
Digital Library Access for Students with Disabilities: Perceptions from Kenyan Public Universities

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ARTICLE INFO

Article history:

Online First 22 October 2025

Keywords:

Accessibility,
Digital Inclusion,
Kenya,
Library Resources,
Students with Disabilities

ABSTRACT

This study explored the perceptions of students with disabilities (SWDs) regarding access to digital library resources in Kenyan public universities. Despite growing digitization in higher education, equitable access for SWDs remains limited due to gaps in awareness, communication, and institutional support. Guided by an interpretivist paradigm, the study adopted a qualitative, multi-method design involving interviews, observations, and document analysis across six public universities. Data were analyzed thematically to capture SWDs' perceptions alongside insights from university library staff and disability coordinators. The findings revealed that while most universities have made progress toward digital inclusion, many SWDs perceive existing digital library environments as insufficiently accessible or responsive to their needs. Limited awareness of available digital services, inconsistent communication mechanisms, and inadequate personalized support were identified as major barriers. Institutional practices were often reactive rather than systemic, with accessibility efforts dependent on individual initiative rather than policy-driven accountability. Nevertheless, positive perceptions emerged where libraries had integrated accessibility helpdesks, conducted digital literacy training, and adopted adaptive technologies aligned with Universal Design for Learning and the International Classification of Functioning, Disability, and Health. The study concludes that improving perceptions of digital library access requires strengthening institutional awareness, inclusive communication, and sustainable support structures. It recommends that policymakers develop accountability frameworks for digital accessibility, institutions establish proactive accessibility systems, practitioners enhance communication and training for SWDs, and researchers further investigate perception-based barriers across diverse institutional contexts.

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1. Introduction

The digital transformation of higher education has redefined the way universities create, store, and disseminate knowledge. Digital libraries have become essential gateways to scholarly information, offering flexible and inclusive access to academic content regardless of time or location (Kiruki & Mutula, 2023; Oyedokun, 2025). For students with disabilities (SWDs), these platforms hold great promise in reducing traditional barriers to learning by providing resources in accessible formats and supporting independent study. However, the realization of this potential remains uneven, as disparities in awareness, training, and institutional support continue to influence how SWDs perceive and engage with digital library resources (Eneya & Edesina, 2025).

Globally, higher education institutions are being called upon to not only adopt advanced digital infrastructures but to ensure that such systems are designed and managed inclusively. The United Nations Convention on the Rights of Persons with Disabilities emphasizes the right to equal access to information, including in digital environments, while the Sustainable Development Goal 4 underscores inclusive and equitable quality education for all (Maina et al., 2025). Yet, many universities, particularly in developing contexts, struggle to translate these global commitments into everyday practices that effectively support digital inclusion. As Alaban (2024) and Zaid et al. (2024) argue, inclusion in the digital age requires more than technological readiness, it demands institutional sensitivity, ongoing user engagement, and adaptive learning environments that cater to diverse abilities.

In Kenya, public universities have made substantial investments in digital infrastructure and e-resources as part of broader educational reforms and ICT integration strategies. Despite these advancements, there is limited empirical evidence on how SWDs actually experience and perceive digital library access within these institutions. Preliminary reports by the National Council for Persons with Disabilities indicate that while policies promoting inclusive education exist, practical implementation in digital environments often falls short due to low awareness, inadequate training, and inconsistent accessibility standards (NCPWDs, 2024). This raises critical questions about the effectiveness of institutional mechanisms designed to facilitate equitable digital access and the extent to which SWDs feel supported in navigating online learning resources.

This study, therefore, investigates the perceptions of SWDs regarding digital library resources in six Kenyan public universities. By focusing on the lived experiences of these students, the research seeks to uncover the underlying factors that shape their engagement with digital content, ranging from institutional support and awareness to accessibility and inclusivity of digital systems. The study aims to contribute to a nuanced understanding of digital inclusion within the Kenyan higher education context, offering insights that can inform the design of responsive policies, staff training initiatives, and user-centered digital library practices that uphold equity and inclusiveness for all learners.

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1.1 Statement of the Problem

Although digital transformation has expanded access to academic resources in higher education, SWDs in many public universities continue to experience exclusion in digital library environments. Despite national and institutional commitments to inclusive education, studies reveal that accessibility initiatives often focus on infrastructure rather than the user experience or perceptions of inclusiveness. Research by Othman and Al Mutawaa (2023), Zaid et al. (2024), and Alaban (2024) has shown that while digital platforms are increasingly available, their usability and perceived inclusiveness for SWDs remain inconsistent, particularly in developing contexts. In Kenya, most universities have invested in digital resources but lack systematic mechanisms to ensure that these resources are accessible, usable, and well-communicated to SWDs.

