficient of 0.433, suggesting that although this factor positively influences electronic resource usage, it has the least impact compared to the other variables. This meant that while financial investments were essential, they should not be prioritized above other areas that demonstrate higher impacts. Pandey and Kumar (2022) however recommend that libraries still maintain an adequate budget for electronic resources to facilitate their successful provision.

Utilization patterns (X2) exhibited a higher coefficient of 0.619, indicating that the variable significantly contributed to maximizing electronic resource usage and that how electronic resources were utilized by staff and students played a crucial role in their overall effectiveness of the resources. This meant that TUM and KeMU should foster favorable utilization habits.

Perceived values (X3) have a coefficient of 0.650, which was higher than financial investment and utilization patterns. This showed that when students and staff recognize the importance and benefits of the resources, they are more likely to maximize their usage. This aligns with the importance of awareness and appreciation of resource utility.

Support services (X4) had the highest coefficient of 0.897, making this the most influential factor in the regression model. The large impact of support services underscores the critical need for universities to provide strong technical and operational support to ensure that users could effectively access and utilize electronic resources.

Adequate support services help overcome barriers to usage, thereby maximizing the benefits derived from these investments.

In conclusion, while financial investments played a role in maximizing electronic resource usage, the support services had the greatest impact, followed closely by utilization patterns and perceived values. This meant that TUM and KeMU should therefore prioritize improving support services and promoting utilization patterns to ensure effective use of their electronic resources.

4.9.4 Correlation Analysis Results

The study employed Pearson's correlation analysis to evaluate the strength of the relationship between the independent and dependent variables. Pearson's correlation coefficients range from -1.0, indicating a perfect negative correlation, to +1.0, indicating a perfect positive correlation as shown in Table 4.21.

Table 4.21*The Pearson's Product Moment Correlations Results*

Variable		X₁	X₂	X₃	X₄	Y
Financial investments (X ₁)	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	384				
Utilization patterns (X ₂)	Pearson Correlation	.433**	1			
	Sig. (2-tailed)	.000				
	N	384	384			
Perceived values (X ₃)	Pearson Correlation	.619**	.565**	1		
	Sig. (2-tailed)	.000	.000			
	N	384	384	384		
Support services (X ₄)	Pearson Correlation	.650**	.726**	.897**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	384	384	384	384	
Maximizing electronic resources usage (Y)	Pearson Correlation	.565**	.619**	.650**	.897**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	384	384	384	384	384

The correlation analysis in Table 4.21 revealed several positive correlations between financial investments, utilization patterns, perceived values, and support services and maximizing electronic resources usage.

Notably, Support services (X₄) showed the strongest positive correlation with maximizing electronic resource usage (0.897) indicating that efficient support services such as those implemented by TUM and KeMU like available internet, easy to use navigate web pages, technical assistance, user support and information literacy training play a pivotal role in ensuring that electronic resources are effectively utilized students and faculty members. This strong correlation suggests that when users had access to quality support services, they were better able to overcome challenges related to electronic resource access and utilization.

The perceived values (X3) of electronic resources also demonstrate a strong positive correlation with maximizing electronic resource usage at 0.650 indicating that when students and faculty members perceive electronic resources as valuable and beneficial to their academic or professional work, they were more likely to use them extensively.

A high perceived value could be fostered through awareness campaigns, training sessions, and demonstrations of the specific benefits that electronic resources offer. When users fully understand the advantages of these resources such as easier access to information, time savings, and enhanced learning outcomes they are more inclined to integrate them into their daily work. This result is consistent with research by Carter and Rogers (2020), which highlights the link between perceived value and the successful adoption of technological tools in academic settings. This finding emphasizes the importance of user perceptions in determining the success of electronic resource programs.

Utilization patterns (X2) exhibited a positive correlation with maximizing electronic resource usage at 0.619, indicating that the manner and frequency with which users interact with electronic resources significantly contribute to their effective use. This finding underscores the importance of fostering favorable usage patterns that encourage all users to regularly interact and engage with these resources in their academic workflows. TUM and KeMU had established some strategies under the support services to improve the utilization patterns of these resources.

The strong correlation suggested that usage habits were a critical determinant of resource effectiveness, as users who frequently engaged with the resources were more likely to experience benefits in their academic performance and research out.

While financial investments (X1) had a positive correlation with maximizing electronic resource usage at 0.565, it was the lowest among the four independent variables. This suggests that, while important, financial resources alone were not sufficient to maximize the use of electronic resources. The findings indicated that simply investing in the acquisition of electronic resources would not necessarily lead to their optimal usage unless accompanied by strong support services, favorable usage patterns, and high perceived value.

This result highlighted the need for a more holistic approach to electronic resource management, where financial investments were complemented by investments in support services, increase in perceived value and increase in utilization patterns. Without these complementary factors, even significant financial investments may not translate into high usage rates. This aligned with studies such as Merande et al. (2021) which argue that financial investments must be paired with operational and technical support to achieve sustainable resource utilization.

In addition to their direct relationships with maximizing electronic resource usage, the independent variables, the analysis also revealed positive correlations among the variables. For instance, financial investments and utilization patterns showed a low correlation at 0.433, financial investments and perceived values, high correlation at

0.619, and utilization patterns and support services very high correlation at 0.726. These interrelationships suggested that improvements in one area may have a ripple effect on other variables. For example, investing in support services could also enhance perceived value and utilization patterns, leading to greater overall usage of electronic resources.

