



Digital Transformation In Libraries: Usage Patterns And Challenges In E-Resource Adoption

DR.MD.MANIQUEZ ZAMAN CHOWDHURY

Librarian, Dhing College

P.O.: Dhing , Dist. Nagaon (Assam)

Pin-782123

Abstract

Digital transformation in libraries has led to the widespread adoption of electronic resources (e-resources) as essential tools for academic research and learning. This study explores the usage patterns and challenges associated with e-resource adoption in academic libraries. Through content analysis, the study highlights how various library users; including students, faculty, and researchers, primarily engage with e-resources for research, assignments, and literature reviews, often accessing them from home or work due to time constraints. Despite the increased usage, several barriers to effective utilization persist, including limited access to specialized e-resources, poor internet connectivity, lack of digital literacy, and complicated navigation of digital platforms. The study also emphasizes the importance of training programs and support services in addressing these challenges, as well as the need for libraries to invest in more user-friendly interfaces and comprehensive e-resource subscriptions. The findings suggest that enhancing internet infrastructure, expanding training initiatives, and adopting targeted marketing strategies could significantly improve the access and utilization of e-resources, ultimately fostering a more digitally inclusive academic environment.

Keywords: Digital transformation, e-resources, academic libraries, usage patterns, challenges, e-resource adoption, digital literacy, internet connectivity, training programs.

1. Introduction

The digital transformation of libraries has fundamentally reshaped their role in society, transitioning them from physical repositories of books and journals to dynamic hubs of digital resources and services. With the advent of information technology, libraries have embraced e-resources, including e-books, e-journals, databases, and institutional repositories, to meet the evolving needs of users (Smith & Jones, 2020). These resources provide remote and instant access to vast collections of knowledge, fostering inclusivity and efficiency in learning and research. As libraries continue to adapt to the digital age, their capacity to offer seamless access to information has positioned them as indispensable in academia and beyond (Taylor & Johnson, 2022). The integration of e-resources has transformed user engagement, enabling advanced search functionalities, multimedia content access, and personalized services. Such innovations have enhanced the user experience, making libraries more relevant in an increasingly digital world (Green et al., 2021). For instance, digital platforms allow users to explore information beyond geographical and temporal constraints, improving learning opportunities for individuals in remote areas (Clark, 2020). However, these advancements also necessitate ongoing technological upgrades and skilled personnel to maintain digital systems effectively (Adams, 2018). Despite the benefits, challenges persist in adopting and managing digital infrastructure. Financial constraints often limit libraries from subscribing to comprehensive e-resource packages, and outdated technological frameworks can hinder user access (Brown, 2019). Additionally, disparities in digital literacy among users and library staff remain a significant barrier to fully leveraging e-resources (Muneja, 2024). Training programs and support services are therefore critical in bridging this gap and ensuring the effective utilization of these resources (Wagay & Dutta, 2024). Understanding usage patterns and user preferences is integral to addressing these challenges. For example, studies show that users primarily access e-resources for academic purposes, such as literature reviews, research writing, and current awareness (Wagay & Dutta, 2024). However, difficulties in discovering relevant information, inadequate access points, and insufficient user training often impede optimal usage (Mommoh & Emmanuel, 2024). Such insights are essential for libraries to design user-centered services and improve resource accessibility. This paper examines the digital transformation of libraries with a focus on usage patterns and the challenges associated with e-resource adoption. It highlights the need for strategic interventions, including infrastructure enhancement, user training, and institutional support, to overcome barriers and maximize the potential of digital resources in academic libraries. By addressing these issues, libraries can solidify their position as vital institutions in the knowledge economy and contribute meaningfully to the digital empowerment of their users.

