

## **Success Factors for Adopting Open Educational Resources in Blended Learning in University Libraries in Nairobi County, Kenya**

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### **Abstract**

Lately, there has been a growth in blended learning (BL), augmented by the integration of Open Education Resources (OER) within this educational approach. However, the reasons that promote the use of OER in BL are uncertain in Nairobi County, Kenya. Therefore, the study sought to evaluate the factors that had a significant impact on the successful implementation of OER in blended learning. The diffusion of innovations theory, technology acceptance model, and institutional theory guided the study. A mixed method approach was utilized. The research obtained quantitative data from questionnaires, whereas qualitative perspectives were obtained from interviews. The study focused on four (4) university librarians and eighty-six (86) library staff from four institutions namely; The University of Nairobi, the Technical University of Kenya, Strathmore University, and the Catholic University of Eastern Africa. The census and purposive sampling techniques were employed. Quantitative data analysis was conducted with SPSS, while qualitative data analysis was carried out using NVivo software for content and thematic analysis. Findings indicated that key success factors for adopting educational resources in blended learning in university libraries included collaboration among stakeholders, improved accessibility to learning resources, ongoing training, positive mindset, digital technology, enhanced evaluation methods for learning resources, and institutional backing. Consistent instruction and support on copyright matters were also noted as crucial elements. Enhanced digital literacy, support from faculty and librarians, and ICT infrastructure supported OER integration. Effective OER adoption requires strong institutional leadership, dedicated resources, and continuous faculty development. Institutions need to boost funding and provide more incentives for faculty involvement in OER initiatives, while also conducting additional research to assess the effects of OER on teaching and student results.

**Keywords:** *Blended Learning (BL), Open Educational Resources (OER), University Libraries, Nairobi County*

## 1.0 Introduction

Globally, universities are facing increasing demand for Blended Learning (BL). Technological advancements and globalization facilitated by the internet have driven these changes (Lane et al., 2021). BL combines face-to-face teaching with online learning components, offering students the benefits of the strengths of both modalities (Rasheed et al., 2020; Vallée et al., 2020). BL provides an efficient way to enhance learning experience by integrating traditional classroom instruction with technology, which offers a dynamic educational setting that caters for modern students' diverse needs (Perris & Mohee, 2020). Despite its benefits, there are challenges associated with its adoption, requiring a deeper exploration of its models, implementation strategies, and success factors (Rasheed et al., 2020). Accordingly, universities can tailor their teaching methods to suit specific requirements, creating an interactive and dynamic learning atmosphere that enhances digital literacy and academic achievements (Hrastinski, 2019). Private and public universities worldwide are increasingly adopting BL. However, there are significant challenges in its implementation, which has necessitated the use of tailored methods to enhance learning experiences and digital literacy.

Additionally, the introduction of Open Educational Resources (OER) has transformed academic and pedagogical practices. OER include different materials that are freely or inexpensively available, supporting learning, teaching, and research; thereby, facilitating personalized learning (Crompton et al., 2020; Vallée et al., 2020) fostering open access and a culture of collaboration (Reimers et al., 2020). They remove financial and geographical barriers, making high quality content accessible to more people (Moody, 2020). OER promotes diversity in education by allowing the creation of culturally sensitive

content that meets varied student needs (Reimers et al., 2020; DeRosa & Jhangiani, 2023). They are well-suited to blended learning, providing resources that support education beyond traditional settings and encouraging lifelong learning (Bordoloi et al., 2020). Moreover, OER fosters a sense of community among educational institutions and educators by promoting resource sharing and adaptation, leading to shared knowledge and innovation (Hrastinski, 2019). Therefore, OER can significantly transform traditional education by offering free or low-cost, customizable materials that facilitate personalized learning, promote a culture of sharing, eliminate financial barriers, and enhance BL environments by providing diverse, high-quality resources accessible to all learners.

University libraries are crucial in supporting OER through their provision, upkeep, and distribution of these materials. Libraries support the development, use, and dissemination of OER to aid in education, research, and learning (Muthanga et al., 2023). They serve as catalysts for enhancing faculty development through providing training and activities to boost understanding and capability in utilizing OER for instructional design (Kolesnykova & Matveyeva, 2021). Libraries globally have adopted OER in different ways, like MIT's Open Courseware project and University of California's Digital Open-Source Library (Thompson & Muir, 2020; Zhu & Kadirova, 2022). Public funding, partnerships between institutions, and grassroots efforts have contributed to the expansion of OER programs, causing substantial changes to the worldwide educational environment (Hylén, 2020). Clearly, successful implementation of OER depends on university libraries.

