



Challenges To Effective Intergration Of E-Learning In Kenyan Universities

A SCOPING REVIEW

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Abstract: E-learning also known as online teaching and learning continues to shape the education landscape globally. Yet most Kenyan universities continue to face significant challenges in adopting and sustaining the approach. This scoping review analysed existing literature to establish challenge to effective intergration of online learning in Kenya's higher education institutions. Science Direct, JSTOR, PubMed, Academia. Edu and Research Gate databases were used to search for articles using identified search terms. These data bases were chosen for their extensive coverage of research articles. Articles that were published between the years 2015–2025 were considered for review. English, open-access, and free full-text articles were reviewed. The search was done in January 2026. The common challenges identified include inadequate technological infrastructure, limited internet connectivity, high costs of data, and insufficient access to digital devices among students and faculty. Pedagogical barriers such as limited digital literacy, lack of training for faculty, and difficulties in adapting traditional curricula to online formats further constrained implementation. Institutional and policy-related issues, including inconsistent government support, weak regulatory frameworks, and financial constraints, exacerbated these difficulties. The review highlights the inequalities, which hinder equitable participation in online education. Based on the findings of the study, it was recommended that more investment is required in technological infrastructure and capacity-building initiatives for faculty and students to enhance online learning in higher education institutions.

Key Words: Challenges, online learning, e-learning, universities, Kenya

I. INTRODUCTION

COVID 19 pandemic has had substantial impact on the educational landscape across the world. As a result, Universities have been forced to shift from the traditional face-to face mode of instruction to e-learning (Ghosh et.al.2022; Devaney, 2020). Even prior to COVID 19, e-learning had become a common phenomenon in the institutions of higher learning. In the US online learning has increased substantially over the past decade and this is expected to continue (Allen & Seaman, 2016).

In the contemporary educational landscape, e-learning also known as online learning or remote learning is the process of acquiring knowledge and information through digital tools and resources (Hermawan, 2021; Mokhtar et al., 2023, Bossman and Agyei, 2022). It also entails using internet to acquire educational resources, interact with learners and conduct assessments (Cubillas et al., 2023).

E-learning has become an important tool in widening access to education, promoting lifelong education and providing personalised learning experience (Bilquish, 2024). In many countries across the world, e-learning has helped bridge educational gaps and promote access to quality education in low resourced contexts. The rapid growth in internet and technological advancements have facilitated the growth of online learning.

The intergration e-learning in Kenya has been an ongoing process with varying successes and challenges (Adhola & Okungu, 2022; Simiyu & Akach, 2021). Early attempts to integrate technology into the education system began in the post-independence period with attempts to use radio to broadcast educational content (Sifuna, 1990 cited in Ndingui, et.al. 2025). In the recent past, online learning in Kenya has majorly been driven by three factors; the COVID-19 pandemic that made face to face learning not feasible, technological advancements and the rise in demand. This shift is particularly evident in higher education, where universities have embraced online learning as a measure to address teacher shortage and also promote access to education (Ndiku & Kaluyu, 2020). Even though the intergration of online learning has presented significant opportunities to advance higher education, universities continue face various challenges in ensuring effective intergration.

1.1 Statement of the problem

Online learning continues to transform the higher education landscape globally, offering flexibility, accessibility, and opportunities for innovation in teaching and learning. In Kenya, the importance of online learning has been underscored by factors such as the massification of university education and disruptions caused by events like the COVID-19 pandemic. Despite its potential to enhance access to higher education, online learning has not been fully adopted by many universities in Kenya. have not fully embraced online learning as a mainstream mode of instruction. The limited adoption of online learning raises critical questions about the barriers to its effective intergration. While global literature highlights various challenges such as inadequate infrastructure and financial constraints, there is insufficient local knowledge about the specific challenges faced by Kenyan universities. Without a clear understanding of these obstacles, efforts to design policies and implement sustainable online learning strategies risk being ineffective or misaligned with institutional realities.

As a result, students may be denied equitable access to quality education, institutions may struggle to remain competitive in a rapidly digitizing academic landscape, and national goals for expanding higher education may be undermined. Addressing this problem requires systematic investigation into the barriers hindering adoption, so that universities, policymakers, and stakeholders can develop informed strategies to strengthen online learning in universities in Kenya.

1.2 The objective of the study

The study sought to establish the challenges to the effective intergration of online teaching and learning in Kenyan Universities.

II. METHODOLOGY

The study was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (Page, et.al. 2020).