Background of the Study The digital transformation of libraries has become a pivotal element in modernizing educational and research environments, emphasizing the integration

of e-resources to meet evolving user demands. The shift from traditional print collections to digital repositories driven by the exponential growth of information and the need for instant accessibility (Singh & Kumar, 2020). Libraries now provide access to e-books, e-journals, and databases that enhance research

capabilities and academic productivity (Chen, 2019). However, this transition is not without challenges, as limited funding, outdated infrastructure, and resistance to change hinder the seamless adoption of digital technologies (Brown & Taylor, 2021). Furthermore, disparities in digital literacy among users create barriers to optimal utilization, highlighting the importance of structured training and user-support programs (Green et al., 2022). Institutional policies and strategic planning are essential in addressing these challenges and ensuring equitable access to digital resources (Johnson, 2018). As libraries continue to adapt, understanding user behavior and addressing operational constraints remain critical for fostering an inclusive and efficient digital ecosystem (Adams & Lee, 2020).

1.1. Emergence of the Problem

The emergence of the problem of digital transformation in libraries is rooted in the growing demand for e-resources and the challenges associated with their integration and management. With the proliferation of digital technologies, libraries have been compelled to evolve from traditional spaces into technologically advanced hubs, offering seamless access to digital content such as e-books, journals, multimedia, and databases. However, this transition is fraught with complexities. One of the primary issues is the lack of adequate financial resources to procure and maintain high-quality e-resources, particularly in libraries of developing regions. Additionally, technological barriers, such as insufficient infrastructure, slow internet speeds, and outdated software, further impede the effectiveness of digital initiatives. Moreover, the diverse digital literacy levels among users create disparities in access and utilization, with some patrons unable to navigate advanced digital platforms effectively. Another critical challenge arises from the reluctance of library staff and users to embrace digital tools, often due to a lack of proper training and a preference for conventional resources. Furthermore, copyright restrictions, licensing complexities, and the rising costs of subscriptions add layers of administrative and legal hurdles. As libraries strive to address these challenges, the gap between the potential benefits of digital transformation and the practical difficulties in its implementation underscores the urgency of understanding and mitigating these issues to ensure equitable access and sustained relevance in the digital age.

1.2. Conceptual Framework of the Study

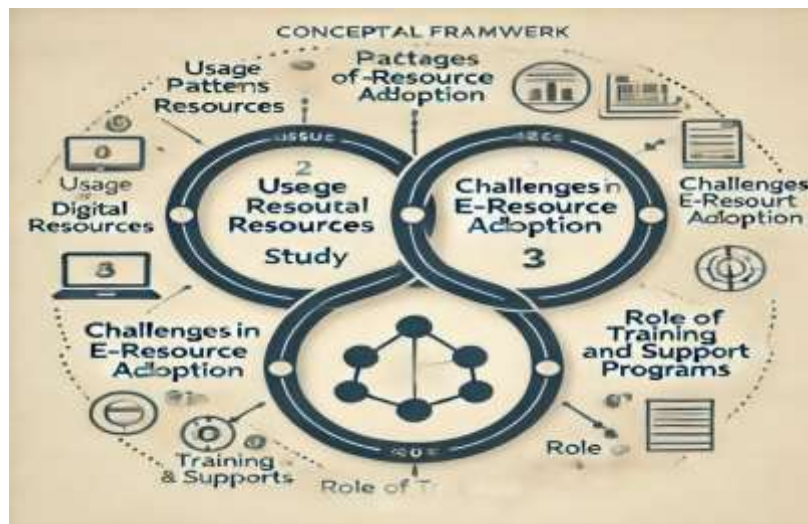


Figure 1.1: Showing the Conceptual Framework of the Study
Source: Made by Investigator

The conceptual framework for this study is centered on three key dimensions: Usage Patterns of Digital Resources, Challenges in E-Resource Adoption, and Role of Training and Support Programs. These dimensions interact and overlap, emphasizing their interconnectedness in driving the digital transformation of libraries. Understanding user behaviors and access preferences informs the adoption of e-resources, while challenges such as financial constraints and technological barriers hinder smooth integration. Additionally, effective training and support programs are crucial in bridging digital literacy gaps, thereby enhancing user engagement with e-resources. The diagram above visually represents these relationships and their collective impact on successful digital transformation in libraries.