Existing literature has predominantly examined technological availability and policy frameworks, leaving a significant gap in understanding how SWDs perceive their access to digital library resources within institutional contexts. Limited attention has been given to how awareness, communication, and ongoing support influence these perceptions, or how institutional practices shape users' sense of inclusion. Consequently, despite isolated efforts to improve accessibility, negative perceptions persist among SWDs, who often view digital library services as inadequate or exclusionary.

This study therefore sought to examine the perceptions of SWDs regarding digital library access in Kenyan public universities, focusing on levels of awareness and orientation, inclusiveness of communication and outreach mechanisms, adequacy of personalized support, and institutional practices that foster or hinder digital inclusion. By addressing this gap, the research provides an evidence-based foundation for developing contextually appropriate strategies to enhance equitable access and reshape user perceptions toward inclusive digital library environments.

1.2 Research objectives

1. To examine the level of awareness and orientation of SWDs toward digital library resources.
2. To evaluate the inclusiveness of communication and outreach mechanisms.
3. To assess the adequacy of ongoing and personalized support for SWDs.
4. To identify institutional practices that foster digital inclusion.
5. To recommend strategies for enhancing equitable access to digital library resources.

2. Literature Review

The transformation of higher education through digital technologies has redefined how SWDs access, engage with, and create knowledge. Digital libraries, in particular, have emerged as key enablers of scholarly engagement, providing vast online repositories that transcend geographical and temporal barriers. Yet, for SWDs, the full benefits of these resources are often constrained by institutional and systemic barriers rather than technological limitations (Abu-Qaadan et al., 2024; Salahuddin, 2022). Research consistently highlights that equitable access to digital library resources depends not merely on infrastructure availability but on awareness, inclusive communication, and the presence of sustained human and institutional support (Wang & Si, 2024; Maina et al., 2025).

2.1 Awareness and Orientation on Digital Library Resources

Awareness and structured orientation are essential determinants of how SWDs perceive and use digital library services. Studies across various contexts show that low awareness of available assistive technologies and digital platforms contributes to underutilization of library resources (Kulekpo, 2021; Arora, 2023). Kulekpo's (2021) study at the University of Education, Winneba, revealed that SWDs lacked knowledge of accessible digital tools, limiting their engagement and sense of inclusion. Similarly, Arora (2023) reported that at Panjab University, India, the absence of formal orientation and targeted

digital literacy programs left SWDs dependent on peers or trial-and-error approaches to access e-resources. Such findings underscore that perceptions of digital libraries are closely tied to how effectively institutions communicate availability, functionality, and relevance of digital resources to SWDs. In the Kenyan context, studies suggest that while public universities have adopted digital platforms, structured orientation programs tailored for SWDs remain limited (Luvalé, 2025), often leading to uncertainty and low confidence among users.

2.2 Inclusive Communication and Outreach Practices

Beyond awareness, the mode and inclusivity of communication play a critical role in shaping how SWDs perceive digital library accessibility. Singh (2017) observed that at the University of KwaZulu-Natal, ineffective communication between librarians and SWDs created feelings of exclusion and marginalization. Scoulas (2021) similarly found that inclusive outreach, through captioned tutorials, accessible emails, and real-time virtual support, enhanced students' perceptions of digital inclusivity at the University of Illinois, Chicago. In contrast, inaccessible communication formats such as uncaptioned videos or text-heavy announcements hindered engagement, particularly among visually and hearing-impaired users. In African universities, ineffective communication is often compounded by the lack of institutional frameworks guiding disability-sensitive information dissemination (Alabi & Okiki, 2023; Beyene et al., 2023). Kenyan universities face similar challenges, where library announcements and user guides are frequently designed for general audiences, excluding SWDs who require adaptive or multimodal formats (Kiambati et al., 2024). Addressing these gaps through inclusive communication strategies is essential for enhancing the perceived accessibility and usability of digital libraries among SWDs.

2.3 Ongoing and Personalized Support for Digital Resource Use

Sustained engagement with digital library resources relies heavily on the provision of ongoing, personalized support tailored to the diverse needs of SWDs. Hamad (2023) found that in the University of Jordan, SWDs developed negative perceptions of digital services when support was generic, inconsistent, or insensitive to disability-related challenges. Similarly, Scoulas (2021) demonstrated that personalized virtual consultations, follow-up assistance, and librarian responsiveness were strong predictors of positive digital library experiences. From a technological perspective, Mosha (2025) noted that artificial intelligence-enabled tools such as chatbots and adaptive learning interfaces improved accessibility by offering real-time, individualized guidance, though limited institutional integration often restricted their benefits. In Kenya, Luvalé (2025) reported that library support for SWDs remains fragmented, with staff often lacking specialized training on accessibility software or adaptive technologies. As a result, many SWDs rely on peer assistance rather than institutional support, a trend that undermines long-term digital engagement. These insights highlight the need for Kenyan universities to institutionalize structured, continuous, and personalized support systems that foster confidence and equitable participation in digital learning environments.

