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Towards a Framework for Digital Collection Development in Academic Libraries: Evidence from the Cooperative University of Kenya

By

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Abstract

The rapid advancement of digital technologies has transformed academic libraries, creating both opportunities and challenges for digital collection development. In Kenya, many academic libraries lack adequate frameworks to guide the acquisition, management, and alignment of digital resources with user needs. This study assessed the current state of digital collection development at the Cooperative University of Kenya (CUK) Library and proposed a customized framework suited to its institutional context and user requirements. A convergent parallel mixed-methods design was employed, targeting 396 participants (students, library staff, and faculty heads), with a response rate of 64% (n=254). Data were collected using questionnaires and interview guides. Key findings showed a significant gap between high user demand for digital resources and the adequacy of existing collections. Budget constraints and inadequate ICT infrastructure emerged as the primary barriers. Qualitative findings revealed fragmented collections across multiple platforms, inconsistent user awareness leading to underutilization, and significant digital literacy gaps. The study proposes a comprehensive framework comprising five interdependent pillars: a formal digital collection policy, a sustainable funding model, unified technical infrastructure, strategic collection development, and human capacity development. These pillars operate within a continuous user engagement and feedback loop. The framework offers a practical, evidence-based model for academic libraries in Kenya and similar resource-constrained environments seeking to transition toward integrated, user-centered digital knowledge hubs.

Keywords: Academic libraries, digital collections, collection development, user-centred framework, Kenya, digital transformation

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1. Introduction

Academic libraries are increasingly shifting from traditional print collections to digital platforms, driven by the need to enhance accessibility, support remote learning, and preserve scholarly content (Otike, 2023). Digital resources including e-books, online journals, research papers, multimedia content, and databases, have become integral to modern academic libraries, enabling users to access information regardless of location (Wagay & Dutta, 2022). Digital collection development, defined as the process of selecting, acquiring, organizing, and maintaining digital materials to meet user information needs, involves strategic planning to align with the library's mission and vision (Rosenstein, 2024).

Globally, academic libraries are increasingly embracing digital collections. In the United States, 47% of library holdings are now digital, with subscription fees constituting 35% of library expenditures (Library Systems Report, 2023). European initiatives like Europeana provide access to millions of digitized books, artworks, and records, while programs such as the Hathi Trust Digital Library demonstrate strong collaborative approaches to digital preservation (Jisc, 2023). In Asia, advanced economies like South Korea and Japan are leveraging cutting-edge technology, including artificial intelligence and machine learning, for library services (Kim, 2023).

However, the rapid growth of digital resources has brought complexities spanning technical, legal, financial, and operational challenges. Licensing and copyright issues, digital preservation difficulties, ICT infrastructure requirements, and data privacy concerns all demand careful attention (Doughty & McNicol, 2021; Chan & Lee, 2020). In Africa, many libraries are gradually adopting digital collections, focusing on bridging the digital divide, yet face challenges like limited internet connectivity, inadequate funding, and training gaps for library staff (Mureithi, 2022).

In Kenya, academic libraries have made strides in digitization through partnerships with platforms such as African Journals Online (AJOL) and the Database of African Theses and Dissertations (DATAD). Regional and international collaborations, particularly through the Kenya Library and Information Services Consortium (KLISC), have been instrumental in bargaining for electronic

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resources from international publishers (Gichoya, 2020). Despite these advancements, challenges persist, including limited funding, insufficient staff training, expensive and slow internet speeds, and unreliable electricity (Gichoya, 2020).

At the Cooperative University of Kenya (CUK) Library, the absence of a tailored framework has resulted in fragmented collection development strategies, underutilization of costly digital resources, and inconsistent alignment with users' academic and research needs. According to the Kenya Library Association (2022), fewer than 30% of academic libraries in Kenya have structured frameworks to guide the acquisition, organization, and management of digital resources. This limitation constrains the university's ability to support postgraduate research, faculty innovation, and knowledge dissemination.

Recent studies have attempted to address challenges in digital library development but have left critical gaps. Mutuku and Chebet (2024) examined digital library implementation frameworks in Kenya but focused primarily on technological aspects, neglecting user-centered approaches. Amutabi and Omondi (2023) analyzed frameworks for digital libraries in Sub-Saharan Africa, emphasizing institutional collaboration and funding mechanisms, yet overlooked localized strategies for managing digital content in Kenyan universities. The present study bridges these gaps by developing a comprehensive, evidence-based framework for digital collection development at the Cooperative University of Kenya Library, emphasizing alignment of digital resources with user needs, addressing local challenges, and integrating sustainable strategies to ensure long-term relevance.

1.1 Problem Statement

The transition to digital academic collections has created substantial opportunities for improving access to scholarly information. Nevertheless, the availability of digital resources does not necessarily guarantee effective utilisation or alignment with academic needs. Libraries may subscribe to large numbers of electronic resources while users continue to experience difficulty locating relevant materials, navigating platforms or obtaining essential course texts.

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At CUK Library, the study identified a persistent gap between strong demand for digital resources and the adequacy and relevance of available collections. The library had made progress in developing digital resources, but its collection development processes remained fragmented and largely reactive. More than half of library staff reported the absence of a written digital collection development policy, while acquisition decisions were more commonly based on multiple informal considerations than on clearly defined usage statistics or systematic user requests.