In Africa, the African Virtual University and the Continental Education Strategy for Africa highlight the importance of OER in enhancing teaching resources and promoting education accessibility.

Attempts to encourage OER in Kenya have been continuous, yet the uptake is still minimal, highlighting the necessity for additional measures (Macharia, 2022; Tlili et al., 2022). The Commission for University Education (CUE) in Kenya emphasizes the significance of fair resource access and maximizing the use of OER. Nevertheless, university libraries in Nairobi County continue to show a clear lack of comprehension when it comes to integrating OER in blended learning. It is important to address this problem as it affects the quality and availability of educational materials (Otike & Barat, 2021). It is crucial to comprehend the methods employed by university libraries in Nairobi County to incorporate OER into blended learning. Accordingly, this study investigated the success factors for adopting OER in blended learning in university libraries in Nairobi County, Kenya. The primary objective was to evaluate the success factors for adopting OER in blended learning in university libraries in Nairobi County, Kenya. Based on this objective, the research question that guided the study was: What are the success factors for adopting OER in blended learning within university libraries in Nairobi County?

### ***Statement of the Problem***

Kenyan university libraries must ensure access to learning materials that align with CUE guidelines (Perris & Mohee, 2020). Despite the advantages of OER, including cost efficiency and adaptability (Admiraal, 2022), their adoption in Nairobi County's university libraries is slow, hindering support for teaching and blended learning (Kuria, 2022). The adoption of OER for blended learning is still in its early stages. Comprehensive strategies are needed to address gaps in OER adoption, such as content development, accessibility, usage, and sustainability (Tlili et al., 2022). Libraries play a pivotal role in fostering use of OER in BL (Baas et al., 2023). Research highlights the need to bridge this gap and

provide a comprehensive perspective on OER integration to enhance access to high-quality educational resources and innovative teaching methods (Nzioka, 2021). Understanding strategies for OER implementation in blended learning will help address current gaps in literature and scaling up integration.



*“The paper reports that for successful integration of OER in blended learning, collaboration among stakeholders, access to learning materials, and improved infrastructure are critical”*

### ***Literature Review***

The diffusion of innovations (DOI), technology acceptance model (TAM), and institutional theories underpinned this study. The DOI theory describes how new ideas and innovations are adopted within a social framework, where individuals progress through five stages: knowledge, persuasion, decision, implementation, and confirmation, at varying paces (Pinho et al., 2021). The TAM emphasizes perceived ease of use and perceived usefulness as critical factors influencing technology adoption, including OER (Utami, 2021). TAM also considers external factors like social influence and facilitating conditions that shape adoption patterns within university libraries (Sánchez-Gómez et al., 2020). Lastly, institutional theory, explains how external and internal pressures within universities, such as institutional policies, norms, and leadership priorities, drive the adoption of OER and blended learning practices, influencing educational resource accessibility and the learning experience (Bokolo et al., 2020). These theories

formed the basis for interpreting the findings.

Extant studies have identified different factors that foster the integration of OER. Institutional support is essential, encompassing resource allocation, training, and policy development to endorse OER usage (Ngamau, 2013). Faculty and librarian attitudes significantly impact the acceptance and use of OER, influenced by satisfaction from sharing and positive feedback (Shahzad & Khan, 2023). Awareness and understanding of OER among educators and administrators are vital, with low awareness leading to slow adoption rates (Hassan, 2020). ICT infrastructure and support systems are necessary to facilitate effective OER integration and blended learning (Ngamau, 2013). Cooperation among stakeholders ensures the identification and development of high-quality OER materials, enhancing teaching and learning experiences (Dakduk et al., 2018). Finally, addressing concerns about OER quality and ensuring the availability of up-to-date resources are crucial for sustained adoption and utilization (Admiraal, 2022). The implication of these findings is that the successful integration of OER in university libraries requires a multifaceted approach that includes robust institutional support, positive faculty and librarian attitudes, increased awareness and understanding of OER, strong ICT infrastructure, stakeholder cooperation, and stringent quality assurance measures.

## 2.0 Materials and Methods

The study employed a mixed method approach with a descriptive cross-sectional survey design, combining quantitative and qualitative methods. The target population included ninety (90) respondents from the University of Nairobi, the Technical University of Kenya, Strathmore University, and the Catholic University of Eastern Africa (CUEA) main campus libraries. Purposive sampling was used to select the universities based on their

location and rankings. A census method was employed for the four (4) sampled university librarians due to the manageable size of the population, while eighty-six (86) library staff were sampled for the quantitative study.

