ADOPTION OF OPEN EDUCATIONAL RESOURCES (OER) IN PROMOTING BLENDED LEARNING AT UNIVERSITY LIBRARIES IN NAIROBI COUNTY, KENYA

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A Thesis submitted to the School of Science and Technology in Partial Fulfillment of the Requirements for the Conferment of the Degree of Masters in Information Science of
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DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been presented for a degree or any other award in any other University.

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Recommendation

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

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DEDICATION

Special dedication goes to Almighty God. To my late dad Dominicus, my mum Petronella and my siblings for their sacrifice, raising me up and directing me in the right path of life.

ABSTRACT

There is a lack of consensus in current studies on the extent of Open Educational Resources integration for blended learning in universities and the associated factors. This study investigated the adoption of Open Educational Resources (OER) in promoting blended learning within university libraries in Nairobi County, focusing on the University of Nairobi, Technical University of Kenya, Strathmore University, and Catholic University of East Africa which was informed by a paucity of studies focusing on this population. The study sought to assess the adoption of open educational resources (OER) in blended learning at university libraries in Nairobi County, Kenya, to provide recommendations for improvement. The specific objectives were to evaluate the extent of OER adoption, identify strategies for incorporating OER into blended learning, and determine the success factors and policies supporting OER initiatives. The Diffusion of Innovations Theory, Technology Acceptance Model, and the Institutional Theory provided the theoretical underpinning for the interpretation of the findings. A mixed-methods approach was employed, combining quantitative and qualitative elements in the questionnaire to library staff and qualitative interviews with university librarians involved in OER adoption initiatives. The data collection involved 86 library staff and 4 university librarians. Census method and purposive sampling was employed to get the library staff and university librarians' respectively. The quality of the data collection tool was achieved by checking the face, content and criterion validity, while reliability was achieved by using Cronbach Alpha Coefficient. The mean and standard deviation were computed to SPSS for descriptive statistics for close-ended questions, while the open-ended questions and interviews were analyzed thematically using NVivo. The data was presented using graphs, pie charts, and tables. The analysis revealed a positive but varied state of OER adoption, with significant differences in awareness and integration efforts across the surveyed libraries with 62.3% indicating adoption to a large extent. The findings showed that the key strategies for incorporating OER included interdisciplinary collaboration (89.8%), investment in technological infrastructure (42% strongly agreed), and the promotion of open pedagogical practices (72.6%). Success factors identified were strong institutional leadership (46.4%), comprehensive faculty development programs (49.3%), and the effective dissemination of best practices. The findings on the policies highlighted presence of but the need for clearer copyright and licensing guidelines, sustainable funding mechanisms, and robust monitoring and review processes. The findings further indicated that while there is a foundational level of OER adoption, significant opportunities exist for enhancement through targeted awareness campaigns, comprehensive training, and strategic investments in technological infrastructure. The study concluded that universities are integrating OER for blended learning, enabled by institutional support, continuous professional development, and clear policies covering different aspects. Based on the findings, universities should enhance awareness campaigns, provide comprehensive OER training, create centralized repositories, foster interdisciplinary collaboration, invest in technological infrastructure, promote open pedagogical practices, ensure strong institutional leadership, implement faculty development programs, review and improve policies, and secure sustainable funding. This research contributes to the understanding of OER integration in higher education and offers practical recommendations for universities aiming to enhance their blended learning initiatives through OER.

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ABBREVIATION AND ACRONYM LIST

ACDE	African Council for Distance Education
ANU	African Nazarene University
AVU	African Virtual University
BL	Blended Learning
COL	Commonwealth of Learning
CUE	Commission for University Education
CUEA	Catholic University of East Africa
DOI	Diffusion of Innovation
DOSL	Digital Open-Source Library
DSVOL	Digital School of Virtual and Open Learning
FME	Federal Ministry of Education
GNU	General Public License
HCI	Human-Computer Interaction
ICT	Information and Communication Technology
IR	Institutional Repository
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KeMU	Kenya Methodist University
KICD	Kenya Institute of Curriculum Development
KM	Knowledge Management
LMS	Learning Management System
MIT	Massachusetts Institute of Technology
MMR	Mixed Method Approach
MOOCs	Massive Open Online Courses

NACOSTI	National Commission for Science, Technology and Innovation
OAIR	Open Access Institutional Repository
OER	Open Educational Resources
SAIDE	South African Institute for Distance Education
SPSS	Statistical Package for Social Sciences
TAM	Technological Acceptance Model
TCC	Technical Committee on Collaboration
UCT	University of Cape Town
UTAUT	Unified Theory of Acceptance and Use of Technology
UMAL	University of Massachusetts Amherst Library
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISA	University of South Africa
UON	University of Nairobi
USU	Utah State University

CHAPTER ONE

INTRODUCTION

In this chapter, the background to the study, purpose, objectives, justification, significance, scope, limitations, assumptions and operational definition of terms are presented.

1.1 Background of the Study

Universities worldwide are dealing with the issue of the growing demand for access to Blended Learning (BL). Blended learning is a developing asynchronous teaching format that has been more widely used because of recent technological breakthroughs and growing globalization brought on by the internet (Lane et al., 2021). Blended learning integrates conventional in-person teaching with online components, cultivating an interactive learning environment (Almalki, 2020). Its components encompass in-person sessions, virtual interactions, and digital resources. It can be measured through engagement metrics like online participation, completion rates, and feedback. Its effectiveness, as well as the value of information resources is determined by improved student outcomes and enhanced interaction. Detecting its presence involves observing seamless transitions between offline and online components, where learners engage both in-person and virtually, creating a cohesive learning experience.

According to Ochieng and Gyasi (2021), the introduction of OER has sparked a significant transformation in academic and pedagogical practices. OER are increasingly recognized as a compelling solution, offering a transformative strategy to support various modes of learning. Sweet and Clarage (2020) assert that, OER go beyond being freely accessible to also encompass being easily shareable educational materials. This can be customized to suit specific teaching and learning needs, ensuring a personalized

educational experience for each learner. They foster collaboration and knowledge sharing among educators, students, and institutions, while also democratizing access to educational materials. OER play a crucial role in today's educational environment, especially in blended learning scenarios. They address the challenge of expensive resources while providing a diverse range of materials to accommodate different learning preferences. Recognizing the inherent connection between resources and good education across all learning modes is crucial as we delve into the investigating the contributory role of OER in supporting blended learning.

Notably, OER offer a promising way to get beyond the drawbacks of conventional educational resources because of their accessibility, customization, and cost. Learning, teaching and research resources are usually provided by or through libraries. Therefore, the adoption and success of OER within private and public universities is facilitated by university libraries. University libraries are fundamental centers for information, learning resources, research, and collaboration. They play a vital role in fostering the creation, utilization, and dissemination of OER to support teaching, learning, and research. Through collecting, maintaining, and sharing these resources, librarians actively contribute to OER, making them available to instructors and students (Kolesnykova & Matveyeva, 2021).

Additionally, libraries operate as catalysts for faculty development by providing activities to increase knowledge of and ability for using OER in instructional design. This assistance is essential for encouraging open access to knowledge acquisition and advancing creative and interesting training that adheres to the OER tenets. In this case therefore, libraries contribute to the educational landscape by carefully selecting and promoting OER collections, making it easier for instructors to find relevant resources for their courses. In addition, they provide training courses on the utilization of OER,

including advice on licensing and copyright matters. In promoting OER adoption, libraries integrate them into institutional repositories, providing a centralized platform for the storage and dissemination of these materials, and actively promoting blended learning initiatives. This underscores the reason why libraries serve as key repositories for OER.

Academic libraries worldwide have embraced OER in various capacities. For instance, in 2001, the Massachusetts Institute of Technology (MIT) started an MIT Open Courseware project, which allowed for the unrestricted sharing of course materials online at no cost. This initiative had a profound impact on students and MIT programs. According to Zhu and Kadirova (2021), MIT's Open Courseware project significantly influenced the career development and educational decisions of numerous learners, enriching MIT programs with a wealth of prospective applications. Similar to this, in 2011 the University of California Libraries and MERLOT collaborated to create the California Digital Open-Source Library (DOSL), which provides OER to lecturers and students (Thompson & Muir, 2020).

Notably, the University of British Columbia Libraries keeps a sizable collection of OER to support accessible and affordable education. The growth of OER programs, therefore, has significantly altered the global educational environment. This expansion has been fueled by public funding, institutional alliances, and grassroots initiatives. More people and organizations are providing open and cost-free OER for digital learning resources as they become aware of their potential to reduce textbook prices, improve instructional quality, and develop creative teaching methods (Hylen, 2020).

Schon et al. (2021) cite statistical evidence to support the broad-reaching effects of OER which have a profound impact on the educational environment, bringing about

significant changes. OER promotes inclusion in education by making high-quality learning materials accessible to everybody, hence reducing budgetary obstacles (Aguilar et al., 2022). The extensive influence of this phenomenon is experienced in various contexts, ranging from traditional educational institutions to independent learning environments. OER stimulates innovation by enabling educators to modify and combine content, customizing it to suit unique pedagogical requirements. Its development fosters a worldwide sharing of knowledge and a wide range of perspectives due to its collaborative character. In addition, it enables educators to continuously enhance and revise course materials, guaranteeing their pertinence and timeliness in a swiftly changing educational environment thereby initiating a fundamental change towards learning experiences that are accessible, adaptive, and collaborative.

According to United Nations Educational, Scientific and Cultural Organizations (UNESCO, 2020) report, 45 countries have enacted policies linked to OER, with 21 of them having national OER policies. These equates to over 2.1 million OER available globally in 2021 to support the education paradigm by the help of libraries (UNESCO, 2020). Since it is an information technology age, most of the universities are shifting from banking on traditional resources to online resources and make them available and accessible. Despite the efforts of librarians and instructors trying to create a wealth of OER, there is the challenge of discoverability caused by technical and descriptive barriers. Kasneci et al. (2023) discusses on the need for libraries to develop an effective hybrid metadata standard for OER, through the institutional repository so as to help improve OER records adaption to future metadata. Despite being in beta, the standards will allow OER to guarantee discoverability for lecturers and students.

Similar focus has been placed on the adoption of OER in Africa, with institutions like the African Virtual University and the Continental Education Strategy for Africa, highlighting their significance for improving instructional materials' quality and fostering access to education (Idara, 2016; Njagi, 2013). Makerere University in Uganda works with the African Virtual University to encourage OER adaption in the continent. These instances highlight the proactive role that libraries play in utilizing OER, highlighting their importance as information hubs and supporters of accessible education.

The need for fair access to materials and good OER utilization for creative and interesting instruction is also emphasized (Otike & Barat, 2021). However, there are still obstacles to widespread OER integration, including inadequate institutional support and lack of digital literacy. To address the problem, several sub-Saharan universities have developed their content and published it in repositories; for instance, Tanzanian universities have made their course materials available to the world through their Open repositories' initiative.

In Kenya, there have been ongoing efforts to promote Open Educational Resources (OER) for several years. However, the adoption of OER remains relatively low, indicating a clear need for further action. Many academic institutions in the country have been actively establishing OER, reflecting a growing interest in exploring their role in promoting blended learning. However, OER integration in blended learning environments brings particular potential and difficulties. Understanding the various tactics used by university libraries in the country is essential even if OER can address challenges with resource scarcity and diverse learning demands. Online learning repositories host a plethora of OER, easily available for access (Tavakoli et al., 2021).

The guidance and recommendations from the Commission for University Education (CUE) highlight the importance of ensuring equitable access to resources for all students. It also stresses the optimization of Open Educational Resources (OER) utilization. Within university library settings, particularly in Nairobi County, there is a noticeable lack of understanding in regard to integration of OER. The use of OER into blended learning in Nairobi County university libraries brings challenges that come from the different rates of OER adoption by institutions Concerns about this inequality are expressed by both instructors and students, driving home the need for thorough comprehension and calculated action. It's imperative to tackle this issue as it directly influences the quality and accessibility of educational resources, consequently shaping the overall learning experience.

1.1.1 Blended Learning at Universities

Blended learning is a dynamic pedagogical strategy meant to leverage the strengths of the face-to-face and online teaching modalities (Vallée et al., 2020). It denotes the seamless combination of traditional face-to-face teaching with online learning components. The integration of traditional and online learning aims to offer students a diverse educational setting. It emphasizes the harmonious blend of digital technologies and in-person instruction. The revolutionary potential of blended learning for the present educational landscape emphasizes its significance and ubiquity in higher education institutions. Rasheed et al. (2020) describe blended learning as a method that combines the advantages of traditional face-to-face teaching with online learning. It is becoming a popular choice for institutions seeking to provide a well-rounded educational experience. However, as their systematic study indicated, the adoption of blended learning is not without problems, needing a deeper exploration of its models and efficient implementation tactics.

Blended learning has recently acquired popularity as an essential educational technique within institutions since it provides an efficient way to enhance the learning experience (Vallée et al., 2020). Universities can establish a dynamic educational setting that caters to the diverse needs of modern students by effectively integrating the strengths of traditional classroom instruction and online learning. The popularity of blended learning is on the rise within academic circles, as educational institutions like universities acknowledge its potential benefits. This recognition is driving the increasing adoption of blended learning approaches. However, according to the findings of Rasheed et al. (2020) the implementation of this plan has not been without its share of difficulties and complications. To overcome these problems, it is necessary to conduct research on the many models of blended learning and the different tactics that may be used to effectively implement blended learning inside selected institutions in Nairobi County libraries.

Furthermore, Yulianti and Sulistiyawati's (2020) highlighted the blended learning model's ability to mould students' attitudes and behaviours. They discussed its benefit in character development. Nonetheless, it is important to note that there exist multiple models, each crafted to meet distinct criteria and educational objectives (Hrastinski, 2019). Universities have the flexibility to tailor their teaching methods to suit the specific requirements of instructors and learners, thanks to the adaptable design of blended learning models.

By doing so, blended learning offers students an interactive and dynamic learning atmosphere that enhances their digital literacy and overall academic achievements. It does this by combining traditional classroom instruction with technology. These methods give academic institutions a way to use technology to its full potential while

preserving the human component of instruction. In agreement, Bordoloi et al. (2020) back up the claim that, blended learning is a widely used and revolutionary paradigm in higher education rather than just a new fad. The incorporation of several blended learning approaches enables academic institutions to establish an engaging and diverse learning atmosphere (Cronje, 2020). It allows for a variety of pedagogical strategies and technological tools, providing students with a customized and flexible learning environment.

1.1.2 Open Educational Resources (OER)

Open Educational Resources, commonly known as OER, constitute a vital element of the contemporary education system. These resources have profoundly altered the conventional methods that are used to produce educational content, as well as the ways in which it is shared and accessible (Nascimbeni et al., 2020). According to Vallée (2020); Mishra et al. (2020); Nascimbeni et al. (2020), there is a general consensus among scholars that "Open Educational Resources" (OER) encompass a wide range of educational materials and resources. These resources are available to the public either free or at minimal cost, with the aim of facilitating learning, teaching, and research efforts.

Traditional educational models, often hindered by financial barriers restricting access to high-quality educational resources, have shifted towards embracing OER, marking a significant paradigm change. These resources are commonly distributed under open licenses, such as Creative Commons licenses, allowing users to engage in various activities, including viewing, downloading, modifying, and distributing the content, as highlighted by Hylén (2020). Other examples of open licenses include the General Public License (GNU) and the MIT license (Huang et al., 2020). As a result, OER acts as a catalyst for innovative and inclusive educational practices.

The idea of making scholarly research and educational materials freely available to the public is at the heart of the larger open access movement (DeRosa & Jhangiani, 2023). Crompton et al. (2020) argue that OER function as a valuable resource for personalized learning, as they allow for the freedom to retain, reuse, modify, remix, and redistribute educational materials. Reimers et al. (2020) found that fundamentally, OER drives a transformation in the educational paradigm by embodying principles of open access within academic settings and promoting a culture of sharing and collaboration.

By eliminating financial and geographical barriers that traditionally restricted access to high-quality educational content, OER have fundamentally transformed the availability of educational materials (Moody, 2020). This economic element is particularly important in higher education, where the exorbitant cost of textbooks and additional resources has frequently discouraged students from continuing their education. Thus, the use of OER encourages diversity in educational settings (DeRosa & Jhangiani, 2023; Moody, 2020; Reimers et al., 2020). It encourages the creation of content that is sensitive to other cultures and responsive to the various requirements of different types of students (Valverde-Berrocoso et al., 2020).

OER is also compatible with the idea of blended learning it paves the way for easier access to educational resources outside of the confines of traditional educational settings (Moody, 2020). Learners of all ages, from all walks of life, and in every situation can reap the benefits of OER by engaging with resources that are tailored to their individual educational objectives. This unrestricted access to education fosters a culture of lifelong learning, which in turn fosters both personal development and professional advancement (Bordoloi et al., 2020) hence; open educational resources promote a sense of togetherness among educational institutions and educators by

encouraging the sharing and adaptation of resources. This enables educators to benefit from each other's expertise, experiences, and innovations, thereby fostering the cultivation of a community spirit and shared knowledge advancement (Cronje, 2020; Hrastinski, 2019).

1.2 Statement of the Problem

Kenyan university libraries play a crucial role in supporting blended learning initiatives by ensuring access to learning materials that align with CUE guidelines, which emphasize integrating library resources into research, teaching, and learning across various education modes (Perris & Mohee, 2020). Despite the advantages of OER, such as cost efficiency and adaptability (Admiraal, 2022) their adoption in Nairobi County's university libraries remains slow, hindering students' access to high-quality resources (Kuria, 2022). OER initiatives in Africa, as argued by Tlili et al. (2022) have primarily focused on content creation while neglecting critical areas like accessibility and sustainability. The challenges of integrating digital resources by faculty further impede innovative teaching practices, and many OER users struggle to find pertinent, high-quality materials (Baas et al., 2023). Additionally, a lack of effective strategies and frameworks for OER adoption exacerbates these issues, preventing successful integration into blended learning. While Nzioka (2021) highlighted progress in integrating OER into Kenyan university libraries, knowledge gaps in the adoption process remain, despite the recognition of core educational skills like problem-solving and comprehension (Mohammad et al., 2020). As such, while some progress has been made, significant gaps remain in OER adoption and utilization.

1.3 Purpose of the Study

The study sought to explore the adoption of open educational resources (OER) in promoting blended learning at university libraries in Nairobi County, Kenya.

1.4 Research Objectives

The study was guided by the following specific objectives

i. To determine the state of OER adoption in promoting blended learning at the selected university libraries in Nairobi County.
ii. To identify the strategies used by university libraries in Nairobi County to successfully incorporate OER into blended learning settings.
iii. To explore the success factors for adopting OER in blended learning in university libraries in Nairobi County.
iv. To analyze the open educational resource policy for supporting adoption of blended learning at university libraries in Nairobi County.

1.5 Research Questions

i. What is the current state of OER adoption in the selected university libraries in Nairobi County?
ii. What strategies are employed by university libraries in Nairobi County to integrate OER into blended learning settings?
iii. What are the key success factors for adopting OER in blended learning within university libraries in Nairobi, and how do these factors contribute to effective OER integration?
iv. What are the OER adoption policies supporting blended learning at university libraries in Nairobi County?

1.6 Justification of the Study

The research fills a notable gap in the current literature by concentrating on the usage of OER within university libraries in Nairobi County, Kenya. This study is important for several reasons. By exploring how well OER is being adopted and what factors help or hinder its use, it is possible to find ways to make education more accessible and affordable by successfully integrating OER. Further, the results of this research can help improve teaching methods and promote educational inclusion, not just in Nairobi but in other parts of Kenya, regionally, and around the world. Finally, the study's focus on Nairobi County makes it relevant to other urban areas in Kenya and beyond, as they likely face similar challenges and opportunities with education. Overall, this research is important because it can help improve teaching methods, promote educational inclusion, and advance educational goals by exploring how OER is being used in university libraries in Nairobi County.

1.7 Significance of the Study

The findings will benefit various stakeholders and inform measures aimed at enhancing the integration of OER in supporting blended learning. For educational institutions and policy makers, the research provides insights into the current state of OER adoption in university libraries. This helps these stakeholders to understand challenges and opportunities, allowing for informed decisions about resource allocation and policy creation to support OER integration. For university libraries, the study explores successful methods for utilizing OER in blended learning. These best practices can serve as a valuable resource for other libraries looking to improve their OER implementation. For students, the research explores how OER can address student challenges like unequal access to resources. By promoting OER adoption, institutions can work towards a more equitable and inclusive learning environment. The study also

suggests that OER can improve blended learning experiences by offering convenience and fostering collaboration. Overall, the study contributes to the field of education by providing evidence-based insights on how OER in university libraries can enhance student engagement and academic performance, ultimately benefiting the future workforce and progress of Nairobi County.

1.8 Scope of the Study

The study involved public and private universities in Nairobi County, focusing primarily on OER integration in university libraries as the main subjects of investigation; the library staff provided essential information for the study. Specifically, the research centered on two public universities: The University of Nairobi and the Technical University of Kenya, along with two private institutions: Strathmore University and the Catholic University of Eastern Africa (CUEA). These institutions cover a broad spectrum of academic environments and can offer helpful information about the use of OER at this time in Nairobi County. Further, the geographical focus of the study was informed by the fact that they host the main campuses of the universities, influencing the policy and strategic direction of the institutions. The study concentrated on the state of OER adoption, integration tactics, success criteria and adoption policies. Aspects such as mixed media, courseware, assignment, class guides and activities were not covered.

1.9 Limitations of the Study

The study focused on library staff employed at the selected university libraries in Nairobi County as its sample population. It is essential to acknowledge that the findings of the study may not be generalizable to other university libraries in Kenya because of differing contextual factors. This study employed a cross-sectional descriptive survey research design for data collection. This design required point of time data collection

from respondents, which raised confidentiality and privacy concerns. To mitigate this limitation, the researcher worked closely with librarians in charge to achieve the desired outcome of data collection and reassure the respondents that information would not be used against them. Notably, some of the respondents from the target population did not participate by providing responses, which limited the scope of the data collected. However, the response rate was sufficient to facilitate analysis, interpretation, and use of the data to make inferences and conclusions related to the phenomenon. Finally, as the study progressed, it became necessary to adjust the budget and schedule to ensure timely completion of the study.

1.10 Assumption of the Study

The study assumed that the chosen university libraries have implemented OER and blended learning practices. It also assumed that the respondents would be available during the data collection period and would complete the questionnaire honestly, objectively, and accurately, drawing from their own perceptions, knowledge, and experiences regarding OER and BL. However, the study was scientific, thus making the assumptions that the constructs in the data collection instruments, collects data that measured the desired constructs.

1.11 Definition of Operational Terms

Adoption : The process and the level by which university libraries accept and use the OER in promoting new technologies.

Blended Learning : A teaching approach that seamlessly combines traditional classroom instruction with remote learning components, creating an interactive and dynamic learning experience (Choy & Quek, 2022).

Creative commons : It is a nonprofit organization whose goal is to advance public knowledge and cultural exchange by offering legal resources, rules for rights, and limitations on public use, attribution, and modification (Creative commons, 2020).

Online Learning : A teaching and learning method that leverages digital technologies and the internet to deliver course materials and facilitate interaction between students and instructors (Marwan et al., 2023).

Open Educational Resources: Freely accessible educational materials available to the public, designed to be used, adapted, and shared under open

		licenses, fostering widespread access and collaboration (Bertram et al., 2023).
Open textbooks	**:**	These are open educational resources offered online usually free of charge in the form of textbooks. Typically, bound or hard copies can be printed.
University Library	**:**	Serves as a central hub within a university or college campus, providing students and faculty with access to a diverse range of scholarly resources and services aimed at supporting teaching, learning, research, and intellectual exploration (Jabeen et al., 2022).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter details the extensive review of literature on the variables and constructs included in the study. The chapter begins with empirical review of the literature on the variables and constructs that form the basis for the research objectives. This followed a comprehensive review of state of OER adoption in supporting blended learning; strategies adopted in OER adoption; success factors to OER adoption and OER policies adoption in supporting blended learning. The chapter concludes with the description of the theoretical and conceptual frameworks.

2.2 State of Open Educational Resources Adoption in Blended Learning

Open educational resources (OER) allow college students to access course materials right from the beginning of their classes, ensuring an equitable learning experience for all (Clinton-Lissel, et al., 2021). With Open Educational Resources (OER), university lecturers and students have unrestricted access to high-quality educational materials and open licenses, enabling them to prepare, enhance, or supplement their teaching and learning practices. However, despite the availability of OER, adoption rates are reportedly low, and lecturers and students encounter numerous challenges when attempting to utilize them, including inadequate technology skills, willingness, and pedagogical knowledge for consuming, producing, or integrating OER (Smith et al., 2023).

Moreover, Madiba (2018) investigated Lecturers' viewpoints and encounters concerning open educational resources in the instructional process at the Free State

University. The research was grounded in the constructivism paradigm and the Knowledge Management (KM) process model. The inquiry involved semi-structured interviews with eighteen lecturers selected based on specific criteria. The study findings unveiled a lack of awareness among lecturers regarding the nature of OER and their effective integration into teaching and learning practices. Similarly, despite the conceptualization of OER dating back to 2002, there are differing perspectives on why these educational resources have not been widely adopted. They were envisioned as the solution to the scarcity of freely available, relevant, and high-quality educational materials in Higher Education Institutions (HEIs).

The utilization and acceptance of Open Educational Resources (OER) exhibit substantial divergence between developed nations and those in developing and underdeveloped stages. Apart from their cost-effectiveness, OER provide educators and students with the advantages of openness and flexibility in the educational journey. A recent study by Admiraal (2022) delved into the utilization of OER for personalized mathematics instruction among undergraduate students with learning disabilities, aiming to enhance their learning outcomes and motivation.

Admiraal's research surveyed 1819 educators from diverse open universities within the United Kingdom (UK), assessing their adoption rates, types, purposes; challenges faced, and perceived impacts of OER. The dataset employed was sourced from a secondary dataset published by the OER Research Hub. Findings revealed that while many educators and learners adeptly customize OER to meet their needs, only a minority engage in creating, publishing, or contributing to OER content. Key obstacles identified include the search for pertinent, current, and high-quality resources, alongside time constraints, and to a lesser extent, concerns regarding workplace

acceptance and institutional support. This study primarily concentrated on barriers hindering the adoption of OER and relied on secondary data for its analysis.

Karunanayaka (2016) conducted a study at the Open University of Sri Lanka to explore the implications of incorporating Open Educational Resources (OER) into the educational landscape. Employing a design-based research methodology, the study engaged 230 participants, including students and educators from the postgraduate diploma departments within the university. Data collection encompassed a range of methodologies, such as structured questionnaires, analysis of lesson plans, concept mapping, self-reflection exercises, semi-structured interviews, and focus group discussions.

The research employed both quantitative and qualitative approaches throughout various stages of data gathering and analysis. Quantitative data underwent examination through descriptive statistical techniques, including percentages, while correlation and regression analyses were utilized to investigate interrelationships among variables. The findings underscored a notable influence of OER integration on educators' utilization of instructional materials, as well as on their pedagogical outlooks and methodologies. Particularly evident was a shift towards more constructivist, contextually-driven, and collaborative instructional practices, indicative of an evolving ethos of participation and knowledge sharing in support of Open Educational Practices.