The positive correlation between perceived values and support services (0.485) suggests that when institutions provide better support services, users are more likely to recognize the value of electronic resources. This highlights the interconnectedness of the determinants, reinforcing the idea that maximizing electronic resource usage requires a coordinated strategy that addresses all these variables simultaneously. This findings affirm Ali and Jan (2020) study that noted that investing in support services, significantly enhanced the perceived value of the resources, their usage and maximization of electronic resources.

The Pearson correlation analysis above provided a valuable insight into the factors driving the maximization of electronic resource usage. Support services emerged as the most critical factor, indicating the importance of providing strong technical and operational assistance to users. Perceived values and utilization patterns also played significant roles, showing that user perceptions and usage habits were key determinants of resource effectiveness. The impact of financial investments was however less pronounced compared to other factors. These findings affirm Ali and Jan (2020) findings which revealed that investments in support services, such as user support, orientation, information literacy, and upgrading electronic resources infrastructure, particularly high-

speed internet and adding more computers in libraries, significantly enhanced the usage and maximization of electronic resources at both TUM and KeMU. These findings provide, TUM, KeMU and other university libraries in Kenya with evidence on why they should adopt a multi-faceted approaches that foster strengthening of support services, promoting favorable usage patterns, and enhancing perceived value in addition to having adequate electronic resource budgets. This will ensure that their electronic resources are fully utilized, ultimately improving educational outcomes and research outputs.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents a summary, conclusions, and recommendations based on the study's findings, aligned with its objectives. Additionally, areas for further research are proposed. The study was on maximizing electronic resources; an assessment of financial investments, utilization patterns, perceived value and support services at TUM and KeMU. A review of empirical literature was conducted in accordance with the research objectives, drawing connections between past studies and this study, particularly in relation to the influence of financial investments in maximizing electronic resources as guided by Edward Freeman's 1984 Stakeholder Theory.

The study utilized a descriptive research design with a target population of 426 individuals from TUM and KeMU, including undergraduate students, postgraduate students, faculty members, and library staff. A total of 420 questionnaires were distributed, with 384 completed and returned correctly. Additionally, interviews were conducted with the 6 library staff members who served as key informants. To ensure data quality, content and construct validity were applied, while Cronbach's alpha was used to assess the reliability of the questionnaires and interview guides. The research data was analyzed using descriptive and inferential statistics, with the results presented in tables and figures.

5.1 Summary of Findings

The main findings of this study were summarized according to each research objective. Overall the respondents revealed that maximizing electronics resources indeed had significant benefits on their academic outcomes and research output. Secondly among the study variables, support services had the most significant impact on increasing resource utilization, while frequent use of the resources greatly enhanced users' perceived value. Financial investments provided a crucial foundation for electronic resources at both universities, covering subscription fees, additional purchases, infrastructure, and maintenance.

However, both universities encountered challenges in accurately assessing the influence of financial investments, utilization patterns, perceived value and support services in maximizing electronic resources. The study revealed the correlation of this variable in maximizing electronic resources as presented below.

5.1.1 Financial Investment in Electronic Resources

The study aimed to examine the financial investments made by TUM and KeMU in electronic resources by investigating the sources of library funding, budgets allocated to various electronic resource functions, recent changes in expenditure, and the perceptions of these budget allocations by undergraduate students, postgraduate students, faculty members, and library staff at both universities. The findings revealed that 83.3% of library staff were satisfied with the current budget with both universities spending approximately Ksh. 2.67 million on electronic resource subscription fees, Ksh. 2 million

on infrastructure, and Ksh. 500,000 on servicing existing infrastructure. However, no funds were allocated for support services and staff training, which were identified as crucial for increasing the utilization and perceived value of electronic resources in maximizing electronic resources. The expenditure on electronic resources had significantly increased over the past five years, largely due to the rising costs of hardware and software required to support these resources.

The findings, supported by a mean score of 2.59, revealed low engagement of undergraduate students, postgraduate students, and faculty members in decision-making regarding budget allocations and acquisitions of electronic resources, despite being the primary users of these resources. This highlights a critical issue that needs to be addressed because if users are not involved in selecting and purchasing relevant electronic resources, money may be spent on unnecessary items, leading to financial losses. Moreover, if users have a low perception of the electronic resources, library's financial investments will be wasted, as the resources will go unused.

The findings suggest that a more balanced approach, involving stakeholders in decision-making, incorporating additional investments in resource acquisition and staff development, and seeking greater stakeholder input, could enhance the effectiveness and maximizing electronic resources at these universities.

5.1.2 Utilization Patterns of Electronic Resources

This objective aimed to examine the utilization patterns of electronic resources at TUM and KeMU by assessing various aspects. The findings revealed that usage statistics were

the most commonly employed tracking method at both institutions, with a mean rating of 4. This was followed by feedback mechanisms and database search logs, which had mean ratings of 3.33 and 3.3, respectively.

