



Analyzing sustainability efforts in supporting the Green Library Initiative by Kenyan University Libraries

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ABSTRACT

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In response to global concerns about sustainability in education, the Green Library Initiative has gained prominence. However, Kenyan university libraries have yet to actively participate in this initiative, highlighting a significant gap. The primary aim was to investigate the sustainable practices of Kenyan university libraries, uncovering their strategies, challenges, and achievements in supporting the Green Library Initiative. By exploring this untapped potential, the research aimed to narrow this divide and provide insights to enhance the role of Kenyan university libraries in promoting sustainability within education. This study employs a systematic literature review to comprehensively explore sustainable practices and the engagement of Kenyan university libraries in the Green Library Initiative. Using a qualitative research approach, it qualitatively analyzes and synthesizes relevant literature, allowing for a thorough examination of the role and impact of Kenyan university libraries in promoting sustainability within the context of the Green Library Initiative. The findings reveal a diverse range of initiatives, from energy-efficient infrastructure to resource conservation and community engagement. Despite facing unique challenges, such as resource limitations and infrastructure constraints, Kenyan university libraries exhibit commendable dedication to environmental stewardship. The study concludes that these libraries play a pivotal role in fostering a culture of sustainability within academic communities. Consequently, this study emphasizes the pivotal role of Kenyan university libraries in promoting the Green Library Initiative. Recommendations are directed towards these libraries, urging them to establish stronger partnerships with environmental organizations, allocate resources more effectively for sustainable practices, and encourage knowledge sharing within the library community. The novelty of this research lies in its targeted exploration of Kenyan university libraries' impact on the global sustainability agenda, offering actionable insights with the potential to inspire similar initiatives in educational institutions worldwide.

Introduction

Libraries, as custodians of knowledge and information, have traditionally played a vital role in shaping educational landscapes. Over the past few decades, there has been a growing global concern about sustainability, leading to the emer-

gence of various sustainable initiatives across different sectors. In response to this global trend, the concept of the Green Library Initiative (GLI) has garnered significant attention, primarily in developed countries, as libraries strive to align themselves with sustainable practices and environmen-

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tal stewardship (Hasan & Panda, 2023a). While many libraries in developed nations have made considerable strides in integrating sustainable efforts, libraries in African and developing countries, such as Kenya, have yet to actively embrace this global movement, revealing a critical gap in their contribution to the broader sustainability agenda (Mwanzu et al., 2023).

In developed countries, libraries have been proactive in adopting sustainable practices, encompassing energy-efficient technologies, resource management, and eco-friendly infrastructure to minimize their environmental footprint (Hasan & Panda, 2023b). These initiatives, often backed by robust financial support and well-established institutional frameworks, have led to the emergence of a culture of environmental consciousness within the library community, aligning with broader global sustainability goals outlined by international organizations such as the United Nations (UN) (Moallemi et al., 2020). Consequently, libraries in these nations have not only become hubs for disseminating sustainable knowledge but have also become living examples of how organizations can integrate eco-friendly practices into their operations, setting benchmarks for other sectors to emulate.

Conversely, in the context of African and other developing countries, libraries have encountered significant challenges in adopting sustainable practices. Limited financial resources, insufficient technological infrastructure, and a lack of awareness about the importance of sustainability have impeded the integration of green initiatives within these libraries (Ayinla & Aramide, 2022). While some pockets of sustainable practices have emerged within educational institutions, the incorporation of comprehensive green initiatives within library settings has remained relatively minimal. The existing literature indicates that the emphasis has largely been on the core functions of libraries, leaving sustainability efforts as secondary priorities (Liao, 2022). This disparity underscores the urgent need to investigate the sustain-

able practices of libraries in these regions and explore avenues to bridge the gap between developed and developing countries in their efforts towards environmental stewardship.

Within the African context, Kenya, known for its dynamic educational landscape, faces unique challenges and opportunities concerning the adoption of sustainable practices within university libraries. The country, while experiencing rapid economic growth, grapples with infrastructural limitations, financial constraints, and diverse socio-economic complexities (Samunderu, 2023). These factors significantly influence the capacity of Kenyan university libraries to actively participate in global sustainability initiatives like the GLI. Despite these challenges, Kenya has demonstrated remarkable progress in embracing sustainable practices in various sectors, including renewable energy, wildlife conservation, and eco-tourism (Ogweno, 2021). However, the integration of sustainable efforts within university libraries remains relatively unexplored, emphasizing the need for comprehensive research to uncover the existing strategies, challenges, and achievements of Kenyan university libraries in supporting the GLI.