Further, Kolesnykova and Matveyeva (2021) conducted a study on Ukrainian university libraries and support of distance learning. The study examined the level of awareness of OER to librarians, the ability of librarians to provide support services and levels of adoption and use of OER in the teaching, learning and research. Professional literature and results analysis methods were adopted. The analysis of 77 questionnaires

was done. The study submitted that the concept of OER is familiar and understandable to the study participants at 84.2%. Additionally, 75% of the participants were involved and used OER at the university. Unfortunately, the study did not collect primary data hence, left this study with bridge research gap.

In Nigeria, Ogunbodede and Cocodia (2023) conducted a study that provided valuable insights into the integration of open educational resources (OER) to facilitate blended learning across Africa. Their research focused on examining the contributions of librarians towards fostering the use of OER. Utilizing a descriptive survey research methodology, data collection was facilitated through an online questionnaire, and a census sampling approach was implemented.

Data analysis was conducted using frequencies and percentages, utilizing the Statistical Package for Social Science window version 23. The study aimed for a target population of 200 librarians as the sample size. However, only 83 librarians participated in the study, resulting in a response rate of 42%. The research uncovered that librarians within Nigerian universities exhibit a strong understanding of OER and actively advocate for its utilization within their institutions. Nonetheless, the study findings may present an overly optimistic estimation due to the response rate falling significantly below the accepted rate of 70% (Ogunbodede & Cocodia, 2023).

In Mali, Hare et al. (2020) conducted a research endeavor with the objective of delineating the involvement of librarians in open pedagogy. Their study entailed introducing doctoral students to open educational resources (OER) and imparting concepts related to information literacy. The research aimed to gauge the extent of collaboration on OER to propel blended learning initiatives forward. Employing a qualitative case study methodology, the study delved into the collaboration between

faculty and librarians in the adoption of OER. Interviews were conducted with both librarians and faculty members to elucidate their experiences of collaborative efforts in promoting and adopting OER at their institution. The findings revealed that only approximately 36% of librarians had incorporated OER into their courses to support doctoral students in blended learning. Additionally, the study highlighted the absence of a centralized repository for locating OER, which poses obstacles for doctoral students within the university.

Librarians at several public universities in Ghana are assuming the roles of advocates and campus leaders, spearheading initiatives related to Open Educational Resources (OER). Kodua-Ntim (2020) deliberately selected four Ghanaian universities and sampled librarians randomly to examine the utilization of institutional repositories. Distinct questionnaires were utilized, eliciting responses from a total of 38 librarians. According to the empirical data, the primary findings revealed a minimal level of awareness and recognition of the OER concept and open licensing among the survey participants.

The study emphasized that faculty members were the primary drivers behind the adoption of OER. It recommended leveraging the skill sets of both librarians and faculty to establish a dynamic team dedicated to providing quality course materials to students and lecturers at minimal or no cost. Their research forms a vital component of the current study's inquiries into the level of OER adoption among university librarians and their efforts to integrate OER programs in support of blended learning.

In East African nations, the uptake of Open Educational Resources (OER) is witnessing an upward trend, aligning with nations' endeavors to alleviate student debt burdens and enhance educational inclusivity. The integration of open educational resources in these

regions is marked by notable advancements. Notably, the University of Dar es Salaam has inaugurated Tanzanian OER repositories, serving as central hubs for the storage and exchange of open educational resources, aimed at fostering the generation, sharing, and application of OER. In a study conducted by Kachota (2022) on the adoption of open educational resources in Tanzanian higher education institutions, a survey approach was employed, with five public higher learning institutions being purposefully selected.

The findings unveiled that most of these institutions exhibit a deficiency in open educational resources, with the exception of the Open University of Tanzania, which predominantly focuses on distance learning provision. Instead, numerous institutions host online repositories accessible via their respective websites. Nevertheless, these repositories lack regular review processes, leading to inconsistent practices and the utilization of outdated software versions. Consequently, the study advocates for the development, accessibility, reuse, repurposing, and dissemination of high-quality OER to bolster teaching and learning practices.

Despite the potential benefits of Open Educational Resources (OER) in Ugandan university libraries, there remains a low level of adoption among both librarians and faculty members. In his assessment, Onaifo (2016) delved into the usage of open access library resources among students, with a particular emphasis on assessing the uptake of open education library materials. The study utilized a descriptive research methodology, incorporating a combination of qualitative and quantitative methods. Analysis of the data was carried out utilizing the Statistical Package for Social Sciences (SPSS) version 25.

The findings revealed a limited adoption of open resources attributed to challenges with internet connectivity, information overload, and insufficient awareness among librarians regarding the availability of open access resources. The study recommended increasing awareness among university librarians about OER to support student usage and mitigate the costs associated with educational resources. Additionally, it suggested enhancing internet speed through library resources and services and conducting training sessions on open access library resources and services for both library staff and students.

The adoption of OER represents a transformative shift reshaping the landscape of higher education across both public and private academic institutions. In Kenya, OER have gained traction within university libraries, aligning with global trends advocating for accessible and cost-efficient education. Nevertheless, the utilization of open educational resources varies significantly between public and private institutions, influenced by distinct institutional missions, financial models, and regulatory environments (Pete, 2019).

The first distinct difference is on the mission and vision of these universities. The mission and vision determine the educational objective with private universities typically having greater latitude than public institutions. They might put an emphasis on new methods of teaching, pedagogical flexibility, and individualized educational experiences. Because of this, there may be a greater readiness to use OER as a means of accomplishing these aims as a result. On the other side, public colleges may choose to match their mission with the educational aspirations of their state or region, with a particular emphasis on accessibility, affordability, and the cultivation of a skilled labour force as assessed by (Karitu & Kimani, 2022).

Adoption of OER can be financially motivated because it helps lower student textbook costs and alleviates financial strains on both students and the institution. Funding resources; tuition, endowments, and charitable gifts are some of the most common sources of income for Kenyan universities. Private universities have a wider variety of revenue streams increase financial stability making them access to the resources necessary to invest in the creation and adoption of open educational resources and infrastructure (Luo, et al., 2020). When it comes to funding, public universities frequently must contend with limitations imposed by the government. This type of adoption can be financially driven.

Lastly, the adoption of OER in Kenya universities differ due to the regulatory environment whereby when compared to their public counterparts, private institutions are subject to a lower number of rules from the government. They can experiment with OER and adapt more quickly to shifting educational landscapes. It is possible that public institutions will be required to traverse regulatory frameworks that are more complex, such as state education regulations and budget requirements. These restrictions have the potential to either help or hinder the adoption of OER.

Therefore, the level of integration of Open Educational Resources (OER) within university libraries varies among different institutions in Kenya. For instance, Mwangi (2018) conducted a study to investigate the incorporation of OER in supporting teaching and learning within Kenyan universities, involving 89 university librarians and library staff. The study employed a census method, encompassing all 89 respondents as the sample size. Data collection was carried out through questionnaires, interviews, and secondary sources. Statistical and thematic analyses were conducted on the collected data, with results presented using tables, graphs, charts, and verbatim quotes. The

results revealed that the predominant OER integrated into academic libraries in Kenya were primarily limited to E-books and E-Journals. Additionally, two university libraries had formed partnerships with external OER providers and successfully integrated external OER into their systems.

Stellah et al (2022) evaluated the use of information communication technologies (ICTs) as instruments for enhancing information literacy among library patrons at the Gaba Campus of the Catholic University of Eastern Africa in Eldoret, Kenya. Employing a survey research design, the study targeted a population of 537 registered users, comprising library staff, teaching staff, non-teaching staff, and students. Through random stratification, the population was divided into distinct groups, and a sample of 113 respondents was selected via simple random sampling. Data collection was conducted using survey questionnaires and subjected to descriptive analysis.

The findings indicated notable advancements in the integration of Open Educational Resources (OER) within the university library. The library's homepage featured subscriptions to electronic resources such as E-Journals and e-Books. Additionally, tutorials on information literacy guides, including instructions on using Zotero and Mendeley, were provided. Moreover, the library incorporated plagiarism detection software, Viper, into its resources. The institutional repository contained links to various academic materials, including conference papers, journal articles, and past examination papers. However, a gap was identified in the lack of partnerships with international OER initiatives.

Kenyatta University, one of Kenya's public universities, offers online learning opportunities through its Digital and Open Learning (DSVOL) School, enabling students to access educational content remotely (Che et al., 2022). The university

supplies digital devices loaded with relevant educational materials to online students based on their registered units. Although access to these resources requires login credentials, the university library maintains an institutional repository featuring open access textbooks referred to as "open textbooks" under Creative Commons licenses. Furthermore, the university library collaborates with the South African Institute for Distance Education (SAIDE) in its OER initiative.

Additionally, the library provides information on accessing OER through online searches and facilitates requests for content from universities worldwide (Adala, 2016; Che et al., 2022). Similarly, Jomo Kenyatta University of Agriculture and Technology (JKUAT) in Nairobi exemplify Kenya's efforts in integrating OER into its library resources (Ngamau, 2013). The university subscribes to electronic resources, including e-Books and e-Journals, enhancing access to academic materials for its users.

2.3 Strategies Used by University Libraries to Successfully Incorporate Open Educational Resources

A strategy is a methodical plan crafted to attain a specific objective, encompassing initiatives that offer structures for the integration of OER in the education sector. According to Nipa and Kermanshachi (2020), the primary challenge lies not in accessing OER but rather in effectively utilizing the accessed OER. Library users require proficiency in locating, identifying, evaluating, and applying information to address various information-related challenges. Moreover, Ntaga (2022) contends that inadequate utilization of OER in institutional libraries stems from deficient library usage and literacy skills among library users (Shiferaw, 2019).

Consequently, the rapid global adoption of OER has brought about significant transformations across various domains of university education. These initiatives have

notably impacted the fields of education, research, and development. They have facilitated new avenues for accessing information, teaching, learning, and training through digital content delivery, thereby promoting networked and cost-effective learning strategies. In response, university librarians are tasked with collaborating closely with teaching staff, IT specialists, and administrators to seamlessly integrate OER into existing library resources. This integration ensures the security and easy accessibility of institutional resources for their intended users. Moreover, librarians are pivotal in fostering the dissemination of existing OER among the university community.

In United States, during the 1990s, numerous universities had already implemented various OER initiatives. A study conducted by Ellis (2014) at the University of Kansas Libraries aimed to align more closely with campus OER strategies and meet user expectations, prompting a comprehensive organizational review and transformation process. The study asserted that while OER integration into educational material management in university libraries is underway, there's a necessity for strategies that fully embrace OER to support blended learning at universities.

In Pakistan, university libraries must leverage modern ICTs to enhance access to both local and global OER. To meet the evolving needs of their users, Ishtiaq (2020) suggested that libraries should employ knowledgeable librarians capable of creating and disseminating knowledge in the digital age. Furthermore, Ishtiaq et al., (2020) stressed the importance of Continuous Professional Development (CPD) for information professionals in academic libraries to ensure they maintain the requisite expertise for the adoption and effective utilization of OER.

Rodés and Gewerc (2021) highlight concerns regarding the sharing of available OER in America, and propose various strategies for academic libraries to integrate institutional resources. They suggest linking to institutional repositories and utilizing social networks such as YouTube, Twitter, and Facebook to disseminate OER. In China, academic libraries leverage platforms like YouTube for sharing digital video materials, while Twitter threads and Facebook pages are utilized to distribute links to available OER to diverse user groups.

In Africa, a number of strategies have been employed to integrate OER, with a particular emphasis on institutional repositories. Kodua-Ntim and Fombad (2020) undertook an assessment into the strategies for leveraging Open Educational Access Institutional Repositories (OAIR) at university libraries in Ghana. The study was grounded in a pragmatism paradigm and utilized a mixed methods research approach, employing a convergent parallel mixed method design that involved simple random sampling and purposive sampling techniques. Data were collected through questionnaires and interview guides. The study focused exclusively on five private university libraries listed in the Directory of Open Access Repositories. Findings revealed that these universities utilized institutional repositories, websites, general/global repositories, and subject-specific repositories. However, the majority of the universities heavily relied on MIT OpenCourseWare, which offered a variety of OER including course syllabi, recorded lectures, lecture notes and slides, reading lists, assessment questions, and assignments.

Saliu, Ngozi, and Lawal (2022) conducted an evaluation of the impediments and approaches to utilizing institutional repositories among academic staff in university libraries across South-West Nigeria. Employing a descriptive survey methodology, the

study targeted 420 academic staff members from six federal universities. Data collection utilized a combination of closed-ended and open-ended questionnaires. Findings indicated various strategies employed, including the implementation of alternative power supply to facilitate OER integration, enhancement of internet bandwidth to optimize institutional repository utilization, encouragement of content acquisition, provision of plagiarism detection software, clarification of copyright and intellectual property rights related to repository content, and enhancement of awareness regarding the significance and contents of institutional repositories.

In South Africa, the predominant strategies for OER integration or sharing primarily involve the utilization of general and global repositories (de Hart, Chetty & Archer, 2015). Notable services include MERLOT, Solvonauts, and OER Commons. MERLOT, originating from California State University, provides access to over 10,000 resources accompanied by user comments, covering various subjects and educational levels. While not all items are open source licensed, resources undergo peer review for suitability. Solvonauts, provided by the University of Hawaii, offers descriptions of over 110 open licensed resources sourced from over 1,400 sites, with specialized searches for images, videos, and audio, as well as open-source software. Similarly, OER Commons offers links to resources across all subjects and education levels, with over 100,000 listed resources. Although not all items have open licenses, they provide creation tools and community features for educators.

Tanzanian higher education encounters obstacles in obtaining high-quality teaching and learning materials, largely attributed to limited expertise and resources for their creation. Nevertheless, a plethora of open educational resources (OER) is readily accessible in the public domain, offering opportunities to augment existing resources

or facilitate the development of new courses. The effectiveness of strategies implemented by university libraries significantly influences the uptake and utilization of these resources across Tanzanian universities.

A study was conducted to investigate collaborative efforts at the Open University of Tanzania regarding the integration of OER. Utilizing a descriptive research design, the study analyzed proceedings and records from course development workshops, planning meetings, and relevant literature to systematically outline the process of establishing partnerships for OER development within the university. The findings revealed that during the 8th Technical Committee on Collaboration (TCC) meeting held on July 13, 2014, key recommendations were made to integrate and mainstream OER into open distance learning programs, with the potential for further evolution into Massive Open Online Courses (MOOCs) at the university (Kassim, 2019).

Universities in Kenya have adopted several strategies to successfully integrate Open Educational Resources (OER) into their curriculums. These tactics demonstrate a dedication to lowering student debt and expanding access to high-quality education. Kenyan institutions can access and share open educational resources (OER) across national boundaries through collaborations with international organizations, such as the African Virtual University's connection with UNESCO (Ochieng & Gyasi, 2021)

A study by Adala (2016) on the state of OER in universities in Kenya established that, private and public universities differ in the strategies they adopt for supporting OER. Africa Nazarene University (ANU) is a private Christian institution associated with the Church of the Nazarene International, catering to a student population of 328 enrolled in distance learning programs. ANU has embraced technology to streamline academic administration and learning procedures, utilizing Moodle, a customized learning

management system known as "ENAZ." This platform enables distance learners to register, communicate with instructors for tutorials, participate in discussions, and accomplish online continuous assessment tasks. Additionally, the university provides an online repository to support research and development efforts.

Egerton University, a prominent public institution in Kenya, has adopted a collaborative approach to enhance its educational offerings. The university has forged a partnership with the Kenya Department of Defense to offer educational avenues for military personnel pursuing advanced studies. Additionally, Egerton University has cultivated international partnerships with esteemed distance learning institutions across Africa and the UK, such as the University of South Africa (UNISA), the Open University of Tanzania, the Africa Virtual University, and the Open University of Nigeria. Particular significance is its collaboration with UNISA, which played a pivotal role in the establishment of the African Council for Distance Education (ACDE), a Continental Universities Association of Distance Learning. This initiative was formally launched in January 2004 at Egerton University (Adala, 2016).

Kenyatta University actively produce and distribute open educational resources (OER) so that teachers and students can use them. The university serves as an exemplary case of an established institution that has augmented its educational programs by incorporating a "virtual" dimension through collaboration in an international initiative. Kenyatta University has maintained a longstanding partnership with the African Virtual University (AVU) since 1997, aimed at delivering distance and e-learning programs (Idara, 2016; Njagi, 2013).

Open licensing of educational resources is a popular practice in Kenyan universities, especially through Creative Commons license. Kwanya and Adika (2020) explain that,

Strathmore University uses Creative Commons license for their open educational resources (OER) publications, enabling authorized content distribution and modification. Kwanya and Adika (2020) further explain that Kenyan universities have included open educational resources (OER) into their learning management systems (LMS) to facilitate student access. One university that integrates OER within the LMS is Maseno University.

Mathenge (2022) explains that in Kenya, community involvement and advocacy work are also very important. As per Mathenge (2022), academic institutions such as the University of Eldoret engage actively with their local communities, advocating for the adoption of open educational resources (OER), which enhances their reception. Stringent quality control measures are implemented to ensure the standard of OER. According to Nyamai (2020), the Kenya Institute of Curriculum Development (KICD) assesses and approves OER resources to ensure they meet educational standards before their integration into the country's educational system.

Furthermore, to increase access to a sizable collection of free educational resources, Kenyan universities encourage their staff and students to use international OER repositories like OER Commons (Mathenge, 2022) and the African Virtual University OER Repository (Adika & Kwanya, 2020). These scholars agree that universities can also seek for grants and financing from institutions like the Hewlett Foundation, which can help to support the production and uptake of Open Educational Resources (OER) for faculty development, infrastructure development, and content development.

2.4 Success Factors for Adopting Open Educational Resources

Success factors according to Oh and Choi (2020) are perceived as comprehensive and enabler for OER adoption and they sometimes interdepend on one another in the

adoption pyramid. Therefore, success factors are those motivating factors influencing the perceptions of university libraries when adopting and using specific OER in supporting BL. The effectiveness of an e-learning system hinges on both its initial acceptance and its continual utilization (Tai et al., 2012). Understanding the factors that influence students' intentions to persist in using such systems is crucial. Among the key determinants impacting the acceptance and usage of OER globally is the attitude of librarians. Attitude, in this context, refers to individuals' overall inclination towards utilizing a system (Schepman & Rodway, 2020).

Numerous investigations have explored university staff's attitudes towards the adoption of OER. Shahzad and Khan (2023) investigated the attitudes of university librarians towards OER adoption in supporting blended learning. Spanning four universities in India, each representing distinct higher education landscapes—comprising a state Open University, a dual-mode University, a semi-urban university, and a multi-campus private university—the study collected 149 survey responses and conducted interviews with four university librarians. Findings revealed a generally favorable disposition among university staff and librarians towards creating and disseminating OER, albeit with slightly less enthusiasm for utilizing externally developed materials. This positive sentiment stemmed from various factors, including the satisfaction derived from others utilizing and adapting their materials, valuable feedback from peers, and the enhanced reputational standing resulting from sharing and collaborative opportunities fostered in the process. However, there existed some mild apprehension regarding the quality of OER.

Zagdragchaa and Trotter (2019) conducted a study to identify the factors contributing to the adoption of Open Educational Resources (OER) in six higher education institutions, both public and private, in Mongolia. Employing a sequential exploratory

model, the research began with qualitative interviews, followed by quantitative surveys. Four Mongolian universities, comprising three government and three private institutions, were represented by 14 participants who were conveniently sampled. Six university librarians were among those interviewed, followed by a subsequent survey involving 42 librarians. Results revealed that despite initiatives from funding bodies and the government to promote OER, awareness of OER among higher education faculty and administrators in Mongolia remains modest, leading to low adoption rates.

In another study, Bello (2023) highlighted the complex sequence of factors influencing OER adoption within institutions, including infrastructural access, legal permissions, conceptual awareness, and individual or institutional willingness, all of which are shaped by prevailing attitudes. Recent African studies suggest an increasing awareness of OER among university librarians and academics. Cox and Trotter (2017) conducted a study examining the adoption of OER within three South African universities. Their objective was to gain insight into the motivations, practices, and decision-making processes surrounding OER utilization. Rather than simply enumerating success factors, the study integrated these factors into an analytical framework for cross-institutional comparison, emphasizing the critical role of attitude, infrastructure, and digital literacy in OER adoption.

Similarly, a study in a Ghanaian university explored academics' perceptions and engagement with OER through in-depth interviews conducted in January 2019. Utilizing thematic analysis, academics expressed positive views on OER, highlighting its potential to address knowledge disparities between the Global North and South and enhance academic practices, while also expressing concerns about the quality of OER content.

The acceptance and utilization of Open Educational Resources (OER) are largely contingent upon scholars' familiarity with open access scholarly communication. Despite this, scholars have often benefited from open access initiatives without being fully cognizant of this form of scholarly communication. A study conducted on the adoption of OER in Ethiopian universities suggests a gradual increase in general awareness of open access within the research community.

Similarly, findings from a study at the State University of Tanzania - Zanzibar Center, conducted by Hassan (2020) shed light on the level of awareness regarding open distance learning. Utilizing an online questionnaire survey, the study analyzed data statistically, revealing that awareness of OER at the University of Zanzibar remains notably low. Educators and librarians at the university face challenges in delivering effective learning experiences to students, particularly in overcrowded classrooms with limited printed resources. Moreover, the study underscored that the current awareness of OER holds significant promise for their adoption in supporting blended learning. In contrast to conventional curriculum resources, OER content is openly available for copying, usage, adaptation, adoption, and sharing, underscoring their capacity to alleviate constraints encountered in educational setups.

The effective integration of OER into blended learning within university libraries depends on various vital factors. First, robust institutional support is imperative, as it establishes a framework for the adoption and implementation of OER initiatives. Institutions must allocate resources, provide training, and create policies that endorse the use of OER. Secondly, student engagement plays a pivotal role, as it directly influences the effectiveness of blended learning with OER (Dakduk et al., 2018). Universities should foster an environment that encourages active student participation, ensuring they not only access but also contribute to the development and dissemination

of OER. Lastly, cooperation among stakeholders, including faculty, librarians, and administrators, is essential for the seamless integration of OER into blended learning environments. Collaborative efforts enable the identification of suitable resources, development of effective pedagogical strategies, and continuous improvement of OER-related practices, thus optimizing the overall success of blended learning initiatives within university libraries (Dakduk et al., 2018).

Ngamau (2013) investigated the challenges impeding the effective implementation of eLearning at the main campus of Jomo Kenyatta University of Agriculture and Technology (JKUAT). Employing a descriptive and correlational research design, the study utilized a stratified random sampling technique. Samples were proportionately drawn from each of the seven schools within the main campus, with a total of 146 participants selected through simple random sampling. Data collection predominantly relied on a questionnaire administered to faculty members. Both descriptive statistics (frequency counts, percentages, and means) and inferential statistics (correlation analysis, regression analysis) were utilized for data analysis.

The study identified Learning Management support, institutional leadership, and management support, perceived benefits of adopting OER, and ICT infrastructure as the primary factors influencing OER adoption within the university. Consequently, the study recommended focusing efforts on enhancing management support, institutional leadership, perceived benefits of OER adoption, and ICT infrastructure to improve eLearning adoption.

In a separate study, Mutua (2021) investigated the success factors affecting the intention to use e-learning among individuals with hearing impairment in Kenya. Utilizing a descriptive study approach and questionnaires to gather data from students and

instructors, the research revealed the availability of Learning Management Systems (LMS) tailored for people with hearing impairment, which users perceived as useful. However, the study noted that users did not perceive these systems to be easy to use, and there was a lack of facilitating conditions influencing the intention to use them. Although the study did not provide information on the sample size, it raised concerns about potential inadequacies in sample representation.

In a study by Mwaniki et al. (2020) projects the current enrollment status of Virtual and Open Learning (VOL) at Kenyatta University, which was investigated as a case study. The study employed a mixed-method approach, whereby the research targeted a population of 1,159 students and 6 coordinators of the VOL program. The Yamane formula was applied to ascertain a sample size of 200 respondents, who were chosen through simple random sampling from the Virtual and Open Learning program at Kenyatta University. Additionally, judgmental sampling was employed to select 3 Digital School coordinators. Data collection involved interview schedules and questionnaires, with quantitative data analyzed statistically and qualitative data thematically. Results revealed several challenges, including inadequate funding, network issues, delayed feedback, and low levels of teaching staff, while also highlighting the absence of policies governing VOL.

Moreover, Mwiti (2017) in a doctoral dissertation, investigated the factors influencing the use of Kenya Methodist University's (KeMU) institutional repository to enhance open access. The study focused on assessing awareness levels of institutional repository and open access concepts among academic staff, the extent of library staff advocacy for KeMU IR usage to enhance open access, user perceptions of open access publications, and factors discouraging content submission by academic and library staff to the KeMU Institutional Repository. With a study population of 130 staff, the Yamane formula

determined a sample size of 98 participants, selected using probabilistic sampling techniques, resulting in an 84% response rate. Data analysis, conducted descriptively using SPSS version 20, revealed low levels of awareness of IR concepts, limited advocacy for repository usage, negative perceptions of submitted content, and a lack of awareness of the benefits associated with repository submissions as barriers to KeMU repository usage.

The study recommended raising awareness among senior university managers regarding the importance of institutional repositories and encouraging their proactive involvement in promoting KeMU repository usage. However, the analysis did not provide statistics on each variable. The study population was relatively small hence the study would employ census method to obtain all the respondents. Therefore, adoption of OER at universities in Kenya is influenced by individual, contextual, institutional and technological factors.

2.5 Assessment of OER policy for Supporting Blended Learning at University Libraries

Open Educational Resources (OER) has been extensively advocated as a pivotal element within ongoing initiatives across global educational sectors, aiming to enhance accessibility and quality of education (Hilton, 2020). Hence, an effective policy is essential to offer guidance on the adoption, utilization, and enhancement of OER. The OER policy entails the regulations and procedures that promote the creation, utilization, or its enhancement (Butcher, 2015). It serves as a comprehensive document outlining an academic institution's stance on OER and providing guidelines for their implementation in teaching and research practices.

Additionally, the policy addresses licensing issues, publication rights, and infrastructure requirements, offering guidance on the use of support systems, library services, and information technology (Miao et al., 2019). Furthermore, it delineates the roles and responsibilities of various stakeholders involved in the development and utilization of OER for educational purposes, both within and external to the academic institution (Butcher, 2015).

Open educational resources policy at both institutional and national levels has been recognized as a significant catalyst for effectively leveraging OER (Hilton, 2020). One vital aspect of adopting OER in support of BL is through policy development (Thomas, 2017). Hilton (2020) did a study on OER, student efficacy, and user perceptions. The study employed an online survey of university libraries as well as of the Faculty Center, deans, and department chairs. The study established the OER policy developed to support free online scholarly materials in curriculum development and pedagogy. The total population surveyed was 164 Librarians and 218 faculty staff. The survey received 107 responses from librarians.

The research findings underscored the importance for academic institutions to prioritize the establishment of policies conducive to the sharing of research outputs as Open Educational Resources (OER). Moreover, it advocated for the encouragement of faculty members and students to publish their research articles in Open Access journals, provided reliable options are available, and to facilitate and support such endeavors. Ultimately, the study concluded that the global utilization of OER could be significantly enhanced through the implementation of robust institutional policies.