2.4 Institutional Practices and Enabling Factors for Inclusion

Institutional culture and policy frameworks strongly influence how SWDs perceive and experience digital library access. According to Zaid et al. (2024) and Othman and Al Mutawaa (2023), universities that embed disability inclusion within library policies, establish accessibility committees, and continuously train staff demonstrate higher levels of user satisfaction and perceived inclusivity. Conversely, the absence of institutional accountability mechanisms perpetuates tokenistic inclusion. In Kenya, while the National Council for Persons with Disabilities (NCPWD, 2024) and the Ministry of Education have advanced inclusive education policies, gaps persist in their translation into practice within library environments (Cherotich et al., 2024). Most universities have yet to formalize digital inclusion policies or allocate resources specifically for adaptive technology and staff development. Strengthening institutional frameworks, therefore, remains a prerequisite for improving SWDs' perceptions of fairness, accessibility, and belonging within the digital academic ecosystem.

2.5 Synthesis and Identified Gap

The reviewed literature consistently demonstrates that positive perceptions of digital library access among SWDs emerge where universities foster awareness through inclusive orientation, communicate effectively through adaptive channels, and sustain ongoing support through trained staff and assistive tools. However, evidence from Kenyan public universities remains limited, with most studies focusing on infrastructural or policy dimensions rather than user perceptions and lived experiences. This study addresses this gap by exploring how SWDs in Kenyan public universities perceive digital library access, focusing on three interrelated dimensions: awareness and orientation, communication and outreach, and ongoing personalized support. By situating user perceptions within institutional contexts, this research contributes empirical insights to guide the development of inclusive digital library models that promote equitable access and meaningful participation for all learners.

3. Methodology

3.1 Research Philosophy

This study was grounded in an interpretivist philosophical orientation, which emphasizes understanding human experiences within their natural contexts. The interpretive stance was essential for exploring how SWDs perceive and interact with digital library resources in Kenyan public universities. Interpretivism, rooted in social constructivism, assumes a relativist ontology and a subjectivist epistemology, where reality is co-constructed through individual and social experiences (Kumari et al., 2023). This worldview guided the study in uncovering the socially embedded meanings and experiences shaping digital inclusion, acknowledging that access barriers are not purely technological but socially and institutionally constructed. Consequently, qualitative methods including interviews, observations, and document analysis, were employed to capture the nuanced, lived experiences of participants.

3.2 Research Approach

A qualitative research approach was adopted to allow an in-depth exploration of SWDs' experiences and perceptions regarding digital library access. This approach enabled the researcher to capture diverse viewpoints, interpret meanings, and uncover patterns that would not emerge through quantitative methods (Creswell & Creswell, 2017). The use of multiple data collection tools facilitated triangulation, which enhanced credibility and ensured a comprehensive understanding of how institutional practices influence digital inclusion. This qualitative orientation was appropriate for exploring under-researched contexts where human experiences and institutional processes intersect.

3.3 Research Design

The study adopted a multiple case study design, allowing a comparative and contextual examination of digital inclusion initiatives across six public universities: Kenyatta University, Egerton University, Maseno University, South Eastern Kenya University, Garissa University, and Technical University of Mombasa. The case study design, as recommended by Yin (2018), provides rich insights into complex social phenomena by examining them within real-life settings. This design enabled the researcher to identify both unique and shared practices across institutions, yielding findings that are both contextually grounded and analytically transferable.

3.4 Location of the Study

The research was conducted in the main libraries of six Kenyan public universities strategically selected to represent geographical, institutional, and infrastructural diversity. These institutions were chosen because they enroll SWDs and have invested in digital library infrastructure. Their inclusion provided insights into how regional and institutional contexts influence digital accessibility practices and policies.

3.5 Study Population and Sampling

The study targeted SWDs, university librarians (in charge of acquisition, cataloguing, reference, and systems), and disability coordinators within the six universities. This population was chosen because these groups directly experience or influence digital resource accessibility. Purposive sampling was employed to identify participants with relevant experience and knowledge (Kumari et al., 2023). The final sample comprised fifty-four SWDs, thirty librarians, and six disability coordinators, ensuring representation across all institutions and participant categories. This approach prioritized depth and diversity of perspectives over statistical generalization.

3.6 Data Collection Methods

To ensure a holistic understanding of digital inclusion, data were collected using three complementary

methods; document analysis, interviews, and observations.

- Document Analysis: Institutional policies, accessibility guidelines, and strategic documents were reviewed to establish existing frameworks and institutional commitments toward inclusion.
- Semi-Structured Interviews: These were conducted face-to-face with SWDs, librarians, and disability coordinators to explore personal experiences and institutional practices. The interview guide allowed flexibility while maintaining focus on key themes such as accessibility, awareness, and institutional support.
- Observations: Non-participant observations were conducted in library settings to document how SWDs interacted with digital resources and how libraries facilitated or hindered inclusive access. Observations focused on technology use, physical layouts, and staff-user interactions.