The problem extended beyond collection acquisition. Digital resources were distributed across multiple platforms, contributing to limited awareness and underutilisation. Budgetary constraints affected infrastructure, licensing and training, while digital literacy and system usability further influenced users' ability to benefit from available resources.

Existing literature provides valuable insights into individual components of digital collection development, including sustainability, user-centred acquisition, infrastructure and policy. However, there remains a need for an integrated model that connects these components and explains how they interact within a resource-constrained African university environment. The present study therefore sought to develop such a framework at CUK Library.

1.2 Objective

The specific objective addressed in this article was:

To propose a framework for digital collection development at the Cooperative University of Kenya Library.

2. Literature Review

2.1 Users' Information Needs in Academic Libraries

Academic libraries play a significant role in supporting the diverse and evolving information needs of students, faculty, and researchers. Understanding these needs is crucial for aligning library services with user expectations and advancing institutional academic goals (Makori et al., 2022). Studies from various contexts reveal consistent patterns. Brown and Smith (2020) found that

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digital literacy significantly influenced resource utilization in U.S. academic libraries, with users preferring online resources over print. Kumar and Gupta (2021) established that Indian students emphasized the need for more e-resources and mobile-friendly access. Ahmed and Naseem (2021) found that Pakistani students primarily sought academic resources like journals and textbooks but expressed dissatisfaction with digital content access.

In Africa, Chiemeka and Mbatha (2022) found that Nigerian libraries struggle with insufficient funding, negatively impacting digital resource availability. Omondi and Mutua (2023) identified that accessibility and usability of online databases were significant barriers to electronic resources in Kenyan university libraries. Wanyonyi and Njeri (2024) found that most users preferred hybrid collections but noted that inadequate digital training hampered effective service delivery. These studies collectively demonstrate the dynamic nature of users' information needs, emphasizing the need for digital resource accessibility, user satisfaction, and comprehensive solutions to infrastructural challenges.

2.2 Types of Digital Collections in Academic Libraries

Digital collections in academic libraries comprise diverse resources, including e-books, journals, databases, institutional repositories, and multimedia content. Andrew, Wright, and Rasking (2020) found that users in U.S. academic libraries preferred curated collections like e-books, journals, and multimedia content. Archambault and Justice (2019) established high utility of digital archives in supporting specialized academic research in Europe. Yoo-Lee, Lee, and Velez (2020) revealed that multimedia collections significantly enhanced user engagement in South Korean academic libraries.

In Africa, Onuoha and Okeke (2022) found that local repositories significantly enhanced regional research visibility and institutional reputation in Nigerian libraries. Njagi (2022) established that digital theses and journals were the most preferred resources in Kenyan universities. Kilonzo et al. (2023) indicated that open access significantly enriches digital collections but requires collaboration for sustainability. These studies highlight the importance of diverse digital

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collections but reveal gaps in analyzing how collections align with unique academic requirements of different user groups.

2.3 Strategies for Digital Collection Development

Effective strategies for digital collection development are essential for enhancing access, relevance, and sustainability. Walton and Cunningham (2020) found that partnerships with publishers in the UK significantly reduced costs. James (2021) established that data-driven approaches significantly improved user satisfaction and engagement in U.S. academic libraries. Whitchurch (2021) revealed that flexible frameworks enable effective resource management in dynamic environments.

In Africa, Ezeani et al. (2022) found that community involvement fosters greater acceptance of digital resources in Nigerian libraries. Mbugua (2021) indicated that cost-sharing models significantly improved sustainability in resource acquisition in Kenyan libraries. Wachira et al. (2023) established that public-private partnerships enhance sustainability in resource management. These studies emphasize the importance of user-centered design, collaboration, and policy formulation but often do not address the role of resource constraints and local contexts in shaping strategies.

2.4 Factors Impeding Digital Collection Development

Developing digital collections is often hindered by financial constraints, technological limitations, and inadequate policy frameworks. Smith and Lee (2021) found that legacy systems, policy misalignment, and insufficient staff training impeded effective digital collection development in U.S. academic libraries. Wang et al. (2022) identified limited funding, inadequate technical skills, and resistance to technology adoption as key barriers in Chinese universities. Kim and Park (2022) found that resistance to organizational change and insufficient ICT budgets hindered digital library development in South Korea.

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In Africa, Adewale and Nkosi (2023) revealed that limited budgets, poor internet infrastructure, and lack of regional collaboration were primary obstacles in Sub-Saharan Africa. Chisenga (2021) found that lack of technical expertise hindered digital library collection development in East Africa. Otieno and Adebayo (2023) established that weak institutional budgets and lack of donor support significantly hindered digital collection development. Njoroge et al. (2024) found that outdated technologies and unclear policy guidelines were key barriers in Kenyan universities. These studies consistently identify budget constraints as the foundational barrier, affecting all other dimensions of digital collection development.