Descriptive analysis showed that 291 respondents (75.8%) reported using electronic resources daily to several times a month. However, a significant portion of respondents, 93 (24.2%), admitted to never using these resources, indicating varying levels of awareness, need, or preference for electronic resources among participants. Further analysis revealed that undergraduate students had the lowest mean rating of 1.83, while postgraduate students and faculty members had a higher mean rating of 2.83, reflecting better utilization of these resources.

Among the types of electronic resources, audiovisual materials had the highest usage, and mobile phones were the most frequently used devices due to their portability and convenience. The highest usage of electronic resources was attributed to coursework, assignments, research, and collaborations.

Overall, the libraries focused on providing daily support and resources, with other measures applied periodically. User satisfaction ratings revealed that nearly three-quarters of respondents, 281 (73.1%), had a positive perception of the electronic resources. While this indicates that most users were satisfied, there is still room for improvement. The varied satisfaction levels present challenges for library staff, including addressing diverse user needs and preferences. These challenges could be

mitigated through increased awareness of available resources and continuous feedback to further customize support services.

5.1.3 Perceived Value of Electronic Resources

To assess the perceived value of electronic resources, both libraries had implemented strategies to evaluate user perception with the most frequently used being feedback mechanisms such as suggestions, complaints, and compliments (50%), followed by user assessment (30%) and finally usage statistics (20%) which when used alongside each other provided structured data on user experiences, giving the libraries a more comprehensive understanding of user engagement and the perceived value of electronic resources.

In addition, the findings indicated that 71.6% of respondents viewed electronic resources as essential for their academic activities, 73.4% recognized their positive effect on performance, and 72.7% believe they enhance learning experiences. However, opinions varied regarding their impact on critical thinking and research capabilities, with 69.1% acknowledging benefits but 41.6% remaining neutral about their influence on research enhancement. This suggests a generally positive perception of electronic resources among respondents at TUM and KeMU, with most appreciating their importance for teaching, learning, and research, as well as their significant impact on academic performance, learning experiences, and cost savings.

The library staff revealed a correlation between the use of electronic resources and academic success, supported by personal testimonials, pass rates for specific programs,

postgraduate research output, information literacy programs, and user feedback. Further analysis revealed that 74.0% of respondents believed that these resources provided access to current information, 72.9% believed they enabled flexible learning and teaching, and 70.1% viewed them as enhancing collaboration. Additionally, 69.8% thought electronic resources improved academic performance, 71.3% valued their support for remote access, 72.4% found them convenient and easy to access, 71.4% appreciated the variety of multimedia resources, and 70.1% felt they offered interactive and engaging learning materials. These findings were consistent with previous studies that confirmed the positive impact of information resources on academic outcomes.

5.1.4 Support Services

The findings revealed that the highest-rated support service was available internet, which made up 12.6% of the total ratings. This underscored the importance of libraries investing in technological infrastructure to enhance the usage of electronic resources. The results also highlighted that inadequate searching and retrieval skills significantly hindered the use of these resources. Close behind in ratings were user needs assessment services (11.1%), library staff assistance and technical support (11.1%), and information literacy training (10.5%). Additionally, services such as awareness programs and support through email, phone, or social media received notable ratings. This distribution emphasized the critical role of these support services in facilitating the effective use of library resources, suggesting a balanced approach to providing comprehensive support for students and faculty.

The ratings for the effectiveness of these support services generally indicated a positive perception. A significant majority (76.1%) reported higher satisfaction (from effective to very effective), with 60.2% rating the services as effective and 15.9% as very effective. The remaining 20.3% rated the services as neutral, reflecting a high level of overall satisfaction. However, a small percentage of respondents (2.3%) found the support services ineffective, and 1.3% rated them as very ineffective, pointing to areas where improvements could be made.

5.1.5 Maximization of electronic resources

The findings revealed that most respondents agreed electronic resources had attracted additional funding to the universities, facilitated better collaboration among colleagues and students, justified the universities' expenditure on these resources, and improved the quality of teaching, learning, and research. This confirms that the strategies implemented by TUM and KeMU to maximize electronic resources were effective.

The library staff reported using a range of support services, making adequate financial investments, and frequently monitoring user perceptions and utilization rates to maximize electronic resources. However, they lacked a comprehensive assessment of how these four variables—financial investments, support services, perceived value, and utilization rates—interact with each other and impact the maximization of electronic resources. Such an assessment would enable the library to understand these interactions better and make informed decisions on financial investments and support service

strategies that influence perceived value and utilization rates, ultimately enhancing the maximization of electronic resources.

The study also highlighted the importance for both TUM and KeMU to evaluate their strategies in comparison with other universities of similar caliber, both within the region and beyond Africa. Benchmarking against best practices could further enhance the benefits of maximizing electronic resources. This recommendation arose from the library staff's acknowledgment of a lack of proper benchmarking strategies, which could help institutions adopt best practices and improve service delivery to keep pace with current trends.

5.2 Conclusions

The conclusions herein are derived from the findings of the study and are done as per each of the research objective.