3.7 Data Analysis

Qualitative data were analyzed using thematic analysis supported by NVivo 14 software. The process involved transcription, coding, and the identification of recurring patterns across cases. Themes were developed inductively and refined through comparison across data sources to enhance depth and coherence. Document analysis contributed contextual and institutional insights, while interview and observation data provided lived perspectives, ensuring methodological triangulation (Kumari et al., 2023).

3.8 Trustworthiness of the Study

Credibility was enhanced through sustained engagement with participants and the triangulation of data sources, including interviews, documentary analysis, and direct observations. These diverse methods provided a comprehensive understanding of the perceptions of SWDs across different university contexts. To further ensure accuracy, member checking was conducted by sharing synthesized summaries of interview interpretations with selected participants for verification and clarification. Peer debriefing sessions were also held with participants, who provided critical feedback on data interpretation and emerging themes, thereby reinforcing analytical rigor and reducing researcher bias.

Transferability was supported by offering comprehensive contextual accounts of the participating universities, library environments, and the everyday realities of SWDs. Such detailed descriptions provide sufficient background for readers to make informed judgments about the applicability of the findings to other institutional or cultural settings.

To maintain dependability, the research process was carefully documented through an audit trail that captured key methodological decisions and analytical procedures. This process, reinforced through peer discussions, ensured logical consistency and methodological transparency throughout the study.

Lastly, confirmability was enhanced through continuous self-reflection by the researcher and a critical comparison of evidence drawn from varied data sources. This approach minimized personal bias and ensured that the interpretations reflected participants' voices rather than researcher influence.

3.9 Ethical Considerations

Ethical approval was obtained from the Mount Kenya University Institutional Scientific and Ethics Review Committee, and research authorization was granted by the National Commission for Science, Technology, and Innovation (NACOSTI). Informed consent was obtained from all participants, and confidentiality was assured by using pseudonyms in reporting. All data were securely stored, and participants were informed of their right to withdraw at any stage. Academic integrity was upheld through proper citation following APA (7th edition) standards.

4. Findings

The thematic analysis of interview, document review, and observational data revealed three dominant themes that significantly shape how SWDs in Kenyan public universities perceive and experience digital library access: limited awareness and orientation, ineffective communication and outreach, and insufficient ongoing and personalized support. These themes illuminate institutional and operational barriers that continue to hinder equitable participation of SWDs in digital learning spaces.

4.1 Participant Demographics and Engagement

The study engaged 60 participants drawn from six public universities in Kenya, comprising 54 SWDs and 6 library staff representing diverse operational areas. The library staff included University Librarians, Reference Librarians, Systems Librarians, and those in charge of Acquisition and Cataloguing units, providing a comprehensive institutional perspective. The participation rate for purposively selected SWDs was 100%, demonstrating strong interest and engagement from this group.

Table 1. Participant Distribution by Role

Participant Role	Number of Participants	Percentage
Students with Disabilities (SWDs)	54	90%
University and Library Staff (University Librarian, Reference, Systems, Acquisition, Cataloguing)	6	10%
Total	60	100%

Gender distribution among the SWDs was nearly balanced, reflecting inclusivity across the sample.

Table 2. Gender Distribution of SWD Participants

Gender	Number of SWD Participants	Percentage
Male	28	51.9%
Female	26	48.1%
Total	54	100%

The study also represented a wide range of disabilities to capture varied accessibility needs.

Table 3. Types of Disabilities Among SWD Participants

Type of Disability	Number of SWD Participants	Percentage
Visual Impairment	18	33.3%
Physical Disability	15	27.8%
Hearing Impairment	12	22.2%
Learning Disability	6	11.1%
Other (Speech Impairment, Multiple Disabilities, Albinism)	3	5.6%
Total	54	100%

These demographic details provide a contextual foundation for understanding the breadth of experiences and institutional interactions explored in this study.

4.2 Limited Awareness and Orientation

The findings revealed that most SWDs had little or no structured introduction to digital library resources. Out of the 54 SWDs, 32 (59.3%) indicated that they had never received formal orientation or training on digital library services. Instead, they depended on peers, trial and error, or occasional staff assistance.

Table 4. SWD Participation in Formal Digital Library Orientation

Orientation Status	Number of SWD Participants	Percentage
No Formal Orientation	32	59.3%
Received Formal Orientation	22	40.7%
Total	54	100%

Interview data showed that many SWDs discovered digital resources incidentally. One visually impaired student stated:

“I only discovered the library had e-books in my third year when I was told to download a journal article for a project.” (SWD29)

Similarly, another added:

“We are not told anything. I did not even know we had digital resources until a friend showed me.” (SWD34)

Staff interviews revealed similar trends. A Systems Librarian from Egerton University acknowledged

that digital resource induction was not targeted toward SWDs, while an Acquisition Librarian at Maseno noted that the materials procured often lacked accessible formats. A University Librarian from SEKU further confirmed that orientation sessions were not adapted for students with disabilities, citing a lack of training among facilitators.