2.1 Search strategy and data bases used

JSTOR, Science Direct and PubMed databases were used to search for articles using identified search terms. The three data bases were selected for their extensive coverage of research articles. The articles searched were between the years 2019–2025, this is because online learning became popular during the COVID-19 pandemic which started in 2019. English, open-access, and free full-text articles were selected for review, this was to ensure that data analysed are publicly available to ascertain transparency and reproducibility of the review. The search was carried out in January 2026. The search strategy terms used are shown in Table 1.

Table 1.

Search terms and data bases used

Data bases used	Search terms
JSTOR, Science Direct, PubMed, Research Gate and Academia.edu	“challenges” OR barriers OR Obstacles AND “online teaching” OR “e-learning” OR “remote learning” AND “Universities in Kenya, AND OR East Africa universities OR “Higher Education Institutions”

2.2 Inclusion and exclusion criteria

Studies included for review were studies conducted on challenges in both public and private universities in Kenya. Only articles in English language that were published between 2015 and 2025 which assessed students and faculty experiences were included. Articles excluded were those not written in English language, and those published before 2015. In addition, studies that did not follow the declaration of Helsinki on research ethics and without clear evidence of ethical consideration and approval were excluded

2.3 Search outcomes

A total of fifty-six (56) articles were obtained from the databases searched. Out of the 56 obtained articles, eight (8) were found to have been duplicated. All duplicated articles were therefore eliminated from the review. After the elimination of duplicates, titles, and abstracts were used to evaluate the remaining forty-eight (48) articles. These articles were screened based on the inclusion criteria. A total of ten (10) studies were excluded after reading the titles and abstracts. Complete texts of thirty-eight (38) articles were carefully read and sixteen (16) were found to be irrelevant to the study. Finally, a total of twenty-two (22) articles were used for the review.

III. RESULTS AND DISCUSSIONS

Data was collected and relevant information was analysed and categorised according to the author, year of the study and challenges cited.

3.1 Distribution of articles reviewed according to year of publication

To provide context for the scope of the study, articles reviewed were classified according to the year of publication This helped to highlight trends the field. Findings are presented in Figure 1.

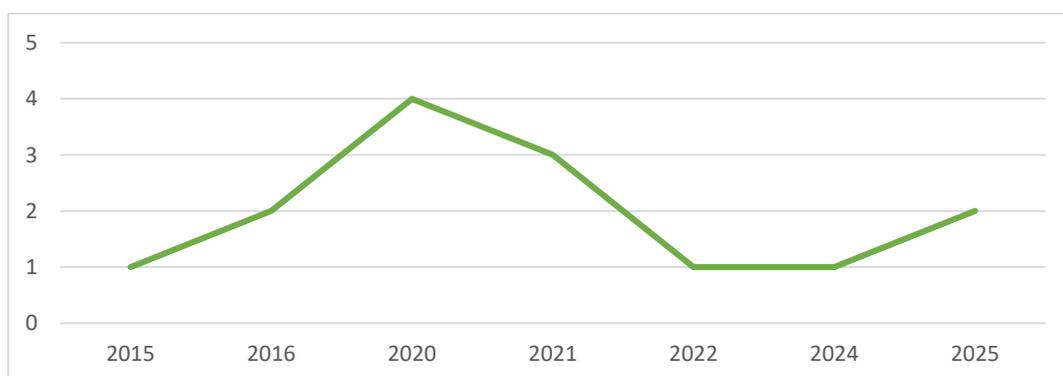


Figure1. Distribution of studies by year of publication

The findings presented in Figure 1 indicate that the number of studies focusing on challenges facing online teaching and learning steadily increased between 2015 and 2020. The highest number of studies in the field were recorded in 2020. This is not surprising because this is the time when the field gained momentum due to COVID-19. During this time, most universities were forced to shift to e-learning platforms. Figure 1 also shows that there was a decline in the number of studies after 2020 to around 2022. This decline or stagnation probably suggest a shift in research focus or saturation. After 2022, the findings show a renewed research focus in the field which could be interpreted to reveal potential gaps that needed to be addressed to ensure a more comprehensive understanding of the topic.