5.2.1 Financial Investments in Electronic Resources

Based on the findings for the first objective, the study concluded that 83.3% of library staff at both TUM and KeMU were satisfied with the current budget allocations for electronic resources. Both universities spent approximately Ksh. 2.67 million on subscriptions, Ksh. 2 million on electronic resource infrastructure, and Ksh. 500,000 on servicing existing infrastructure. However, no funds were allocated for support services and staff training, which are essential for support services and ultimate maximization of electronic. The results revealed that there was low involvement of users in decision-making for budget allocations and acquisitions of electronic resources. This lack of

engagement, reflected by a mean score of 2.59, reduced user perceived value and increased the risk of misallocating funds on unnecessary resources, leading to financial losses and underutilization of the investments made. In conclusion, the study recommends that both universities adopt a more balanced approach to enhance the effectiveness and utilization of electronic resources, which includes involving stakeholders more actively in the decision-making process in electronic resource acquisition.

5.2.2 Utilization Patterns of Electronic Resources

According to the findings related to the second objective, the study concluded that while most users actively engaged with electronic resources, there was significant disparities in usage among the different user groups, with undergraduate students being the least frequent users. Usage statistics, monitored several times a week, were the most common method for tracking utilization patterns, though less frequent methods like surveys and web analytics tools indicated a need for more comprehensive tracking approaches.

High utilization rates were observed, particularly for audio visual resources followed by databases, open educational resources, e-journals and e-books, with mobile phones being the preferred access device due to their portability compared to laptops and desktop computers. However, a quarter of respondents reported never using the electronic resources, highlighting gaps in awareness or perceived value and need for the resources. Satisfaction levels were generally positive, though the presence of neutral and dissatisfied users suggests areas for improvement, including resource variety,

infrastructure, and user support. To fully maximize the usage of their electronic resources, TUM and KeMU must address these areas. The study concluded that both universities should focus on increasing user engagement, meeting diverse needs, upgrading infrastructure, and continuously gathering user feedback to optimize utilization and effectiveness of maximizing electronic resources.

5.2.3 Perceived Value of Electronic Resources User Perception

In line with the findings of objective three, the study concluded that the electronic resources were highly valued by users at TUM and KeMU, with a strong majority recognizing their essential role in academic activities, positive impact on performance, and enhancement of learning experiences. Although perceptions on their influence on critical thinking and research capabilities were mixed, the overall positive reception underscored the resources' importance in supporting teaching, learning, and research. The correlation noted by library staff between electronic resource usage and academic success, bolstered by evidence such as pass rates, postgraduate research output, and user feedback, further highlights the value of these resources. However, the variability in responses regarding critical thinking and research capabilities suggests areas where further improvement and targeted interventions could be beneficial. For better benefits on the maximization of electronic resources, both TUM and KeMU should continue to enhance user engagement and support services by conducting continuous user assessment and adapting strategies, based on user feedback and usage patterns. This would increase the benefits derived from maximizing electronic resources ensuring that they contribute significantly to academic outcomes and institutional success.

The findings from objective three reveal that electronic resources were highly valued at TUM and KeMU, with users acknowledging their crucial role. However, there were mixed perceptions regarding their influence on critical thinking and research capabilities, suggesting areas for improvement. To enhance their maximization both universities should focus on increasing user engagement through targeted outreach and training, refining their resource offerings to better support critical thinking and research, and prioritizing infrastructure upgrades to improve access to these resources.

5.2.4 Electronic Resource Support Services

In line with the findings of objective four, the study revealed the crucial role of support services in maximizing the use of electronic resources at TUM and KeMU. The highest rated service, internet availability, underscored the need for ongoing investment in technological infrastructure to facilitate resource access. However, the significant impact of inadequate searching and retrieval skills on resource usage signaled an urgent need for enhanced training in information literacy among the users. The overall positive perception of these support services suggested a high satisfaction level for respondents and the libraries success in meeting the needs of the users in both universities. However, the small percentage of users who found the services ineffective brought to light areas for improvement such as strengthening information literacy training and ensuring that technological infrastructure remains robust. By doing so, TUM and KeMU could further optimize the effectiveness and utilization of their electronic resources, leading to better academic outcomes, greater institutional value and increased maximization of the resources.

5.2.5 Maximization of Electronic Resources

The study demonstrated that electronic resources significantly enhanced the quality of teaching, learning, and research at TUM and KeMU, while also fostering greater collaboration among users. This underscores the positive impact of electronic resources on the academic environments of these universities. The strategies implemented by TUM and KeMU for maximizing electronic resources have been largely effective, resulting in increased funding, improved collaboration, and better academic outcomes. However, the library staff identified a gap in their comprehensive assessment of how financial investments, support services, perceived value, and utilization rates interact and impact resource maximization. Addressing this gap through a detailed evaluation would lead to more informed decision-making and better optimization of resources. Additionally, the study highlighted the importance of benchmarking with similar universities both regionally and globally to adopt best practices, further enhancing electronic resource utilization and staying aligned with current trends.

5.3 Recommendations

In view of the foregoing conclusions, the study made several recommendations which were presented as per each research objective.

5.3.1 Recommendations on Research Findings

Based on the findings from the first objective, library staff at TUM and KeMU were generally satisfied with the current budget allocations for electronic resources. However, while the budget covered subscription fees and infrastructure, it neglected support

services and staff training, which are crucial for maximizing the use of electronic resources. Additionally, the low level of user involvement in decision-making highlighted a risk of misallocating funds to less impactful resources. To address these issues, both universities should allocate funds for support services and staff training, involve users more actively in budget decisions, and adopt a sustainable budgeting strategy. Furthermore, they should conduct regular needs assessments and monitor utilization patterns to ensure that resources are effectively utilized, ultimately enhancing the benefits derived from maximizing them.