In recent years, open educational resources (OER) have evolved substantially, shifting from loosely defined materials to integral elements of policies aimed at improving

education access, quality, and blended learning. The establishment of an open education resource policy ensures that publicly funded materials are openly licensed, maximizing the efficiency and effectiveness of education expenditures. However, despite the increasing use of OER, a study by Ni et al. (2024) examining the utilization of OER by students at Fudan University in China revealed that many participants had limited knowledge of these resources. They demonstrated insufficient awareness of OER repositories and lacked a clear understanding of the concept of OER. Consequently, the open provision and sharing of teaching and learning resources in Higher Education Institutions (HEIs) in China have emerged as urgent policy imperatives aimed at supporting blended learning initiatives (Huang et al., 2020).

In Africa, efforts are underway to develop or modify OER policies to facilitate the effective utilization of open educational resources in universities. However, despite the proliferation of OER initiatives in many institutions, relatively few have formalized OER policies. According to Nipa and Kermanshachi (2020), institutions that have adopted such policies typically did so in the aftermath of OER projects, recognizing the necessity for policy guidance to inform initiatives or to institutionalize OER practices formally.

Alternatively, some universities formulated OER policies as they embarked on exploring the use of OER. Leadership support and champions have been identified as pivotal in promoting and implementing OER policies (Majanja, 2020). An examination of current policies at the University of South Africa indicates a frequent deficiency in providing comprehensive guidance on all facets associated with OER creation and adaptation. These policies primarily concentrate on managing intellectual property rights and distributing materials under Creative Commons licenses (Majanja, 2020; Cronin & MacLaren, 2018).

The University of Nigeria Free Content and Open Courseware Strategy, initiated by Derek Keats in October 2005, marked the first institutional-level support for Open Educational Resources (OER) in Nigeria (Nascimbeni et al., 2018). Since then, various efforts have been undertaken to promote the adoption of OER in tertiary institutions across the country (Nascimbeni et al., 2018). Despite these initiatives, their impact in Nigeria remains largely unexplored. Subsequently, the Federal Ministry of Education (FME) introduced the OER Policy for Higher Education in Nigeria, mandating all universities in the country to develop and utilize OER to enhance access and support quality teaching, learning, and research (Onaifo, 2016). This policy encourages higher education institutions to create and procure OER from external sources, recognizing that well-designed learning resources foster greater student engagement with information, ideas, and content than traditional lectures alone.

Similarly, in 2014, the University of Cape Town (UCT) integrated OER into its UCT Open Access Policy (Czerniewicz et al., 2015). This policy ensures free access to educational materials for both students and faculty, thereby reducing barriers to learning. By integrating OER into its policy framework, UCT demonstrates its commitment to fostering innovation, collaboration, and knowledge-sharing in higher education, ultimately enhancing the academic experience and outcomes for all stakeholders.

Mutsvunguma (2019) investigated the development and utilization of repository policies at the KwaZulu-Natal University in a bid to enhance OER usage amidst budgetary constraints. Utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT) model, the study employed a mixed-method approach, collecting quantitative data from academics and qualitative insights from university librarians through interviews. Findings revealed consistent growth in the university's

institutional repository, supported by advancements in Information and Communication Technology (ICT) infrastructure. Although most academics and librarians believed that utilizing university repositories in blended learning would benefit students, many had limited knowledge of the university's repository policies. Recommendations to enhance OER usage included implementing a mandatory OER policy and reviewing and strengthening quality assurance, human resource, and ICT-related policies.

Furthermore, Luo et al. (2020) emphasize that policies play a crucial role in either facilitating or hindering the adoption and development of Open Educational Resources (OER) within university libraries. These policies aid in the effective management and archiving of materials while fostering internal improvements, innovation, reuse, and sustainability. OER have become widely recognized and valued tools for improving teaching and learning experiences for both educators and students in Sub-Saharan countries. Despite this growth in OER adoption and usage, the formulation of specific policies addressing the development, sharing, adaptation, and utilization of OER in East African universities remains limited.

In Ethiopian universities, the absence of clear OER policy guidelines raises questions regarding the incorporation of tasks such as creating learning resources into the job descriptions of library staff, as well as the implications of such responsibilities on development, performance management, remuneration, and promotion (Abayneh & Hoivik, 2021). Similarly, Ongaya et al. (2023) note that human resources policies often lack adequate provisions for recognizing and rewarding the creation or adaptation of OER within university libraries. These policies should include mechanisms for acknowledging the time invested in OER development.

Moreover, the adoption of blended learning (BL) in Tanzania is affected by OER policies, which necessitate clear guidelines for accessing and utilizing appropriate software, hardware, Internet connectivity, technical support, version control, and backup systems for educational resources (Parra et al., 2021). Thus, the development and implementation of comprehensive OER policies are essential to support the effective integration of OER into university libraries and advance the goals of blended learning initiatives.

Furthermore, Ongaya (2023) investigated the policy challenges linked with institutional repositories across six universities in Uganda. Employing an exploratory approach, the study utilized a simple random stratified snowballing method via Google Forms. The research revealed that while these universities are establishing institutional repositories to enhance their online presence and support blended learning initiatives, various policy challenges hinder the effective implementation of this innovation across institutions.

It was also highlighted that university libraries play a crucial role in dissemination, although departments and individual authors equally share responsibility in this regard. The study concluded that universities should facilitate comprehensive stakeholder engagement in crafting policies governing institutional repositories to facilitate widespread adoption and utilization of Open Educational Resources (OER). Consequently, university libraries should establish institutional policies on quality assurance, discouraging faculty from engaging in online teaching activities before receiving tenure, and implementing measures for controlling intellectual property rights developed by faculty members.

Moreover, Makerere University implemented an OER repository, requiring lecturers to upload their teaching and learning materials for public access (Kakai, 2020). However,

OER extends beyond uploading resources to the university repository; it encompasses downloading and utilizing shared OER for teaching, learning, and research purposes (Kakai, 2020). This initiative has led to an expanding pool of OER, providing lecturers with a broader array of resources and fostering opportunities for adaptation to fit local cultural contexts and learning needs without extensive copyright negotiations or content duplication. Additionally, the development of materials and quality assurance policy guidelines is essential to ensure appropriate selection, development, quality assurance, and copyright clearance of shared works.

Since its inception in 2017, the National Open Educational Resources (OER) Policy has been instrumental in driving the adoption of OER in Kenya, facilitated by the efforts of the Kenyan government (KICD, 2017). This policy is designed to facilitate the development, sharing, and utilization of Open Educational Resources (OER) across Kenyan educational institutions, providing a framework for their creation, exchange, and application. As part of this initiative, Kenyan universities have established OER repositories, serving as central hubs for storing and sharing open educational resources (Nyamai, 2020). Notable examples include the OER Repository at the University of Nairobi and the OER Portal at Kenyatta University.

Additionally, collaborations with international entities like UNESCO and the Commonwealth of Learning (COL) have significantly expedited the adoption of OER in Kenyan universities. These partnerships offer invaluable resources and assistance for developing and executing OER initiatives.

Ngugi and Juma (2016) conducted a review of the implementation of Open Educational Resources (OER) policies among faculty members in selected universities in Kenya. Their study revealed that academic institutions are leveraging the technological

advancements to revolutionize teaching and research through the development of policies facilitating access to digital resources via the Internet, particularly targeting specific demographics.

The growing demand for teaching and learning resources in Kenyan universities has prompted the formulation of e-learning and ICT policies, which have created a conducive environment for the utilization of OER to enhance blended learning. The study underscored the importance for academic institutions to assess the extent to which their policies encourage faculty members to dedicate time to ongoing curriculum development, the creation of effective teaching and research environments within courses, and the production of high-quality teaching and research materials. Furthermore, there is a need for policies supporting collaborative materials development and the promotion of intellectual property rights.

Additionally, UNESCO advocates for the inclusion of open licenses, addressing issues like plagiarism and copyright, in OER policies (Muthanga et al., 2023). For instance, the African Virtue University (AVU) policy stipulates that all information resources shared on its platform are licensed under Attribution-Share Alike, allowing users to freely modify, extend, and distribute the material. The AVU policy emphasizes the responsibility of faculty members and students to ensure compliance with intellectual property rights, copyright regulations, and accessibility standards when publishing OER.

The aforementioned research highlights the significance of OER policies in facilitating the utilization of OER in academic institutions. While existing literature provides valuable insights and recommendations on the importance of universities having OER policies to guide the utilization process, there remains a gap in research regarding the

OER policies' adoption to support blended learning. This area warrants further investigation to enhance understanding and implementation of OER policies in diverse educational settings.

2.6 Blended Learning at University

Blended learning integrates conventional in-person teaching with online learning elements, providing a versatile and individualized educational method (Wada, et al., 2021). This approach enables students to interact with course content both in physical classrooms and via digital platforms, accommodating diverse learning preferences and styles. Through fostering interactive and collaborative learning environments, blended learning utilizes technology to improve resource accessibility and facilitate communication among students and instructors.

According to Min and Lee (2023), blended learning in universities adopts a comprehensive strategy, merging direct instruction, virtual engagements, and digital tools to enrich students' learning experiences. Direct instruction entails traditional face-to-face teaching methods, where instructors deliver lectures, facilitate discussions, and offer hands-on learning experiences within classroom settings (Shi, et al., 2022). This facet enables students to actively participate in course content, promptly receive feedback from instructors, and collaborate with peers in a cooperative setting.

However, blended learning transcends physical classrooms by incorporating virtual interactions through online platforms like discussion forums, video conferencing, and other collaborative tools (Ashraf et al., 2021). Digital resources are harnessed to complement conventional teaching methodologies, furnishing students with supplementary learning materials and resources. Gqokonqana et al. (2022) argue that

by integrating digital resources into the curriculum, universities provide students with a wide range of learning materials tailored to their specific needs.

Globally, Universities embrace blended learning to provide students with adaptable and vibrant learning environments (Chen, et al., 2023). In Canada, institutions like the University of British Columbia (UBC) blend traditional lectures with online resources via their learning technology hub, granting students access to course materials and multimedia resources (Padilla-Rodriguez & Armellini, 2021). Likewise, the University of Toronto's Rotman School of Management combines online modules with in-person workshops, enabling students to interact with course content both on and off campus.

Blended learning in Canadian universities prioritizes interactive and collaborative learning, utilizing digital tools to boost student involvement and tailor learning experiences. Frail and Severson (2022) stated that, blended learning at Canadian Universities has thrived due to the effective integration of advanced information technology. This has allowed them to create dynamic learning environments merging traditional teaching with digital resources and interactive tools. Through the utilization of state-of-the-art technology and principles from library science, the effectiveness of blended learning strategies has improved tremendously in recent times.

In Saudi Arabia, Menzli et al. (2022) conducted a study to examine the adoption of open educational resources (OER) in higher education institutions using Rogers' Diffusion of Innovation Theory as the theoretical framework. The research design employed both descriptive and analytic approaches. Through an online survey, a total of 422 responses from faculty members were collected and analyzed, incorporating the adaptive attributes of the Diffusion of Innovations (DOI) framework. The descriptive analysis revealed that relative advantage positively influences faculty adoption of OER.

Furthermore, the study found positive effects of observability and complexity on OER adoption (Menzli et al., 2022). Furthermore, the analysis of the structural model revealed a positive correlation between trialability and both complexity and compatibility. Moreover, the relative advantage of OER was observed to have a positive effect on complexity but a negative impact on compatibility.

In Finland, universities have embraced blended learning by integrating learning analytics, webinars, and web conferencing to enrich educational experiences (Salonen, et al., 2021). For instance, the University of Helsinki utilizes learning analytics to monitor student progress and engagement, offering insights that inform instructional design and personalized learning paths. Additionally, Mielikäinen (2022) noted that webinars serve as interactive learning sessions. Similarly, web conferencing tools like Zoom facilitate virtual lectures and discussions, allowing students to participate in real-time irrespective of their physical location. Aalto University also embraces blended learning strategies, aiming to cultivate dynamic and inclusive learning environments that cater to a wide range of student needs and preferences. Through the incorporation of learning analytics and web conferencing, Finnish universities underscore active participation, collaboration, and personalized learning, thereby enhancing the effectiveness of blended learning approaches (Salonen et al., 2021).

Zeqiri (2020) conducted a study to examine the impact of blended learning on students' performance and satisfaction at South East European University in North Macedonia. Data was gathered through a structured questionnaire, and analysis was performed on 319 completed questionnaires using multivariate regression within the framework of structural equation modeling (SEM). The findings revealed that blended learning has a significant influence on both student performance and satisfaction. Specifically, course management and interaction were found to have a notable positive effect on student

satisfaction and performance. Notably, interaction showed a stronger impact on both satisfaction and performance outcomes in blended learning settings (Zeqiri et al., 2020). Furthermore, the study highlights a correlation between blended learning and improved student performance, as well as a positive correlation between satisfaction and performance.

In the African region, South Africa in particular, universities embrace blended learning by integrating digital textbooks, e-books, and virtual simulations (Gqokonqana et al., 2022). For instance, the University of Cape Town utilizes digital textbooks and e-books to allow students to engage with the content at their own pace and from any location with internet access. Similarly, institutions like the University of Johannesburg leverage virtual simulations to create immersive learning experiences (Phesa, 2024). These simulations provide students with opportunities to practice real-world skills in a controlled environment, thereby enhancing their understanding and retention of complex concepts.

Gambari et al. (2018) conducted a study to assess the effectiveness of blended learning and e-learning instructional methods on the academic performance of undergraduate students in Kwara State, Nigeria. Employing a quasi-experimental design with pretest, posttest, and control group arrangements, the researchers collected data from a sample of 30 students using the Educational Materials and Methods Performance Test (EMPT), which demonstrated satisfactory reliability with a coefficient of 0.71 obtained from the Kuder-Richardson (KR-20) formula. Hypotheses were examined using Analysis of Covariance (ANCOVA) and the Scheffe post hoc test.

The outcomes revealed a notable disparity in academic performance among the three groups, favoring Experimental Group 1 (Blended learning). Additionally, there was no

significant discrepancy in performance observed between male and female undergraduates instructed with blended learning, nor between male and female undergraduates exposed to e-learning. These findings suggest that undergraduates' academic performance is bolstered when engaged in blended learning instructional mode.

A study by Mtebe and Raisamo (2014) explored the perceived hindrances to the adoption of open educational resources (OER) in higher education within Tanzania. Their investigation revealed that primary obstacles to the utilization of OER in Higher Education Institutions (HEIs) in Tanzania encompass limited access to computers and the Internet, inadequate Internet bandwidth, absence of pertinent policies, and insufficient skills for creating and/or utilizing OER. Unlike findings from other African regions, factors such as distrust in external resources, disinterest in OER creation or usage, and lack of time to find suitable materials were not perceived as significant barriers. These results underscore the distinctive contextual influences shaping OER adoption within Tanzania's higher education landscape.

Addis Ababa University in Ethiopia utilizes online libraries, providing students with access to a diverse array of digital resources including e-books, journals, and research databases (Adugna et al., 2023). These digital libraries enable students to conveniently access educational materials from anywhere, encouraging independent learning and research. Additionally, universities such as Hawassa University utilize data analytics to monitor student progress and customize teaching approaches accordingly. Through the analysis of student data, educators tailor learning experiences, offer targeted support, and bolster overall student achievement.

However, the widespread adoption of blended learning in Ethiopia faces challenges, including limited technology infrastructure limitations, and the need for faculty training (Tadesse et al., 2022). Despite these hurdles, institutions like Bahir Dar University are making notable strides in integrating blended learning approaches, indicating the potential for further advancement and innovation in Ethiopian higher education.

Locally, blended learning in Kenyan universities combines traditional in-person teaching with digital resources and interactive technologies (Magut & Kiplagat, 2022). For instance, institutions like Kenyatta University employ learning management systems (LMS) and virtual classrooms to distribute course materials and encourage student participation beyond physical classrooms. However, achieving optimal outcomes faces challenges. Moreover, disparities in digital infrastructure hinder the smooth implementation of blended learning approaches (Ruga et al., 2023). Despite the progress made by universities like the University of Nairobi, persistent issues such as unreliable internet access and insufficient faculty training impede the full realization of blended learning's potential. Nonetheless, ongoing efforts to address infrastructure limitations and improve digital literacy skills remain critical for enhancing the effectiveness of blended learning across Kenyan Universities.

Karitu and Kimani (2022) conducted an evaluation of the usage of OER among postgraduate students in selected public university libraries in Kenya. Employing a descriptive survey design, the study utilized a random sampling method to select respondents from a target population of 34,445 postgraduate students and university librarians across designated libraries in public universities in Kenya. Data analysis encompassed both descriptive and inferential statistics. The study's results indicated that awareness of OER significantly influenced its utilization among postgraduate students. Furthermore, the accessibility of OER emerged as a crucial factor in

augmenting its utilization. Additionally, the presence of ICT infrastructure was deemed essential in supporting OER resources. Various promotional strategies, such as lecturer influence, policies and guidelines, training workshops, and OER sensitization programs, were identified as contributing factors to OER adoption.

Tibi et al. (2022) investigated the determinants of blended learning among students at Kenya Medical Training College. Employing a cross-sectional survey research design, they employed simple random sampling across chosen campuses, resulting in a sample size of 384 participants. Questionnaires were utilized for primary data collection, with descriptive statistics used for analyzing quantitative data and content analysis applied to qualitative data.

The study's results suggested that students' departments, courses of study, and academic levels played significant roles in shaping the achievement of blended learning. Furthermore, a significant association was observed at a 5% significance level between owning a device for online learning and attending virtual classes. Likewise, a correlation was identified at a significance level of 5% between students' competence in utilizing learning applications and their attendance percentage in virtual classes.

2.7 Theoretical Framework

A theory comprises a collection of beliefs and assumptions that direct the researcher's approach to a study. Conversely, a theoretical framework outlines the structure for the entire study, offering guidance and bolstering the research idea by providing a reference framework (Braidotti, 2019). The significance of a theoretical framework lies in its ability to steer the entire research process using established theories. This study advocates for institutional policy support and funding for integration of OER whereby it will recommend for faculty training framework and curriculum development in alignment with blended

learning. In this study, the research is grounded in the diffusion of innovations theory, the technology acceptance model, and the institutional theory.

2.7.1 Diffusion of Innovations Theory

The diffusion of innovations theory was propounded by Everett M. Rogers in 1962 and outlines the trajectory of new ideas and innovations' acceptance. It elucidates their dissemination within a social framework as individuals undergo a five-step process to evaluate the impact of change on their work. Initially, in the knowledge step, they become acquainted with a novel idea, gradually grasping its functionality (Pinho et al., 2021). Subsequently, individuals are persuaded to form either positive or negative attitude towards the change, leading to a decision regarding adoption or rejection. Following this, they implement the innovation and subsequently confirm their decision by evaluating the outcomes of its implementation. Rogers' theory recognizes that individual's progress through these stages at varying paces, shaping the reactions and adoption patterns of those around them (Antwi-Boampong, 2020).

Innovators, typically the earliest to embrace new concepts, are succeeded by early adopters, who are influenced by the positive feedback from innovators regarding the innovation's benefits (Ezzatlo, 2020). Subsequently, the early majority, followed by the late majority and laggards, gradually adopt the idea, with laggards often resistant until facing consequences for their reluctance. Central to the Diffusion of Innovation theory lays the concept of the tipping point, marking the juncture when a new idea garners broader acceptance and adoption (Pinho et al., 2021). This signifies the culmination of incremental advancements towards substantial progress. Within the context of university libraries, the adoption of innovations occurs within the social framework of a collaborative work environment.

In the process of adopting open education resources (OER), various elements of the Diffusion of Innovations theory come into play. OER presents a relative advantage by offering cost-effectiveness and accessibility in contrast to traditional educational resources (Antwi-Boampong, 2020). Universities are inclined towards adopting OER strategies when they perceive tangible benefits such as reduced costs for students and improved access to educational materials. Additionally, compatibility is paramount. OER ought to align with existing educational practices and curriculum requirements to seamlessly integrate. When OER aligns with the university's goals and values, it becomes more compatible with current practices, facilitating its adoption among educators and decision-makers (Ezzatlo, 2020).

Moreover, the complexity of implementing OER can influence adoption rates. Streamlining the process of discovering, adapting, and utilizing OER can diminish barriers to adoption (Pinho et al., 2021). Offering training and support for faculty members in effectively using OER can alleviate complexity and bolster adoption rates. Furthermore, observability plays a crucial role. Visible and measurable benefits of OER adoption, such as enhanced student outcomes or cost savings, serve as catalysts for further adoption and commitment to OER initiatives. Universities can showcase successful OER implementations and share data on their impact to demonstrate benefits and encourage broader adoption. Overall, the Diffusion of Innovations theory offers valuable insights into the factors promoting the adoption of OER strategies and policies (Antwi-Boampong, 2020). These insights contribute to success factors such as improved access to quality education and enriched learning experiences through blended learning methodologies.

2.7.2 Technology Acceptance Model

The Technology Acceptance Model (TAM) was developed by Fred Davis in 1989. The technology acceptance model posits that an individual's readiness to embrace technology is shaped by two primary factors: perceived ease of use and perceived usefulness (Utami, 2021). Perceived ease of use pertains to the simplicity of user interaction and operation with the technology, while perceived usefulness relates to their evaluation of how effectively the technology can enhance their productivity or performance (Ray et al., 2019). According to TAM, the more user-friendly and beneficial a technology is perceived to be, the higher the likelihood of its adoption. Shanmugapriya et al. (2023) argues that the relationship between these factors is often portrayed as a causal loop, where perceived ease of use influences perceived usefulness and vice versa. Additionally, external factors such as social influence, system-specific characteristics, and facilitating conditions can also affect an individual's intention to adopt technology, although these are seen as secondary to the core constructs of ease of use and usefulness.

The Technology Acceptance Model (TAM) serves as a structured approach for comprehending individuals' perceptions and adoption patterns of emerging technologies (Sánchez-Gómez et al., 2020). This renders it suitable for analyzing university librarians' acceptance of Open Education Resources (OER). TAM primarily highlights perceived ease of use and perceived usefulness as pivotal factors influencing technology uptake. In the context of university librarians, perceived ease of use entails evaluating the simplicity of integrating OER into existing library systems and workflows. Shanmugapriya et al. (2023) opine that, perceived usefulness pertains to the perceived enhancement of educational resources' quality for students and faculty.

Employing TAM allows researchers to delve into these perceptions among university librarians, offering insights into their attitudes toward OER adoption.

Furthermore, TAM provides valuable insights into the OER success factors and blended learning adoption within university libraries and among their users (Shanmugapriya et al., 2023). The perceptions of ease of use and usefulness among librarians significantly impact their decisions concerning OER adoption and incorporation into library services. Additionally, TAM acknowledges external factors like social influence and facilitating conditions, which can significantly influence the adoption of technology (Sánchez-Gómez et al., 2020). Within university libraries, these external factors may encompass institutional support for OER initiatives, librarian training initiatives, and collaborative opportunities with faculty members. Moreover, TAM aids in understanding users' acceptance of OER and blended learning technologies by analyzing their perceptions of ease of use and usefulness. It also considers other pertinent factors such as social influence and system-specific attributes. This comprehensive understanding, guided by TAM, informs strategies aimed at promoting successful OER and blended learning technologies adoption within university libraries. Consequently, this enhances access to quality educational resources and enriches the overall learning experience for students and faculty.

2.7.3 Institutional Theory

Institutional theory was developed by John Meyer and Richard Scott in 1977. Institutional theory provides insights into the forces driving institutions towards homogeneity, thereby diminishing institutional diversity. Organizations strive to adhere to recognizable and acceptable standards within their respective fields, thereby enhancing their legitimacy (Antwi-Boampong & Bokolo, 2022). Institutional theory explains how institutions tend to reflect the norms, values, and ideologies prevalent in

their organizational fields, whether through deliberate decisions or unintentional actions.

Consequently, organizations that conform to the anticipated traits of their surroundings attain legitimacy and are deemed worthy of societal and environmental resources (Anthony et al., 2022). Conversely, deviating from these expectations can lead to perceptions of deviance and reduce the likelihood of resource allocation. Within the framework of institutional theory, the environment constrains institutions' discretion to engage in specific strategic activities and exerts pressure for conformity. Institutional theory also underscores the normative influence of the environment on organizational behavior.

Institutional theory offers valuable insights into the Open Education Resources (OER) adoption within universities, encompassing institutional policies, norms, and practices (Bokolo et al., 2020). Institutional policies establish the guidelines governing academic practices. They can potentially facilitate or hinder OER adoption depending on their alignment with principles of openness and accessibility. The prevailing norms within academic institutions significantly influence OER adoption, with a culture of sharing and collaboration among faculty members potentially encouraging uptake due to alignment with institutional values.

Conversely, resistance to change or a preference for traditional educational resources may impede OER adoption (Anthony et al., 2022). Additionally, institutional practices such as funding allocation and tenure criteria can impact faculty members' engagement with OER initiatives, shaping incentives for adoption. Institutional theory offers a framework for understanding how these external factors interact to mold the OER adoption landscape within universities.

Institutional theory describes how external and internal pressures within university libraries influence the adoption of OER and blended learning practices (Zhang et al., 2022). Externally, universities may face pressures from accrediting bodies, funding agencies, and government policies to enhance the accessibility and affordability of educational resources, thereby stimulating OER adoption. Internally, institutional norms, values, and leadership priorities shape the strategic direction and decision-making processes of the library concerning OER adoption.

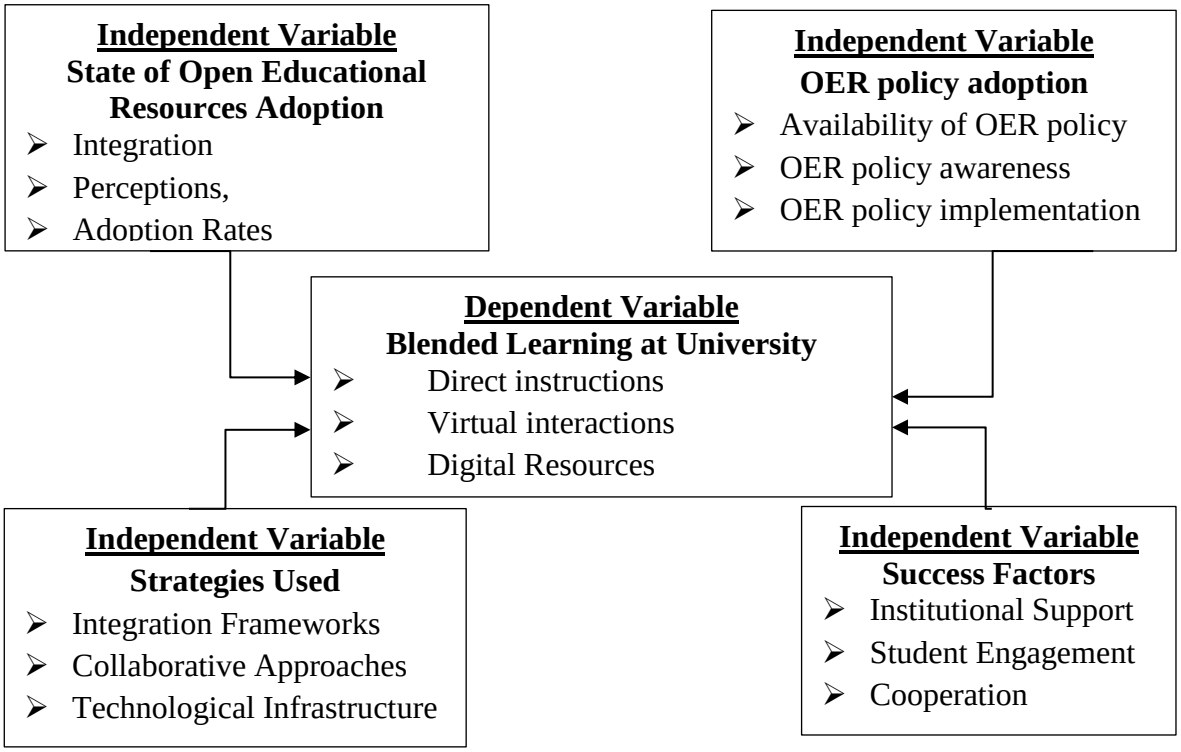
A strong institutional commitment to innovation and digital transformation can foster an environment conducive to experimenting with OER initiatives (Graham et al., 2023). Conversely, resistance to change or a lack of awareness about the benefits of OER may impede adoption efforts. The institutional theory offers a lens through which to comprehend the interaction of these external and internal pressures, influencing the trajectory of OER and blended learning practices adoption within university libraries, ultimately impacting educational resource accessibility and the learning experience.