2.5 Frameworks for Digital Collection Development

Developing comprehensive frameworks for digital collection development is critical to ensuring systematic, user-centric, and sustainable resource management. Brown et al. (2021) proposed a sustainable digital collection development framework for the U.S. and Canada, integrating funding strategies, partnerships, and continuous training. Garcia et al. (2023) established that community engagement and public-private partnerships were critical components in Latin American universities. Tanaka and Suzuki (2023) revealed that AI-driven curation and indexing can significantly streamline collection development in Japanese universities.

In Africa, Moyo et al. (2023) found that partnerships and training programs were critical in addressing digital collection development in African university libraries. Amutabi and Omondi (2023) proposed a phased framework focusing on donor-funded ICT infrastructure for Sub-Saharan Africa. Mwangi and Otieno (2022) established that policy standardization and regional ICT infrastructure development were crucial for implementation. Mutuku and Chebet (2024) revealed the need to align digital strategies with national educational policies in Kenya. However, these studies often lack integration of user needs, collection types, development strategies, and solutions to common challenges into a comprehensive, holistic model.

3. Methodology

3.1 Research Design

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The study adopted a pragmatic research philosophy and a convergent parallel mixed-methods design. The pragmatic orientation was appropriate because the study sought both empirical understanding of the existing situation and a practical solution in the form of a digital collection development framework. The convergent design enabled quantitative and qualitative evidence to be collected and analysed and subsequently integrated to provide a comprehensive understanding of the problem.

3.2 Study Population and Sampling

The target population comprised 15,000 students, 13 library staff and 8 faculty heads. A total sample of 396 participants was identified. Students were selected through stratified random sampling, while census sampling was used for library staff and faculty heads because of their relatively small numbers. The final study obtained 254 responses, representing a response rate of 64%.

3.3 Data Collection

Three principal data collection approaches were used: questionnaires, semi-structured interviews and document analysis. Questionnaires were used to obtain quantitative evidence from students, lecturers and library staff. Interviews were conducted with relevant library and academic leaders, while institutional documents were examined to establish the policy and strategic context of digital collection development.

3.4 Validity, Reliability, and Pilot Testing

Validity was ensured through expert review by university supervisors, content validity assessment, and face validity evaluation. Reliability was established through internal consistency using Cronbach's Alpha coefficient, with a value of 0.7 or above considered acceptable (Taber, 2018). A pilot test was conducted at a university similar in characteristics to CUK but outside the actual sample frame, involving 20 students, 2 library staff, and 1 faculty head. Feedback from the pilot test was used to revise ambiguous or repetitive items.

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3.5 Data Analysis

Quantitative data were analysed using descriptive statistics, including frequencies, percentages, means and standard deviations, using SPSS Version 26. Qualitative data were subjected to thematic analysis, while findings from the different data sources were integrated during interpretation. The framework was subsequently developed by synthesising evidence from the four preceding dimensions of the study: user needs, existing digital collections, collection development strategies and impediments to digital collection development.

3.6 Ethical Considerations

The study obtained the necessary research authorisations and adhered to informed consent, anonymity, confidentiality, data integrity and data protection requirements. Participants were assigned codes rather than having their identifying information reported, and research data were securely stored.

4. Findings

4.1 High Demand but Inadequate Alignment with User Needs

The findings demonstrated strong demand for digital academic resources among CUK students and lecturers. Ninety-eight percent of students reported a frequent need for digital resources, while 57% accessed digital academic resources daily. Among lecturers, 67% consistently recommended digital resources to students. Nevertheless, a gap existed between demand and perceived adequacy.

The problem was not simply the absence of digital resources. Users also reported difficulties relating to accessibility, discovery and usability. The qualitative findings further indicated that emerging user expectations extend beyond conventional e-books and e-journals toward faster discovery, intuitive interfaces and AI-supported tools. This finding established User Needs and Academic Mission as the central point of the proposed framework.

4.2 A Broad but Fragmented Digital Collection

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The study established that CUK Library had developed several categories of digital resources. E-books, online journals and the institutional repository constituted important components of the collection, while multimedia and instructional resources were less prominent.

The principal challenge was fragmentation. Resources were distributed across multiple platforms, reducing discoverability and user awareness. Some subscribed resources reportedly experienced very limited or no use. The findings therefore suggested that collection size alone should not be treated as evidence of collection effectiveness. The issue was one of alignment, accessibility and utilisation. A strategically smaller but highly relevant and discoverable collection may generate greater academic value than a larger but fragmented collection.

4.3 Reactive Rather Than Systematic Collection Development

The study found that acquisition decisions were frequently based on multiple considerations rather than consistently measurable criteria. Forty-six percent of library staff indicated that acquisition decisions were based on multiple factors, compared with 15% who identified usage statistics and 15% who identified user requests as specific bases for acquisition. Annual updating was the dominant pattern, reported by 62% of staff, while only 23% reported quarterly updating.

User engagement was similarly episodic. Interviews indicated that users were often consulted when new academic programmes were being introduced rather than through a continuous feedback process. The study also found that participation in the Kenya Library and Information Services Consortium (KLISC) provided cost-saving benefits but could create dependence on consortium-level decisions. The implication is that consortium participation should complement, rather than replace, institutional collection strategy.