The findings for objective two revealed that while most users engaged with electronic resources, undergraduate students were the least frequent users. The findings also revealed that there was high utilization rates for audiovisual resources, with mobile phones as the preferred access device. A quarter of respondents reported never using these electronic resources, indicating potential gaps in awareness or perceived need. Despite generally positive satisfaction levels, the presence of neutral and dissatisfied users highlights the need for improvements in resource variety, infrastructure, and user support. To address these issues, TUM and KeMU should focus on increasing user engagement, diversifying electronic resources, and enhancing tracking methods to include more comprehensive approaches such as surveys and web analytics. Additionally, upgrading infrastructure and strengthening user support are essential. Paying close attention to user feedback will help optimize the effectiveness and utilization of electronic resources, thereby enhancing the benefits derived from maximizing them.

For objective three that dealt with perceived value of the electronic resources, the libraries should consider investing in technological infrastructure, reliable internet and the support service to improve the users experience with the resources. Improving users' searching and retrieval skills through targeted training programs will address current limitations that hinder usage due to low confidence in using the resources. Expanding user needs assessment services, strengthening library staff assistance, promoting information literacy training, enhancing awareness programs through various channels and offering more technical support would help increase confidence among the users as well to further boost the usage of the resources and their perceived value. Finally, addressing the concerns of those who found support services ineffective and continuously customizing them based on user feedback will help maintain high levels of satisfaction and optimize the benefits derived from maximizing the electronic resources.

Based on the findings of objective four, the study recommends several actions to optimize the use of electronic resources at TUM and KeMU for more benefits on maximizing electronic resources. Firstly, prioritize ongoing investment in technological infrastructure to maintain and improve internet availability, which is crucial for resource access. Enhance information literacy training to address the identified gaps in searching and retrieval skills, ensuring users can effectively utilize electronic resources. Continue to support and expand key services, including user needs assessments, library staff assistance, technical support, and awareness programs, as these have proven valuable in supporting perceived value and effective resource utilization. Additionally, address the concerns of users who found the support services ineffective by focusing on specific

areas for improvement. By strengthening information literacy training and ensuring robust technological infrastructure, TUM and KeMU can further enhance the effectiveness and utilization of their electronic resources, leading to improved academic outcomes, greater institutional value, and increased benefits on maximizing the electronic resources.

5.3.2 Implications on Theories, Policies and Practices

This study aimed to significantly impact policy formulation and practices concerning the assessment financial investments, utilization patterns, perceived value and support services in maximizing electronic resources in academic libraries. In terms of policy implications, it provided valuable insights for policymakers, including library staff, university management, and the Ministry of Education, highlighting key areas for improving policies on library budget allocations, information technology infrastructure and capacity building for library staff to better support electronic resources in universities.

Practically, the study offered library management and staff strategies to optimize the use of electronic resources by customizing library budgets, support services, assessing users' perceived value, and developing plans to enhance resource utilization for informed decision making on maximizing the electronic resources for enhanced benefits on teaching learning and research. This comprehensive approach aids in financial planning, budgeting, and the development of effective midterm and strategic plans, ensuring maximum utilization of library resources and successful achievement of library goals.

The study adopted Edward Freeman's 1984 Stakeholder Theory, originally developed for business contexts. This study confirmed the theory's applicability to the nonprofit service industry, such as libraries. The theory facilitated the study's objectives by highlighting the importance of meeting stakeholder needs within any institution. It enabled the identification of key stakeholders; students, faculty, library staff, and university administration, whose needs must be addressed to achieve a maximum value on the maximization of electronic resources. The high utilization rates and satisfaction levels among users and library staff, as revealed in the study, underscore the significance of aligning library investments with stakeholder needs, which is a core principle of Stakeholder Theory.

5.3.3 Recommendations for Further Research

The study demonstrated the influence of financial investments, utilization patterns, perceived value, and support services in maximizing electronic resources. This approach could be applied to evaluate other library investments, including information technology such as artificial intelligence, big data, and cloud computing, as well as human resources competency and engagement. Extending this method would allow libraries to thoroughly assess all strategies implemented for maximizing electronic resources and to understand the relationships and impacts of various factors comprehensively. This, in turn, would help set the best practices for achieving increased benefits in maximizing electronic resources.

However, the study did not explore the long-term impact of electronic resource utilization patterns, perceived value, and support service effectiveness on maximizing electronic resources. Future research could investigate these aspects to understand the long-term trends and sustainability of these variables in their impact on resource maximization in universities.

Additionally, while this study focused on two universities, TUM and KeMU, it did not conduct a comparative analysis of the differences in the impact of financial investments and support services across varying sizes and types of universities. Future research could expand this line of inquiry to include institutions across Africa and globally, providing insights into the implementation challenges and successes in different contexts.