2.8 Conceptual Framework

The conceptual framework helps the researcher see how the various explanations for the phenomena fit together (Evans, 2017). It does this by laying out the interconnections between fundamental ideas and variables. Thus, a conceptual framework provides a visual representation of the connections between independent and dependent variables. Figure 2.1 is a presentation of the conceptual framework guiding this study.

Figure 2.1

Conceptual Framework



A variable represents a measurable attribute that can take on various values across subjects, providing a logical means of expressing specific characteristics of the subject under research. In this study, the dependent variable focused on blended learning. The study aimed to explore the impact of integrating OER into university libraries on facilitating blended learning within these educational institutions. Blended learning was constituted by direct instruction, virtual interactions and digital resources. The OER adoption formed the independent variable where state of Open Educational Resources Adoption was operationalized with three indicators; integration, perceptions and adoption Rates.

Additionally, the study measured strategies used to promote incorporating OER to support BL; Three indicators; institutional repositories, general and global repositories

and collaborative strategies. The OER policy adoption was operationalized with availability of OER policy, OER policy awareness and OER policy implementation. Finally, individual, contextual, institutional and technological included success factors under this investigation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter explains the methodology that was used in conducting the study. The chapter describes the location of the study, research design, target population, sample size, and sampling techniques, data collection instruments, data collection procedure, data analysis techniques, and ethical issues.

3.2 Location of the Study

The study location refers to the specific area where data was gathered for analysis and interpretation to fulfil the study's objectives (Pandey & Pandey, 2021). In this study, data collection took place in selected public and private universities situated in Nairobi County. The selection of university libraries was justified by the County's status as a dynamic urban educational hub over other Counties. Specifically, the study focused on two public universities, namely the University of Nairobi and the Technical University of Kenya, as well as two private institutions, Strathmore University and the Catholic University of Eastern Africa (CUEA) main Campus libraries in Nairobi County.

The decision to choose this study location was rooted in the fact that Nairobi hosts numerous chartered universities in Kenya, both public and private, along with satellite colleges for universities located outside Nairobi County as compared to other counties (Omwami, 2022). The libraries of these four universities play active roles in innovative learning initiatives that leverage advancements in ICT. They actively promote the adoption of blended learning modalities such as Open and Distance electronic learning (ODEL) and maintain online repositories for research and instructional materials, thereby necessitating comprehensive open educational resources.

3.3 Research Design

Research design is the overall method used to combine the many components of a research in a clear and logical manner (Karanja, 2016; McGregor, 2018). It refers to a structured approach to data collection and analysis aimed at aligning relevance with the research objectives. The study was based on the Mixed-Method Research (MMR) approach, which used a descriptive cross-sectional research survey design, which was also used in studies by Karitu and Kimani (2022); Mwancha et al. (2021); Magut and Kiplagat (2022) demonstrating the suitability of the approach. The quantitative method enabled the collection of numerical data at a specific point in time. This design involved interviewing a sample of individuals and administering questionnaires to gather and analyze data comprehensively. On the other hand, interviews, a qualitative method, allow for in-depth exploration (collection on non-numerical data) (Mohajan, 2018). Therefore, qualitative data complemented the quantitative findings hence the adoption of a concurrent triangulation research design allowed for the simultaneous collection and analysis of both quantitative and qualitative data (Ruga et al., 2023). This offered a comprehensive understanding of the adoption of OER in promoting blended learning.

3.4 Target population

Target population refers to a specific group of individuals, objects, or entities possessing particular attributes relevant to the phenomenon being studied (Elfil & Negida, 2017). Moreover, it represents the specific population from which samples are drawn for measurement purposes (Muhindi & Ngaba, 2018). In this study, the target population comprised university librarians and assistant librarians from the main campuses of the University of Nairobi (UoN), Technical University of Kenya (TUK),

Strathmore University, and Catholic University of Eastern Africa (CUEA) in Nairobi County.

The inclusion of librarians is based on their role as stewards of information and their familiarity with Open Educational Resources (OER). Librarians play a vital role in advocating for the utility and adoption of OER to enhance blended learning (BL) within the university setting. The cross-sectional study aimed to involve 90 librarians, with university librarians identified as primary informants, as shown in Table 3.1.

Table 3.1

Target population

University Library	University librarian	Library staff
University of Nairobi	1	30
Technical University of Kenya	1	18
Strathmore University	1	22
Catholic University of East Africa	1	16
Total	4	86

3.5 Sampling Design

The process of selecting items for the sample is known as the sampling design (Kothari, 2014). Ultimately, the effectiveness of a sample design is determined by how accurately it reflects the characteristics of the population it represents (Odhiambo et al., 2018). Both quantitative and qualitative research methods were employed specific sampling techniques. In this study, a purposive sampling technique was employed to choose two public universities (University of Nairobi and Technical University of Kenya) and two private universities (Strathmore University and Catholic University of Eastern Africa).

The selection criteria were based on the universities' location and their highest rankings in the 2024 web metric. A list of universities with their main campuses in Nairobi County is provided in Appendix IV.

Consequently, the University of Nairobi and Technical University of Kenya were chosen as representatives of public universities, while Strathmore University and Catholic University of Eastern Africa were selected to represent private universities. These universities, located within Nairobi County and holding the highest rankings, meet the selection criteria effectively. The study employed the census method to obtain the 90 librarians because the population is relatively small and the researcher can reach all the participants in a reasonable number of resources and time. The 86- library staff formed the sample for quantitative study. Further, the study applied purposive sampling to select the 4 university librarians who were the key informants for interviews.

3.6 Data collection instruments

Data collection involves gathering information from chosen participants in a research endeavor (Cr, 2020; Pandey & Pandey, 2021). In this study, data was gathered through the utilization of questionnaires and interview guides to assess the incorporation of OER by libraries to bolster blended learning in Nairobi County.

3.6.1 Questionnaires

A questionnaire is a data collecting instrument consisting of carefully chosen and ordered questions that are designed to elicit the data necessary for addressing research questions or testing hypotheses (Pandey & Pandey, 2021). The questionnaire was administered to the library staff in University of Nairobi**,** the Technical University of Kenya, Strathmore University and the Catholic University of Eastern Africa. The study used semi-structured questionnaires because they offered a rapid, efficient, and cost-

effective way of data collection and was especially useful for monitoring the behavior, preferences, intentions, attitudes, and views of respondent towards OER adoption.

Additionally, Closed-ended questions were used to guide the respondent to specific responses with a confined open-ended question in every section, to allow expression, flexibility and unbiased response (Bertram, 2023). Therefore, the questionnaire included Likert scale statements rated at five scales (1-5), that respondents would either rate their agreement with strongly disagree, disagree, neutral, agree or strongly agree.

The depth and dependability of the questions to be included in the tool were guided by the empirical review per every objective in chapter two.

Also, the study relied on the variable indicators to frame questions. The questionnaire was categorized into six parts; A, B, C, D, E and F as shown in appendix II. Section A collected data on the respondent's profile that was used to describe the sample characteristics, while section B on current state of OER and BL section C collected data on the strategies used in OER adoption in promoting BL; section D on success factors of OER adoption in promoting BL; section E on the OER policies promoting BL; and section F on Blended Learning at University.

3.6.2 Interview guide

The study was conducted using online/face-to-face interviews for university librarians using an interview schedule. The approach is efficient since it was only four (4) university librarians involved in the four universities and it was easy to schedule an interview. The interview session helped the researcher in comprehending and complimenting the quantitative data obtained.

Therefore, the questions were open-ended focusing on how the Adoption of OER has been utilized to support blended learning in university libraries. The questions were derived from the indicators and from gaps identified during reviewing the literature.

Therefore, questions about the demographic data of the University librarians were in Part A; part B, included questions on integration and perceptions of OER adoption. Part C discussed the framework and approaches. Part D, handled the success factors for continuous improvement. Part E focused on implementation of OER adoption policy. While part F focused on the impact and degree of OER utilization. The interview guide used for this study is in appendix III.

3.7 Data collection procedures

After deciding on the methods to be used and the materials to be procured, the next step in the data collection process is to initiate contact with respondents to begin gathering information (Sileyew, 2019). Data collecting processes was closely monitored to reduce the possibility of omission biases and transcription mistakes. The instruments for gathering information were interview-administered. Ethically, data collection permits and authorities were sought before the primary data collection exercise.

3.7.1 Procedures for Administering Questionnaires

The researcher visited the universities to seek authorization from the university librarians which was done through the office of Directorate of Research and Innovations. After obtaining approval to conduct the research, the researcher distributed the questionnaires to the designated participants. First, the researcher introduced herself and the purpose of the meeting; this was done through the presentation of the introduction letter, informing the respondents that the process of answering the questionnaire is voluntary. Thereafter, the researcher gave the respondents' time to fill the questionnaire since the library staff work in different shifts, and agreed on a specific pick-up time which was after one week. The researcher ensured that all the parts of the questionnaire have been filled, picked and stored safely for analysis.

3.7.2 Procedures for Conducting Interviews

The researcher conducted interviews personally to gather data. The researcher began by providing the University librarians with an overview of the study, delineating the interview process, and obtained their informed consent. Subsequently, a prearranged interview schedule guided the engagement during interviews, encompassing key variables comprising the status of open educational resource adoption, OER strategies applied, OER policy, success factors, and the university's approach to blended learning. Librarians were requested to openly share their views and insights. Following this, interviews were recorded with participants' consent, and the ensuing recordings were transcribed for analysis. Finally, thematic analysis was employed to analyze the interview transcripts, aiming to identify recurring patterns, themes, and insights germane to the research objectives.

3.8 Pretesting of the instruments

Before the main data collection for the study, the questionnaires were pre-tested to ensure that they relate to the study. The study pretested the tool in a different location from that of the main study. In the current study, pre-testing was done at Kenyatta University and Mount Kenya University in Kiambu County. The choice of the two Universities was based on the highest university rank in Kiambu County and they also have similar structures as the current area of study. For the pre-testing, the 7 librarians were obtained through simple random method while the key informants (2 University Librarians) were selected purposively in the two selected Universities.

3.8.1 Instrument Validity

Validity refers to the degree to which a test accurately measures what it purports to measure, ensuring confidence in its effectiveness (Grégis, 2019). This concept encompasses various forms, including face, content, and criterion validity. Face validity

assesses how well an instrument superficially appears to measure its intended construct and is typically evaluated subjectively by experts in the relevant field. To determine face validity, researchers examine whether the questionnaire items align with the intended purpose, seeking input from supervisors to ensure the instrument's perceived validity and relevance. Content validity, on the other hand, ensures that a research tool adequately covers the entire scope of the construct it intends to measure (Clark & Watson, 2019). This form of validity guarantees that the instrument's content accurately represents the full extent of the domain under investigation. To assess content validity, supervisors meticulously scrutinized the questionnaire items to ensure they comprehensively represent the construct in question. This evaluation involved assessing the relevance, representativeness, and clarity of each item.

Criterion validity pertains to how well scores on a given test or measure correlate with a specific outcome of interest (Grégis, 2019). This validity form is determined by analyzing the correlation between scores from the new instrument and those from the established criterion measure. A strong correlation indicates robust criterion validity, signifying that the new instrument accurately measures the intended construct or predicts relevant outcomes. In this study, content validity was determined. Content validity included thorough review of the questionnaire to ensure comprehensive coverage of each variable, comprising the state of OER adoption, OER strategies, OER policy, success factors, and blended learning. Content validity was not assessed statistically but relied on the expertise of the research supervisors. Approval from the supervisors indicated that the questionnaire adequately addressed the content related to all variable indicators.

3.8.2 Instrument Reliability

Reliability refers to the consistency of test results when administered repeatedly to the same individual or group under varying conditions (Mueller & Knapp, 2019). Ensuring reliability enhances objectivity and credibility while minimizing bias (Mohajan, 2017). Measures of internal consistency assess whether different instruments aimed at evaluating the same underlying concept yield similar outcomes. This is achieved by examining correlations between items within the same test or subscale of a larger instrument (Kothari et al., 2020). To evaluate reliability and ensure consistency across questionnaire components, Cronbach's Alpha Coefficient was employed. This coefficient, denoted by (α), ranges from -1 to +1. A Cronbach's alpha value above 0.7 to 1 indicates high reliability, whereas a value below 0.7 suggests potential issues with the instruments' reliability in accurately measuring the intended construct (Adeniran, 2019). According to the findings, all the variables had Cronbach's alpha values greater than $\alpha=0.7$, which indicated that the data collection tool was reliable.

3.9 Data Analysis and Processing

Data analysis involves organizing, processing, and interpreting the information gathered from questionnaires or interview guides in a systematic manner to derive meaningful insights (Meaza, 2019; Sharma et al., 2021). The study's objectives, the nature of the collected data, and the measurement scale employed guide the data analysis process, which can be conducted quantitatively or qualitatively (Meaza, 2019). Quantitative data obtained from the field through questionnaires was inputted into Statistical Package for Social Sciences (SPSS) version 25 to create a data file. In SPSS, the data was then analyzed to calculate different descriptive statistics, which were utilized to summarize and depict the data, employing measures such as frequencies, percentages, mean, and standard deviation to provide a comprehensive overview.

The study findings were presented using frequency tables and charts to enhance clarity and comprehension. Qualitative data was subjected to thematic analysis using NVivo, where patterns, themes, and categories within the data were identified and interpreted. The findings were presented through verbatim quotes and elucidated themes to convey the richness and depth of the qualitative insights using NVivo software.

3.10 Ethical Considerations

Ethics are a set of conduct principles that the researcher should obey when conducting the research (Sutrop et al., 2020). Similarly, the study upheld the autonomy of the respondents, ensuring that they are not pressured or coerced into participating. Hence, participants were given the liberty to decide whether they wished to take part in the study or not. Prior to their involvement, informed consent was obtained from all participants, as outlined in Appendix I (Sutrop et al., 2020). Moreover, the researcher did not collect any identifying information, thus ensuring anonymity for all respondents. The study prioritized the well-being of the participants, ensuring that they are not subjected to any form of harm, whether emotional, social, or physiological, which minimized any potential risks involved (Sutrop et al., 2020). Additionally, proper citation and referencing practices was adhered to for any non-original material used in the study to maintain academic integrity.

Furthermore, the study strictly avoided any fabrication of data, adhering to the highest ethical standards set forth by the KeMU Ethics Review Committee and the Commission for University Education Guidelines. Permission for data collection was obtained from Kenya Methodist University (KeMU) attached in appendix V and a research permit was sought from the National Commission for Science, Technology, and Innovation (NACOSTI) attached in appendix VI.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter details the research findings and discussions regarding the use of open educational resources (OER) to enhance blended learning in university libraries within Nairobi County. The main variables explored include the current status of OER adoption, OER strategies, OER policies, OER success factors, and blended learning. The chapter starts off by providing information on the response rate, results of the reliability tests, and background information.

4.2 Questionnaire and Interviews Response Rate

The researcher aimed to survey 86 library staff, so 86 questionnaires were prepared and distributed. Of these, 69 were completed and returned, resulting in a response rate of 80.2%, which was sufficient for the study. For the interviews, four librarians were invited to participate, but only three agreed to take part, indicating a 75% response rate. Thus, the study achieved a total response rate of 72(80%) which is termed satisfactory. The realized response rate for the questionnaires and interviews was very good, in line with the observations by Babbie (2020) that a response rate ≥60% is desirable in research studies. A response rate ≥60% provides accurate and comprehensive insights into the target population (Babbie, 2020). The implication therefore is that the collected data is sufficient to facilitate a further analysis, interpretation, conclusions, and inferences about the study phenomenon.

4.3 Reliability Test Results

A reliability test was performed to evaluate the dependability and accuracy of the data collection tool. The pertinent findings from the tests for reliability are presented in Table 4.1.

Table 4.1

Reliability test results

Study Variables	Cronbach Alpha Values
State of the Adoption of Open Educational Resources	0.823
OER Strategies	0.776
OER Policy	0.708
OER Success Factors	0.894
Implementation of Blended Education	0.839

The results indicate that the data collection tool exhibited internal consistency across all variables, as shown by Cronbach's alpha values exceeding the 0.7 threshold. The OER success factors variable demonstrated the highest reliability with an alpha of 0.894. Similarly, the implementation of blended education and state of the adoption of open educational resources variables had alpha values of 0.839 and 0.823, respectively, indicating strong internal consistency. The OER strategies variable had a slightly lower yet acceptable alpha of 0.776, while the OER policy variable had the lowest alpha of 0.708, still meeting the threshold. Notably, in line with the observations by Taber (2018), the Cronbach's alpha for all the variables was ≥0.7, indicating that the data collection instrument's elements measured the variables they were intended to measure consistently. Overall, these reliability scores suggest that the data collection tool was effective in capturing consistent and reliable information across the various study variables.

4.4 Background Information

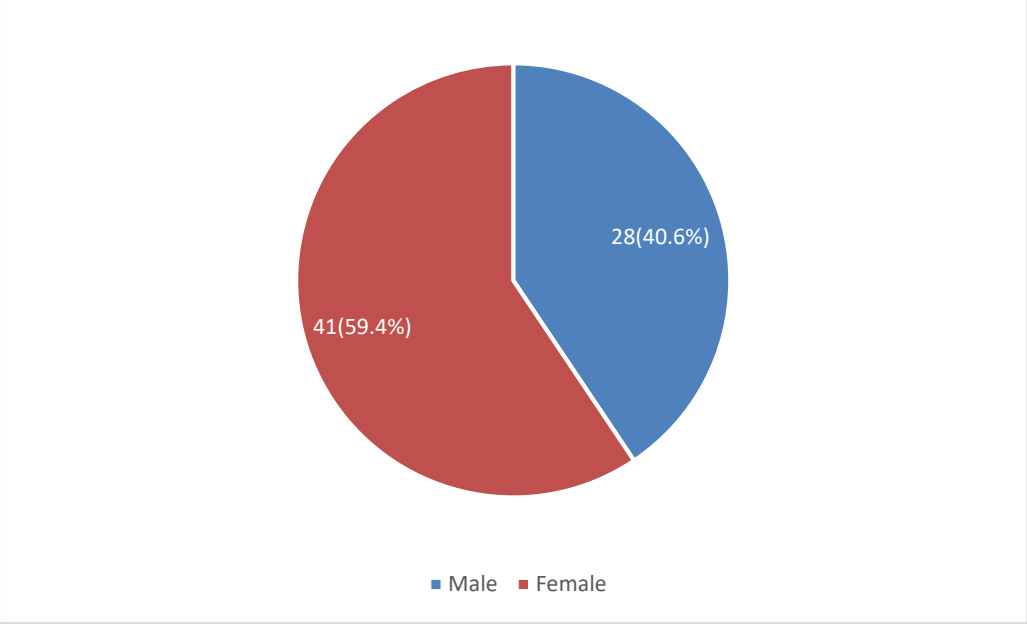
This section presents the background characteristics of the library staff and university librarians. Some essential details collected about the respondents' characteristics included; their gender, highest academic qualification and tenure. Table 4.2, Figure 4.1, and Figure presents a summary of the gender, educational qualifications, and years of experience details for the library staff and University librarians, respectively.

4.4.1 Gender of the Respondents

To assess gender representation in the sampled library staff, and evaluate trends in gender representations in university libraries' staff, the respondents were asked to indicate their gender. Figure 4.1 summarizes the findings.

Figure 4.1

Gender of the respondents



According to the data, 41(59.4%) were female, while 28 (40.6%) were male. The data suggests that an increasing number of women are working in libraries in universities in Kenya. Further, the findings suggest a near equal representation of both genders in the staff working in libraries in Kenyan universities. These findings are consistent with the

findings of other studies. For example, Wandahi and Njoroge (2021) established that from their study focusing on librarians in Kenyan universities, a majority of the participants were women.

4.4.2 Level of Education and Worked Years (Tenure)

The participants were asked to indicate their level of education. Level of education indicates levels of competency and an understanding of library operations. The findings are summarized in Table 4.2, which illustrates the highest educational attainment among the respondents.

Table 4.2

Participants' level of education

Description	Frequency	Percentage (%)
Certificate	2	2.9
Diploma	17	24.6
Bachelors	38	55.1
Masters	12	17.4
Total	69	100.0

The results in table 4.2 indicate that the majority, 38 respondents (55.1%), held a bachelor's degree. Additionally, 17 respondents (24.6%) had a diploma, and 12 respondents (17.4%) had a master's degree as their highest level of education. Only a small minority, 2 respondents (2.9%), possessed a certificate as their highest educational qualification. From the qualitative interviews among the University librarians, one of the respondents held a master's degree and two had a doctorate degree. These findings are partly consistent with the findings of other studies. For instance, the findings are consistent with the findings by Olaka and Adkins (2012) that a significant

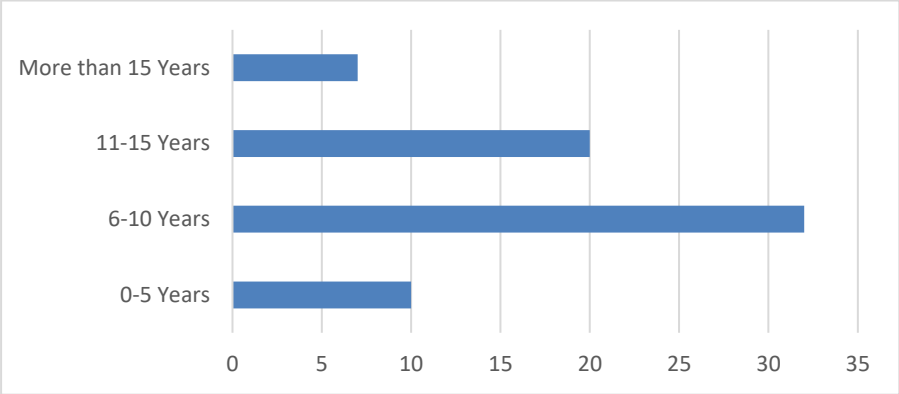
number of librarians hold Master's and Bachelor's degree, but most of the participants in their study held diploma qualifications. A small number of participants in the study by Olaka and Adkins (2012) held PhD qualifications, which was also established in this study. These findings are echoed by Nakitare et al. (2020) who ascertained that the majority of the participants, 69.7%, held a Master's degree, and only 9.1% held PhD qualifications. Consequently, the university staff generally has a relatively high level of education, which is conducive to understanding and adopting open educational resources in the implementation of blended learning.

4.4.3 Number of Years Worked (Tenure)

The participants were asked the number of years they have worked in their current positions. Based on the collected data, Figure 4.2 provides a summary of the length of service of the participants.

Figure 4.2

Number of years worked



A majority of the respondents from among the library staff had served for more than 5 years. As shown in Figure 4.2, a majority of the respondents, 32 had worked for between 6 and 10 years and 20 had worked for between 11 and 15 years. Only 10 had worked for between 0 and 5 years and 7 had worked for more than 15 years. From the

interviews conducted among librarians, one had worked for 2 years as the university librarian, one had worked for 14 years, and another had worked as the university librarian for 7 years. These findings are in line with the findings of other studies. For example, Gitau (2016) established that a majority of the respondents in the study had worked for between 1 and five years, accounting for more than 50% of the respondents. In the study by Gitau (2016) 26.2% and 23.0% had worked for between 6 and 10 years and more than 10 years respectively. The findings demonstrate variability in the length of service, with a significant number of respondents having served more than 5 years. The tenure of the participants is indicative of the extent to which they understand the operations of the libraries and the quality of the responses received.

4.5 State of the Adoption of Open Educational Resources

The first objective of this study was to determine the state of adoption of open educational resources in facilitating blended learning at selected university libraries in Nairobi County. Table 4.3 presents the findings on the extent to which open educational resources (OER) have been adopted to support blended learning.

Table 4.3

Extent to which OER has been adopted in Supporting Blended Learning

	Frequency	Percentage (%)
Small Extent	4	5.8
Moderate Extent	13	18.8
Large Extent	43	62.3
Very Large Extent	9	13.0
Total	69	100.0

According to the results, 43 respondents (62.3%) indicated that OER was adopted to a large extent. Additionally, 13 respondents (18.8%) and 9 respondents (13%) reported that OER was adopted to a moderate and very large extent, respectively. However, 4 respondents (5.8%) noted that OER was adopted to a small extent in their universities. The findings indicate a substantial level of adoption for (OER) in supporting blended learning, suggesting that these resources are widely utilized across the surveyed universities. Additionally, the trends of moderate to very high levels of adoption demonstrate a positive movement towards integrating OER in educational practices. However, the presence of minimal adoption in some areas points to potential challenges or barriers that certain institutions may need to address to enhance their use of OER.

Cumulatively, the findings on the extent and nature of the integration of OER demonstrated moderate to extensive integration of OER as evidenced by the majority of respondents selecting moderate extent to a very large extent of integration. These findings are consistent with the findings of previous studies, such as Admiraal (2022); Ogunbodede and Cocodia (2023); Hare et al., (2020) all of which demonstrated extensive integration of OER aimed at enhancing blended learning in institutions of higher learning. Studies within East African region, such as Kachota (2022) also demonstrated extensive integration of OER to enhance blended learning in universities. More specifically, the findings of this study concurred with the studies by Mwangi (2018); Pete (2019) which concluded that OER have gained traction in Kenyan universities.

Further, in line with objective one of this study, to evaluate extent of OER methods integration, the participants were asked to choose to the best of their opinion the extent their respective libraries have integrated different elements in a 5-level Likert rating

scale. The rating was then coded in SPSS for interpretation. The key elements covered in Table 4.4 summarizes the respondents understanding of the extent to which their libraries have integrated electronic books and open textbooks, electronic journals, audio podcasts, slides and class presentations, open courseware and virtual labs.