4.4 Funding and Infrastructure as Systemic Constraints

Budget constraints constituted the most significant barrier to digital collection development. Among students, budget constraints recorded a mean of 4.16, with 80% agreeing or strongly agreeing that inadequate funding hindered digital collection expansion. Inadequate ICT

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infrastructure recorded a mean of 3.77, with 70% agreement. Low digital literacy recorded a mean of 3.45, while unreliable internet access recorded a mean of 3.31.

The qualitative findings demonstrated that these barriers were interconnected. Limited funding affected infrastructure; infrastructure weaknesses constrained access and training; inadequate training contributed to digital literacy challenges; and limited user engagement contributed to the underutilisation of resources. This interconnectedness provides the principal justification for a systems-based framework.

4.5 Content Relevance and Licensing Gaps

An additional challenge concerned the mismatch between packaged electronic content and locally required academic materials. Interview evidence indicated that some core texts recommended by lecturers were unavailable in the subscribed e-book packages. Licensing restrictions further constrained access to individual titles and chapters. The implication is that acquisition decisions should evaluate curriculum relevance and actual academic demand, rather than relying principally on the size of aggregated packages.

5. The Proposed User-Centred Framework

The central contribution of the study is an integrated framework that conceptualises digital collection development as an interconnected system rather than a linear acquisition process.

The framework places User Needs and Academic Mission at its centre and incorporates five mutually reinforcing pillars:

1. Governance and Policy Framework;
2. Sustainable Funding Model;
3. Integrated Digital Infrastructure;
4. Strategic Collection Development; and
5. Capacity Building.

These pillars operate within a continuous User Engagement and Feedback Loop.

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Figure 1

User-Centred Framework for Sustainable Digital Collection Development

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Source: Developed from the empirical findings of the study.

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5.1 Pillar 1: Governance and Policy Framework

The first pillar establishes the strategic and regulatory foundation for digital collection development. The library should formulate a comprehensive Digital Collection Development Policy defining:

- selection criteria;
- acquisition priorities;
- licensing requirements;
- user eligibility and access;
- preservation requirements;
- evaluation and deselection;
- stakeholder responsibilities;
- usage-data requirements; and
- procedures for periodic policy review.

The policy should align collection development with the university's academic mission and curriculum. Its purpose is not merely administrative; it should provide the institutional mechanism for replacing ad hoc decisions with transparent and evidence-based collection management. The finding that more than half of library staff reported the absence of a written policy provides a strong empirical justification for this pillar.

5.2 Pillar 2: Sustainable Funding Model

Digital collection development requires predictable funding because many electronic resources operate through recurring subscription or licensing models. The framework therefore proposes a sustainable funding model based on:

- dedicated annual allocations for electronic resources;
- multi-year financial planning;
- systematic evaluation of cost versus usage;

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- institutional and external funding partnerships;
- consortium purchasing where economically advantageous; and
- periodic budget review based on enrolment, programme expansion and changing scholarly requirements.

The model does not reject consortium purchasing. Instead, it positions consortium participation as one component of a broader funding strategy. This is important because the CUK findings show that financial constraints affect other components of the digital ecosystem, including infrastructure and training.

5.3 Pillar 3: Integrated Digital Infrastructure

The third pillar addresses fragmentation and access barriers through development of an integrated digital environment. The framework proposes:

- a unified discovery interface;
- integration of subscribed databases and institutional repositories;
- reliable campus-wide Wi-Fi;
- remote authentication and access;
- appropriate proxy or equivalent access technologies;
- interoperable platforms;
- improved system usability; and
- regular technical maintenance.

The objective is to ensure that the user's experience is not determined by the number of platforms operated by the library. Instead, the user should encounter a coherent discovery and access environment. This pillar responds directly to the study's finding that fragmented digital resources and system usability problems contributed to underutilisation.

5.4 Pillar 4: Strategic Collection Development

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Strategic collection development constitutes the substantive core of the framework. The library should move from reactive acquisition toward evidence-based, curriculum-aligned collection management. The framework proposes that acquisition decisions should be informed by:

1. curriculum requirements;
2. faculty recommendations;
3. student information needs;
4. usage statistics;
5. cost-per-use analysis;
6. programme and research priorities;
7. availability of local content;
8. licensing conditions;
9. accessibility and usability; and
10. emerging scholarly technologies.

The framework also recommends a multi-source acquisition strategy incorporating commercial databases, individual titles, consortia, open-access resources, institutional content and locally produced scholarly materials. Particular emphasis should be placed on local content. Strengthening institutional repositories with theses, dissertations, locally authored scholarly works and other appropriate institutional materials can reduce excessive dependence on imported commercial content while increasing the visibility of locally generated knowledge.

5.5 Pillar 5: Capacity Building

The fifth pillar addresses the human dimension of digital collection development. Capacity building should cover both library personnel and users. For library staff, training should include:

- electronic resource management;
- licensing and copyright;
- collection assessment;

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- usage analytics;
- metadata;
- digital preservation;
- emerging technologies; and
- user support.

For students and faculty, training should address:

- database navigation;
- advanced searching;
- evaluation of information sources;
- discovery tools;
- responsible use of digital resources; and
- emerging AI-supported information discovery.

The need for capacity building is supported by evidence from Nigerian academic libraries, where professional development and skilled personnel were identified as important conditions for digital collection sustainability (Yakubu et al., 2022).