The concept of sustainability efforts within libraries encompasses a range of initiatives that promote environmental stewardship, resource conservation, and community engagement (Beutelspacher & Meschede, 2020)). These efforts aim to reduce carbon footprints, minimize waste generation, and foster an environmentally conscious culture within the academic community. The GLI, a prominent global movement, further amplifies these efforts, emphasizing the importance of integrating sustainable practices within library operations and services. In this context, understanding the role and impact of Kenyan university libraries in promoting sustainability through the GLI is imperative, not only for the advancement of the global sustainability agenda but also for the sustainable development of the country's educational sector.

Statement of the problem

In an ideal scenario, university libraries across the globe would actively engage in the Green Library Initiative (GLI), integrating sustainable practices seamlessly into their operations to contribute significantly to the global sustainability agenda (Mwanzu et al., 2023). These libraries would serve as influential hubs for promoting environmental stewardship, fostering a culture of sustainability within academic communities, and setting benchmarks for other educational institutions to follow.

However, the current reality presents a stark contrast, particularly within the context of Kenyan university libraries. Despite the global emphasis on sustainability and the growing momentum of the GLI, Kenyan university libraries have yet to effectively integrate sustainable practices into their core functions and infrastructure (Zeng et al., 2020). This disparity highlights a significant gap between the idealized expectations of libraries' roles in promoting sustainability and the actual practices observed within Kenyan university libraries.

The repercussions of this gap are multifaceted, ranging from missed opportunities for environmental impact to limited contributions to the broader sustainability agenda at the national and global levels. Without active participation in the GLI, Kenyan university libraries risk further perpetuating unsustainable practices and failing to harness the potential of their educational platforms to instill a culture of environmental consciousness among students and faculty members (Chumba, 2023). This not only undermines their potential influence as educational leaders but also impedes the country's progress towards achieving its sustainable development goals.

Previous studies have primarily focused on sustainable practices in developed countries, highlighting the initiatives and achievements of libraries in integrating environmentally friendly strategies into their operations (Shahzad et al., 2021). Conversely, within the African context, limited

research has specifically addressed the challenges and opportunities faced by Kenyan university libraries in aligning with the GLI and fostering sustainable practices (Zeng et al., 2020). The lack of comprehensive research on this topic leaves a notable gap in understanding the specific barriers and facilitators of sustainable efforts in Kenyan university libraries, hindering the development of targeted strategies to bridge the existing divide between the idealized expectations and the current reality. Closing this gap is crucial for empowering Kenyan university libraries to play a more active and effective role in promoting sustainability and environmental stewardship within the country's educational landscape.

Purpose of the study

The primary aim of this study was to investigate the sustainable practices of Kenyan university libraries, uncovering their strategies, challenges, and achievements in supporting the Green Library Initiative.

Objective

Through this investigation, the study sought to narrow the gap between the observed practices and the ideal expectations, thereby providing insights to enhance the role of Kenyan university libraries in promoting sustainability within the educational context.

Research question

How did the previous sustainable efforts of Kenyan university libraries, including their practices and initiatives supporting the Green Library Initiative, contribute to fostering environmental stewardship within the academic community, and what were the key challenges they faced in integrating these efforts effectively?

Literature review

In the context of developed nations, libraries have been at the forefront of sustainable practices, with notable examples including the Vancou-

ver Public Library in Canada. Through its 'Greenest City 2020' initiative, the library incorporated roof-top gardens, rainwater harvesting systems, and energy-efficient lighting, significantly reducing its carbon footprint (Vancouver Public Library, 2020). Similarly, the Seattle Public Library in the United States implemented a comprehensive sustainability plan, integrating LEED-certified designs and sustainable materials in its construction, thereby serving as a model for environmentally conscious infrastructure development (The Seattle Public Library, n.d.). These cases highlight the proactive stance of developed world libraries in embracing the Green Library Initiative (GLI) through tangible, eco-friendly measures.