Table 4.4

Nature and Extent to which OER Methods are integrated

	V.Small Extent 1	Small Extent 2	Moderate Extent 3	Large Extent 4	V.Large Extent 5	Mean	Std. Dev.
Electronic books and open textbooks	3 (4.3%)	3 (4.3%)	6 (8.7%)	34 (49.3%)	23 (33.3%)	4.03	1.000
Electronic Journals	4 (5.8%)	2 (2.9%)	12 (17.4%)	32 (46.4%)	19 (27.5%)	3.87	1.042
Audio Podcasts	6 (8.7%)	19 (27.5%)	22 (31.9%)	18 (26.1%)	4 (5.8%)	2.93	1.062
Slides and Class Presentations	7 (10.1%)	7 (10.1%)	18 (26.1%)	32 (46.4%)	5 (7.2%)	3.30	1.089
Open Courseware	6 (8.7%)	11 (15.9%)	12 (17.4%)	32 (46.4%)	8 (11.6%)	3.36	1.150
Virtual Labs	14 (20.3%)	11 (15.9%)	17 (24.6%)	23 (33.3%)	4 (5.8%)	2.88	1.243
Tutorials/ Course Modules	3 (4.3%)	11 (15.9%)	22 (31.9%)	25 (36.2%)	8 (11.6%)	3.35	1.027
Video Lectures	6 (8.7%)	8 (11.6%)	19 (27.5%)	30 (43.5%)	6 (8.7%)	3.32	1.078
Interactive Games and Simulations	9 (13%)	15 (21.7%)	17 (24.6%)	25 (36.2%)	3 (4.3%)	2.92	1.137

According to the findings, 23(33.3%) of respondents reported a high adoption of electronic books and open textbooks. Additionally, 34(49.3%) and 6(8.7%)

demonstrated substantial and moderate integration of e-books and open books, respectively (Mean=4.03; Std.Dev=1.000). For electronic journals, 19(27.5%) and 32(46.7%) indicated very high and high integration into OER respectively. However, a significant majority 22(31.9%) indicated only moderate integration of audio podcasts (Mean=3.87; Std.Dev=1.042). Slides and class presentations were integrated into open educational resources to a large extent by 32(46.4%) of respondents (Mean=3.30; Std.Dev=1.089). The mean and the standard deviations for the different responses demonstrate low level of skewness, indicating some level of uniformity in the participants understanding of the extent to which OER have been integrated.

The findings from the qualitative responses echoed the statistics from the quantitative data on electronic and digital elements as a part of OER integration. The responses by the library staffs captured digital tools as a key part of OER integration, which was one of the notable themes. For example, from among the librarians, Librarian 1 said that one of the measures implemented to foster integration of OER for blended learning was "online public access catalog," which provides access to digital resources. Similarly, Library Staff 12 said that OER integration has involved increased access to various reading materials digitally, bridging gaps, such as financial, which foster inequalities in access to learning materials.

Moreover, open courseware was adopted extensively by 32(46.4%) of participants. Virtual labs were integrated into OER and blended learning to a large extent, as indicated by 23(33.3%) of respondents (Mean=3.36; Std.Dev=1.150). Furthermore, 8(11.6%) and 25(36.2%) of participants reported very high and high integration of tutorials/course modules, respectively (Mean=3.35; Std.Dev=1.027). According to the findings, 30(43.5%) of respondents indicated that video lectures were integrated into

OER to a large extent (Mean=3.32; Std.Dev=1.078). Finally, 25(36.2%) of respondents indicated that interactive games and simulations were integrated to a large extent (Mean=2.92; Std.Dev=1.137). The means and the standard deviations, with an exception for games and simulation, demonstrated low levels of skewness, indicating some level of uniformity.

From the qualitative responses on the integration of OER for blended learning, technology was also a key theme from the thematic analysis of the responses. For example, Library Staff 1 said ensuring continuous access to the internet was a key element of integration of OER for blended learning. Library Staff 21 said that OER integration for blended learning has happened "through information technology." The findings indicate a varied adoption and integration of different elements of OER, with varying levels of integration of these elements, mostly indicating an inclination towards integration. Notably though, virtual labs were inclined towards low integration, indicating that fewer universities have virtual lab, probably because of the large capital investment required for technology deployment in virtual labs.

As such, the findings from this study indicate that universities in Kenya have integrated different aspects of OER, with most of the elements of OER, including e-materials, open licenses materials, and other elements as presented being a part of the OER integration strategy. The findings concur with the findings of other studies in Kenya and beyond. For example, the findings are in line with the observations by Kodua-Ntim and Fombad (2020) that open courses and open-educational access materials have been an integral part of OER integration. Similarly, the findings concur with de Hart et al. (2015) who concluded that general global repositories and open licenses have been a part of OER integration and Gqokonqana et al. (2022) who identified simulations and

virtual labs as a part of OER integration. As such, the findings from this study are in line with previous studies conducted on the nature and extent of OER integration to improve blended learning in Kenya and beyond, with a majority of the respondents indicating large to very large extent of integration of different elements of OER.

Further, to evaluate the extent of OER integration, librarians' and library staff's role in enhancing integration of OER was evaluated. Different roles played by librarians in facilitating the integration of OER, such as cataloguing and metadata collection, information retrieval and reference services, providing user support, instruction and information literacy, and archives and special collections curation, among others, were captured in the data collection instrument. The findings are presented in Table 4.5.

Table 4.5

Extent to which the Role of Library Staff Influence the Integration of Open Educational

Role of Library Staff	Not at All 1	Small Extent 2	Moderate Extent 3	Large Extent 4	Very Large Extent 5	Mean	Std. Dev
Cataloguing and metadata creation.	4 (5.8%)	2 (2.9%)	12 (17.4%)	23 (33.3%)	28 (40.6%)	4.00	1.111
Information retrieval and reference services.	4 (5.8%)	3 (4.3%)	11 (15.9%)	22 (31.9%)	29 (42%)	4.00	1.138
Managing digital materials.	6 (8.7%)	3 (4.3%)	10 (14.5%)	23 (33.3%)	27 (39.1%)	3.90	1.226
Providing user support, instruction and information literacy.	3 (4.3%)	4 (5.8%)	10 (14.5%)	25 (36.2%)	27 (39.1%)	4.00	1.085
Archives and special collections curation.	6 (8.7%)	7 (10.1%)	20 (29%)	23 (33.3%)	13 (18.8%)	3.43	1.169
Providing technology support.	4 (5.8%)	7 (10.1%)	12 (17.4%)	29 (42%)	17 (24.6%)	3.70	1.129
Providing curriculum support and integration.	3 (4.3%)	8 (11.6%)	17 (24.6%)	27 (39.1%)	14 (20.3%)	3.59	1.075

According to the findings, librarians' role of cataloging and metadata creation significantly influence the integration of OER, with 28(40.6%) and 23(33.3%) of respondents indicating very large and large extents of influence, respectively (Mean=4.00; Std.Dev=1.111). Information retrieval and reference services were reported to influence OER integration to a very large extent by 29(42%) of respondents

(Mean=4.00; Std.Dev=1.138). Managing digital materials also plays a crucial role, with 27(39.1%) of respondents indicating very large influence on OER integration (Mean=3.90; Std.Dev=1.226).

Furthermore, user support, instruction, and information literacy were similarly influential, as indicated by 27(39.1%) of respondents (Mean=4.00; Std.Dev=1.085). Archives and special collections curation were reported to influence OER integration to a large extent by 23(33.3%) of respondents (Mean=3.43; Std.Dev=1.169). Technology support was highlighted as influential by 29(42%) of respondents (Mean=3.70; Std.Dev=1.129). Ultimately, curriculum support and integration were noted to influence OER integration to a very large extent by 14(20.3%) of respondents, and to a large extent by 27(39.1%) of respondents (Mean=3.59; Std.Dev=1.075). The mean and the standard deviations indicate minimum variability in the responses to the different elements of the library staffs' roles in supporting the integration of OER.

Consequently, the findings indicated that library staff and librarians play an important role in enhancing the integration of OER. Different aspects of library staff's roles contribute to the integration of OER and subsequent support services to enhance user experiences in blended learning environments. For example, the findings demonstrate that library staff play a role in ensuring availability of OER materials in libraries, foster user access, and optimize the utility of these materials by providing support services that help users to access and use the materials.

These findings are consistent with the findings and conclusions in extant studies. For instance, the findings of the study on the supportive role that library staff play in helping users access and use OER has been established in different studies, such as Karitu and Kimani (2022); Kolesnykova and Matveyeva (2021) who concluded that library staffs

play a critical role in enhancing the integration of OER by ensuring availability, accessibility, and use of the materials. Further, the findings are in line with the findings of Kolesnykova and Matveyeva (2021) who concluded that librarians play a critical role in record keeping and fostering OER materials access and use in universities. Finally, the findings of this study are consistent with the conclusions by Kodua-Ntim (2020); Mwiti (2017) that librarians act as advocates for OER integration and support users, including faculty and students to access and use such materials. The findings from this study and other extant literature suggest that librarian play a critical role in the extent and nature of OER integration, materials access, and utilization among university students and faculty.

To further expound on objective one of this study, the participants were asked to provide an assessment of the state of OER adoption in blended learning in their respective universities using the 5-Likert rating scale. The participants were asked select agreement to the best of their knowledge the extent to which the library supports the integration of OER towards direct instruction, library facilitation of the integration of OER in virtual platforms, seamless transition between offline and online components, technical infrastructure deployment, OER inclusion of advice on licensing and copyright matters, and awareness of various OER integrated in their respective libraries, among others. The findings from the responses provided by the respondents are summarized in Table 4.6.

Table 4.6

State of Open Educational Resources Adoption in Blended Learning in the University Library.

Assessment	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev.
Library supports the integration of the Open Educational Resources towards direct instruction	1 (1.4%)	0 (0%)	8 (1.6%)	36 (52.2%)	24 (34.8%)	4.19	0.753
Library facilitates the integration of Open Educational Resources in the virtual platforms	1 (1.4%)	1 (1.4%)	10 (14.5%)	36 (52.2%)	21 (30.4%)	4.09	0.800
There is seamless transition between offline and online components, where learners engage both in-person and virtually, creating a cohesive learning journey	1 (1.4%)	4 (5.8%)	12 (17.4%)	36 (52.2%)	16 (23.2%)	3.90	0.877
Technical infrastructure assistance is essential for encouraging open access to knowledge acquisition, advancing creative and interesting training that adheres to the OER tenets.	1 (1.4%)	0 (0%)	10 (14.5%)	39 (56.5%)	19 (27.5%)	4.09	0.742

Assessment	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev.
Providing training courses on the utilization of Open Educational Resources including advice on licensing and copyright matters	1 (1.4%)	3 (4.3%)	7 (10.1%)	28 (40.6%)	30 (43.5%)	4.20	0.901
I am aware of various Open Educational Resources integrated in our Libraries.	1 (1.4%)	7 (10.1%)	4 (5.8%)	25 (36.2%)	32 (46.4%)	4.16	1.024
Library users need skills to locate, identify, evaluate and use information to solve different information problem	1 (1.4%)	2 (2.9%)	6 (8.7%)	21 (30.4%)	39 (56.5%)	4.38	0.876

According to the findings, 60(87%) of the respondents agreed (Mean=4.19; Std.Dev=0.753) library supports the integration of the open educational resources in the support towards direct instruction. The findings show 36(52.2%) of the respondents agreed (Mean=4.09; Std.Dev=0.800) library facilitates the integration of open educational resources in the virtual platforms. Additionally, 52(75.4%) of the respondents agreed (Mean=3.90; Std.Dev=0.877) that there are seamless transitions between offline and online components, where learners engage both in-person and virtually, creating a cohesive learning journey. Further, 39(56.5%) of the respondents agreed (Mean=4.09; Std.Dev=0.742) that technical infrastructure assistance is essential for encouraging open access to knowledge acquisition and advancing creative and interesting training that adheres to the OER tenets.

An additional 58(84.1%) of the respondents agreed (Mean=4.20; Std.Dev=0.901) that providing training courses on the utilization of OER including advice on licensing and copyright matters. Findings also show 57(82.6%) of the respondents agreed (Mean=4.16; Std.Dev=1.024) that they are aware of various OER integrated in our libraries. 86.9% of the respondents agreed (Mean=4.38; Std.Dev=0.876) that library users need skills to locate, identify, evaluate and use information to solve different information problem. The standard deviations for these aspects of the state of integration of OER, ranging from 0.7 to 1.024, demonstrate that the responses were not very spread out from the mean, indicating a tendency towards the mean or some level of homogeneity in the responses to each of the elements. These findings indicate that libraries play a critical role in the integration and use of OER materials in universities.

The responses provided by the University librarians when asked to state the measures implemented by the university library echoed the responses provided by the library staff when asked to provide an assessment of the extent of the integration of OER for blended learning. For example, all the three librarians captured technology as an integral part of the integration of OER for blended learning. For example, University Librarian 1 observed, "*The library has set up relevant ICT infrastructure.*" Further, University Librarian 1 said, "*Training on digital literacy, access to digital repository and the entire library website.*" Similarly, University Librarian 2 identified various forms of technological facilitation for the integration of OER for blended learning, such as Turnitin for academic integrity, Jove, and MyLOFT. University Librarian 2 further said, the university library conducts, "*Regular trainings for staff and other users.*" Also, University Librarian 3 observed, "*Ensuring constant availability of the internet connectivity*," which is a form of technological facilitation for OER integration for blended learning.

The responses by the librarians further demonstrated that the university libraries have supported the integration of OER for blended learning and training for staff and other users, which was also captured by the library staff in their responses. For example, University Librarian 1 said, "*We do create awareness and seek support from management, staff and our users.*" University Librarian 3 said, "*Regular trainings for staff and other users,*" which indicates university libraries' support for the integrating OER for blended learning. Notably, only one of the librarians captured an aspect of seamless integration of measures to ensure seamless transition from virtual to physical learning. University Librarian 2 observed, the university library offers "*Off campus access through MyLOFT*," intimating an endeavour to ensure seamless transition from virtual to face-to-face learning. These findings indicate that university libraries have

implemented a range of measures to enhance the integration of OER measures to improve blended learning.

Further, as summarized in the word cloud in Figure 4.2, and in line with the first objective of this study, the library staffs were asked to discuss how the integration of OER has contributed to the enhancement of blended learning. The findings indicate that the integration of OER has significantly enhanced blended learning in different ways.

Figure 4.3

OER Integration and blended learning

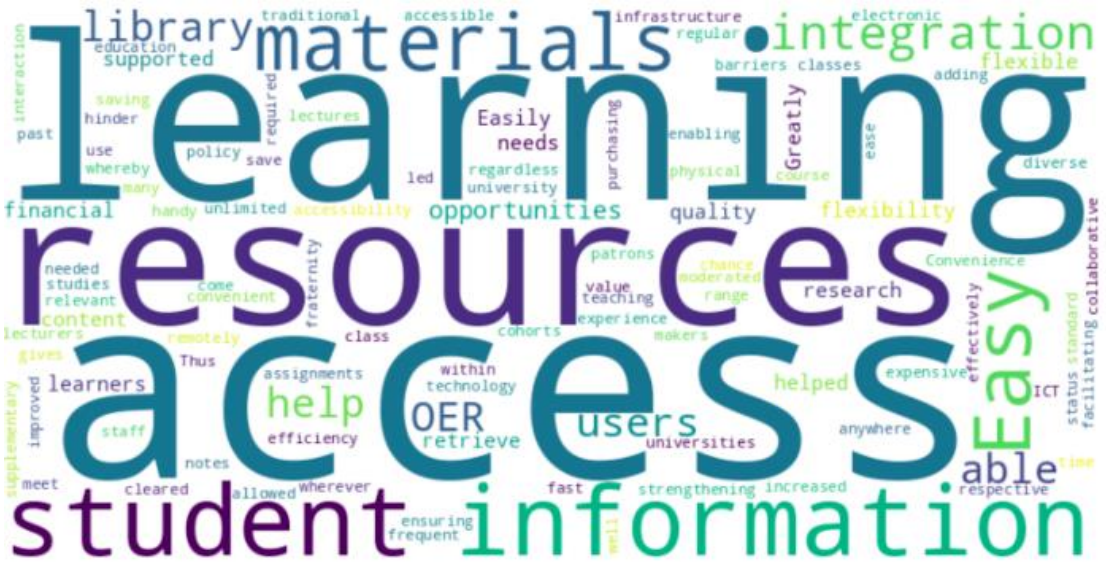


Figure 4.3 is based on the most frequently occurring words from a content and thematic analysis using NVivo. The responses from the library staffs indicated that the integration of OER into blended learning has significantly increased accessibility, allowing students to access an unlimited range of materials regardless of their financial status. This has been particularly beneficial as students can save on purchasing expensive materials, effectively removing financial barriers that previously hindered access to quality education. Library users now have the chance to access resources from

anywhere, providing more flexibility and efficiency in their studies. For example, Library Staff 1 said, "*By incorporating these resources into the library's digital collection, students and faculty gain access to a diverse range of content that can supplement traditional learning materials.*" Library Staff 7 said, "*It has increased accessibility whereby students can access an unlimited range of materials regardless of their financial status.*" Evidently, OER has greatly facilitated easy access to information, meeting the needs of library patrons and providing convenience in learning. The availability of resources moderated by policy makers ensures standard learning for students. The use of information technology has further supported universities by strengthening class notes, assignments, and adding value to lectures.

Further, the responses indicated that by facilitating access to information materials, OER ensures that learners receive the resources they need, just like their physical cohorts. The flexibility of resources has improved the quality of the learning experience, enabling students to access resources remotely and save time. For example, Library Staff 29 said, "*OER allow for greater flexibility and customization of learning paths.*" Improved ICT infrastructure has made it easier for students to retrieve resources with ease. The easy access and use of electronic resources have led to more flexible learning opportunities, helping students and lecturers access relevant content for learning and research. Frequent interaction between users and staff has been made possible, supporting teaching, learning, and research within the university fraternity. For example, Library Staff 62 said, "*Flexible learning opportunities and frequent interaction between users and staff.*" Accessible content, diverse learning materials and the supplementation of traditional course materials have all contributed to enhanced learning experiences. Collaborative learning opportunities and easy access to

information resources further underscore the positive impact of OER integration in blended learning.

The findings are consistent with the conclusions and inferences in other studies about the role of libraries in OER integration. For example, Mwiti (2017) findings that libraries encourage access to open access materials are consistent with this study's findings that libraries stock and provide access to various open access materials. Similarly, the findings in this study about libraries facilitating access to and use of different resources by students and faculty are in line with the findings and conclusions reported by Ntaga (2022) and Shiferaw (2019) about libraries' critical role in facilitating physical and virtual access to and use of OER materials. Finally, the findings are in line with the conclusions drawn by Adala (2016) and Che et al. (2022) that libraries provide information to users on how to access and use OER materials through online and physical searches. The findings indicate that libraries, including physical and online library platforms play a critical role in the integration of OER to enhance blended learning.

To interpret the findings related to the state of OER adoption in promoting blended learning at the selected university libraries in Nairobi County, the Diffusion of Innovations Theory (DOI) and the Technology Acceptance Model (TAM) can be used. According to the DOI, the process of adopting new technologies follows stages: knowledge, persuasion, decision, implementation, and confirmation. The data indicates that a majority of the libraries have moved beyond the knowledge stage, with 62.3% reporting a large extent of OER adoption and 13% a very large extent. This suggests that many institutions are in the decision and implementation stages, actively integrating OER and beginning to see its benefits. The 18.8% reporting a moderate

extent of adoption reflect ongoing persuasion efforts, while the small extent adopters (5.8%) represent the late majority and laggards who are more resistant to change.

From the perspective of the TAM, which focuses on perceived ease of use and perceived usefulness, the high adoption rates suggest that university libraries find OER highly beneficial for enhancing educational practices. The perceived usefulness of OER is reflected in the substantial adoption percentages, implying that libraries believe OER significantly improves educational outcomes. The overall high adoption rates imply that OER is relatively easy to integrate into existing workflows. Furthermore, the importance of training and institutional support mentioned in the findings aligns with TAM's emphasis on external factors facilitating adoption. Overall, the findings indicate a positive trend towards embracing OER, driven by its perceived benefits and supported by robust institutional frameworks.

4.6 Strategies for Incorporation of OER into Blended Learning

The second objective of this study was to assess the strategies used by university libraries in Nairobi County to successfully incorporate OER into blended learning strategies. The specific strategies that were the focus were collaborative strategies, linking OER to the institutional repository, library provision an OER link in the e – resources, search interface in the library catalogue, relevant OER in the reading lists, and integrating OER into curriculum design. The findings are summarized in Table 4.7.

Table 4.7

Strategies for Incorporating OER

Strategies	Not at All 1	Small Extent 2	Moderate Extent 3	Large Extent 4	Very Large Extent 5	Mean	Std. Dev
Collaborative strategies	3 (4.3%)	4 (5.8%)	13 (18.8%)	34 (49.3%)	15 (21.7%)	3.78	0.998
Linking OER to the institutional repository	4 (5.8%)	7 (10.1%)	15 (21.7%)	28 (40.6%)	15 (21.7%)	3.62	1.113
Library provides an Open Educational Resources link in the e – resources	6 (8.7%)	4 (5.8%)	9 (13%)	30 (43.5%)	20 (29%)	3.78	1.187
Search interface in the library catalogue	4 (5.8%)	2 (2.9%)	15 (21.7%)	33 (47.8%)	15 (21.7%)	3.77	1.017
Relevant Open Educational Resources in the reading lists	4 (5.8%)	6 (8.7%)	13 (18.8%)	31 (44.9%)	15 (21.7%)	3.68	1.091
Integrating OER into curriculum design	1 (1.4%)	2 (2.9%)	13 (18.8%)	38 (55.1%)	15 (21.7%)	3.93	0.810

The findings showed that 15(21.7%) and 34(49.3%) of respondents noted that collaborative strategies significantly support OER integration to a very large and large extent, respectively (Mean=3.78; Std.Dev=0.998). Additionally, 28(40.6%) indicated that linking to the institutional repository supports OER integration to a large extent (Mean=3.62; Std.Dev= 1.113). The library providing an OER link in e-resources was

reported by 30(43.5%) of respondents as contributing significantly to OER integration (Mean=3.78; Std.Dev=1.187). Moreover, 33(47.8%) mentioned that the search interface in the library catalogue supports OER integration to a large extent (Mean=3.77; Std.Dev=1.017). Relevant OER in reading lists was noted to contribute significantly by 31(44.9%) of respondents (Mean=3.68; Std.Dev=1.091). Finally, 38(55.1%) indicated that universities integrate OER into curriculum design to a large extent (Mean=3.93; Std.Dev=0.810). The means and the standard deviations indicate some level of variability, but with uniformity across the different elements of the strategies for the integration of OER.

Further, in line with the second objective, the respondents were specifically asked to identify specific strategies for integrating OER into blended learning, focusing on ICT, online repositories for research development, social networks, and collaboration. The findings are tabulated in Table 4.8.

Table 4.8

Strategies for Incorporating Open Educational Resources into Blended Learning

Strategies	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev
The library uses the modern ICTs so as to facilitate better access to local and global Open Educational Resources	1 (1.4%)	0 (0%)	3 (4.3%)	29 (42%)	36 (52.2%)	4.43	0.717
The university has online repository for research development.	0 (0%)	2 (2.9%)	3 (4.3%)	32 (46.4%)	32 (46.4%)	4.36	0.707
The library has adopted social network-with the advancement of technology such as YouTube, twitter and Facebook to support blended learning	0 (0%)	2 (2.9%)	11 (15.9%)	31 (44.9%)	25 (36.2%)	4.14	0.791
University library has employed institutional repositories and websites that support direct instruction.	1 (1.4%)	2 (2.9%)	6 (8.7%)	34 (49.3%)	26 (37.7%)	4.19	0.827
University library has employed institutional repositories and websites that support virtual interaction.	2 (2.9%)	2 (2.9%)	8 (11.6%)	34 (49.3%)	23 (33.3%)	4.07	0.913
University library employed institutional repositories and websites that support digital learning	2 (2.9%)	3 (4.3%)	7 (10.1%)	32 (46.4%)	25 (36.2%)	4.09	0.951

Strategies	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev.
The library adopted general and global repositories to supporting direct instruction	2 (2.9%)	3 (4.3%)	14 (20.3%)	23 (33.3%)	27 (39.1%)	4.01	1.022
The library adopted general and global repositories to supporting Virtual interactions	6 (8.7%)	4 (5.8%)	14 (20.3%)	23 (33.3%)	22 (31.9%)	3.74	1.221
The library adopted general and global repositories to supporting digital resources	2 (2.9%)	4 (5.8%)	10 (14.5%)	3 (47.8%)	20 (29%)	3.94	0.968
The institution collaborates with international organizations like the African Virtual University	2 (2.9%)	6 (8.7%)	13 (18.8%)	29 (42%)	19 (27.5%)	3.83	1.028
The institution partners with top distance learning institutions in Africa and worldwide	3 (4.3%)	3 (4.3%)	11 (15.9%)	35 (50.7%)	17 (24.6%)	3.87	0.984

According to the study findings, 36(52.2%) of respondents strongly agreed that the library uses the modern ICTs so as to facilitate better access to local and global Open Educational Resources. This is supported by a mean of 4.43 and a standard deviation of 0.717, indicating a high level of agreement among participants regarding the effect of ICT integration on enhancing educational resource accessibility. The presence of an online repository for research development within the university library receives substantial endorsement, with 32(46.4%) of respondents agreeing. Importantly, no respondent expressed disagreement, highlighting unanimous positive views. The mean of 4.36 and a standard deviation of 0.707 underscore the repository's recognized role in supporting scholarly activities effectively.

Responses varied regarding the adoption of social networks like YouTube, Twitter, and Facebook to support blended learning. While 31(44.9%) agree with this initiative, 25(36.2%) remain neutral, suggesting mixed opinions or uncertainty. There was no mention of social media platforms integration from the qualitative responses to the posed open-ended questions seeking to evaluate strategies for integration of OER for blended learning. The integration of institutional repositories and websites to support direct instruction receives positive feedback, with 34(49.3%) agreeing on its efficacy.

The mean of 4.19 and a standard deviation of 0.827 reflect a strong consensus among respondents regarding the utility of these tools in enhancing teaching activities within the library setting. A further 57(82.6%) of the respondents agreed (Mean=4.07; Std.Dev=0.913) that their university libraries have employed institutional repositories and websites that support virtual interaction. Notably, for these responses, the means and standard deviations show slight variability in the data with the standard deviation ranging from 0.7 to 0.9, indicating some level of uniformity in the responses provided.

Respondents also acknowledge the role of institutional repositories and websites in facilitating digital learning, with 32(46.4%) agreeing. The mean score of 4.09 and a standard deviation of 0.951 suggest a positive but slightly varied perspective on the impact of these resources on enhancing educational experiences. Also, 27(39.1%) of the respondents strongly agreed (Mean=4.01; Std.Dev=1.022) that their respective libraries adopted general and global repositories to supporting direct instruction.

Further, 23(33.3%) of the respondents agreed that the library adopted general and global repositories to supporting virtual interactions. Similarly, the integration of general and global repositories for virtual interaction is perceived positively by 23(33.3%) of respondents, with a mean score of 3.74 and a standard deviation of 1.221. This suggests varying opinions among respondents regarding the effectiveness of these repositories in fostering virtual engagement. Another 29(42%) of the respondents agreed that the institution collaborates with international organizations like the African Virtual University.