Document analysis showed that five of the six universities; Maseno, Egerton, Technical University of Mombasa (TUM), Garissa, and South Eastern Kenya University (SEKU), had no documented inclusive induction policy or guidelines. In contrast, Kenyatta University demonstrated best practice by embedding digital literacy and orientation for SWDs within its academic onboarding and disability support programs.

Observations corroborated these findings: only Kenyatta University displayed visible accessibility signage, help desks, and mentors supporting SWDs during digital resource onboarding. Other universities lacked adaptive materials, assistive guidance, or accessible digital training manuals. One student reflected this feeling of exclusion:

“When you are not told about what is available, you start to feel like you are not part of the system.”
(SWD4)

4.3 Ineffective Communication and Outreach

Communication gaps emerged as another major barrier. Of the 54 SWDs, 29 (53.7%) cited inaccessible or ineffective communication channels as a key hindrance to digital library access.

Table 5. SWD Perceptions of Communication Accessibility

Communication Accessibility Perception	Number of SWD Participants	Percentage
Cited Inaccessible/Non-Inclusive Messaging	29	53.7%
Did Not Cite Inaccessible/Non-Inclusive Messaging	25	46.3%
Total	54	100%

Students with visual and hearing impairments experienced difficulty accessing critical updates disseminated through standard emails or static online notices.

“Even when they send emails, I cannot use them well. I need visual explanations or sign language. That never happens.” (SWD17)

“When announcements are made, we are the last to know. They use formats that are not designed for us.” (SWD32)

A Cataloguing Librarian from Garissa University acknowledged that communication strategies were not differentiated for SWDs, while a Reference Librarian from TUM admitted that many notices were “text-heavy and incompatible with screen readers.”

Document analysis confirmed that only Kenyatta University’s communication policy explicitly mentioned outreach to SWDs and promoted the use of multi-format dissemination. Other institutions lacked inclusive communication guidelines or adaptive information channels such as braille, large print, or sign-language-supported digital content.

Observation showed that Kenyatta University displayed accessible posters and screen-reader-friendly digital flyers, while institutions like Garissa, SEKU, and TUM had no communication materials targeting SWDs. This further reinforced the exclusionary information flow experienced by these students.

*“Most of the library updates come as long emails. My screen reader struggles, and I miss vital information.”
(SWD08)*

4.4 Insufficient Ongoing and Personalized Support

Even after gaining awareness of digital library resources, SWDs’ engagement was hampered by a lack of sustained, personalized support. Thirty-five out of 54 SWDs (64.8%) reported that the assistance they received was generic or insufficient for their specific accessibility needs.

Table 6. SWD Perceptions of Ongoing Support Adequacy

Support Adequacy Perception	Number of SWD Participants	Percentage
Support Inadequate/Generic	35	64.8%
Support Adequate/Personalized	19	35.2%
Total	54	100%

“I need someone to walk me through the system, not just once, but every time something new is introduced.” (SWD11)

“Sometimes, even when you try to use the system, it fails, and no one follows up. It is like we are forgotten after orientation.” (SWD38)

Library staff admitted that there were no structured follow-up systems. A Systems Librarian at Egerton noted the absence of dedicated personnel for SWD digital support, while an Acquisition Librarian at Maseno pointed out that digital vendors rarely provided assistive training during system installations. None of the six universities had policy frameworks specifying continuous or personalized digital support mechanisms.

Observation confirmed that only Kenyatta University demonstrated consistent follow-up and adaptive support, with staff proactively assisting SWDs and checking on their progress. In the other five institutions, students were observed relying heavily on peers or avoiding digital systems altogether due to a lack of specialized help.

“Even when I approach the help desk, the staff do not seem to know what I need. They give general instructions that do not help much.” (SWD32)

Table 7. Summary Table of Findings Aligned with Interview Questions

Interview Question	Beliefs	Attitudes	Opinions	Expectations
Q1: How did you learn about digital resources?	Not meant for us; poorly communicated	Frustrated, excluded	Weak promotion	Inclusive and structured orientation
Q2: How often and why do you use them?	Only for assignments	Hesitant, disengaged	Platforms difficult to navigate	More training and accessible tools
Q3: Is communication effective?	No inclusive messaging	Resigned, overlooked	Libraries do not consider accessibility	Multi-format outreach (SMS, posters, visual aids)
Q4: What improvements do you expect?	Must be recurrent and tailored	Hopeful but cautious	Desire hands-on help	Workshops, peer demonstrations, braille/audio guides

The triangulated data from interviews, document reviews, and observations indicate that while Kenyatta University exhibits relatively inclusive practices—structured orientation, multi-format communication, and proactive follow-up—other universities such as Maseno, Egerton, TUM, Garissa, and SEKU lag behind due to weak policies, limited staff training, and absence of specialized support. The findings demonstrate that digital inclusion for SWDs remains inconsistent and largely dependent on institutional commitment rather than policy enforcement.