3.2 Challenges

The findings of the study were analysed and categorized according to the citations in identified studies. The findings are summarised in Figure. 2

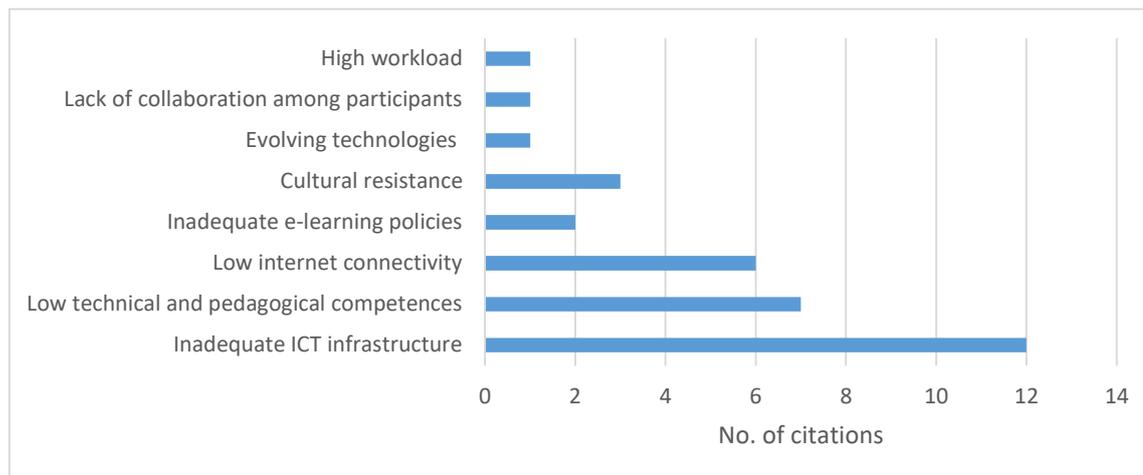


Figure 2. Summary of challenges hampering adoption of e-learning in Kenyan universities

The findings presented in Figure 2 reveal that the major challenge facing the adoption of online teaching and learning in Kenyan universities was inadequate ICT infrastructure followed by low technical and pedagogical competences among faculty. Low internet connectivity and cultural resistance were ranked third and fourth respectively.

3.1 Inadequate Information and Communication Technology (ICT) infrastructure

Information and Communication Technology (ICT) infrastructure makes up an important component for effective online learning. It facilitates access to educational resources and support collaboration among e-learning participants. Lugonzo (2020) argued that inadequate ICT infrastructure undermines the quality of online learning experience. Inadequacy in ICT infrastructure in Kenyan universities has been documented in several studies (Njihia, et.al. 2020; Zeleza & Okanda, 2020; Riany, et.al. 2025; Kibuku et al., 2020; Wafula & Mamati, 2021; Owidi, et.al. 2023, Tarus et al., 2015; Woldegiorgis, 2025).

According to Zeleza and Okanda (2020) higher education institutions (HEIs) in East Africa struggle with inadequate digital infrastructure. This has effectively hindered the full integration of online learning. Shisakha et.al. (2024) and Kibuku et al. (2020) confirmed these findings. Wafula and Mamati (2021) emphasized that limitations in computing devices particularly in processing speed, memory, and storage further constrained online education. Other studies have shown that even though most universities in Kenya had adopted blended learning, ICT infrastructure was still a major challenge (Matere & Oranga, 2025; Mbuguah, et.al. 2022; Makokha & Mutisya, 2016; Etakwa & Mmbwanga, 2024). The study recommended the need for the institutions to devise strategies to improve ICT infrastructure so as to enhance the quality of learning and reduce digital exclusion. Collectively, these studies underscore the urgent need for investment in ICT infrastructure to enable sustainable and equitable online learning in Kenyan higher education.

3.2 Low technical and pedagogical competencies

Jamil et.al. (2024) highlights the critical role of tutor competence in overcoming hurdles associated with online education. Tutor technical competence not only enhances clarity and accuracy but also makes learning more engaging. In addition, pedagogical competence, equips tutors with the necessary skills to deliver high quality online education (Susanto, et.al., 2025; Ali, et.al. 2024). Liu et.al. (2022) found a positive correlation between teacher competence in online teaching and perceived quality of learning outcomes.

Low technical and pedagogical competence among faculty is reported several studies (Matere & Oranga, 2025; Kibuku, et.al. 2020; Ngaruya, et.al. 2021; Riany, et.al. 2025; Gathui, et.al. 2024; Njihia, et.al. 2020;). Ngaruya, et.al (2021) particularly reported how low tutor competence in online pedagogy negatively influenced students' engagement resulting to low quality of learning outcomes and student retention. A study by Makokha & Mutisya (2016) found that tutors had low competence in preparing interactive content to be uploaded in the Learning Management System (LMS). Instead most of the content being uploaded were mere lecture notes. Riany et.al. (2025) on the other hand highlighted the limited digital literacy among staff and emphasized the need to prioritize investment in faculty training to build capacity in digital literacy and pedagogical competence.