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APPENDICES

Appendix I: Letter of Introduction

Kochumba Teresia Atieno

Dear Sir/Madam,

RE: A REQUEST TO CONDUCT A RESEARCH PROJECT IN YOUR ORGANIZATION

I am a student at the Kenya Methodist University – Mombasa Campus, pursuing a Master's Degree in Information Science. I am currently undertaking a study on maximizing electronic resources: an assessment of financial investment, utilization patterns, perceived value and support services at Technical University of Mombasa and Kenya Methodist University.

My study aims to assess influence of financial investment, utilization patterns, perceived value and support services in maximizing electronic resources to establish strategies to increase their impact on academic outcomes and research output.

I kindly request you to assist me by filling out the questionnaires provided to enable this study to achieve its objectives. Any data you enter will be kept in strict confidence.

Thank you for your participation in this exercise.

Yours sincerely



KOCHUMBA ATIENO

tkochumba@gmail.com

Appendix II: Consent to Participate in the Study

Kochumba Atieno
Kenya Methodist University
P.O. Box 267 – 60200.

Dear respondent,

I am writing to request for your consent to participate in my study which will help me to actualize my academic research with the title maximizing electronic resources: an assessment of financial investment, utilization patterns, perceived value and support services at Technical University of Mombasa and Kenya Methodist University. This research will assess the influence of maximizing electronic resources on teaching, learning and research and further guide in the establishment of mechanisms to further maximize on the utilization of the electronic resources.

Procedure to be followed

The questions in the questionnaire and interview guide are organized into 6 sections. Section 1 covers the demographic information of the sampled respondents. Sections 2, 3, 4, and 5 contain questions regarding the independent variables, while Section 6 contains questions on the dependent variable. Some questions in the questionnaire and interview guide are closed-ended, and some are open-ended. All items in the questionnaire are rated on a 5-7 point Likert scale. It takes approximately 10 to 15 minutes to complete the questionnaire and respond to the interview questions. Respondents are under no obligation to complete the questionnaire, answer all questions, or participate in the interview. If a respondent encounters a question they do not wish to respond to, they may skip it.

Discomforts and Risks

In this study, there are no risks of participating in the research. The reputation of the participant will not be harmed, and the respondent is welcome to discontinue participation in the study at any time.

Benefits

Your input is critical in helping this study assess the influence financial investment, utilization patterns, perceived value and support services in maximizing electronic resources at Technical University of Mombasa and Kenya Methodist University to further establish strategies to enhance their benefits academic outcomes an research output.

Rewards

There is no reward for anyone who chooses to participate in the study.

Confidentiality

Your participation will remain strictly confidential. No name will be recorded on the questionnaire/ interview schedule or attached to any data you provide. The collected data will be kept in a safe and confidential location after collection and in the future and have nothing to identify you.

Contact Information

Should you have questions regarding your participation, please contact me on tkochumba@gmail.com, or my supervisors at paul.maku@kemu.ac.ke and lilliannkoroi@mksu.ac.ke.

Participant's Statement

The above statement regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary.(By the CoD signing this consent form, it means that he/she will make arrangements for students from his/her department to participate in the study). I understand that my records will be kept private

and that I can leave the study at any time. I understand that I will not be victimized at my place of work whether I decide to leave the study or not and my decision will not affect the way I am treated at my workplace.

Name of Participant..... Date.....

Signature.....

Investigator's Statement

I, the undersigned, have explained to the volunteer in a language s/he understands the procedures to be followed in the study and the risks and benefits involved in this study.

Name of

Interviewer.....Date.....

Interviewer Signature.....

Appendix III: Questionnaire for Users - Faculty and Students

This questionnaire aims to comprehensively evaluate the maximization of electronic resources by assessing financial investment, utilization patterns, perceived value and support services at Technical University of Mombasa and Kenya Methodist University. The questions are divided into 5 parts and will address the objectives of this study. Section 1 contains demographic information while sections 2-5 contain questions that will address the objectives of this study which include; the financial investments on electronic resources, utilization patterns of electronic resources, perceived value of electronic resources, electronic resources support services and maximization of electronic resources. The questions are either open-ended or closed-ended; kindly ☐ / ☒ or provide answers where appropriate.

Section 1: Demographic Information

1. University

☐ TUM

☐ KeMU

2. School/ Faculty

3. Gender

☐ Male

☐ Female

4. Age

- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55 and above

5. Role in the University

- ☐ Undergraduate
- ☐ Postgraduate
- ☐ Faculty Member (Teaching staff)

Section 2: Financial Investment

1. Budget allocation for electronic resources at your university library

On a scale of 1-5, where (1) is Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) is Strongly Agree, rate the following appropriately.

Financial investment	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Students and Faculty members are aware of the budget allocations for e-resources					
Students and faculty members participate in the decision-making process of acquiring electronic resources.					
The library purchases additional electronic resources based on students and faculty members suggestions					
I have purchased additional electronic resources not provided by my library					
I have invested in apps to aid with accessing the library's e-resources					

2. Rate the return on investment on electronic resources at your university.

On a scale of 1-5, where (1) is Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) is Strongly Agree, rate the following appropriately

Rate return on Investment on electronic resources	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The university has an excellent Return on investment in electronic resources.					
Electronic resources have improved the quality of teaching, learning and research.					
The university's spending on electronic resources is justified by the benefits they provide.					
Electronic resources have facilitated better collaboration with colleagues and students.					
Electronic resources have attracted more funding to the university					

3. Suggest ways to improve return on investment at the university library

.....