A thematic analysis of the qualitative responses further demonstrated the role of institutional repositories as a key theme. For example, Library Staff 12 cited, "*using an institutional repository*" as one of the strategies. Similarly, Librarian 28 identified, "*Through integration into digital repository*," as a key strategy for OER integration for blended learning. Finally, 35(50.7%) of the respondents agreed that the institution partners with top distance learning institutions in Africa and worldwide. A thematic analysis of the responses to the open-ended questions highlighted internal and external collaboration as one of the strategies used. For example, Library Staff 52 said, " *working closely with faculty was one of the strategies employed*," same sentiments that were echoed by Library Staff 63. The means and the standard deviations for these

elements also indicate a slight variability in the responses, with no significant skewness. These findings indicate a range of strategies adopted in incorporating OER in blended learning, with a strong inclination towards leveraging technology in different ways to facilitate the integration.

The qualitative responses provided by the librarians echo the quantitative data on the strategies for adoption and integration of OER and incorporation in blended learning. From a content and thematic analysis, technology, training, collaboration, and policies formulation and implementation emerged as integral to the adoption and integration of OER. For example, when asked about the state of adoption of OER and the measures implemented by university libraries to integrate OER into its services to support blended learning all the librarians captured technology as a part of the integration of OER.

Librarian 1 from among the University Librarians observed that "*the university ensures awareness about OER and implementing the required infrastructure, such as ensuring continuous availability of internet connectivity"*. University Librarian 2 provided various examples to demonstrate technology adoption as a part of OER adoption, which included Turnitin for academic integrity, online public access catalog (OPAC), library webpage to provide suggestions for lacking OER materials, use of MyLOFT for off-campus access, and acquisition of Jove program. University Librarian 3 said, *"The library has set up relevant ICT infrastructure"*. These findings demonstrate that technology has been an integral part of the integration of OER.

Collaboration also emerged as a critical part of OER integration. Two of the librarians during the interview captured collaboration with faculty and other users-the students. University Librarian 2 said, "*Collaboration with faculty*" was a part of the measures

implemented to integrate OER to support blended learning. These responses indicate that for university libraries, collaboration has been a critical part of OER integration, enabling collective and facilitated adoption, deployment, and use of OER to foster blended learning in universities in Nairobi County.

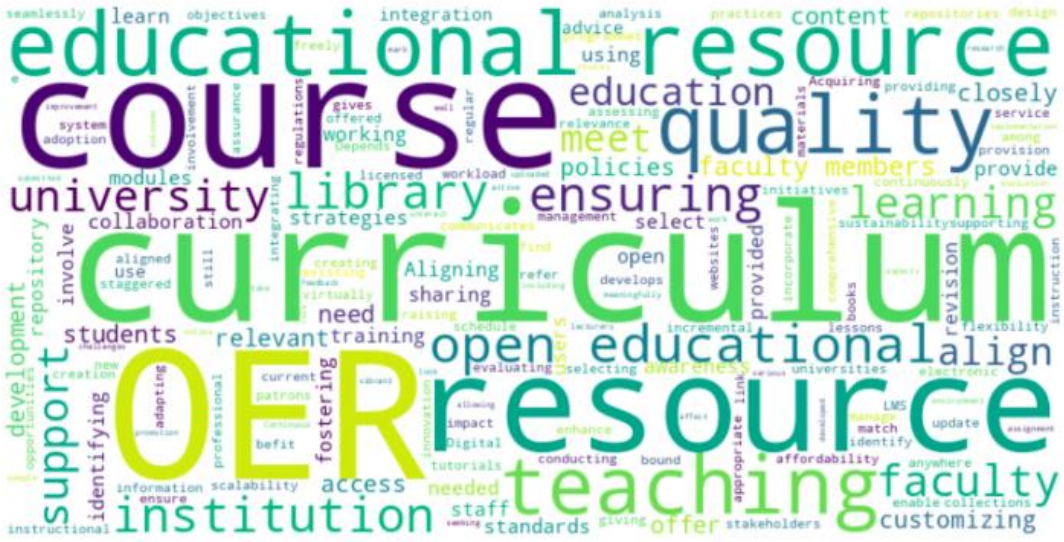
Additionally, when asked what methods used to curate and promote relevant OER materials within reading lists to support teaching and learning, in line with the second objective, the librarians' responses further brought forth the strategies used to incorporate OER in blended learning. Training, collaboration, and technology emerged as key focus areas. For example, University Librarian 1 said, "*By adding the links to the relevant OER into our lists of available databases of electronic resources so that our users can access.*" Capturing the same themes, University Librarian 2 said, "*Offer trainings, interaction between users and staff especially in Facebook pages, suggestion box, user satisfaction register, and information literacy*." University Librarian 3 said, "*We use digital repositories, the learning management systems, library websites, information Literacy trainings, library open days, library staff, students, faculty and partner collaboration, social media, library marketing section, media and print adverts and discovery tool.*" All these findings indicated the adoption and use of varying strategies in integrating OER resources in blended learning strategies, including technological infrastructure, collaboration and support, and training and capability development. The findings mirrored the trends identified in the collected quantitative data collected from the library staff and further captured in the responses to the other open-ended questions related to the second objective of this study.

Further, in line with the second objective of assessing strategies used by university libraries to successfully incorporate OER into blended learning settings, the library staffs were asked to describe how university libraries align OER strategies with the

university curriculum. Figure 4.4 provides an overview of the recurrent themes from commonly occurring words.

Figure 4.4

Strategies for OER integration in curriculum



The word cloud presented in Figure 4.4 highlights several key themes and strategies related to aligning OER strategies with university curricula. For example, the respondents captured course customization and alignment as a key strategy. For example, Library Staff 3 said, "*Customizing our courses with the Open Educational Resources and using quality licensed information resources*." Similarly, Library Staff 12 said, "*By working closely with teaching staff to identify, select the educational resources that align with the university's curriculum*." The findings indicate a focus on customization and alignment of OER materials to support course curriculum. Accessibility and flexibility also emerged as a key strategy. For Example, Library Staff 20 said, "*The institution has websites that enable students to learn virtually, sharing books, tutorials, lessons, modules, and access to the library, which gives students the flexibility they need while still being bound to the university curriculum*." Similarly,

Library Staff 13 said, "*Offer a vibrant learning environment where users can take an active role in their education and meaningfully interact with the content.*" Hence, another critical strategy used to align OER with university curriculum.

Policy and professional development also emerged as a key strategy for enhancing integration and alignment of OER with university curriculum. For example, Library Staff 60 said, "*The institution develops and communicates policies for faculty members to refer to when creating or selecting OER for courses*." Another respondent, Library Staff 31 said, "*Institutions provide professional development opportunities for faculty members to learn how to find, select, and incorporate OER into their instruction.*" Another strategy for aligning OER with university curriculum was quality assurance. For example, Library Staff 2 said, "*By ensuring that the OER provided aligns or meets the quality standard that is the quality assurance*." Another respondent, Library Staff 62 said, "*Ensuring provision of appropriate electronic resources which meet the needs of the courses offered.*"

Also, continuous improvement emerged as significant strategy used to align OER with university curriculum. For instance, Library Staff 64 said, "*Continuous improvement and feedback through identifying the challenges that affect the uses of open educational resources.*" Library Staff 3 said, "*Institutions update existing courses to align with the new OER standards, which can involve a staggered, incremental revision schedule to manage the workload for faculty members*." Finally, the responses indicated that collaboration and support are an integral part of the strategies of aligning OER with university curriculum. For example, Library Staff 1 said, "*Through collaboration and sharing*." Making similar intimations, Library Staff 42 said, "*By seeking advice from faculty*." These themes indicate that university libraries are actively engaging in

comprehensive strategies to align OER with curriculum needs, enhancing the accessibility, affordability, and quality of education in blended learning settings. The focus on policy development, professional training, quality assurance, and continuous improvement demonstrate a commitment to fostering innovation and collaboration in teaching and learning practices.

The findings indicate different strategies for integration of OER broadly, and incorporation of OER into blended learning specifically. This study's findings on the utilization of collaboration strategies to foster integration of OER and incorporation into blended learning are consistent with the conclusions and inferences presented in other studies. For example, de Hart et al. (2015) and Ntaga (2022) concluded that collaboration between teaching staff, IT specialists, administrators, and librarians and library staffs is critical for successful integration of OER. Similarly, the findings of this study are in line with the conclusions drawn by Kassim (2019); Kodua-Ntim and Fombad (2020); Ntaga (2022); Ellis et al. (2014); Rodés and Gewerc (2021) who also established that the integration of OER into existing library resources and repositories is a strategy that enhances integration of OER and incorporation into blended learning. Further, the finding on technology infrastructure and utilization of social media platforms are consistent with the findings and conclusions presented by Ishtiaq et al., (2020); Saliu et al. (2022); Rodés and Gewerc (2021) who ascertained that technology deployment and use has been an integral part of integration of OER and incorporation in blended learning.

To interpret the findings on strategies for incorporating OER into blended learning in university libraries in Nairobi County, the Diffusion of Innovations Theory and the Technology Acceptance Model (TAM) provide valuable perspectives. The Diffusion

of Innovations Theory explains the process of adopting new ideas and technologies through stages: knowledge, persuasion, decision, implementation, and confirmation. The high percentage of respondents indicating significant support for collaborative strategies (21.7% to a very large extent and 49.3% to a large extent) suggests that these strategies are well into the implementation and confirmation stages. Collaborative efforts, such as linking OER to institutional repositories and incorporating relevant OER into reading lists, indicate a widespread institutional endorsement and acceptance. The use of ICTs and the integration of OER into curriculum design are seen as critical facilitators of this diffusion process, with a substantial majority acknowledging their importance.

From the perspective of the TAM, which emphasizes perceived ease of use and perceived usefulness as key factors in technology adoption, the findings underscore the high perceived usefulness of OER integration strategies. The significant agreement on the efficacy of ICT integration (52.2% strongly agreeing) and the role of institutional repositories (46.4% agreeing) highlights the perceived benefits in enhancing access to educational resources and supporting scholarly activities. The adoption of social networks and modern ICTs to facilitate OER access indicates recognition of their ease of use and effectiveness in improving blended learning environments. The positive feedback on collaboration with international organizations and top distance learning institutions further reflects the perceived value of these partnerships in enhancing OER integration. Overall, the findings suggest that university libraries in Nairobi County are leveraging collaborative strategies and technological advancements to effectively incorporate OER into blended learning, driven by the perceived advantages and supported by institutional and external collaborations.

4.7 Success Factors for Adopting OER into Blended Learning

The third objective of this study was to evaluate the success factors for adopting OER in blended learning in university libraries in Nairobi County. The success factors that were explored included enhanced collaboration among library staff, faculty and students, increased accessibility to learning materials by students, robust library's digital infrastructure, improved methodologies for evaluating the learning quality, increased training and development opportunities for the faculty, providing guidance on copyright issues, and increased institutional support. The findings are as presented in Table 4.9.

Table 4.9

Success Factors for Adopting Open Educational Resources in Blended Learning

Success factors	Not at All 1	Small Extent 2	Moderate Extent 3	Large Extent 4	Very Large Extent 5	Mean	Std. Dev
Enhanced collaboration among library staff, faculty and students.	2 (2.9%)	0 (0%)	14 (20.3%)	32 (46.4%)	21 (30.4%)	4.01	0.883
Increased accessibility to learning materials by students.	6 (8.7%)	4 (5.8%)	8 (11.6%)	22 (31.9%)	29 (42%)	3.93	1.252
Robust library's digital infrastructure.	3 (4.3%)	6 (8.7%)	11 (15.9%)	29 (42%)	20 (29%)	3.83	1.084
Improved methodologies for evaluating the learning quality.	2 (2.9%)	6 (8.7%)	21 (30.4%)	30 (43.5%)	10 (14.5%)	3.58	0.946
Increased training and development opportunities for the faculty.	5 (7.2%)	6 (8.7%)	10 (14.5%)	34 (49.3%)	14 (20.3%)	3.67	1.120
Providing guidance on copyright issues.	1 (1.4%)	8 (11.6%)	12 (17.4%)	39 (56.5%)	9 (13%)	3.68	0.899
Increased institutional support	2 (2.9%)	7 (10.1%)	10 (18.8%)	32 (14.5%)	18 (46.4%)	3.83	1.028

The findings indicated that 21(30.4%) and 32(46.4%) of respondents indicated enhanced collaboration among library staff, faculty and students to a very large extent and large extent respectively (Mean=4.01; Std.Dev=0.883). Additionally, 29(42%) of the respondents indicated an increased accessibility to learning materials by students to

a very large extent (Mean=3.93; Std.Dev=1.252). According to the findings, 20(29%) of the respondents indicated robust library's digital infrastructure to a large extent (Mean=3.83; Std.Dev=1.084). Further, 30(43.5%) of the respondents indicated that there is an improved methodology for evaluating the learning quality to a large extent (Mean=3.58; Std.Dev=0.946). Also, 34(49.3%) of the respondents indicated that there is an increased training and development opportunities for the faculty to a large extent (Mean=3.67; Std.Dev=1.120). Another 39(56.5%) of the respondents showed that there is provision of guidance on copyright issues to a large extent (Mean=3.68; Std.Dev=0.899). Finally, 18(46.4%) of the respondents indicated that there is an increased institutional support to a very large extent (Mean=3.83; Std.Dev=1.028). The means and the standard deviations for the different components of the success factors contributing to the integration of OER in blended learning, indicate that a combination of factors significantly contributed to the successful adoption of OER in blended learning to a large extent, including collaboration, technology, and training of staff and users.

Further, in line with the third objective, the library staffs were asked to assess the factors contributing to the successful implementation of OER in blended learning in their universities. They were provided with multiple statements, to which they were supposed to respond with the extent to which they agreed with the statements provided in Likert rating scale. The findings from the responses are summarized in Table 4.10.

Table 4.10

Factors contributing to a successful implementation of OER to support blended learning in university libraries

	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev
I am very positive about creating and sharing Open Educational Resources to support towards blending learning in my institution	0 (0%)	0 (0%)	8 (11.6%)	31 (44.9%)	30 (43.6%)	4.32	0.675
I am in support of obtaining and adopting Open Educational Resources to support blended learning	0 (0%)	0 (0%)	12 (17.4%)	36 (52.2%)	21 (30.4%)	4.13	0.684
I am happy with increased reputational profile experienced as a result of sharing and collaborative opportunities introduced in the sharing process of Open Educational Resources.	0 (0%)	1 (1.4%)	11 (15.9%)	35 (50.7%)	22 (31.7%)	4.13	0.726
There are regular trainings for librarians on OER adoption policy in the institution	0 (0%)	1 (1.4%)	6 (8.7%)	45 (65.2%)	17 (24.6%)	4.13	0.616

	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev.
The library has ICT infrastructure that support direct instruction	0 (0%)	2 (2.9%)	6 (8.7%)	32 (46.4%)	29 (42%)	4.28	0.745
The library has ICT infrastructure that support virtual interaction	0 (0%)	1 (1.4%)	7 (10.1%)	31 (44.9%)	30 (43.5%)	4.30	0.713
The library has ICT infrastructure that ensure availability of digital resources	1 (1.4%)	4 (5.8%)	6 (8.7%)	34 (49.3%)	24 (34.8%)	4.10	0.894
The librarians are well vast with digital literacy that has enabled OER adoption in support towards direct instructions for students	1 (1.4%)	3 (4.3%)	11 (15.9%)	33 (47.8%)	21 (30.4%)	4.01	0.884

The findings showed that 30(43.6%) of the respondents strongly agreed (Mean=4.32; Std.Dev=0.675) that they are very positive about creating and sharing Open Educational Resources to support towards blending learning in my institution. Another 57(82.6%) of the respondents agreed (Mean=4.13; Std.Dev=0.684) they are satisfied to obtaining and adopting Open Educational Resources when others use and adapt them to support the learning. A further 22(31.7%) of the librarians agreed that they are happy with increased reputational profile experienced as a result of sharing and collaborative opportunities introduced in the sharing process of Open Educational Resources. The results also indicated that 45(65.2%) of the respondents agreed that there are regular trainings on librarians on open educational resources adoption in the institutions policy. Another 29(42%) strongly agreed (Mean=4.28; Std.Dev=0.745) that libraries have ICT infrastructure that support direct instruction. Of the respondents, 30(43.5%) strongly agreed (Mean=4.30; Std.Dev=0.713) that the University libraries have ICT infrastructure that support virtual interaction.

Further, from among the respondents, 24(34.8%) of the respondents strongly agreed (Mean=4.10; Std.Dev=0.894). The libraries have ICT infrastructure that ensure availability of digital resources. Finally, 33(47.8%) of the respondents agreed (Mean=4.01; Std.Dev=0.884) that the librarians are well vast with digital literacy that has enabled OER adoption in support towards direct instructions for students. The mean and the standard deviation demonstrate minimal skewness adduced from the range of the standard deviation and central tendency. The results indicate that the respondents demonstrated openness and positivity to OER integration and incorporation in blended learning, and the accrued benefits.

The findings of this study about the success factors and perceptions of the benefits of incorporation of OER in blended learning, as presented in Table 4.9 and Table 4.10 are consistent with the findings and conclusions in extant literature. For example, this study's findings are consistent with the findings of other studies that librarians' positive attitudes, perceived benefits of OER, awareness about OER and institutional support are critical drivers of the integration of OER in blended learning (Dakduk et al., 2018; Hassan, 2020; Ngamau, 2013; Schepman & Rodway, 2020; Shahzad & Khan, 2023; Zagdragchaa & Trotter, 2019).

The participants' qualitative responses on the perceived and real benefits of OER for enhanced blended learning indicated that they perceived OER as being beneficial for OER learning. For example, from among the library staffs, one respondent, Library Staff 4 observed, *"The integration of the OER have come in handy since student can save from purchasing very expensive materials."* Another, Library Staff 36, observed, *"The users are able to access and retrieve the resources required fast and easily from whenever they are within the library."* Qualitative responses from the librarians echoed the observations by library staff. For example, Librarian 1 said, "*We have internet in the library for access to information resources and we provide off-campus access through RemoteX providers to allow users to access information full time*." Librarian 2 said, "*Making the resources available and also one on one interaction is effective.*" These findings indicate that there is increasing adoption and integration of OER in blended learning, which is associated with numerous benefits for different categories of users, especially learners.

Additionally, in line with the third objective, the Librarians were asked how collaboration contributed to the successful adoption and utilization of OER, illustrated the importance of this factor. For example, University Librarian 1 said, "*Sometimes*

users find good OER and recommend to the library. If the OER is good, we circulate it for use by all other users. Users also give us feedback to allow us to make a decision on what to adopt or drop." University Librarian 2 said, "*Allocated member staff in certain faculty who are aware and also keep us updated on new developments of the curriculum*." University Librarian 3 said collaboration had, "*Increased awareness and use, enhanced user satisfaction, and positive attitudes towards resource adequacy.*" These responses capture the significance of positive attitudes and collaboration as a key contributing factor to the successful integration of OER in blended learning settings.

Further, this study's findings on the importance of technology adoption, deployment, and use as a facilitator for OER incorporation in blended learning align with the conclusions reported in other studies (Bello, 2023; Cox & Trotter, 2017; Ngamau, 2013). Finally, the results on the role of collaboration in supporting OER integration in blended learning are echoed by Dakduk et al. (2018) who concluded that collaboration between different stakeholders is important for the successful deployment and integration of OER in blended learning. Emphasizing on the importance of collaboration, University Librarian 3 observed, *"Establishing collaboration with users"* was a part of the strategies implemented to integrate OER for blended learning. University Librarian 3 further said, *"We create awareness and seek support from management, staff, and our users."* The respondents also captured the importance of training as a facilitator of OER integration in blended learning. For example, University Librarian 2 observed, "*Regular trainings for staff and other users"* has been an integral part of the rollout of OER to support blended learning. In agreement, University Librarian 3 said, *"Training on digital literacy, access to digital repository and the entire library website"*, has been a critical part of OER implementation for enhanced

blended learning. Respondent 3 also cited ensuring competent staff as one of the approaches for integrating OER for enhanced blended learning.

In evaluating success factors for adopting OER in blended learning in Nairobi County's university libraries can also be interpreted through Institutional Theory, Technology Acceptance Model (TAM), and Diffusion of Innovations Theory (DOI), offering insights into how these factors contribute to adoption and implementation. From one point of view, Institutional Theory posits that organizations adopt practices to gain legitimacy and conform to prevailing norms. The findings that enhanced collaboration among library staff, faculty, and students (76.8% large to very large extent) and increased accessibility to learning materials (73.9% large to very large extent) are perceived positively highlight institutional efforts to align with educational openness and collaboration norms, which is in line with the conclusions drawn by Dakduk et al. (2018) about the importance of collaboration. Institutional Theory suggests that by fostering collaboration and enhancing accessibility, institutions seek to integrate OER into blended learning to meet educational goals and institutional missions, thereby gaining legitimacy and acceptance.

Conversely, TAM offers insights into individuals' perceptions of technology adoption based on perceived usefulness and ease of use. The findings that robust library digital infrastructure (71.0% large to very large extent) and effective methodologies for evaluating learning quality (73.9% large to very large extent) are important underscore TAM's principles. These factors indicate that stakeholders perceive digital infrastructure and assessment methodologies as essential and beneficial for integrating OER in blended learning, which echoes the arguments presented by Bello (2023) about the role of technology in facilitating the integration. TAM emphasizes that perceived usefulness and ease of use of technology influence its adoption and utilization,

suggesting that robust digital infrastructure and effective assessment methods facilitate OER adoption by enhancing their practical utility.

Finally, DOI provides a framework for understanding how innovations spread within organizations. The findings that increased training and development opportunities for faculty (69.6% large to very large extent) and provision of guidance on copyright issues (70.1% large to very large extent) are significant align with DOI principles. DOI suggests that innovations like OER adoption spread through stages influenced by factors such as communication channels and perceived benefits. The emphasis on training and guidance, in line with the conclusions by Tadesse et al. (2022) indicates that these factors facilitate OER adoption by supporting stakeholders in understanding and implementing OER effectively within blended learning environments.

As such, the Institutional Theory, TAM, and DOI collectively provide a comprehensive framework for understanding the success factors influencing OER adoption in blended learning within Nairobi County's university libraries. They demonstrate the role of institutional norms, technological perceptions, and innovation diffusion processes in shaping how OER adoption is perceived, embraced, and implemented. These theoretical perspectives help identify critical factors that support successful OER integration and inform strategies for enhancing educational practices through innovative approaches like OER in blended learning contexts.

4.8 Policies to Support OER Incorporation in Blended Learning

The fourth objective of this study was to assess the OER policy for supporting blended learning at university libraries in Nairobi County. In line with this objective, the library staffs were asked to assess the extent to which policies in place addressed various OER issues, including integration of the OER, the role of Librarians in integrating OER, the

type of Open Educational Resources to be integrated in the library, the access methods, and the licensing methods. The findings are summarized in Table 4.11.

Table 4.11

Open education resource policy adoption in supporting Blended Learning at university libraries.

	Not at All	Small Extent	Moderate Extent	Large Extent	Very Large Extent	Mean	Std. Dev.
Integration of the Open Educational Resources.	2 (2.9%)	1 (1.4%)	7 (10.1%)	41 (59.4%)	18 (26.1%)	4.04	0.830
The role of Librarians in integrating Open Educational Resources.	2 (2.9%)	4 (5.8%)	17 (24.6%)	31 (44.9%)	15 (21.7%)	3.77	0.957
The type of Open Educational Resources to be integrated in the library.	4 (5.8%)	4 (5.8%)	14 (20.3%)	31 (44.9%)	16 (23.2%)	3.74	1.066
The access methods	4 (5.8%)	2 (2.9%)	14 (20.3%)	36 (52.2%)	13 (18.8%)	3.75	0.991
Licensing Methods	2 (2.9%)	6 (8.7%)	19 (27.5%)	25 (36.2%)	17 (24.2%)	3.71	1.030

The findings, as summarized in Table 4.11, indicate that a substantial majority of respondents 18(26.1%) demonstrated that OER policy integration occurs to a large extent and 41(59.4%) to a very large extent. 7(10.1%) were satisfied the integration with only 1(1.4%) perceiving the integration to a small extent (Mean=4.04; Std.Dev=0.830), it is clear that the overall integration of OER is well adopted in the

blended learning. Moreover, 15(21.7%) and 31(44.9%) of the respondents showed that librarians are involved in the integration of OER to a large and very large extent respectively. However, 4(5.8%) believe that their involvement is to a small extent or not at all. Another 31(44.9%) of the respondents are satisfied with the types of OER being integrated to a large extent (Mean=3.77; Std.Dev=0.957).

Nevertheless, a combined 8(11.6%) felt that the types of OER are only being integrated to a small extent or not at all. From among the respondents, 36(52.2%) demonstrated that access methods for OER are effective to a large or very large extent (Mean=3.74; Std.Dev=1.066). However, 6(8.7%) perceive the access methods to be effective to a small extent or not at all but the majority 36(52.2%), and 13(18.8%) respectively expressed their satisfaction on the access methods with large to very large extent while 14(20.3%) remained neutral (Mean=3.75; 0.991). Finally, 25(36.2%) of respondents view the licensing methods for OER to be effective to a large extent. However, a combined 8(11.6%) believe the licensing methods are effective to a small extent or not at all (Mean=3.71; Std.Dev=1.030). The mean and standard deviation did not show a significant variability in the responses, which indicates some level of consistency in the responses provided by the library staff. Therefore, the findings indicate that the policies in place have contributed to addressing various issues associated with the integrating of OER in blended learning including actual integration, role of staff, access, and licensing issues.

Further, in line with the fourth objective, the library staffs were asked to assess the extent to which policies have been adopted to support blended learning at university libraries. The focus areas were the library has an OER policy that boosts university visibility by integrating learning materials, the library has a functional OER policy, discussion of the policy for implementation, presence of unapproved policy governing

OER, licensing issues for OER, involvement of librarians in policy formulation, value of OER in supporting blended learning, and e-learning and ICT policies. The results are summarized in Table 4.12.

Table 4.12

Policy adoption for blended learning

	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev.
The library has an OER policy that boosts university visibility by integrating learning materials.	0 (0%)	2 (2.9%)	14 (20.3%)	36 (52.2%)	17 (24.6%)	3.99	0.757
The library has a functional Open Educational Resource Policy.	1 (1.4%)	4 (5.8%)	18 (26.1%)	41 (59.4%)	5 (7.2%)	3.65	0.764
The policy in place has been discussed by the library management for implementation	1 (1.4%)	2 (2.9%)	21 (30.4%)	34 (49.3%)	11 (15.9%)	3.75	0.812
Our library has an unapproved policy governing available Open Educational Resources.	7 (10.1%)	14 (20.3%)	12 (17.4%)	32 (46.4%)	4 (5.8%)	3.17	1.137
Library policy outlines licensing levels for sharing Open Educational Resources.	2 (2.9%)	5 (7.2%)	20 (29%)	33 (47.8%)	9 (13%)	3.61	0.911

	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev.
Librarians are directly involved in formulation of the policy	2 (2.9%)	7 (10.1%)	16 (23.2%)	30 (43.5%)	14 (20.3%)	3.68	1.007
I recognize the value of OER created in my institution, supporting their integration into blended learning.	2 (2.9%)	6 (8.7%)	22 (31.9%)	29 (42%)	10 (14.5%)	3.57	0.947
University e-learning and ICT policies enable library's conducive environment for OER use in blended learning.	1 (1.4%)	2 (2.9%)	12 (17.4%)	31 (44.9%)	23 (33.3%)	4.06	0.873

The findings showed that 50(76.8%) of respondents agreed (Mean=4.00; Std.Dev=0.757) that the library's Open Educational Resources (OER) policy enhances the university's visibility by integrating learning materials. Although a majority 46(66.6%) agree that the university has a fully developed and functional OER policy, the mean=3.65 and standard deviation=0.764 suggest more variability in responses, with 5(7.2%) of the respondents not fully convinced of its functionality. While 34(49.3%) of the respondents agreed, 30.4% of the respondents had differing opinions (Mean=3.75; Std.Dev=0.812) that the library management has discussed the policy for implementation.