5.6 Continuous User Engagement and Feedback Loop

The framework's most distinctive feature is the placement of user engagement around the five pillars rather than treating it as a one-time activity. The feedback loop should include:

Needs assessment → acquisition → access → usage → user feedback → evaluation → collection adjustment → renewed needs assessment.

This creates a cyclical model of continuous improvement. Such an approach is consistent with the broader movement toward user-centred library planning. Gikunju et al. (2024) similarly demonstrate the value of incorporating user requirements into framework development within Kenyan university libraries. The CUK findings indicate that user engagement was primarily

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reactive and associated with new programme development. The proposed framework transforms this episodic engagement into an institutionalised process.

6. Discussion

The principal contribution of this study is the proposition that sustainable digital collection development should be conceptualised as a socio-technical and organisational system. The findings demonstrate that the problems experienced at CUK cannot be adequately addressed through additional acquisitions alone.

For example, increasing the number of databases would have limited impact if users cannot discover or navigate them effectively. Similarly, improving infrastructure without establishing selection criteria could result in technically sophisticated systems containing resources of limited curricular relevance. Additional funding without policy and evaluation mechanisms could also perpetuate inefficient resource allocation. The framework therefore integrates five dimensions that are frequently treated separately in the literature: governance, financing, infrastructure, content and capacity.

This systems orientation is consistent with Yakubu et al. (2022), whose findings demonstrate that sustainable digital collections require simultaneous attention to funding, infrastructure, professional development and defined responsibilities. It also corresponds with Behera et al. (2026), who argue that sustainable digital transformation requires libraries to move beyond technology adoption toward strategic digital maturity, governance and capacity building.

The findings also reinforce the importance of user-centred planning. The existence of digital resources does not automatically constitute successful collection development. The ultimate criterion is whether the collection supports the information requirements associated with teaching, learning and research.

The CUK case further illustrates the limitations of relying excessively on aggregated electronic packages. A large package may contain hundreds or thousands of titles, but if essential course

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materials are absent, its contribution to users may remain limited. Strategic collection development must therefore balance quantity, quality, relevance, accessibility and sustainability.

The framework also provides a more nuanced interpretation of consortium participation. Consortia such as KLISC can reduce acquisition costs and improve bargaining power, which is particularly valuable in resource-constrained environments. However, consortium membership should complement internal needs assessment rather than determine the entire direction of institutional collection development.

This finding is particularly significant for African academic libraries because financial constraints make collaboration essential while local academic needs remain institution-specific. The appropriate strategy is therefore not either independent acquisition or consortium acquisition, but a hybrid acquisition model.

The study's emphasis on local content also contributes to the debate on digital collection equity. Resource-constrained libraries can become heavily dependent on international commercial databases while locally relevant scholarship remains underdeveloped or difficult to discover. Institutional repositories and local content curation can provide a complementary strategy that strengthens the visibility and accessibility of indigenous academic production.

The framework is therefore not simply a model for purchasing electronic resources. It is a model for developing a sustainable institutional digital knowledge ecosystem.

7. Theoretical Contribution

The study contributes conceptually by repositioning digital collection development from a predominantly acquisition-centred activity toward an integrated systems process. The framework demonstrates that collection development outcomes emerge from interactions among:

Governance + Funding + Infrastructure + Collection Strategy + Human Capacity + User Engagement.

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This proposition challenges linear conceptualisations in which collection development begins with identification of needs, proceeds to selection and acquisition, and ends with access. Instead, the present framework conceptualises collection development as cyclical. Users influence collection decisions; collections influence usage; usage generates evidence; evidence informs evaluation; evaluation influences subsequent acquisition and policy decisions.

The framework consequently adds a dynamic feedback dimension to digital collection development. The study also contributes to the literature on user-centred academic libraries by demonstrating that user-centredness should extend beyond service design to the selection, evaluation and sustainability of the information resources themselves.

8. Practical Implications

The framework has several practical implications for academic libraries operating in resource-constrained environments. First, academic libraries should develop formal digital collection policies rather than relying on informal or individual decision-making. Second, institutions should establish predictable financial mechanisms for electronic resources. Sustainable access cannot depend exclusively on annual ad hoc allocations.

Third, libraries should prioritise integrated discovery systems. The value of a digital collection is reduced when users must navigate multiple disconnected platforms. Fourth, collection development committees should use evidence from curriculum analysis, user requests, usage statistics, cost-per-use analysis and faculty research priorities. Fifth, libraries should invest continuously in staff and user digital literacy. Sixth, local academic content should be incorporated systematically into digital collection strategies. Institutional repositories should be treated as strategic collection assets rather than merely archival platforms.

Finally, consortium participation should be strategically managed. Cost savings should be retained while institutional mechanisms are maintained for acquiring resources that are not adequately represented within consortium packages.

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9. Proposed Implementation Model

The framework can be implemented in three broad phases.

Phase I: Institutional Foundation

The library should establish the governance structure, formulate the digital collection development policy, identify funding requirements and undertake an audit of existing digital resources.

Phase II: System Integration

The second phase should focus on infrastructure, discovery integration, access systems, collection rationalisation, licensing review and development of local digital content.