Section 3: Utilization Patterns of Electronic Resources

1. How frequently do you use the e-resources provided by your university library?

- ☐ Never
- ☐ Several times a month
- ☐ Once a week
- ☐ Several times a week
- ☐ Daily

2. What types of e-resources do you use most often?

On a scale of 1-5 where (1) is Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily, Rate how often you use the following e-resources.

Electronic resources use	1	2	3	4	5
	Never	Several times a month	Once per week	Several times a week	Daily
E-books					
E-journals					
Audiovisual					
Databases					
Open education resources					

3. Which device do you use to access electronic resources?

On a scale of 1-5 where (1) is Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily, Rate how often you use the following devices to access e-resources

Electronic resources access device	1	2	3	4	5
	Never	Several times a month	Once per week	Several times a week	Daily
Personal desktop computer					
Library computers					
Laptop					
Tablet / Palm top					
Mobile phone					

4. What do you use the electronic resources for?

On a scale of 1-5 where (1) is Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily, Rate how often you use the following e-resources functions.

Electronic resources use	1	2	3	4	5
	Never	Several times a month	Once per week	Several times a week	Daily
Coursework assignments					
CATs and Exams					
Teaching / preparing lecture notes					
Research and collaborations					

5. How satisfied are you with the availability of electronic resources at your library?

☐ Very Dissatisfied

☐ Dissatisfied

☐ Neutral

☐ Satisfied

☐ Very Satisfied

6. Suggest ways the library can improve the availability of electronic resources in your library

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

Section 4: Perceived Value of Electronic Resources

1. To what extent do you agree with the following statements about e-resources?

On a scale of 1-5, where (1) is Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) is Strongly Agree, rate the following appropriately.

Perceived Value of Electronic Resources on Academic Outcomes	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Electronic resources are essential for teaching, learning and research					
Access to electronic resources has positively impacted my academic/lecturing performance					

Electronic resources improve learning/teaching experiences					
Electronic resources improve critical thinking and problem-solving skills					
Electronic resources enhance research capabilities					
Electronic resources help save time and costs associated with academic activities					

2. In your opinion, what are the benefits of using electronic resources?

On a scale of 1-5, where (1) is Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree and (5) is Strongly Agree, rate the following statements appropriately

Benefits of using electronic resources	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
They provide access to current information					
They allow for flexible learning and teaching They provide interactive and engaging learning materials					
They provide access to a variety of multimedia resources					
They are convenient and easy to access					
They allow for remote access					
They improve academic performance					
They enhance collaboration teaching and learning					

3. Others

.....

4. Recommend strategies the library could implement to enhance your experience with electronic resources, maximizing their benefits.

.....

Section 5: Support Service for Electronic Resources Maximization

1. **How often do you use the following support systems?**

On a scale of 1-5 where (1) is Never, (2) Several times a month, (3) Once a week, (4) Several times a week, and (5) Daily, Rate how often you use the following library's electronic resource support services?

Frequency of using the support services	1	2	3	4	5
	Never	Several times a month	Once per week	Several times a week	Daily
Library Orientation					
Information literacy training					
Awareness Programs					
Library staff assistance / technical support					
Easy to navigate web pages					
Available internet					
Email, phone and social media support					
Online tutorials, guides and manuals					

Posters					
Social media engagement					
Feedback mechanisms					
User needs assessment					

Others

2. How would you rate the effectiveness of the above support systems in maximizing electronic resources?

☐ Very ineffective

☐ Ineffective

☐ Neutral

☐ Effective

☐ Very Effective

3. What improvements would you suggest for maximizing the utilization of electronic resources at your university

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

Thank you for participating in this study.

Appendix IV: Interview Guide for Library Staff

This interview guide aims to comprehensively evaluate the maximization of electronic resources by assessing financial investment, utilization patterns, perceived value and support services at Technical University of Mombasa and Kenya Methodist University. The questions are divided into 5 parts. Section 1 contains demographic information while sections 2-6 contain questions that will address the objectives of this study which include; the financial investments on electronic resources, utilization patterns of electronic resources, the perceived value of electronic resources, electronic resources support services and return on investments on the electronic resources.

Section 1: Demographic Information

1. University

TUM

KeMU

2. Gender

Male

Female

3. Age

- 18-24
- 25-34
- 35-44
- 45-54
- Above 55

4. Highest academic qualification

- PhD
- Masters
- Bachelors

5. Years of work experience.....

6. Role/position.....

- University Librarian / Head of Library
- E-resources Librarian
- Systems Librarian

Section 2: Financial Investment

1. What are the library's sources of funds?

.....
.....What proportion of the overall library budget is dedicated to electronic resources?
.....

.....
2. What annual budget is allocated for your library's electronic resources 2023/2024?

Subscription fees

Purchase of Additional electronic resources

Purchasing Electronic resources infrastructure

E-resources staff training

E-resources infrastructure servicing.....

3. Is the library budget allocation for electronic resources enough for the library?
Rate appropriately using: Very Dissatisfied (1), Dissatisfied (2), Neutral (3), Satisfied (4) or Very Satisfied (5).