Contrastingly, within the African context, examples from the University of Ghana's Balme Library showcase notable sustainable efforts. The library's adoption of solar panels and energy-efficient lighting has contributed to a substantial reduction in energy consumption, aligning with the GLI's emphasis on energy conservation (University of Ghana Library System, 2021). Similarly, the University of Cape Town Libraries in South Africa have employed water-saving technologies and waste management systems, demonstrating a commitment to sustainable practices despite the challenges posed by limited resources and infrastructure (University of Cape Town Libraries, 2020). These instances underscore the resilience of African libraries in incorporating sustainable practices, albeit amidst resource constraints, emphasizing their role in advancing the GLI within the African context.

Turning to Kenya, the case of the McMillan Memorial Library in Nairobi exemplifies the country's gradual strides in embracing sustainable measures. By adopting a digitization program for its archival materials and implementing energy-efficient lighting, the library has contributed to reducing paper consumption and energy waste, aligning with the broader objectives of the GLI (McMillan Memorial Library, n.d.). Additionally, the Kenyatta University Library has taken initiatives to

promote awareness about environmental conservation among students, integrating sustainability-themed workshops and campaigns into its academic programs, thus fostering a culture of environmental consciousness within the university community (Kenyatta University Library, 2021). These cases highlight the evolving role of Kenyan university libraries in driving sustainable efforts and promoting the ethos of the GLI within the national educational landscape.

In summary, while libraries in the developed world have set benchmarks for sustainable practices, African and Kenyan university libraries have demonstrated commendable progress in integrating the GLI through various sustainable initiatives, despite facing distinct challenges. The global momentum of the GLI is evident in the diverse approaches adopted by libraries worldwide, emphasizing the universal significance of environmental stewardship and the role of libraries in advancing this pivotal agenda.

Materials and Methods

This study employed a systematic literature review to ensure the validity and reliability of the findings. The process involved the systematic identification and selection of relevant literature, following established inclusion and exclusion criteria. Additionally, the quality of the selected studies was assessed using standardized appraisal tools to guarantee the reliability of the included data. The systematic approach ensured the comprehensive coverage of sustainable practices in Kenyan university libraries within the Green Library Initiative, enhancing the credibility and robustness of the study's findings.

Results and Discussion

Through the systematic review, a comprehensive understanding of the sustainable efforts in supporting the Green Library Initiative (GLI) by Kenyan university libraries emerged. A total of 12 relevant literature pieces published within the last five years were analyzed, providing insights into

Title	Author	Year	Theme
"Sustainable Initiatives in Kenyan University Libraries: A Case Study of Strathmore University Library"	Ochieng et al.	2022	Energy Efficiency and Waste Management
"The Emergence of Green Libraries in Kenya: Insights From Academic Libraries "	Mwanzu et al.	2023	Community Engagement and Environmental Awareness
"Challenges of Implementing Sustainable Strategies in Kenyan University Libraries: A Systematic Review"	Kibuku et al.,	2020	Resource Constraints and Infrastructural Limitations
"Incorporating Sustainable Practices into Academic Libraries: Case Studies from Kenyan University Libraries"	Wambua & Omondi	2023	Eco-Friendly Infrastructure and Digitalization
"Promoting Environmental Stewardship in Kenyan University Libraries: Lessons from the University of Nairobi Library"	Maina & Waweru	2022	Green Information Literacy and Outreach Programs
"Sustainable Resource Management in Kenyan Academic Libraries: Challenges and Opportunities"	Achieng & Mutiso	2021	Conservation of Natural Resources and Recycling
"Collaborative Approaches to Sustainability in Kenyan University Libraries"	Otieno and Wanjala	2020	Collaborative Networks and Partnerships
"Policy Implications for Sustainable Development in Kenyan University Libraries"	Kamau and Ndung'u	2019	Institutional Policies and Support
"Sustainability Integration in Kenyan Library Curricula: A Case of Moi University"	Kibet & Simiyu	2020	Curriculum Development and Integration
"Environmental Impact Assessments in Kenyan University Libraries: A Critical Analysis"	Nyambura & Wachira	2019	Environmental Impact and Mitigation Strategies
"Technology-Driven Sustainable Innovations in Kenyan University Libraries"	Kariuki & Njoroge	2021	Digital Technologies and Innovation for Sustainability
"Stakeholder Engagement for Sustainable Library Initiatives in Kenyan Universities"	Mwanzu, Nguyu, et al.	2023	Stakeholder Collaboration and Community Involvement

Table 1: *Overview of reviewed literature*

the strategies, challenges, and achievements of Kenyan university libraries in their pursuit of sustainable practices within the GLI framework. The table below presents the reviewed literature, highlighting their contributions to this study's objectives:

Table 1 provides a succinct overview of the reviewed literature, highlighting the diverse themes and topics explored in the context of sustainable practices within Kenyan university libraries, serving as a foundation for the comprehensive analysis presented in the discussion.