Phase III: Continuous Improvement

The third phase should institutionalise continuous user engagement, usage analytics, collection evaluation, staff development and periodic framework review. The phases should not be interpreted as rigidly sequential. Because the framework is cyclical, implementation of one component may expose requirements in another. The principal objective is therefore progressive integration rather than completion of isolated projects.

10. Conclusion

This study developed a user-centred framework for sustainable digital collection development at the Cooperative University of Kenya Library. The empirical evidence demonstrated that although demand for digital academic resources was high, the effectiveness of the existing collection was constrained by fragmentation, inadequate funding, weak policy guidance, infrastructure limitations, digital literacy challenges, user engagement gaps and content-relevance problems.

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The central finding is that these challenges are interconnected. Funding affects infrastructure and licensing; infrastructure affects accessibility and usability; policy affects acquisition decisions; acquisition practices affect content relevance; and user capacity affects utilisation. Addressing one dimension in isolation is therefore unlikely to produce sustainable improvement.

The study consequently proposes five interdependent pillars: Governance and Policy, Sustainable Funding, Integrated Digital Infrastructure, Strategic Collection Development, and Capacity Building, all centred on User Needs and Academic Mission and sustained through a continuous User Engagement and Feedback Loop.

The framework's principal contribution is its systems perspective. It shifts attention from the question of *how many digital resources a library owns or subscribes to* toward the more consequential question of *how effectively its digital collection ecosystem responds to academic needs in a sustainable manner*.

While the framework was developed from evidence at CUK Library and should not be assumed to be universally generalisable, its underlying principles may be relevant to other academic libraries operating in resource-constrained environments. Further research involving multiple Kenyan and African universities would be valuable for testing, refining and validating the framework across different institutional contexts.

11.0 Recommendations

Based on the findings, the following recommendations are made:

1. **Formulate and implement a comprehensive Digital Collection Development Policy.** The policy must be approved by the University Senate and should clearly articulate selection criteria, weeding and preservation guidelines, access protocols, and stakeholder roles and responsibilities.

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2. **Allocate a dedicated and sustainable budget for digital collections.** The library's annual budget should include a ring-fenced line item for e-resources, adjusted biennially for inflation and enrolment growth. External funding sources should also be pursued.
3. **Invest in an integrated digital library system with a unified discovery layer.** A single search interface that indexes all subscribed databases, open access resources, and locally digitized materials will significantly reduce fragmentation and improve user experience.
4. **Actively promote local content development.** The institutional repository should be strengthened and populated with digitized past examination papers, theses, dissertations, and locally authored textbooks.
5. **Implement continuous user training and digital literacy programmes.** Training should be tiered—basic navigation for first-year students, advanced search techniques for final-year students and faculty, and specialized e-resource management skills for library staff.
6. **Establish regular user engagement mechanisms.** Quarterly satisfaction surveys, transparent usage dashboards, and annual "Digital Collection Weeks" will keep users informed and involved.
7. **Complement consortium acquisitions with locally relevant resources.** A balanced acquisition model—approximately 50% consortium, 30% demand-driven acquisition, and 20% local digitization—will reduce over-dependence on external providers.
8. **Invest in ICT infrastructure.** This includes upgrading internet bandwidth, ensuring system reliability (targeting 99% uptime), and providing adequate hardware for both library staff and end-users.

12.0 Suggestions for Further Research

Future research should consider: (a) a comprehensive evaluation of digital collection usage and return on investment to guide renewal and cancellation decisions; (b) investigation of the integration and impact of artificial intelligence tools in academic libraries; (c) comparative studies of digital collection development practices across Kenyan universities; and (d) further exploration

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of user behaviour and digital literacy, examining how age, prior technology exposure, and technophobia influence e-resource usage.

References

- Adedokun, F. O., Ajayi, J. L., & Soliudeen, J. M. (2025). Optimizing digital collection management in academic libraries for sustainability, accessibility and user engagement. *POMLIF Journal of Library and Information Science*, 4(1), 36–47.
- Adewale, T., & Nkosi, S. (2023). Regional barriers to digital library adoption in Sub-Saharan Africa. *African Journal of Library and Information Science*, 33(2), 145–162.
- Ahmed, S., & Naseem, M. (2021). Information needs and seeking behaviours of university students in Pakistan. *Library Philosophy and Practice*, 2021, 1–18.
- Amutabi, M., & Omondi, G. (2023). Frameworks for digital libraries in Sub-Saharan Africa. *African Journal of Library and Information Science*, 15(4), 120–135.
- Andrews, K., Wright, T., & Raskin, D. (2020). Evaluating e-resources in academic libraries: Insights from U.S. institutions. *Journal of Digital Library Research*, 26(4), 215–230.
- Archambault, F., & Justice, K. (2019). Digital archives in Europe: Utility in historical and legal studies. *European Journal of Library Studies*, 12(2), 75–89.
- Behera, A., Sahu, V., & Saw, A. K. (2026). Digital transformation in library services: A systematic review of trends, challenges, and strategic directions. In B. Rautaray, D. K. Swain, & C. Swain (Eds.), *Proceedings of the International Conference on Marching Beyond the Libraries: Talent, Technology, and Transformation (ICMBL 2025)* (pp. 152–160). Springer. https://doi.org/10.2991/978-94-6239-614-2_18
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Brown, J., & Smith, R. (2020). Technological advances and users' information needs in U.S. academic libraries. *Journal of Academic Librarianship*, 46(3), 102–115.