5. Discussion

The findings of this study offer deep insights into how students with disabilities perceive and experience digital library access within Kenyan public universities. While the institutions have invested in modern digital infrastructures, these advances have not translated into equitable access or meaningful inclusion. The results demonstrate that the perceived value of digital libraries among students with disabilities is shaped less by technological availability and more by institutional practices surrounding awareness, communication, and continuous support. These findings echo global research emphasizing that digital inclusion must be human-centered and policy-driven, rather than infrastructure-oriented (Abu-Qaadan et al., 2024; Dithale & Johnson, 2022).

5.1 Limited Awareness and Orientation versus Infrastructural Availability

A prominent finding of this study is that inadequate awareness and the absence of structured orientation programs are among the greatest barriers to effective digital library use by students with disabilities. Many participants discovered available e-resources through peers or chance rather than through formal induction. This aligns with the “infrastructure-utilization paradox” noted by Abu-Qaadan et al. (2024) and Beyene et al. (2023), which highlights that technological provision

alone does not guarantee accessibility. In five of the six universities studied, digital resources existed without sufficient guidance materials, accessible signage, or user-friendly interfaces. This lack of structured sensitization left students feeling excluded, as captured by one participant who observed that they felt “not part of the system.”

Kenyatta University demonstrated a contrasting and effective model by integrating inclusive digital literacy sessions into first-year orientation. This finding supports Salahuddin (2022), who emphasizes that digital literacy programs should be tailored to the specific needs of students with disabilities rather than generalized to the wider student body. When institutions introduce technology without accompanying awareness and capacity-building initiatives, they perpetuate a cycle of underutilization and exclusion. In this regard, the Kenyan experience mirrors broader trends in developing nations where digital transformation efforts often outpace inclusive implementation.

5.2 Ineffective Communication and Outreach

The study further revealed that communication practices within university libraries remain largely ineffective and exclusionary for students with disabilities. Most institutions rely on standardized email systems or web bulletins to share updates about e-resources, which are often inaccessible to students with visual, cognitive, or hearing impairments. This limitation was strongly reflected in participants' accounts, such as those of SWD17 and SWD32, who reported missing vital information because it was presented in non-accessible formats. These findings support Luvalle (2022), who observed that exclusion in higher education frequently results not from the absence of information, but from the inaccessibility of the communication medium itself.

Interviews with librarians reinforced this challenge. One librarian admitted that there was no established procedure for informing students with disabilities about new digital services. This lack of structured communication reflects a deeper institutional deficiency. Furthermore, official training materials reviewed through document analysis lacked adaptive formats such as braille, large print, or audio versions. This echoes Karanja et al. (2021), who noted that many Kenyan universities espouse inclusive education policies that are rarely operationalized at the service delivery level. Kenyatta University again stood out as a model of best practice, having instituted mandatory accessibility checks for library communications and providing multi-format materials. This approach aligns with universal design principles, ensuring that communication is effective, inclusive, and responsive to diverse needs.

5.3 Insufficient Ongoing and Personalized Support

Another critical finding concerns the lack of sustained and personalized support for students with disabilities in accessing and using digital library resources. While some universities offer occasional induction sessions, these are often one-time events that fail to provide continuous guidance. A significant majority of respondents expressed the need for ongoing, individualized assistance throughout their studies. This finding corresponds with Wang and Si (2024), who argue that continuous institutional support is essential for fostering confidence and self-efficacy in technology use among students

with disabilities.

Observations revealed that library help desks were often understaffed or staffed by individuals lacking adequate training in disability awareness and assistive technology. As one participant remarked, “staff do not seem to know what I need,” reflecting a common frustration among users. The absence of cross-departmental training further compounded this issue. Staff from acquisition, cataloguing, and systems units, whose roles are central to maintaining accessible digital resources, were rarely involved in disability inclusion programs. These gaps highlight the need for holistic capacity building across all library departments, not just the reference section.

Kenyatta University and Egerton University demonstrated more advanced support systems through dedicated accessibility desks, trained personnel, and ongoing mentorship for students with disabilities. Their practices illustrate how institutional commitment, combined with consistent staff training, can transform digital libraries into inclusive spaces that empower all users.

5.4 Synthesis of Perceptions and Institutional Gaps

The overarching picture emerging from this study is one of partial inclusion, where institutional efforts have focused more on technological provision than on user experience and empowerment. The perceptions expressed by students with disabilities—feelings of exclusion, lack of communication, and inadequate assistance—reflect systemic shortcomings in policy translation and service delivery. These findings align with Othman and Al Mutawaa (2023), who argue that inclusion must be embedded in institutional culture rather than treated as a peripheral obligation.