The systematic review revealed that Kenyan university libraries have increasingly prioritized sustainable practices, with a specific focus on energy efficiency and waste management. Ochieng et al. (2022) highlighted the case of Strathmore

University Library, which successfully implemented energy-efficient lighting systems and initiated waste reduction campaigns, significantly reducing its carbon footprint. This exemplifies the commitment of Kenyan university libraries to environmentally conscious operations. Moreover, (Mwanzu et al., (2023) emphasized the importance of community engagement and environmental awareness initiatives, showcasing how libraries have actively organized sustainability workshops and outreach programs to foster a culture of environmental stewardship among students and faculty members.

Despite these commendable efforts, the systematic review also pointed out persistent challenges faced by Kenyan university libraries, including limited financial resources and infrastructural

constraints. Kibuku et al. (2020) discussed these challenges in detail, emphasizing the need for enhanced resource allocation and infrastructural development to facilitate the effective implementation of sustainable strategies. The findings underscore the existing divide between the aspirations of Kenyan university libraries in supporting the GII and the practical limitations they encounter, calling for targeted interventions to bridge this gap.

By critically analyzing the reviewed literature, this study provides valuable insights into the landscape of sustainable efforts within Kenyan university libraries, highlighting their pivotal role in promoting sustainability within the educational context. The identified strategies, challenges, and achievements serve as a foundation for future research and practical initiatives aimed at enhancing the role of Kenyan university libraries in the global pursuit of environmental sustainability through the Green Library Initiative.

The systematic review demonstrated that Kenyan university libraries have emphasized the importance of eco-friendly infrastructure and digitalization as key components of their sustainable practices. Wambua and Omondi's (2023) study highlighted how the adoption of digital resources and the implementation of eco-friendly building designs have contributed to energy conservation and reduced paper usage, showcasing the libraries' commitment to sustainable operations. Additionally, Maina and Waweru (2022) underscored the significance of green information literacy and outreach programs, illustrating how the University of Nairobi Library has actively engaged students and faculty in workshops and seminars, fostering a culture of environmental consciousness and knowledge dissemination.

However, the review also highlighted challenges related to sustainable resource management faced by Kenyan academic libraries, including the conservation of natural resources and recycling. Achieng and Mutiso's (2021) research shed light on these challenges, emphasizing the need for effective waste management strategies and the

integration of recycling initiatives within library settings. These findings indicate the complexities and constraints involved in implementing sustainable resource management practices, underscoring the importance of tailored approaches and collaborative efforts to address these challenges effectively.

By synthesizing the findings from the reviewed literature, this study contributes to a comprehensive understanding of the sustainable efforts and challenges faced by Kenyan university libraries within the context of the Green Library Initiative. The identified themes and case studies serve as valuable references for policymakers, library administrators, and stakeholders seeking to enhance sustainability practices and bridge the gap between aspirations and practical implementation within Kenyan university libraries.

Furthermore, the systematic review highlighted the critical role of collaborative partnerships and knowledge-sharing initiatives in advancing sustainable practices within Kenyan university libraries. Studies such as "Collaborative Approaches to Sustainability in Kenyan University Libraries" by Otieno and Wanjala (2020) shed light on the significance of collaborative networks among libraries, academic institutions, and environmental organizations, emphasizing the need for collective efforts to address sustainability challenges effectively. These collaborative approaches have the potential to facilitate resource sharing, skill exchange, and the development of interdisciplinary solutions, contributing to the overall promotion of the Green Library Initiative across the academic landscape.

Moreover, the review revealed the importance of policy advocacy and institutional support in fostering a conducive environment for sustainable practices within Kenyan university libraries. The work of Kamau and Ndung'u (2019) titled "Policy Implications for Sustainable Development in Kenyan University Libraries" emphasized the need for comprehensive policy frameworks and institutional support to prioritize sustainability within library

operations. The integration of sustainability goals within institutional policies can provide a robust foundation for long-term planning, resource allocation, and capacity-building efforts, ensuring the sustainability agenda remains integral to the core functions of Kenyan university libraries.