Data was collected through semi-structured questionnaires and interviews. The data collection instruments were pre-tested before administration to assess face and content validity, while reliability was assessed using Cronbach's Alpha ( $\alpha > 0.7$ ). A Cronbach Alpha ( $\alpha$ ) value of 0.839 was determined, implying the data collection instrument was reliable. This finding aligns with observations made by Taber (2018) that, a Cronbach's alpha of  $\geq 0.7$  shows construct reliability or internal consistency. Informed consent was obtained before administering the questionnaires and conducting the interviews using the interview guide. The quantitative data was analyzed using SPSS version 25. Descriptive statistics (frequencies, percentages, mean, standard deviation) were employed. Results were presented in tables and charts. The qualitative data was analyzed using NVivo software to identify patterns and themes, which were presented using word clouds and verbatim quotes.

## 3.0 Results and Discussions

The research achieved an acceptable response rate of 80.2% for surveys and 75% for interviews, consistent with Babbie's (2020) claim that a response rate of  $\geq 60\%$  is considered adequate for research. Forty-one (59.4%) of the survey's participants were females and 28 (40.6%) were males. These findings are consistent with prior research by Wandahi and Njoroge (2021) suggesting increased diversity in university library settings in Kenya. The majority of library staff surveyed had completed a Bachelor's degree; 40 individuals (57.9%) held both bachelor's and master's degrees. Furthermore, 17 (24.6%) held diplomas while 2 individuals (2.9%) possessed certificates.

The librarians had a minimum of a master's degree; 2(66.7%) possessed a doctorate degree and 1(33.3%) had a master's degree. These findings are consistent with Nakitare et al. (2020) and Olaka and Adkins (2012) which revealed that library staff possessed advanced credentials and pursued continuous learning. Most of the participants were skilled; 32 had 6-10 years of experience, and 20 had 11-15 years of experience. Librarians who were interviewed had different levels of experience, with some having worked for 2 years and others for up to 14 years, which aligns with Gitau's (2016) discovery that more than half had 1-5 years of experience, while approximately half had 6-10 years or over 10 years of experience. The respondents' thorough knowledge of library operations is shown in the diverse range of

service durations, guaranteeing trustworthy and high-quality responses.

### ***Results on success factors for adoption of OER in blended learning***

A structured question was presented to the participants, focusing on collaboration, digital infrastructure, improved accessibility of materials, methodologies for assessing learning materials quality, training and development, institutional support, and guidance on copyright issues. The participants were asked to what extent the factors influenced the adoption of OER blended learning. 1, 2, 3, 4, and 5 represented Not at All, Small Extent, Moderate Extent, Large Extent, and Very Large Extent respectively. The findings are presented in Table 1.

**Table 1**

*Success Factors for Adopting Open Educational Resources in Blended Learning*

Success factors	1	2	3	4	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%)	18 (25.7%)	32 (46.4%)	3.83	1.028

The findings in Table 1 show that a majority of respondents indicated enhanced collaboration among library staff, faculty, and students to a very large or large extent 53(76.8%) (Mean=4.01; Std.Dev=0.883), and increased accessibility to learning materials by students to a very large extent 29(42%) (Mean=3.93; Std.Dev=1.252). Robust library digital infrastructure was noted by 20(29%) to a large extent (Mean=3.83; Std.Dev=1.084), and improved evaluation methodologies by 30(43.5%) to a large extent (Mean=3.58; Std.Dev=0.946). Increased training and development opportunities for faculty were indicated by 34(49.3%) (Mean=3.67; Std.Dev=1.120), and 39(56.5%) reported significant guidance on copyright issues (Mean=3.68; Std.Dev=0.899). Additionally, 32(46.4%) of respondents noted increased institutional support to a very large extent (Mean=3.83; Std.Dev=1.028). The means and standard deviations show a high level of consistency in the respondents' responses. The findings

showed some level of agreement on the impact of different factors for successful adoption of OER in blended learning. Collaboration, digital infrastructure, institutional support, training, and the benefits associated with OER, such as increased accessibility of materials for learners, are factors that significantly contribute to the successful integration of OER in blended learning.

To further assess the factors associated with the successful adoption and integration of OER in blended learning, the participants, in the structured part of the questionnaire, were asked to indicate the extent to which they agreed or disagreed with the provided statements. The statements assessed attitude towards OER for blended learning in different ways, technology integration, and librarian's support with 1, 2, 3, 4, and 5 representing strongly disagree, disagree, moderate, agree, and strongly agree, respectively. These findings are summarized in Table 2.