Electronic Resources Budget	1	2	3	4	5
	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
The library budget allocation for electronic resources is sufficient					

For 1-3 (Very dissatisfied, dissatisfied and Neutral) explain and recommend an appropriate budget for your library (Justify the proposed budget)

.....
.....

4. Apart from the University's budget allocation, what measures has the library established to further fund the electronic resources?

.....
.....

-
-
5. How has the expenditure on electronic resources changed over the past five years in your library?
-
-
-
6. How is the Return on Investment of electronic resources determined in your library?
-
-
-
7. Does your library benchmark its return on investment against other libraries in Kenya? Africa?
- Comment
-
-
-
-

Section 3: Utilization Patterns

1. What is the frequency of the usage of the library's electronic resources?
Rate appropriately using (1) Never, (2) Several times a month, (3) Once a month, (4) Several times a week, (5) Daily

Frequency of usage	1	2	3	4	5
	Never	Several times in a month	Once per week	Several times a month	Daily
E-books					
E-journals					
Audiovisual books					
Databases					

Any comments on the utilization patterns

.....

2. How do the utilization rates of electronic resources vary among different users?

Rate appropriately using: Poor (1), Fair (2), Good (3), Very good (4) or Excellent (5).

Utilization rate	1	2	3	4	5
	Poor	Fair	Good	Very good	Excellent
Undergraduate students					
Postgraduate students					
Faculty					

3. What is the general utilization trend/pattern of the different user categories
 (1) Never, (2) Annually, (3) Monthly, (4) Weekly, (5) Daily

Number of users	1	2	3	4	5
	Never	Annually	Monthly	Weekly	Daily
Undergraduate students					
Postgraduate students					
Faculty					

4. How do you track the utilization patterns of the electronic resources?
 Rate appropriately using (1) Never, (2) Several times a month, (3) Once a month,
 (4) Several times a week, (5) Daily

Tracking Electronic Resource Usage Patterns	1	2	3	4	5
	Never	Several times in a month	Once per week	Several times a week	Daily
Usage statistics from database					
Survey (Questionnaire, Interviews, Focus groups)					
Feedback mechanism (Compliments, Complaints and suggestion)					
Web analytics tools – Tools like Google Analytics					

Search Logs (Database)					
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Other (s)

.....

5. What measures have been put in place to optimize the usage of electronic resources?

Rate appropriately (1) Never, (2) Several times a month (3) Once a week, (4) Several times a week, (5) Daily

maximizing usage of Electronic Resources	1	2	3	4	5
	Never	Several times a month	Once per week	Several times a week	Daily
Information literacy training					
Awareness Programs					
User support					
User instruction manuals and guides					
Easy to navigate web pages					
Available internet					
Social media engagement					
Posters					
Feedback mechanisms					
User needs assessment					

Other(s)

.....

6. What challenges do the library staff face when implementing measures to maximize electronic resource utilization?

.....

7. What recommendations would you offer to enhance the utilization of electronic resources in your library?

.....

Section 4: Perceived Value

1. How does the library assess user perception?
 - User Assessment
 - Feedback mechanism (suggestions, complaints and compliments)
 - Usage statistics
2. How do students and faculty perceive the impact of electronic resources on their academic performance and research quality?
.....
.....
.....
3. What evidence exists in your institution to show a correlation between the usage of electronic resources and academic success?
.....
.....
.....

Section 5: Support Services for maximizing electronic resources

1. What services and programs does your library offer in maximizing electronic resources?
.....
.....
.....
2. What feedback mechanisms does your library have for users to report issues or suggest improvements for electronic resource maximization your university?
.....
.....
.....

Thank you for participating in this study.

Appendix V: Introduction Letter KeMU



KENYA METHODIST UNIVERSITY

P. O. Box 267 Meru - 60200, Kenya

Fax: 254-64-30162

Tel: 254-064-30361/31229/30367/31171

Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

Our Ref: KeMU/NACOSTI/ISK/07/2024

June 24, 2024

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: KOCHUMBA TERESIA ATIENO – (REG. NO. ISK-3-4707-7/2023)

This is to confirm that the above named person is a bona fide student of Kenya Methodist University, in the School of Science and Technology, Department of Information Science undertaking a Master's Degree in Information Science. She is conducting research on: "An Analysis of Return-on-investment on Maximization of E-resource at Technical University of Mombasa and Kenya Methodist University".

We confirm that her research proposal has been presented and approved by the University.

In this regard, we are requesting your office to issue a research license to enable her collect data.

Any assistance accorded to her will be appreciated.

Yours sincerely,

Dr. John M. Machiri (PhD)
Dean, Postgraduate Studies

Cc: Dean, SST

CoD, IS

Postgraduate Coordinator - IS

Supervisors

Appendix VI: Research Permit NACOSTI

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 72973	Date of 11 /July/2024
RESEARCH LICENSE	
	
This is to Certify that Ms.. TERESIA ATIENO KOCHUMBA of Kenya Methodist University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Meru, Mombasa on the topic: ANALYSIS OF RETURN-ON-INVESTMENT ON MAXIMIZATION OF E-RESOURCES AT TECHNICAL UNIVERSITY OF MOMBASA AND KENYA METHODIST UNIVERSITY for the period ending : 11/Julv/2025.	
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