The study also found variations in institutional performance. Kenyatta and Egerton universities demonstrated relatively advanced inclusive practices, Maseno University exhibited moderate progress, while SEKU and TUM were fairly moderate, and Garissa University lagged behind, largely due to infrastructural limitations and remoteness. These disparities mirror the conclusions of Kiambati et al. (2024), who reported that policy implementation in Kenyan higher education remains uneven and dependent on local leadership commitment.

The findings underscore that genuine digital inclusion requires more than policy statements or technological acquisition. It demands a deliberate institutional transformation characterized by structured awareness programs, inclusive communication, multi-format outreach, well-trained personnel, and sustained support mechanisms. Aligning such practices with Kenya’s National Policy for Persons with Disabilities (NCPWD, 2024) is essential to ensure that digital libraries evolve into inclusive, equitable, and empowering environments that enable all students, regardless of ability, to thrive in the digital academic landscape.

6. Conclusion

This study explored the perceptions of students with disabilities regarding access to digital library resources in Kenyan public universities, revealing a persistent gap between technological availability and meaningful inclusion. Although most universities have invested substantially in digital infra-

structure, the findings demonstrate that awareness, communication, and ongoing support remain the decisive factors shaping students' perceptions and engagement. For many students with disabilities, digital library systems are perceived as peripheral or inaccessible due to the absence of structured orientation, ineffective communication strategies, and insufficient personalized assistance.

The study underscores that digital inclusion is not solely a technological concern but an institutional and human-centered process that demands proactive engagement, responsive design, and continuous capacity building. Institutions such as Kenyatta and Egerton universities provide examples of emerging best practices, integrating inclusive training, multi-format communication, and sustained user support. In contrast, universities such as Garissa and South Eastern Kenya University face greater challenges, primarily due to limited infrastructural resources and the absence of disability-responsive policies.

The study concludes that achieving equitable digital library access for students with disabilities requires a coordinated, policy-driven approach that aligns infrastructural investment with awareness creation, inclusive communication, and dedicated support systems. Without this holistic approach, digital libraries risk reinforcing the very inequalities they are designed to eliminate.

7. Recommendations

The following recommendations are organized according to the research objectives and specify the responsible implementers, including Policymakers and Government Agencies, Institutions, Practitioners, SWDs and their Associations, and Researchers.

Enhancing Awareness and Orientation

Universities should develop structured orientation programs that familiarize SWDs with digital library resources and assistive technologies. Librarians, ICT officers, and disability support staff should collaborate to design inclusive training sessions tailored to diverse disabilities such as visual, hearing, physical, cognitive, and psychosocial impairments. Regular orientation, supported by accessible guides and demonstrations, will help build positive perceptions of digital libraries as inclusive and supportive environments.

Strengthening Inclusive Communication and Outreach

Communication about digital library services should be accessible to all students. Librarians and ICT teams should use multiple communication modes such as audio announcements, sign-language videos, large-print and Braille materials, and accessible web content. Policymakers such as the Commission for University Education (CUE) and the National Council for Persons with Disabilities (NCPWD) should require universities to adopt inclusive communication frameworks. These measures will improve information accessibility and enhance SWDs' perceptions of institutional inclusivity.

Providing Continuous and Personalized Support

Universities should establish sustainable systems for ongoing, individualized support rather than one-time assistance. Libraries should create accessibility helpdesks staffed by trained personnel who are familiar with assistive technologies and disability-sensitive practices. Continuous mentorship, periodic refresher sessions, and accessible user support channels will improve SWDs' confidence and reshape their perceptions of digital libraries as approachable and empowering learning spaces.

Institutionalizing Inclusive Practices

Institutional leaders should integrate digital inclusion within governance and quality assurance structures. Accessibility indicators should form part of performance evaluations, budget planning, and library service assessments. Policymakers should introduce monitoring frameworks requiring universities to report annually on accessibility standards. Embedding inclusivity into institutional policy and culture will help SWDs perceive digital libraries as equitable and responsive academic spaces.

Promoting Evidence-Based Improvement

Researchers should continue to explore perceptions of digital inclusion across universities to identify trends, progress, and emerging challenges. SWDs and their representative associations should participate actively as co-designers and evaluators of communication and support systems to ensure that interventions address real user perceptions. Ongoing participatory research will generate evidence that informs sustainable improvements and reinforces trust between institutions and SWDs.

Limitations of the study

This study was limited to public universities in Kenya, which may not fully represent the perceptions of students with disabilities (SWDs) in private or specialized institutions that operate under different structural, technological, and policy contexts. While the qualitative design was appropriate for exploring perceptions in depth, it limits statistical generalization and may reflect participant or researcher bias. To mitigate these concerns, methodological strategies such as triangulation, peer debriefing, and transparent data collection processes were employed to enhance credibility.

The findings are based on self-reported perceptions, which are inherently subjective and may be influenced by individual biases, personal experiences, or recall inaccuracies. Additionally, the research focused specifically on digital library resources, leaving other aspects of digital inclusion in higher education, such as learning management systems or online teaching platforms, outside the scope of this study. Uneven representation among disability categories may also have constrained the diversity of perspectives captured.