**Table 2**

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

	1	2	3	4	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	0 (0%)	1 (1.4%)	11 (15.9%)	35 (50.7%)	22 (31.7%)	4.13	0.726

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	0 (0%)	1 (1.4%)	6 (8.7%)	45 (65.2%)	17 (24.6%)	4.13	0.616
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
	1	2	3	4	5	Mean	Std. Dev
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 Open Educational Resources 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 in Table 2 show that 30(43.6%) of respondents strongly agreed (Mean=4.32; Std.Dev=0.675) they are very positive about creating and sharing OER for blended learning. Additionally, 57 (82.6%) agreed (Mean=4.13; Std.Dev=0.684) they are satisfied with obtaining and adopting OER when others use them. Further, 45(65.2%) agreed there are regular trainings on OER adoption (Mean=4.13; Std.Dev=0.616), and 30(43.5%) strongly agreed that libraries have ICT infrastructure

supporting virtual interaction (Mean=4.30; Std.Dev=0.713). The findings indicate strong positivity and openness towards OER integration, with benefits including enhanced digital literacy and ICT infrastructure support.

In the semi-structured questionnaires, the library staff were asked to discuss the success factors for OER integration in blended learning and describe the factors that have contributed to the successful integration of OER. A content and thematic

analysis of the qualitative data from the responses by the library staff and librarians agreed with the quantitative data. Figure 1

summarizes the recurring themes by capturing the frequency of different words and phrases.

**Figure 1**

*Success factors for the adoption of OER in blended learning*



The recurring themes were adduced from frequently recurring words, such as accessibility (7), collaboration (4), technology (6), training (5), affordability (4), and flexibility (4), which showed the respondents viewed facilitating factors and benefits as key factors for the integration of OER in blended learning. Participants highlighted numerous benefits of OER for blended learning as factors for success, with Library Staff 4 noting, *"The integration of the OER have come in handy since student can save from purchasing very expensive materials,"* and Library Staff 36 adding, *"The users are able to access and retrieve the resources required fast and easily from whenever they are within the library."* The importance of collaboration was emphasized, as University Librarian 1 stated, *"Sometimes users find good OER and recommend to the library. If the OER is good, we circulate it for use by all other users,"* and University Librarian 3 mentioned that collaboration had *"increased awareness and use, enhanced user satisfaction, and positive*

*attitudes towards resource adequacy."* The role of technology adoption was also underscored, aligning with other studies. University Librarian 3 further emphasized, *"Establishing collaboration with users" and seeking support from various stakeholders."*

Training was highlighted as a facilitator, with University Librarian 2 noting the importance of *"regular trainings for staff and other users,"* and University Librarian 3 stressing *"training on digital literacy, access to digital repository and the entire library website."* These results align with existing literature, which emphasizes the importance of librarians' positive attitudes, perceived benefits, awareness, and institutional support as critical drivers for integrating OER in blended learning (Dakduk et al., 2018; Hassan, 2020; Shahzad & Khan, 2023). As such, the findings from this study, consistent with extant literature, demonstrated the importance of collaboration, digital infrastructure, training, and institutional



support in the successful integration of OER in blended learning.

#### 4.0 Conclusions

Several key factors are critical for the successful integration of OER in blended learning. Enhanced collaboration among library staff, faculty, and students was a crucial factor, along with increased accessibility to learning materials. Robust digital infrastructure in libraries, improved methodologies for evaluating learning quality, and increased training opportunities for faculty were also significant. Additionally, the importance of guidance on copyright issues and substantial institutional support were emphasized. Library staff underscored the need for a supportive environment for OER initiatives, noting positivity about creating and sharing OER, the critical role of technological infrastructure, and the necessity of regular training for librarians. A multifaceted approach, including strong institutional support, robust digital infrastructure, regular training, and faculty incentives, are essential for successful adoption of OER in blended learning.

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#### 5.0 Recommendations

To ensure successful adoption and incorporation of OER in blended learning settings, universities and libraries should prioritize strong institutional leadership, allocate dedicated funding and resources, and implement ongoing faculty development programs focused on OER integration, pedagogical innovation, and digital literacy. University administrators should offer incentives for faculty engagement in OER activities and establish mechanisms to evaluate the impact of OER adoption on teaching and student outcomes. Sharing successful case studies and best practices is also essential. Further research is recommended to assess the impact of OER-based blended learning on student outcomes, explore the cost-effectiveness of OER integration, investigate faculty adoption and motivation, evaluate the effectiveness of specific OER in various disciplines, and conduct longitudinal studies to track the long-term benefits of OER integration on student success. These research efforts will provide valuable insights to enhance blended learning models and educational equity in Nairobi County universities.

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