Another 36(52.2%) of the respondents agreed that there is an unapproved policy governing OER at their universities. Additionally, (42, 60.8%) agree that the policy outlines licensing levels for sharing OER. Moreover, 44(63.8%) of the respondents agreed that librarians are directly involved in formulating the OER policy. While a majority 39(56.5%) recognize the value of OER in blended learning, the moderate mean=3.57 and standard deviation=0.947 suggest varying levels of recognition and support for OER integration. A significant majority 54(78.2%) agreed (Mean=4.06; Std.Dev=0.873) that their universities' e-learning and ICT policies create a conducive environment for OER use in blended learning. The means and the standard deviations indicate slight variability in the responses to the various elements of the contribution of policies in supporting blended learning in university libraries. The findings indicate that OER policies have played a critical role in supporting blended learning.

Overall, the findings indicate that respondents view the university's OER policies favorably, especially in terms of enhancing visibility and supporting blended learning. The high levels of agreement across most statements suggest that these policies are

well-received and effectively integrated into the university's educational practices. However, some areas require attention and improvement. Lower mean scores and greater variability in responses regarding the functionality of the OER policy and the involvement of librarians suggest that not all respondents are fully informed or convinced about these aspects. This highlights the need for improved communication and potentially more inclusive policy development. Additionally, mixed responses about the unapproved policy governing OER suggest there is confusion and a possible lack of clarity or transparency. To address this, the university could benefit from clearly disseminating policy details and fostering more comprehensive discussions with stakeholders. The strong consensus on the value of OER and the supportive role of e-learning and ICT policies indicate a solid foundation for utilizing these resources effectively in blended learning environments.

The findings from this study are aligned with conclusions and inferences made in other studies on the nature and importance of OER policies in enhancing blended learning. For example, this study's findings on the nature of policies are in line with the recommendations by Miao et al. (2019) that OER policies provide guidelines on various areas, such as licensing issues, publication rights, and infrastructure requirements, offering guidance on the use of support systems, library services, and information technology. The qualitative responses also capture the importance of policies. For example, from among the University librarians, one of the respondents, Librarian 1, observed, "*We ensure that at no point we contravene intellectual property rights by following the type of use recommended by the publisher of the information resource. This is in line with the creative commons.*" Similarly, from among the library staffs, the nature and importance of policies is captured.

The responses provided to the supporting open-ended question seeking to assess library staff's understanding of how implementation of OER policy contribute to the progress of blended learning, demonstrated their significant roles. Key themes were the establishment of a framework, incentivizing creation and sharing, increased access and cost-reduction, flexibility and customization, collaboration and sharing, quality assurance, intellectual property and licensing issues, continuous improvement, standardization and guidance, and support for innovative pedagogies. For example, one of the respondents, Library Staff 2 observed, "*They set standards and guidelines for users to follow in respect with the intellectual property rights.*" Another respondent, Library Staff 33 observed, "*Helps in the choosing for the best online resources for the promotion of blended learning and also in choosing the standardized materials.*" These observations are also echoed by Thomas (2017); Hilton (2020) who observed that OER policies provide guidelines on the use of these resources to foster better learning experiences in blended learning environments. Similarly, the findings that OER policies support the adoption and use of the resources in blended learning are in line with the conclusions in other studies, such as Butcher (2015); Huang et al. (2020); Luo et al. (2020) who emphasized that policies play a crucial role in either facilitating or hindering the adoption and development of OER within university libraries.

4.9 Blended Learning in Universities in Nairobi County

Finally, in line with the overarching purpose of the study, to gain a more detailed understanding of the integration of OER for enhanced blended learning, the participants were asked to discuss the nature and elements of blended learning in universities in Nairobi County. The focus areas in line with the purpose were direct instructions through lectures enhance blended learning at the university, use of digital platforms and learning management systems, online lectures and video tutorials, combination of

synchronous live lectures and discussions with asynchronous pre-recorded content, collaborative learning through online platforms, and use of multimedia, simulation, and online textbook engagement and comprehension. The results are summarized in Table 4.13.

Table 4.13

Blended Learning at University Libraries

	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev
Direct instructions through lectures enhance blended learning at the University.	0 (0%)	1 (1.4%)	12 (17.4%)	43 (62.3%)	13 (18.8%)	3.99	0.653
We use digital platforms and learning management systems for course content and assessments.	0 (0%)	1 (1.4%)	10 (14.5%)	28 (40.6%)	30 (43.5%)	4.26	0.760
Online lectures and video tutorials supplement course content in blended learning.	0 (0%)	2 (2.9%)	13 (18.8%)	34 (49.3%)	20 (29%)	4.04	0.775
University blends synchronous live lectures and discussions with asynchronous pre-recorded content.	0 (0%)	2 (2.9%)	15 (21.7%)	40 (58%)	12 (17.4%)	3.90	0.710
University promotes collaborative learning through online platforms and peer interactions.	0 (0%)	1 (1.4%)	6 (8.7%)	35 (50.7%)	27 (39.1%)	4.28	0.684

	SD 1	D 2	M 3	A 4	SA 5	Mean	Std. Dev.
We use multimedia, simulations, and online textbooks to boost engagement and comprehension.	0 (0%)	1 (1.4%)	10 (14.5%)	36 (52.2%)	22 (31.9%)	4.14	0.713

The findings showed that 54(81.1%) of respondents agreed (Mean=4.00, Std.Dev= 0.653) that direct instructions through lectures significantly enhance the blended learning experience at the university. The results imply that direct lectures are a crucial component of a blended learning environment and that traditional lecture methods remain highly valued even in a blended format. As per the study results, 58(84.1%) of respondents agreed (Mean=4.26, Std.Dev= 0.760) that digital platforms and LMS are effectively utilized for course content and assessments. The high level of agreement and the substantial mean score highlights the effectiveness of digital platforms and LMS in supporting the academic needs of students. Additionally, 54(78.3%) of respondents agreed (Mean= 4.04, Std.Dev= 0.775) that online lectures and video tutorials effectively supplement course content. Online lectures and video tutorials are beneficial additions to the course materials. This indicates that multimedia resources are vital in enhancing the learning experience. The mean and the standard deviations show minimal variability in the responses assessing the nature and extent of OER in blended learning.

Furthermore, 52(75.4%) of respondents concurred (Mean = 3.90, Std. Dev. = 0.710) that the university effectively blends synchronous live lectures with asynchronous pre-recorded content. An overwhelming 62(89.8%) of respondents agreed (Mean = 4.28, Std. Dev. = 0.684) that collaborative learning is effectively promoted through online platforms. This means that online platforms are highly effective in fostering collaborative learning. This strong positive feedback underscores the importance of peer interactions and group activities in the digital learning environment. Moreover, 58(84.1%) of respondents agreed (Mean = 4.14, Std. Dev. = 0.713) that multimedia, simulations, and online textbooks boost engagement and comprehension. It implies that

these tools are well-received and considered highly effective in enhancing student engagement and understanding, which is further demonstrated by the means and the standard deviations, which show minimal skewness in the responses. This reflects the value of diverse and interactive learning materials in supporting student learning.

These findings are consistent with the conclusions and arguments presented in other studies. For example, in line with the diversity of approaches integrated in OER as established in this study, is echoed by Min and Lee (2023), who established blended learning integrates direct instructions, virtual engagements, and digital tools, which provides an enriched learning experience. The conclusions by Shi et al. (2022) also articulate the diversity of the pedagogical and instructional approaches in blended learning, which aligns with the findings of this study. The qualitative responses also captured this diversity. For example, University Librarian 1 said, "*We have our RemoteX services to allow all time on and off campus access to the library resources especially for the distance learners. The university LMS allows staff to interact with students remotely and can make recommendations for access of information through the library system remotely.*" Librarian 3 from among the university librarians in a discussion of blended learning observed, "*The university has offered full support by enabling the library subscribe to pwds softwares, has pads friendly websites, ensures staff are trained on sign language for instance, digital literacy, presence of special needs mainstreaming policy, improved ICT infrastructure and enhanced budget.*

The observations by the Librarians are echoed by the library staffs. For example, Library Staff 1 said, "*Blended learning integrates traditional face-to-face instruction with online learning modalities, allowing for a seamless combination of in-person interaction, independent study, and collaborative online activities. This approach*

enables universities to optimize resources, such as physical classroom spaces and digital learning platforms, while accommodating varying learning styles and preferences." Library Staff 12 said, "*Enhanced learning experiences that is diverse learning materials like videos, podcasts Improved student engagement and retention by the use of interactive tools Scalability and resource optimization by allowing more efficient use of physical and digital resources*." These findings demonstrate that blended learning integrates different elements of face-to-face and virtual learning pedagogical approaches, in line with Cox and Trotter (2017) on the importance of technology in OER and blended learning and Lane et al. (2021) on integration of face to face and virtual learning for blended learning, which in turn is associated with various benefits for the learners.

These findings regarding OER policy integration in supporting blended learning at university libraries in Nairobi County can be interpreted through the lenses of Institutional Theory, Technology Acceptance Model (TAM), and Diffusion of Innovations Theory (DOI), providing a comprehensive understanding of the adoption and implementation dynamics. The Institutional Theory suggests that organizations conform to prevailing norms, values, and practices to gain legitimacy and acceptance. In this context, the high percentage of respondents (85.5%) indicating large to very large extents of OER policy integration reflects institutional norms favoring educational openness and resource sharing, which aligns with the arguments presented by Butcher (2015) in a discussion of institutional policies to support blended learning. The theory emphasizes that institutional environments shape organizations' behaviors and decisions, influencing how policies like OER integration are embraced to align with educational goals and institutional missions. The strong agreement (76.8%) that the OER policy enhances university visibility illustrates how institutions seek legitimacy

and recognition through innovative educational practices, which is consistent with the conclusions made by Miao et al. (2019) on the roles of policies.

Technology Acceptance Model provides insights into individuals' adoption and use of technology based on perceived usefulness and ease of use. The findings that digital platforms and LMS are effectively utilized for course content and assessments (84.1% agreement) align with TAM, highlighting that technologies supporting OER implementation are perceived as beneficial and user-friendly, which is consistent with conclusions drawn by Mutsvunguma (2019) who also used the same model. TAM emphasizes that perceptions of technology's usefulness and ease of use are critical determinants of its adoption and integration into organizational practices, such as blended learning environments where digital tools play a pivotal role.

Finally, the DOI theory offers a framework for understanding how new ideas and technologies spread within organizations and society. The high agreement (78.2%) that e-learning and ICT policies create a conducive environment for OER use reflects DOI's emphasis on the importance of supportive infrastructure and policies in facilitating innovation adoption. DOI posits that innovations like OER policies diffuse through various stages from knowledge to adoption affected by factors such as communication channels and the perceived benefits of innovation. The findings that collaborative learning through online platforms is effectively promoted (89.8% agreement) underscore DOI's premise that innovations spread faster when they address organizational needs and enhance operational efficiency, which is consistent with the findings and conclusions in reported in other studies, such as Ongaya (2023); Abayneh and Hoivik (2021); Parra (2021). These findings indicate that policies covering different aspects of OER integration in blended learning.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a comprehensive summary of the study's findings on the adoption of Open Educational Resources (OER) to enhance blended learning in university libraries across Nairobi County. Utilizing a Mixed-Methods Research (MMR) approach, the study investigated the current state of OER adoption, strategies employed, success factors, and policy frameworks supporting OER integration. Data was collected through semi-structured questionnaires and interviews with university librarians and staff from four selected universities. Quantitative data were analyzed using descriptive statistics, while qualitative data underwent thematic analysis. The findings underscored varying levels of awareness and utilization of OER among university libraries, highlighted effective strategies for integrating OER into blended learning environments, identified critical success factors influencing adoption, and examined existing policies supporting OER initiatives. The chapter concludes with insights into each thematic area, informing recommendations aimed at enhancing OER adoption and support for blended learning in university library settings.

5.2 Summary of the Findings of the Study

The response rate was notably high, with a 3(75%) participation rate among university librarians and a 69(80.2%) response rate among library staff, demonstrating the study's robustness and breadth of data collected. The reliability of the findings was upheld through Cronbach's alpha coefficients, confirming strong internal consistency across variables such as OER adoption, strategies, success factors, policies, and blended learning implementation. The study identified varying degrees of OER adoption across the universities surveyed, highlighting both challenges and successes in integrating

OER into blended learning environments. Policies supporting OER were found to be pivotal yet varied in their effectiveness, influencing the overall adoption for enhanced blended learning. The next sub-section provides an overview of the background and demographics of the participants in the study.

5.2.1 Background and Demographics

The study gathered comprehensive background information from respondents, including demographic details such as gender distribution and their highest level of education. The respondents were predominantly female, with 41 individuals (59.4%) compared to 28 males (40.6%). The majority (55.1%) held a bachelor's degree, followed by 24.6% with diplomas and 17.4% with a master's degree. A small percentage (2.9%) had a certificate as their highest educational attainment. Notably, among the university librarians, one had a master's degree and two possessed PhD qualifications, indicating a high level of educational attainment conducive to understanding and implementing open educational resources (OER) for blended learning initiatives. Regarding tenure, a significant portion of library staff had served for more than 5 years, with 32(46%) having worked between 6 and 10 years, 20(29%) between 11 and 15 years, 10(14%) between 0 and 5 years, and 7(10%) over 15 years. This tenure distribution among respondents underscores their experience and depth of understanding within their respective library roles, influencing their perspectives on OER adoption and blended learning implementation.

5.2.2 State of Adoption of OER in Promoting Blended Learning

From the evaluation of the state of adoption of OER in promoting blended learning in university libraries in Nairobi Count revealed a generally positive trend. A significant portion of respondents, 62.3%, reported that OER have been adopted to a large extent,

while 18.8% indicated a moderate extent, and 13% a very large extent. Despite this positive reception, 5.8% of respondents noted only a small extent of OER adoption, pointing to disparities in implementation across different universities. Further, examining specific OER methods, the study found varying levels of integration. Electronic books and open textbooks were integrated to a large extent by 49.3% of respondents and to a very large extent by 33.3%. Similarly, electronic journals saw substantial integration, with 46.4% of respondents indicating a large extent and 27.5% indicating a very large extent. In contrast, audio podcasts were less widely integrated, with 31.9% of respondents noting only a moderate extent of integration. Slides and class presentations were integrated to a large extent by 46.4% of respondents, and open courseware was similarly adopted extensively by the same percentage. Virtual labs showed a lower level of integration, with 33.3% reporting a large extent, likely due to the high costs associated with their implementation. Tutorials and course modules were integrated to a large extent by 36.2% of respondents, and video lectures by 43.5%. Interactive games and simulations also saw significant integration, with 36.2% of respondents indicating a large extent.

Further, the role of library staff in facilitating OER integration was also highlighted. Cataloguing and metadata creation significantly influenced OER integration, with 40.6% of respondents indicating a very large extent of influence and 33.3% a large extent. Information retrieval and reference services were similarly influential, with 42% reporting a very large extent of influence. Managing digital materials, user support, instruction, and information literacy were also crucial, with 39.1% of respondents noting a very large extent of influence in these areas. Additionally, technology support and curriculum support and integration were important, with 42% and 39.1% of respondents, respectively, indicating large extents of influence.

Overall, the findings demonstrate that while some university libraries in Nairobi County have effectively integrated OER into their educational frameworks, others lag behind. This suggests a need for increased awareness and more robust integration strategies. Challenges such as limited technological infrastructure and faculty resistance to change were identified as barriers to wider adoption. Libraries with established OER policies and proactive educational campaigns showed higher adoption rates, underscoring the importance of institutional support and resource allocation in promoting effective blended learning initiatives.

5.2.3 Strategies Used to Incorporate OER into Blended Learning Settings

In assessing the strategies employed to integrate Open Educational Resources (OER) into blended learning settings across Nairobi County university libraries, several key findings emerged. Primarily, collaborative strategies are widely adopted, with 71% of respondents indicating significant support for OER integration. Libraries provide direct access to OER through links in e-resources, with 72.5% of respondents noting its importance. Furthermore, 69.5% of respondents reported the use of search interfaces in library catalogs to facilitate OER discovery. Further, institutional repositories play a crucial role, with 82.6% of respondents agreeing that these repositories support direct instruction and virtual interaction. The integration of OER into curriculum design is also significant, with 76.8% of respondents highlighting its importance.

Additionally, modern ICTs are extensively used to improve access to OER, with 94.2% of respondents strongly agreeing or agreeing on its impact. Also, 92.8% of respondents noted the presence of online repositories for research development. Social networks like YouTube, Twitter, and Facebook are also utilized to support blended learning, with 81.1% of respondents acknowledging their adoption. Finally, the findings showed that

libraries adopted both general and global repositories to support direct instruction and virtual interactions, with 72.4% of respondents agreeing on their effectiveness. Moreover, 69.5% of respondents recognized the institution's collaboration with international organizations like the African Virtual University as a key strategy. Overall, the study highlighted the fact that proactive strategies such as using modern ICTs, establishing online repositories, leveraging social networks, and fostering institutional partnerships significantly enhanced OER integration. Despite challenges such as inadequate funding, these strategies promote effective blended learning environments in university libraries.

5.2.4 Success Factors for Adopting OER in Blended Learning

In evaluating the success factors influencing the adoption of Open Educational Resources (OER) in blended learning within Nairobi County university libraries, several critical insights emerged from the study. The findings showed that enhanced collaboration among library staff, faculty, and students is crucial, with 30.4% of respondents indicating this factor to a very large extent and 46.4% to a large extent. Increased accessibility to learning materials is another key success factor, as noted by 42% of respondents to a very large extent. Further, robust digital infrastructure in libraries is vital, with 29% of respondents acknowledging its importance to a large extent. Improved methodologies for evaluating learning quality were recognized by 43.5% of respondents to a large extent. Additionally, 49.3% of respondents highlighted the significance of increased training and development opportunities for faculty to a large extent, while 56.5% indicated that providing guidance on copyright issues is essential to a large extent. Furthermore, 46.4% of respondents reported increased institutional support to a very large extent.

The library staff emphasized the importance of a supportive environment for OER initiatives. A notable 43.6% of respondents strongly agreed that they are very positive about creating and sharing OER to support blended learning. Additionally, 52.2% of respondents supported obtaining and adopting OER to support blended learning. Regular training for librarians on OER adoption policies was acknowledged by 65.2% of respondents. Also, technological infrastructure also plays a critical role. A significant 42% of respondents strongly agreed that libraries have ICT infrastructure to support direct instruction.

Furthermore, 43.5% strongly agreed that libraries have ICT infrastructure to support virtual interaction, with a mean score of 4.30 and a standard deviation of 0.713. Additionally, 34.8% strongly agreed that libraries ensure the availability of digital resources. Overall, the study underscores that a multifaceted approach, including strong institutional support, robust digital infrastructure, regular training, and faculty incentives, is essential for the successful adoption of OER in blended learning. However, challenges such as resistance to change among faculty and staff highlight the need for cultural and organizational readiness to foster broader OER adoption and promote effective blended learning practices in university libraries across Nairobi County.

5.2.5 Policies for Supporting OER for Blended Learning

In assessing the policies supporting Open Educational Resources (OER) for blended learning within Nairobi County university libraries, several key findings emerged from the study. A majority of respondents (85.5%) indicated that OER policy integration occurs to a large or very large extent, underscoring the importance of clear institutional policies that mandate the integration of OER into curriculum design and delivery. These

policies align OER adoption with educational goals and ensure consistency across academic programs. Other crucial policies, including funding were highlighted by the respondents, with 52.2% demonstrating that access methods for OER are effective to a large or very large extent, and 36.2% viewing the licensing methods for OER as effective to a large extent. Financial support is essential for sustaining OER initiatives, enabling their development, adaptation, and maintenance, and enhancing accessibility for students and faculty.

Despite these positive aspects, multiple challenges were identified. For example, 11.6% of respondents perceived the integration of OER types and licensing methods to a small extent or not at all. This highlighted gaps in comprehensive copyright and licensing policies, which are seen as barriers to broader OER adoption and dissemination. Addressing these policy gaps is essential to fostering a conducive legal and regulatory environment for OER utilization in university libraries. Overall, effective policy frameworks are pivotal in shaping the landscape for OER adoption. A significant majority (78.2%) agreed that their universities' e-learning and ICT policies create a conducive environment for OER use in blended learning, with a mean score of 4.06 and a standard deviation of 0.873. This strong consensus indicates a solid foundation for promoting innovative blended learning practices across Nairobi County's academic institutions.

5.2.6 Blended Learning at University

This study investigated the integration of Open Educational Resources (OER) in blended learning environments within university libraries in Nairobi County. The findings indicated that lectures remain relevant. A high percentage of respondents (81.1%) agreed that direct instruction through lectures is a valuable component of

blended learning. This suggests that traditional lecture methods hold merit even in blended formats. Also, the majority of respondents (84.1%) agreed that digital platforms and Learning Management Systems (LMS) are effective for delivering course content and assessments. This highlights the successful integration of digital tools to support student learning. Further, over 78% of respondents agreed that online lectures and video tutorials are beneficial additions to course materials. This indicates the value of multimedia resources in enhancing the learning experience. Additionally, a significant portion of respondents (75.4%) agreed that universities effectively blend synchronous live lectures with asynchronous pre-recorded content. This suggests a successful combination of real-time and self-paced learning elements.

Notably, online platforms emerged as strong facilitators of collaboration. A strong majority (89.8%) of respondents agreed that online platforms effectively promote collaborative learning. This highlights the success of online platforms in fostering peer interaction and group activities within the blended learning environment. From the findings, it was also notable that multimedia engagement is high, evidenced by the fact that over 84% of respondents agreed that multimedia resources like simulations and online textbooks significantly improve student engagement and comprehension. This indicates the positive impact of diverse and interactive learning materials. Overall, the findings suggested that blended learning in university libraries in Nairobi County is characterized by the effective use of a combination of traditional lecture methods, digital tools, online resources, and collaborative learning platforms. This integration creates a rich learning environment that caters to diverse student needs and preferences.

5.3 Conclusions

The conclusions of the study are presented in line with the specific research objectives, starting with state of adoption of OER, strategies for incorporation, success factors, and supporting policies, in that order.

5.3.1 State of Adoption of OER in Promoting Blended Learning

The findings regarding the state of adoption of Open Educational Resources (OER) in promoting blended learning underscore a positive but uneven landscape across Nairobi County university libraries. While there has been some level of OER integration into blended learning educational practices, significant disparities exist in awareness, accessibility, and utilization. Notably, limited awareness and insufficient training are some of the barriers hindering widespread OER adoption. Moving forward, enhancing awareness campaigns and providing targeted training programs are crucial to fostering a more inclusive and effective OER ecosystem that supports diverse teaching and learning needs.

5.3.2 Strategies Used to Incorporate OER into Blended Learning Settings

The study identified diverse strategies employed by Nairobi County university libraries to incorporate Open Educational Resources (OER) into blended learning settings. Notably, repository platforms for OER storage and dissemination, facilitating easy access and reuse of educational materials are a critical aspect of OER incorporation in blended learning settings. Additionally, as evidenced by the responses by some of respondents, collaborative partnerships with faculty and external experts to develop and adapt OER for specific courses and disciplines are critical. However, challenges such as technical infrastructure limitations hinder seamless integration and utilization of OER. To optimize these strategies, investing in robust technological infrastructure and

fostering interdisciplinary collaborations are essential for enhancing OER effectiveness in blended learning environments.

5.3.3 Success Factors for Adopting OER in Blended Learning

Success factors identified for adopting Open Educational Resources (OER) in blended learning highlight critical elements contributing to effective implementation and outcomes. Notably, institutional leadership and support are pivotal in driving OER initiatives forward. Clear policies mandating OER integration into curriculum design and delivery are also instrumental in fostering a supportive environment for OER adoption. Moreover, faculty engagement and professional development opportunities are crucial in promoting pedagogical innovation and enhancing OER utilization. Moving forward, nurturing these success factors through continuous advocacy, resource allocation, and capacity-building efforts is essential for sustaining OER initiatives and maximizing their impact on blended learning outcomes.

5.3.4 Policies for Supporting OER for Blended Learning

The study's exploration of policies supporting Open Educational Resources (OER) for blended learning underscores both opportunities and challenges within Nairobi County university libraries. There are institutional policies mandating OER integration, but gaps remain, particularly in comprehensive copyright and licensing frameworks. Furthermore, dedicated funding policies to sustain OER development and maintenance efforts are important. Addressing these policy gaps is critical for creating an enabling environment that promotes equitable access to high-quality educational resources while safeguarding intellectual property rights. Effective policy formulation and implementation are essential for harnessing the full potential of OER in advancing blended learning practices and enhancing educational outcomes across academic institutions.

5.3.5 Blended Learning at University

This study explored the integration of Open Educational Resources (OER) within blended learning environments in university libraries across Nairobi County. While the research focused on OER, the findings revealed broader insights into the overall effectiveness of blended learning in these libraries. Despite the integration of digital tools, lectures continue to be valued by a high percentage of respondents (81.1%). This suggests that traditional lecture methods hold merit and complement online components effectively. Further, it is evident that digital tools are an integral element of the blended learning environment, as evidenced by the fact that a vast majority of respondents (84.1%) agreed that digital platforms and LMS are instrumental in delivering course content and assessments. This confirms the successful integration of technology to support student learning.

Additionally, from the findings, it is evident that multimedia resources have been integrated to enrich the learning experience. Online lectures, video tutorials, and other multimedia resources were viewed favourably by over 78% of participants, which demonstrated the value these resources hold in enriching the learning experience. Also, it is evident that universities have effectively integrated and managed asynchronous and synchronous learning, leveraged online platforms to foster collaboration, and used multimedia resources and online materials to improve students' engagement and comprehension. Blended learning in Nairobi County university libraries is a well-established approach that effectively integrates a variety of elements. Traditional lectures are valued alongside digital tools, online resources, collaborative learning platforms, and multimedia resources. This approach caters to diverse student needs and learning styles, fostering a dynamic and engaging learning environment.

5.4 Recommendations

In this section, based on the findings and the extant literature, recommendations are provided to optimize the integration and incorporation of OER in blended learning for improved learning experiences for students and benefits to faculty and other stakeholders. The recommendations are organized in line with the specific research objectives.

5.4.1 State of Adoption of OER in Promoting Blended Learning

To improve the adoption and integration and incorporation of OER for blended learning, universities, and more specifically, university libraries, under the leadership of librarians and the participation of library staff, and the support of university administrators, should implement measures to enhance awareness campaigns. They should implement targeted awareness programs to educate faculty, students, and administrators about the benefits of Open Educational Resources (OER) in blended learning. Use multiple channels such as workshops, webinars, and newsletters to reach diverse stakeholders. Further, they should provide OER training. They should focus on developing comprehensive training modules for faculty and library staff on OER creation, adaptation, and integration strategies. The university libraries under the leadership of librarians should also, offer continuous professional development opportunities to enhance digital literacy and pedagogical skills related to OER. Finally, they should create a centralized OER repository. This could involve establishing a centralized repository for storing, organizing, and sharing OER across university libraries. The librarians should ensure the repository is user-friendly, accessible, and compliant with open licensing standards to facilitate seamless resource discovery and reuse.