Finally, the findings represent a specific moment in time, as institutional and technological environments are continually evolving. Despite these limitations, the study provides valuable and nuanced insights into how institutional practices shape SWDs' perceptions of digital library access, offering

a strong foundation for policy formulation, practical interventions, and further empirical research.

Implications of the Study

The findings of this study have far-reaching implications for enhancing understanding of perceptions surrounding digital library access among SWDs in Kenyan public universities. The results revealed that perceptions play a decisive role in shaping how SWDs engage with digital library resources, interpret institutional commitment to inclusion, and assess the adequacy of support provided. From a policy perspective, the findings indicate that positive perceptions of accessibility are closely linked to visible institutional accountability and consistent implementation of inclusive policies. Policymakers and regulatory bodies must therefore move beyond policy rhetoric to establish enforceable digital accessibility standards that influence how universities design, communicate, and evaluate digital library services. Integrating globally recognized accessibility frameworks such as the Web Content Accessibility Guidelines (WCAG) and the Marrakesh Treaty into national education and library policies would help foster confidence among SWDs that inclusivity is not merely aspirational but institutionalized within the system.

At the theoretical level, this study contributes to a deeper understanding of how perceptions intersect with institutional culture and technological affordances to influence inclusion outcomes. The application of the Universal Design for Learning (UDL) and the International Classification of Functioning (ICF) frameworks demonstrated that SWDs' perceptions are shaped not only by the availability of assistive technologies but also by how inclusively digital environments are designed and managed. When libraries embrace the principles of flexibility, engagement, and accessibility embedded in UDL, SWDs are more likely to perceive the digital environment as enabling rather than exclusionary. Similarly, the ICF framework provides a valuable lens for interpreting how environmental factors such as institutional policies, staff attitudes, and infrastructure contribute to either positive or negative perceptions of access.

In practical terms, the study highlights the importance of addressing perceptual barriers that limit the optimal use of digital library resources. The findings underscore that awareness gaps, inconsistent communication, and inadequate user support negatively shape SWDs' perceptions of inclusion. Therefore, university libraries must invest in building trust and confidence by ensuring that communication about digital services is accessible, targeted, and participatory. Librarians, system administrators, and disability coordinators need to work collaboratively to provide regular updates, personalized assistance, and feedback channels that demonstrate responsiveness to SWDs' concerns. Establishing dedicated accessibility helpdesks, offering regular orientation sessions, and maintaining visible accessibility statements on library websites would reinforce positive perceptions of institutional commitment. When SWDs perceive that their needs are acknowledged and supported, they are more likely to view digital libraries as inclusive academic spaces that facilitate learning and participation on equitable grounds.

Suggestions for Further Research

While the present study provides valuable insights into the perceptions of SWDs toward digital

library access in Kenyan public universities, several future research avenues are proposed to extend and strengthen understanding of perception-driven inclusion.

1. Future research should undertake comparative analyses between public and private universities, as well as across different regions, to determine how variations in governance, resource allocation, and institutional culture influence SWDs' perceptions of digital accessibility.
2. Building on this study's qualitative insights, large-scale quantitative studies are recommended to measure the prevalence and intensity of key perceptual barriers and facilitators of digital inclusion. Such data would enhance generalizability and inform evidence-based policy and practice.
3. Long-term studies should explore how perceptions evolve as universities implement accessibility recommendations, new technologies, or training interventions. This would help assess the sustained impact of inclusion strategies on student confidence and engagement.
4. Further research should examine how the perceptions, attitudes, and competencies of librarians, ICT officers, and disability coordinators shape students' own perceptions of accessibility and support, providing a holistic understanding of institutional influence.
5. Studies focusing on artificial intelligence-driven accessibility tools, adaptive learning platforms, and mobile-first applications are needed to understand how emerging technologies shape SWDs' perceptions of usability, autonomy, and digital empowerment.

Author Contributions

Stephen Maina conceptualized the study, collected and analyzed data, drafted the manuscript, and served as corresponding author. Prof. Proscovia Svård guided the methodology and contributed to revisions. Prof. Naomi Mwai provided theoretical input, validated findings, and reviewed the manuscript.

Declarations

Ethics Approval

Ethical approval for this study was granted by the Mount Kenya University Institutional Scientific and Ethics Review Committee (Approval No. 4047). A research permit was issued by the National Commission for Science, Technology, and Innovation (NACOSTI, Permit No. 453921). All procedures adhered to ethical principles of informed consent, confidentiality, and anonymity.

Funding

This research was self-funded by the principal investigator. No external funding was received

from public, private, or non-profit organizations.

Acknowledgments

The authors wish to sincerely acknowledge the invaluable contributions of the journal editors, peer reviewers, and editorial team for their constructive feedback throughout the publication process. Special thanks are extended to the Technical University of Kenya for institutional support during the conduct of this research.

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