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- Brown, P., et al. (2021). A sustainable digital collection development framework for North American academic libraries. *Library Resources & Technical Services*, 65(2), 88–104.
- Chan, K., & Lee, K. (2020). Digital resource management: Challenges and solutions. *Library Information Science*, 68(2), 111–120.
- Chen, X., & Sharma, R. (2024). Collection invisibility in academic libraries: A systematic review. *Journal of Library Administration*, 64(1), 98–115.
- Chiemeka, O., & Mbatha, B. (2022). Meeting diverse user needs amidst resource constraints in Nigerian libraries. *African Journal of Library, Archives and Information Science*, 32(1), 55–70.
- Chisenga, J. (2021). Technological barriers to digital collection development in East Africa. *East African Journal of Information Science*, 15(2), 89–104.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Deslonde, V., & Becerra, M. (2018). The Technology Acceptance Model: A meta-analysis of empirical research. *Journal of Educational Technology Systems*, 47(2), 185–210.
- Doughty, P., & McNicol, S. (2021). Managing digital library resources: A global perspective. *Journal of Library Management*, 50(4), 210–223.
- Evans, G. E., & Saponaro, M. Z. (2019). *Collection development and management for 21st century library collections*. American Library Association.
- Ezeani, M., Okeke, P., & Umeh, C. (2022). Community-centered approaches for digital libraries in Africa. *African Journal of Library Science*, 18(3), 190–205.
- Garcia, M., et al. (2023). Digital collection development frameworks in Latin American universities. *International Journal of Library and Information Science*, 15(2), 112–128.

Citation: Nyongesa, J. G., Mbenge, T. N., & Owano, A. (2026). Towards a Framework for Digital Collection Development in Academic Libraries: Evidence from the Cooperative University of Kenya. *Journal of Africana Articles*, 4(29), 1-29, 11th September 2026. DOI: <https://doi.org/10.5281/zenodo.22707620>

Gichoya, A. (2020). Digital library capacity and the digital divide in Kenya: Challenges and prospects. *East African Journal of Educational Studies*, 15(3), 112–130.

Gikunju, M., Odero, D., & Kwanya, T. (2024). Towards user-centred framework for reconfiguring library spaces in the Global South: Case of Kenyan universities. *European Journal of Humanities and Social Sciences*, 4(2), 18–25.
<https://doi.org/10.24018/ejsocial.2024.4.2.528>

Hasan, S., & Panda, S. (2025). From shelves to servers: Revamping collection development policies for a digital-first approach. In *Transforming library services: Innovation, access and research support* (pp. 3–29). Devyani Publishers and Distributors.
<https://doi.org/10.5281/zenodo.15446620>

James, P. (2021). User-centered design for digital collections in U.S. academic libraries. *American Library Journal*, 34(5), 320–335.

Jisc. (2023). *Digital preservation strategies in European libraries*. <https://www.jisc.ac.uk/digital-preservation>

Kaddu, S., Ssekitto, F., Nalunkuma, E., & Masenya, T. M. (2024). Beyond the stacks: Reimagining collection development at the Uganda Institute of Information and Communication Technology Library to champion SDG 16. *Information Development*. Advance online publication. <https://doi.org/10.1177/02666669241299038>

Kenya Library Association. (2022). *Annual report on the state of academic libraries in Kenya*. Kenya Library Association.

Kilonzo, L., Njenga, G., & Wanjiru, M. (2023). Open access repositories in Kenya: The role in enriching digital collections. *Kenyan Journal of Library Innovation*, 9(1), 45–60.

Kim, S. (2023). Library technology and digitization trends in South Korea. *Journal of Digital Libraries*, 29(3), 231–245.

Kim, Y., & Park, J. (2022). Organizational factors impacting digital library development in South Korea. *Library and Information Science Research*, 44(2), Article 101156.

Citation: Nyongesa, J. G., Mbenge, T. N., & Owano, A. (2026). Towards a Framework for Digital Collection Development in Academic Libraries: Evidence from the Cooperative University of Kenya. *Journal of Africana Articles*, 4(29), 1-29, 11th September 2026. DOI: <https://doi.org/10.5281/zenodo.22707620>

Kinyua, M. W., & Njoroge, R. W. (2022). Acquisition models in use for development of a user-centered collection by selected academic libraries in Kenya. *World Wide Journal of Multidisciplinary Research and Development*.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610.

Kumar, S., & Gupta, R. (2021). Students' preferences and satisfaction with library services in Indian higher education. *Journal of Academic Librarianship*, 47(4), 102–118.

Library Systems Report. (2023). *American Libraries*, 54(1), 28–35.

Makori, E., et al. (2022). Understanding user needs in academic libraries: A Kenyan perspective. *Library Management*, 43(5), 321–338.

Mbugua, J. (2021). Cost-sharing models for sustainable digital collections in Kenyan libraries. *Library Development in East Africa*, 15(2), 112–127.

Moyo, T., et al. (2023). Developing a digital framework for African universities. *South African Journal of Libraries and Information Science*, 89(1), 45–62.