3.3 Low internet connectivity and power supply

Access to reliable internet is critical to effective e-learning. Internet allows learners and lecturers to access learning material and also interact effectively (Prajveen, et.al. 2023; Crawford,2021). Internet-enabled platforms allow for video conferencing, virtual classrooms, and collaborative projects, making learning more engaging and interactive compared to face to face teaching and learning. Without reliable internet connectivity, accessing online resources is impossible and time consuming. Furthermore, slow internet reduces students' ability to engage and delaying completion of tasks (Akmad and Abatayo, 2024; Perez, 2023). Low internet connectivity as a challenge hampering online learning in Kenyan universities has been highlighted in several studies (Mutisya & Makokha, 2016; Wafula & Mamati, 2021; Kibuku et al. 2020; Riany et al. 2025; Omwenga, 2021; Njihia, et.al. 2020;)

3.4 Inadequate e-learning policies

Another challenges facing adoption of e-learning at universities in Kenya was the lack of adequate policies. Framework plays a crucial role in the implementation of e-learning. The presence or absence of such policies therefore determine whether e-learning programmes will succeed or not. In the Kenyan context, several policy interventions have been undertaken to streamline online education. Some of the policies include; The Sessional Paper No. 1 of 2005, which suggested the creation of a National Open University (established in 2024), The National ICT Policy of 2006 and the National ICT Policy of 2016 which saw the inclusion of an elaborate section on e-Learning policy strategies. However, even with this government policy interventions, studies have reported a lack of clear and operational policy to guide intergration of e-learning in Kenyan universities. Nyerere (2016) in his study reported that even though majority of the universities had e-learning policies, operationalization of such policies remained a challenge. Tarus, et.al.(2015) and Kitaria et.al. (2024) also reported that absence of operational e-learning policies was a key impediment to the effective deployment of e-learning in some of the Kenyan state sponsored universities.

3.5 Cultural resistance to integration on e-learning

Negative attitude and resistance looms large as a significant impediment to the widespread adoption of e-learning. Several studies reported that most university staff and students Kenya were sceptical with many perceiving online learning as inferior to traditional classroom methods (Matere & Oranga, 2025; Riany et al. 2025; Kibuku et al. 2020). The cultural resistance not only slowed adoption of innovative teaching practices but also perpetuated reliance on outdated instructional approaches and undermined the quality learning outcomes. The digital divide among the older and young members of staff perpetuated inequality in most universities. As a result, older academics struggle to adopt online learning and participate fully in e-learning initiatives (Owino, 2025).

3.6 Evolving digital technologies

Intergration of digital technologies into educational landscape continue to reshape the traditional learning models, creating a more dynamic and interactive learning environment. (Zhu et al., 2022; Kumbo et.al. 2023; Hemajothi and Kumar Jain, 2022) Yet, digital technologies themselves continue to evolve rapidly over time. In the fast-paced digital era, new tools, platforms, and innovations emerge almost daily, reshaping industries

and redefining how people work and live. Although educational technologies are increasingly being recognized as catalysts for e-learning, their effective adoption have remained constrained by systemic barriers. Only one study had reported that digital transformation was among the challenges affecting adoption of online learning in Kenya (Kibuku et.al., 2020)

3.7 Lack of collaboration among e-learning participants

Kibuku, Ochieng, and Wausi (2020) investigated digital learning difficulties faced by Universities in Kenya through empirical review. They found a lack of collaboration among the eLearning participants as a challenge militating against the effectiveness of e-teaching and learning.

3.8 High work load

Mutisya and Makokha (2016) found that faculty rank high workloads (the result of many students registering for online courses) as the main reason why they are not embracing e-learning.

3.9 Other challenges

Other challenges identified included high costs of data and data privacy concerns (Matere & Oranga, 2025).

IV. CONCLUSION

Based on the findings of the study, it was concluded that adoption of e-learning in Kenyan universities was constrained by multiple challenges, with inadequate ICT infrastructure standing out as the most critical barrier. This was compounding by low level of technical and pedagogical competence among faculty. Additional challenges included low internet connectivity and cultural resistance by both staff and students. These challenges probably limited access to and the quality of online teaching and learning.

V. RECOMMENDATION

Based on the foregoing conclusion, the study recommended that Kenyan universities should take deliberate action to enhance ICT infrastructure and build staff pedagogical and technical competences so as to ensure sustainable adoption of e-learning. It was further recommended that studies be conducted to establish the reason for the persistent challenges in the intergration of e-learning in Kenyan universities.

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