By critically examining and synthesizing the diverse findings from the reviewed literature, this study not only provides a comprehensive overview of the sustainable practices and challenges faced by Kenyan university libraries but also underscores the interconnected nature of sustainability efforts, collaborative partnerships, and policy interventions. These insights offer a roadmap for fostering a holistic and integrated approach to sustainability within Kenyan university libraries, ultimately contributing to the advancement of the Green Library Initiative's objectives and the promotion of environmental stewardship within the academic community.

The systematic review highlighted the critical importance of incorporating sustainability principles within the library curricula, as emphasized by Kibet and Simiyu (2020). The integration of sustainability topics within the academic curriculum of Moi University reflects a proactive approach in nurturing a generation of environmentally conscious scholars and information professionals, contributing to the broader goals of the Green Library Initiative.

Furthermore, Nyambura and Wachira (2019) emphasized the significance of environmental impact assessments within Kenyan university libraries. Their analysis shed light on the importance of adopting mitigation strategies to minimize the ecological footprint of library operations, emphasizing the need for sustainable resource management practices and the implementation of environmentally friendly policies.

The study by Kariuki and Njoroge (2021) highlighted the transformative role of technology-driven innovations in fostering sustainable practices within Kenyan university libraries. Their research illustrated how the integration of digital

technologies and innovative solutions has facilitated energy conservation, improved information accessibility, and enhanced overall operational efficiency, aligning with the objectives of the Green Library Initiative in the digital age.

Moreover, the importance of stakeholder engagement and community involvement in promoting sustainable library initiatives was emphasized by Mwanzu, Nguyu, et al. (2023). Their work emphasized the need for collaborative efforts among various stakeholders, including students, faculty, local communities, and environmental organizations, to foster a culture of environmental stewardship and collective responsibility, thereby enhancing the sustainability agenda within Kenyan university libraries.

Conclusion

Based on the systematic review and analysis conducted in this study, several key findings have emerged regarding the sustainable practices of Kenyan university libraries in their support of the Green Library Initiative. The review highlighted a diverse array of initiatives, including the implementation of energy-efficient infrastructure, resource conservation measures, and active community engagement. Despite grappling with distinct challenges such as resource limitations and infrastructure constraints, the dedication of Kenyan university libraries to environmental stewardship remains commendable, underscoring their pivotal role in fostering a culture of sustainability within academic communities.

Consequently, this study emphasizes the crucial significance of Kenyan university libraries as key drivers in promoting the Green Library Initiative within the country's educational landscape. The findings not only shed light on the current sustainable practices but also reveal the untapped potential within these institutions to further enhance their contributions to the sustainability agenda. The exploration of this untapped potential serves as a stepping stone to bridge the gap between existing practices and the idealized ex-

pectations, providing valuable insights for enhancing the role of Kenyan university libraries in promoting sustainability within the education sector.

Recommendations

In line with the objectives of this research, it is recommended that Kenyan university libraries establish stronger collaborations with environmental organizations to leverage resources and expertise in the implementation of sustainable strategies. Furthermore, effective resource allocation and prudent infrastructure planning are crucial to overcoming the identified challenges and facilitating the seamless integration of sustainable practices within library operations. Encouraging knowledge sharing within the library community, coupled with the development of interdisciplinary sustainability programs, can further enhance the impact of these initiatives on the academic community. To the Kenyan Government: Allocate dedicated funding for sustainable initiatives in university libraries, develop comprehensive policies prioritizing environmental stewardship, and foster collaborations between environmental agencies and university libraries. To University Library Staff: Participate in capacity-building programs, foster interdisciplinary collaborations, and conduct regular assessments to identify and implement sustainable solutions aligned with the Green Library Initiative. To Policymakers: Prioritize sustainable development goals in institutional policies, advocate for sustainable infrastructure and technology integration plans, and support collaborative platforms for knowledge sharing among university libraries.

The novelty of this research lies in its comprehensive exploration of the sustainable efforts of Kenyan university libraries within the global framework of the Green Library Initiative. By addressing the specific challenges and achievements unique to the Kenyan context, this study contributes to the broader understanding of the pivotal role played by libraries in promoting sustainability within the education sector. The actionable in-

sights provided have the potential to inspire similar initiatives in educational institutions not only within the country but also across the African continent and beyond, fostering a culture of environmental consciousness and stewardship within academic communities worldwide.

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