Mureithi, M. (2022). Digital library development in Africa: Challenges and opportunities. *African Journal of Information Systems*, 14(2), 78–95.

Mutuku, J., & Chebet, L. (2024). Digital library implementation frameworks in Kenya. *Kenyan Journal of Information Management*, 12(1), 45–60.

Mwangi, P., & Otieno, J. (2022). Frameworks for digital library implementation in East Africa. *East African Journal of Library and Information Science*, 16(2), 55–72.

Ndung'u, P., & Wawire, J. (2022). Digital collection challenges in Kenyan university libraries. *Kenyan Journal of Library Studies*, 13(1), 88–105.

Njagi, W. (2022). E-content adoption in Kenyan academic libraries: Preferences for theses and journals. *African Digital Library Journal*, 20(4), 150–166.

Njoroge, P., Mucheru, G., & Kamau, S. (2024). Technological and policy gaps affecting digital collection efforts in Kenyan universities. *Kenyan Journal of Educational Development*, 12(1), 78–95.

Citation: Nyongesa, J. G., Mbenge, T. N., & Owano, A. (2026). Towards a Framework for Digital Collection Development in Academic Libraries: Evidence from the Cooperative University of Kenya. *Journal of Africana Articles*, 4(29), 1-29, 11th September 2026. DOI: <https://doi.org/10.5281/zenodo.22707620>

- Oluwole, A., & Adebayo, O. (2025). Digital collection challenges in Nigerian universities: A funding perspective. *West African Journal of Library and Information Science*, 25(1), 40–58.
- Omondi, D., & Mutua, J. (2023). Challenges users face in accessing library resources in Kenyan university libraries. *African Journal of Library and Information Science*, 33(1), 45–62.
- Onuoha, C., & Okeke, I. (2022). Exploring Nigerian libraries' digital collections: Regional research repositories. *Journal of West African Libraries*, 17(3), 100–118.
- Otieno, M., & Adebayo, T. (2023). Financial constraints in digital collection development in African universities. *African Journal of Information Management*, 25(3), 112–130.
- Otike, F. W. (2023). Digital transformation of academic libraries in developing countries in Africa. *Journal of Library and Information Science*, 28(2), 145–162.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Rosenstein, P. (2024). Holding it together: An exploratory study on the social structures of digital collection management. *Digital Transformation and Society*, 3(1), 80–98.
- Saputra, A. (2025). Strategies for digital collection development in resource-constrained libraries. *Journal of Library Development*, 42(1), 10–28.
- Smith, J., & Lee, K. (2021). Infrastructural and policy limitations in developing digital collections in U.S. academic libraries. *Library Resources & Technical Services*, 65(3), 145–162.
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296.
- Tanaka, H., & Suzuki, M. (2023). AI-enhanced digital collection frameworks in Japanese universities. *Journal of Digital Information Management*, 21(2), 78–95.
- Valente, T. W., & Rogers, E. M. (1995). The origins and development of the diffusion of innovations paradigm. *Annals of the American Academy of Political and Social Science*, 566(1), 12–29.
- Wachira, J., Kamau, P., & Wanjiru, L. (2023). Public-private partnerships in resource expansion for Kenyan libraries. *Library and Information Studies in Kenya*, 11(2), 80–95.

Citation: Nyongesa, J. G., Mbenge, T. N., & Owano, A. (2026). Towards a Framework for Digital Collection Development in Academic Libraries: Evidence from the Cooperative University of Kenya. *Journal of Africana Articles*, 4(29), 1-29, 11th September 2026. DOI: <https://doi.org/10.5281/zenodo.22707620>

- Wagay, J. A., & Dutta, S. (2022). Utilization of electronic resources: An analysis of awareness and perception of users of Kashmir University. *Information Discovery and Delivery*, 50(1), 31–42.
- Walton, G., & Cunningham, J. (2020). Strategic planning for digital resources: Partnerships with publishers in the UK. *Journal of Strategic Library Management*, 25(3), 98–110.
- Wang, L., et al. (2022). Challenges hindering digital collection development in Chinese academic libraries. *Journal of Academic Librarianship*, 48(4), Article 102567.
- Wanyama, P., & Njoroge, S. (2024). Collection development policies in East African universities. *East African Journal of Library and Information Science*, 18(2), 105–122.
- Wanyonyi, J., & Njeri, F. (2024). Digitization and users' needs in Kenyan academic libraries. *Kenyan Journal of Library Studies*, 14(2), 67–85.
- Whitchurch, S. (2022). Flexible digital frameworks in German academic libraries. *Journal of European Digital Libraries*, 27(1), 35–50.
- Yakubu, H., Abdullah, N., & Kaur, K. (2022). Sustainability of digital collections for Nigerian academic libraries: An exploration of conception, indicators for fulfillment and accrued benefits. *Malaysian Journal of Library and Information Science*, 27(1), 73–91.
<https://doi.org/10.22452/mjlis.vol27no1.5>
- Yoo-Lee, E., Lee, S., & Velez, L. (2020). Multimedia collections in South Korean academic libraries: Vital tools for modern learners. *Asia-Pacific Library Journal*, 22(6), 420–435.