5.4.2 Strategies Used to Incorporate OER into Blended Learning Settings

To enhance the incorporation of OER into blended learning settings, universities should firstly foster interdisciplinary collaboration. Librarians and university administrators should encourage collaboration among faculty, instructional designers, librarians, and technologists to co-create and adapt OER for diverse disciplinary contexts. They should establish cross-departmental working groups to share best practices and resources. Secondly, they should further invest in technological infrastructure. Institutions should allocate resources to upgrade technological infrastructure, including high-speed internet, learning management systems (LMS), and multimedia tools. Ensure compatibility with various OER formats to support interactive and engaging blended learning experiences. Finally, they should promote open pedagogical practices. Institutions of higher learning should encourage faculty to embrace open pedagogical practices that emphasize learner-centered approaches, active engagement, and collaboration. Provide incentives for faculty who redesign courses using OER to enhance student access and engagement.

5.4.3 Success Factors for Adopting OER in Blended Learning

To ensure the successful adoption and incorporation of OER in blended learning settings, universities and their respective libraries, under the leadership of university librarians and library staff should strive for institutional leadership and support. University administrators and management team should foster strong institutional leadership that prioritizes OER adoption and integrates it into strategic initiatives and policies. They should allocate dedicated funding and resources to sustain OER projects and initiatives. Further, administrators and heads of department should also implement ongoing faculty development programs focused on OER integration, pedagogical innovation, and digital literacy. They should offer incentives such as grants,

recognition, and professional development credits for faculty engaged in OER-related activities. Also, they should establish mechanisms for evaluating the impact of OER adoption on teaching effectiveness and student learning outcomes. Finally, the leadership of different operational areas in the universities, including librarians and faculty heads should disseminate successful case studies and best practices to inspire and guide faculty and administrators across the institution in the implementation and incorporation of OER in blended learning environments.

5.4.4 Policies for Supporting OER for Blended Learning

To support the effective, efficient, legal, and ethical use of OER in blended learning, first, universities and the respective libraries should review and improve their policies and the implementation mechanisms. Institutional administrators, librarians, heads of department, and other leaders should formulate and communicate clear policies on copyright, intellectual property rights, and open licensing frameworks for OER. They should also ensure compliance with international standards while promoting fair use and creative commons licenses. Secondly, they should advocate for sustainable funding mechanisms to support the creation, adaptation, maintenance, and continuous improvement of OER. Explore public-private partnerships, endowments, and grants specifically earmarked for OER initiatives. Finally, they should establish a governance structure to monitor and periodically review the implementation of OER policies. They should solicit feedback from stakeholders and adjust as needed to address emerging challenges and opportunities in OER adoption.

5.4.5 Blended Learning at University

Building on the positive findings regarding blended learning in Nairobi County university libraries, there are opportunities for further improvements to enhance the integration of Open Educational Resources (OER). These recommendations target key

stakeholders, including librarians, administrators, and university leadership. Librarians should develop workshops and online tutorials for faculty on identifying and evaluating high-quality OER aligned with their curriculum. They should also collaborate with faculty to adopt OER for the specific needs of their courses and seamlessly integrate them into existing LMS platforms. Finally, librarians should organize workshops and information sessions to raise awareness among faculty about the benefits of OER, including cost savings for students and increased access to learning materials.

Administrators should allocate dedicated funding to support librarian efforts in OER discovery, curation, and adaptation. Explore and implement incentive programs that encourage faculty to adopt and integrate OER into their blended learning courses. They should also invest in upgrading the university's Learning Management Systems (LMS) to ensure smooth integration and accessibility of OER for students. Finally, administrators should provide workshops and resources on copyright and licensing issues related to OER to empower faculty to confidently utilize these resources. The university leadership should develop a strategic vision for OER integration in line with the overall strategic direction of their institutions' strategic direction, to guide the integration and facilitate resources mobilization and utilization for these activities.

5.4.6 Practice and Policy Implications

The findings of this study hold significant implications for practice and policy within Nairobi County universities, and by extension, other universities making similar adjustments. By emphasizing the need for librarian training in OER discovery, curation, and adaptation, this study reinforces the theoretical concept of the librarian as a key player in the OER ecosystem. It aligns with the expanding role of librarians as information specialists, moving beyond traditional information retrieval towards actively supporting faculty in pedagogical innovation. This practical approach

strengthens the theoretical framework of librarian involvement in the scholarship of teaching and learning (SoTL).

Further, the focus on faculty development programs for OER integration in blended learning builds upon existing theories of learner-centred pedagogy and instructional design. By equipping faculty with skills to select, adapt, and effectively utilize OER, the study contributes to the ongoing conversation about technology-mediated learning and its impact on student engagement. Furthermore, it underscores the importance of faculty buy-in and pedagogical expertise in the successful implementation of OER. Further, the findings on collaboration and OER repositories, especially, about shared OER repository specific to Nairobi County strengthens the theoretical foundation of collaborative knowledge creation and resource sharing within a regional context. This approach aligns with the core principles of open education, fostering a more interconnected learning environment where institutions and educators work together to benefit a wider community. The study contributes to the ongoing exploration of collaborative OER development and its potential to address local educational needs.

In terms of policy, the study's findings have implications for OER integration and open access publishing: The call for an OER integration policy and the promotion of open access publishing initiatives directly address theoretical discussions surrounding the tension between intellectual property and educational accessibility. By advocating for clear copyright guidelines and institutional support for open access publishing, the study contributes to the body of knowledge on how to navigate these complexities while promoting open educational practices. Finally, the emphasis on integrating OER with financial aid programs aligns with theoretical discussions surrounding educational equity and the removal of financial barriers to learning. By demonstrating how OER can contribute to student affordability, the study strengthens the theoretical argument

for open education as a key strategy for promoting social justice and equal access to quality education. Therefore, this study goes beyond practical recommendations and describes the theoretical underpinnings of successful OER integration in blended learning environments. By highlighting the roles of librarians, faculty, and collaborative knowledge creation, the research contributes valuable insights that can inform future practice and policy decisions within Nairobi County and beyond. Ultimately, these theoretical considerations pave the way for a more robust and sustainable OER ecosystem that benefits both educators and learners.

5.5 Recommendations for Further Research

Building on the insights gained from this study, further research is recommended to deepen the understanding of OER integration in blended learning environments within Nairobi County university libraries and the associated impacts. Further research should be conducted to assess the impact of OER-based blended learning on student learning outcomes compared to traditional formats. This could involve analyzing exam scores; student self-reported learning gains, or qualitative studies exploring student engagement and satisfaction.

Further research should also explore the cost-effectiveness of OER integration for both students and universities. This would involve examining cost savings for students through reduced textbook expenses and analyzing potential resource requirements for universities, such as librarian training or LMS upgrades. Another area that could be the focus of future research is faculty adoption and motivation. Such research should investigate the factors that influence faculty adoption of OER. This could involve qualitative interviews with faculty members to understand their motivations, challenges, and preferred support structures for integrating OER into blended learning courses. Another area for further research is the role of specific OER, such as

simulations, interactive modules, or online textbooks, are being used and their effectiveness in specific disciplines. This would provide valuable insights into tailoring OER integration to different learning objectives.

Finally, further studies should conduct longitudinal studies to track the long-term impact of OER integration on student learning, career readiness, and overall academic success. This would provide a more comprehensive picture of the benefits associated with OER-based blended learning. By investigating these areas, researchers can contribute valuable knowledge to the ongoing development of effective blended learning models that leverage OER to enhance learning experiences and improve educational equity for students in Nairobi County universities.

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APPENDICES

Appendix I: Consent to participate in the study

Felysta Nyamusi Nyamboga
Kenya Methodist University
P.O. Box 267 – 60200.
MERU-KENYA

Dear respondent,

I am writing to request for consent to participate in my study which will help me to actualize my academic research that investigates on ***The Adoption of Open Educational Resources (OER) in promoting Blended Learning at university libraries in Nairobi County***. The research aims to uncover the determining elements for a successful integration of OER. Hence, provide guidance on developing strategic frameworks to effectively leverage these resources for promoting blended learning in University libraries. To be sure that you are informed about being in this research, the researcher is asking you to read it (or have it read to you). This consent form might contain some words that are unfamiliar to you. Please ask the researcher to explain anything you may not understand.

General Information about Research

Education is the bedrock of progress and development in any society, and the way education is delivered is constantly evolving. The future success of communities and thus nations depend on today's youth and the education they access (Shaturaev, 2021). Blended learning, which combines traditional face-to-face instruction with online components, has emerged as a prominent educational approach. Concurrently, the adoption of OER has revolutionized the availability and accessibility of educational materials. The significance of this study lies in its exploration of the adoption of OER in promoting blended learning within university libraries in Nairobi County, Kenya. For a number of higher education stakeholders, especially in Nairobi County, this study is of utmost significance.

Procedure to be followed

The researcher will identify herself to you after which you will be required to fill a detailed questionnaire through an interview administration. This will be a private and confidential exercise. You will be required to take part in the study only after you have signed the consent form. The specific questions in the questionnaire and interview is organized into sections ranging from section A to F. Section A covers the introduction and biographical information of the sampled respondents. Sections B, C, D, and E, contain questions regarding the independent variables, while section F constitutes questions on the dependent variable. Several questions in the questionnaire are closed-ended, and an open-ended question for each section. All sentiments in the questionnaire are in 5 points Likert scale. This exercise will not take much of your time, approximately 10-30 minutes. The information obtained from this study will inform policies and programs that are responsive to the implementation of Open Education Resources in promoting Blended Learning. There are no risks associated with participation in this study.

Voluntary Participation

Your participation in this research is voluntary and you will not be victimized for not taking part in the study. You are free to discontinue participation at any time with no consequences. You are also free not to answer questions which you are not free with.

Rewards and Benefits

Participation into this study will not attract any monetary or non-monetary rewards whatsoever. However, the key findings of the study will be helpful in creating policies by the private and public university libraries towards adoption of open educational resources in promoting blended learning in Nairobi County. Therefore, your input will go a long way.

Confidentiality

The study will protect information about you and your library staff taking part in this research to the best of our ability. The findings of this study shall be made public in workshops, conferences, and publications; however, your personal details shall remain anonymous and not disclosed to a third party without your express permission.

Concerns

You are free to ask any other question related to the study during your participation. You may contact the researcher. If you have questions or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the university supervisor.

Contact Information

Should you have questions regarding your participation, please contact me on f.nyamusi@gmail.com. You may also contact my research supervisor at paul.maku@kemu.ac.ke

I am kindly asking you to sign the consent form (below) indicating agreement for you to participate in the study. By the University librarian signing this consent form, is also an indicator that one has agreed to make arrangement for the library staff to participate in the study

Participant's statement

I have read and understood the provided information and have had the opportunity to ask questions. I voluntarily agree to take part in this study.

Name of the Participant……...Date…….

Participant's 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 the benefits involved.

Name of the Investigator……Date…….

Investigator's signature …….

Appendix II: Questionnaire

Purpose of the Research: To examine the adoption of Open Educational Resources in supporting blended learning by university libraries in Nairobi County

Instructions

i. *Answer all the questions appropriately.*

ii. *Information you provide will be kept confidentially and private.*

Section A: Background information

1. What is your gender?
    i. Male [ ]
    ii. Female [ ]
2. What is your highest level of education completed?
    i. Secondary [ ]
    ii. Diploma [ ]
    iii. Bachelor's degree [ ]
    iv. Master's degree [ ]
    v. Doctorate [ ]
    vi. Others (specify) _____
3. How long have you worked in this library? Indicate the actual years in numbers.

    _____

SECTION B: State of Open Educational Resources adoption in supporting blended learning at the selected university libraries in Nairobi County

1. To what extent are Open Educational Resources adopted at your institution in supporting blended learning?
   i. Very small extent [ ]
   ii. Small extent [ ]
   iii. Moderate [ ]
   iv. Large extent [ ]
   v. Very large extent [ ]
2. Please indicate the extent to which your library integrates open educational resources with other library collections. Tick (√) appropriately against each statement in the spaces provided using the 5-point Likert scale where; 5=Very Large Extent, 4=Large Extent, 3=Moderate Extent, 2= Small Extent, and 1= Not at all

Integration Methods	**Not at All 1**	**Small Extent 2**	**Moderate Extent 3**	**Large Extent 4**	**Very Large Extent 5**
Electronic books and open textbooks					
Electronic Journals					
Audio Podcasts					
Slides and Class Presentations					
Open Courseware					
Virtual Labs					
Tutorials/ Course Modules					
Video Lectures					
Interactive Games and Simulations					

3. To what extent does the role of library staff influence the integration of open educational resources? Tick (√) appropriately against each statement in the spaces provided using the 5-point Likert scale where; 5=Very Large Extent, 4=Large Extent, 3=Moderate Extent, 2= Small Extent, and 1= Very Small Extent

Roles of Library Staff	**VSE 1**	**SE 2**	**ME 3**	**LE 4**	**VLE 5**
Cataloguing and metadata creation.					
Information retrieval and reference services.					
Managing digital materials.					
Providing user support, instruction and information literacy.					
Archives and special collections curation.					
Providing technology support.					
Providing curriculum support and integration.					

4. The following statements measure the state of Open Educational Resources Adoption in Blended Learning in your university. Kindly rate your agreement for each one. (Tick which applies) SD= 'Strongly Disagree'; D= 'Disagree'; M= 'Moderate Agreement'; A='Agree'; SA='Strongly Agree'

Statement on the State of Open Educational Resources Adoption in Blended Learning in the University Library	**SD 1**	**D 2**	**M 3**	**A 3**	**SA 5**
Library supports the integration of the Open Educational Resources towards direct instruction					
Library facilitates the integration of Open Educational Resources in the virtual platforms					
There is seamless transitions between offline and online components, where learners engage both in-person and virtually, creating a cohesive learning journey					
Technical infrastructure assistance is essential for encouraging open access to knowledge acquisition and advancing creative and interesting training that adheres to the Open Educational Resources tenets.					

Providing training courses on the utilization of Open Educational Resources including advice on licensing and copyright matters					
I am aware of various Open Educational Resources integrated in our Libraries.					
Library users need skills to locate, identify, evaluate and use information to solve different information problem					

5. How has the integration of open educational resources contributed to the enhancement of blended learning within your university library?.....

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SECTION C: Strategies used by university libraries in Nairobi County to successfully incorporate Open Educational Resources into blended learning settings.

1. Please indicate the extent to which the following strategies contribute to the successful integration of open educational resources into blended learning. Tick (√) appropriately against each statement in the spaces provided using the 5-point Likert scale where; 5=Very Large Extent, 4=Large Extent, 3=Moderate Extent, 2= Small Extent, and 1= Very Small Extent

Strategies	**VSE 1**	**SE 2**	**ME 3**	**LE 4**	**VLE 5**
Collaborative strategies					
Linking OER to the institutional repository					
Library provides an Open Educational Resources link in the e –resources					
Search interface in the library catalogue					

Relevant Open Educational Resources in the reading lists					
Integrating OER into curriculum design					

2. The following statements measure strategies used by university libraries in Nairobi County to successfully incorporate Open Educational Resources into blended learning. Kindly rate your agreement for each one. (tick which applies) SD= 'Strongly Disagree'; D= 'Disagree'; M= 'Moderate Agreement'; A='Agree'; SA='Strongly Agree'

Statements on strategies used by university library in incorporating Open Educational Resources into blended learning	**SD 1**	**D 2**	**M 3**	**A 3**	**SA 5**
The library uses the modern Information and communication technologies so as to facilitate better access to local and global Open Educational Resources					
The university has online repository for research development.					
The library has adopted social network-with the advancement of technology such as YouTube, twitter and Facebook to support Blended Learning					
The library has employed institutional repositories that support direct instruction.					
The library has employed institutional repositories and websites that support virtual interaction.					
University library employed institutional repositories and websites that support digital learning					
The library adopted general and global repositories to supporting direct instruction					
The library adopted general and global repositories to supporting Virtual interactions					
The library adopted general and global repositories to supporting digital resources					

The institution collaborates with international organizations like the African Virtual University					
The institution partners with top distance learning institutions in Africa and worldwide					

3. Describe how you align Open Educational Resource strategies with the university curriculum.

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SECTION D: Success factors for adopting Open Educational Resources in blended learning in university libraries in Nairobi County.

1. Please rate the following success factors for adopting Open Educational Resources in blended learning in university Library. Tick (√) appropriately against each statement in the spaces provided using the 5-point Likert scale where; 5=Very Large Extent, 4=Large Extent, 3=Moderate Extent, 2= Small Extent, and 1= Very Small Extent

Success Factors	**VSE 1**	**SE 2**	**ME 3**	**LE 4**	**VLE 5**
Enhanced collaboration among library staff, faculty and students.					
Increased accessibility to learning materials by students.					
Robust library's digital infrastructure.					
Improved methodologies for evaluating the learning quality.					
Increased training and development opportunities for the faculty.					
Providing guidance on copyright issues.					
Increased institutional support					

2. The following statements are measuring the success factors for adopting Open Educational Resources in blended learning in university libraries in Nairobi County. Kindly rate your agreement for each one. (tick which applies) SD= 'Strongly Disagree'; D= 'Disagree'; M= 'Moderate Agreement'; A='Agree'; SA='Strongly Agree'

Statements on success factors for adopting Open Educational Resources in blended learning in University Library	**SD 1**	**D 2**	**M 3**	**A 3**	**SA 5**
I am very positive about creating and sharing Open Educational Resources to support blending learning in my institution					
I am in support of obtaining and adopting Open Educational Resources to support blended learning					
I am happy with increased reputational profile experienced as a result of sharing and collaborative opportunities introduced in the sharing process of Open Educational Resources.					
There are regular trainings for librarians on Open Educational Resources adoption policy in the institution					
The library has ICT infrastructure that support direct instruction					
The library has ICT infrastructure that support virtual interaction					
The library has ICT infrastructure that ensure availability of digital resources					
The librarian are well vast with digital literacy that has enabled Open Educational Resources adoption in support towards direct instructions for students					

3. Explain why Open Educational Resources within blended learning in university library has been successful?

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SECTION E: Open education resource policy adoption in supporting Blended Learning at university libraries.

1. Please indicate the extent to which the policy addresses the issues pertaining to open education resources. Tick (√) appropriately in the spaces provided using the 5-point Likert scale where; 5=Very Large Extent, 4=Large Extent, 3=Moderate Extent, 2= Small Extent, and 1= Very small extent

OER Policy	**VSE 1**	**SE 2**	**ME 3**	**LE 4**	**VLE 5**
Integration of the Open Educational Resources.					
The role of Librarians in integrating Open Educational Resources.					
The type of Open Educational Resources to be integrated in the library.					
The access methods					
Licensing Methods					

2. The following statements measure Open education resource policy adoption in supporting Blended Learning at university libraries. Kindly rate your agreement for each one. (tick which applies) SD= 'Strongly Disagree'; D= 'Disagree'; M= 'Moderate Agreement'; A='Agree'; SA='Strongly Agree'

OER policy Statement	**SD 1**	**D 2**	**M 3**	**A 3**	**SA 5**
The library has an OER policy that boosts university visibility by integrating learning materials.					
The university library has a functional Open Educational Resources Policy.					

The policy in place has been discussed by the library management for implementation					
Our library has an unapproved policy governing available Open Educational Resources.					
Library policy outlines licensing levels for sharing Open Educational Resources.					
Librarians are directly involved in formulation of the policy					
I recognize the value of OER created in my institution, supporting their integration into blended learning.					
University e-learning and ICT policies enable library's conducive environment for OER use in blended learning.					

3. How does the implementation of policy regarding Open Educational Resources (OER) contribute to the progress of blended learning initiatives?

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SECTION F: Blended Learning at University

1. Please indicate the level of agreement with the following statements regarding blended learning at the University. (tick which applies) SD= 'Strongly Disagree'; D= 'Disagree'; M= 'Moderate Agreement'; A='Agree'; SA='Strongly Agree'

Statement	**SD 1**	**D 2**	**M 3**	**A 3**	**SA 5**
Direct instructions through lectures enhance blended learning at the University.					
We use digital platforms and learning management systems for course content and assessments.					

Online lectures and video tutorials supplement course content in blended learning.					
University blends synchronous live lectures and discussions with asynchronous pre-recorded content.					
University promotes collaborative learning through online platforms and peer interactions.					
We use multimedia, simulations, and online textbooks to boost engagement and comprehension.					

2. Explain how the implementation of blended learning has contributed to the provision of educational services at your university?

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Thank you for your time and cooperation.

Appendix III: Interview Guide for University Librarians

Section A: Background information

1. What is your highest level of education completed?
2. How long have you worked in this facility as the University librarian?

Section B: State of the adoption of OER

1. State the measures put by the University library to integrate Open Educational Resources (OER) into its services to support blended learning
2. What initiatives has the library put in place to govern the use and sharing of OER materials?

Section C: OER Strategies

1. What strategies does the library employ to evaluate the quality and relevance of OER materials before recommending them for integration into curriculum design?
2. What methods does the library use to curate and promote relevant OER materials within reading lists to support teaching and learning?

Section D: OER Adoption Policy

1. How does the library promote awareness and advocacy for OER policy among faculty, students, and other stakeholders within the university community?
2. How does the library ensure that the integration of OER materials complies with intellectual property rights?

Section E: OER Success Factors

1. What measures have you taken to increase accessibility to learning materials for students through the integration of OER?

2. How has the collaboration among library staff, faculty, and students contributed to the successful adoption and utilization of OER within the university?

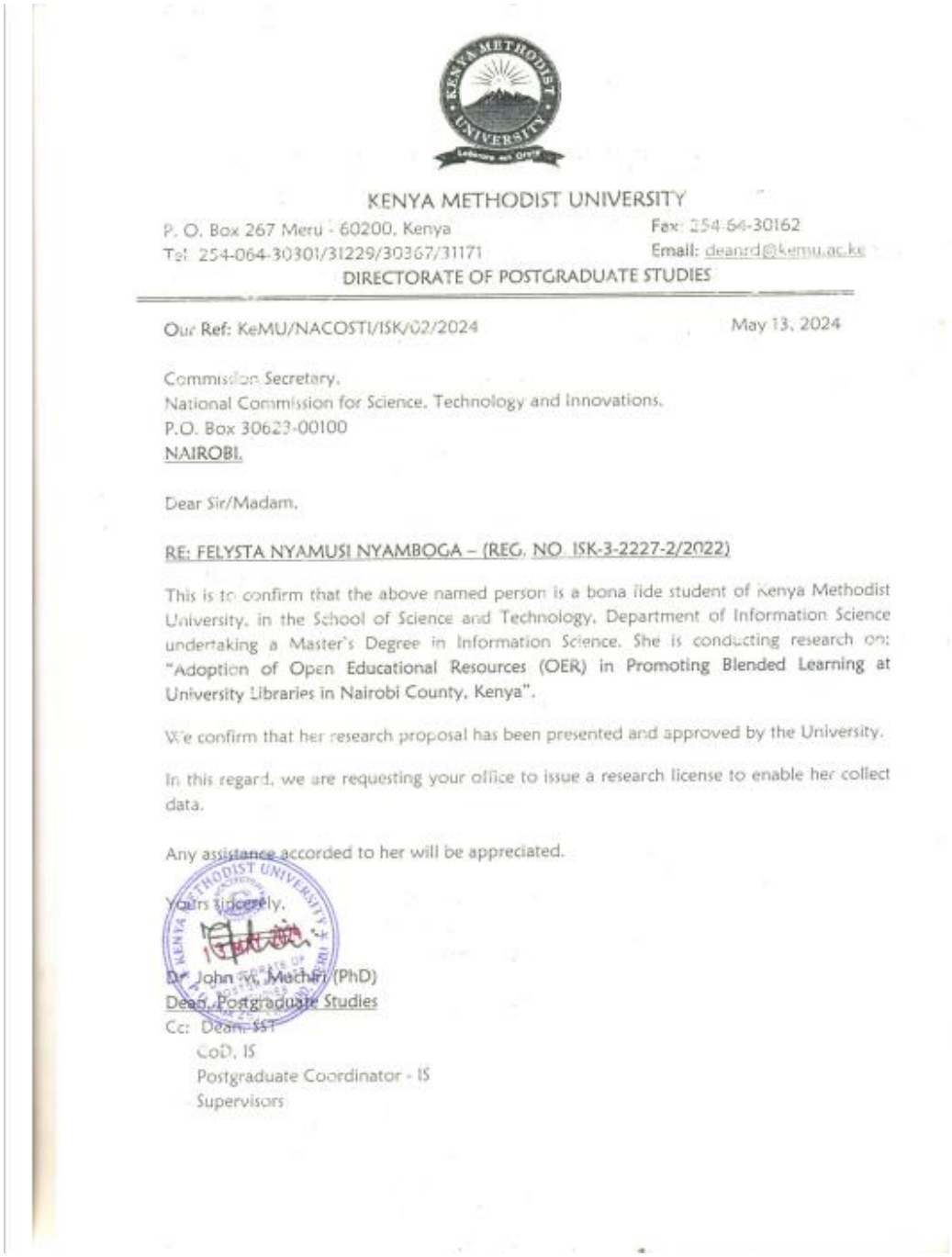
Section F: Blended Learning at the University

1. In which way has the university ensured that digital platforms and online resources are accessible to all students, including those with disabilities, within the blended learning environment?
2. What can you recommend in order to ensure/improve on full utilization of OER in supporting blended learning at Universities in Nairobi County?

Appendix IV: List of Universities in Nairobi County

Public	**Private**
1. University of Nairobi	1. Strathmore University
2. Technical University of Kenya	2. Catholic University of East Africa
3. Multimedia University	3. United States International University
4. Cooperative University	4. Riara University
	5. KCA University
	6. African International University
	7. Pan Africa Christian University
	8. Pioneer International University
	9. Management University of Africa
	10. AMREF International University
	11. Aga Khan University
	12. Kiriri Women's of Science and Technology University

Appendix V: Introduction Letter to NACOSTI



KENYA METHODIST UNIVERSITY

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Fax: 254-64-30162
Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

Our Ref: KeMU/NACOSTI/ISK/02/2024

May 13, 2024

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

Dear Sir/Madam,

RE: FELYSTA NYAMUSI NYAMBOGA – (REG. NO. ISK-3-2227-2/2022)

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: "Adoption of Open Educational Resources (OER) in Promoting Blended Learning at University Libraries in Nairobi County, Kenya".

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 W. Machiri (PhD)
Dean, Postgraduate Studies

Cc: Dean, SST
CoD, IS
Postgraduate Coordinator - IS
Supervisors

Appendix VI: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **320991**

Date of Issue: **23/May/2024**

RESEARCH LICENSE

This is to Certify that Ms.. Felysta Nyamusi Nyamboga 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 Nairobi on the topic: ADOPTION OF OPEN EDUCATIONAL RESOURCES (OER) IN PROMOTING BLENDED LEARNING AT UNIVERSITY LIBRARIES IN NAIROBI COUNTY, KENYA for the period ending : 23/May/2025.

License No: **NACOSTI/P/24/35884**

320991

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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