1.3. The Statement of the Problem

The digital transformation in libraries has significantly altered the way information is accessed, managed, and disseminated, with a growing reliance on electronic resources (e-resources) to enhance library services. However, the adoption of these e-resources met with varying degrees of success across libraries, influenced by usage patterns, infrastructural challenges, and user engagement levels. While e-resources offer numerous benefits such as accessibility, cost-efficiency, and up-to-date content, many libraries face challenges including inadequate technological infrastructure, lack of proper training for users, and resistance to change among library staff and patrons. These barriers hinder the full potential of e-resources, posing a critical issue in ensuring their effective integration and usage within libraries. The problem, therefore, lies in understanding the underlying patterns of e-resource usage and identifying the specific challenges that libraries encounter in their digital transformation efforts.

1.4.The Significance of the Study

The significance of this study lies in its potential to provide valuable insights into the adoption and usage patterns of e-resources within libraries, a critical area of focus in the context of ongoing digital transformation. As libraries increasingly transition from traditional print-based collections to digital platforms, understanding how both library staff and users utilize e-resources is essential for optimizing their accessibility and efficiency. By identifying the challenges faced by libraries—such as technological barriers, resource limitations, and user resistance—this study will contribute to the development of strategies aimed at overcoming these obstacles. Moreover, the research can inform policy decisions regarding investments in digital infrastructure, training programs for library staff, and awareness campaigns for users, ensuring that e-resources are effectively integrated into library services. The findings of this study assisted in enhancing the user experience, facilitating greater engagement with digital content, and fostering a more inclusive and accessible information ecosystem. Ultimately, this research has the potential to guide libraries in their digital evolution, enabling them to better serve their communities and meet the growing demand for efficient, digital information access in the modern era.

1.5.Research Question

RQ1:What are the prevalent usage patterns of digital resources among different categories of library users?

RQ2:What challenges do libraries face in the implementation and maintenance of e-resources?

RQ3:How do training and support programs influence the effective utilization of e-resources by library users?

1.6.The Objectives of the Study

O1:To identify the usage patterns of digital resources among library users.

O2:To explore the key challenges faced by libraries in implementing and maintaining e-resources.

O3:To investigate the role of training and support programs in enhancing the effective use of e-resources.

2. The Review of Related Literature

Mogaka, J. M. (2024). *Utilization Of Electronic Resources By Postgraduate Students In Selected Academic Libraries In Kisii County, Kenya* (Doctoral dissertation, Kisii University). The findings also established that the scholars retrieved online resources mainly through their personal effort and majority of them access e-resources from their home or work place due to their busy working schedule. Major challenges that hindered admittance and usage of online resources are dearth of subscriptions in particular fields of study, complications in discovery pertinent information, information surplus and failure to admittance full-text articles entirely. In order to increase access and use of online resources the study recommended that subscription to e-resources should be done for all the programmes offered in the university, increase bandwidth to enhance internet connectivity, purchase more computers to upsurge

admittance points to online resources and market e-resources to library patrons using social media and library knowledge ambassadors. The study suggested that funding to academic libraries should be increased to enable them subscribe to more relevant electronic databases, conduct training on online resources at all levels of study to equip students with skills on access and utilization of online resources and that library supervision should put in domicile devices to facilitate utilization of online resources by their users.

Mommoh, R. L., & Emmanuel, V. O. (2024). Electronic information resources management in academic libraries. *Journal of Library Services and Technologies*, 6(2), 136-154. The paper concludes that proper management of electronic information resources (EIRs) in academic libraries is imperative to guarantee that users have access to sufficient and up-to-date information. Recommendations include continuous training programs for library staff and users, user-centric support services, collaborative partnerships with faculty and researchers to understand their needs, accessibility initiatives, usage data analysis, and the continuous effort of librarians in charge of academic libraries.

Muneja, P. S. (2024). Assessment of the effectiveness of online e-resources marketing tools in university libraries. *Global Knowledge, Memory and Communication*. It was revealed that most university libraries use websites for displaying e-resources. The commonly used social media for marketing e-resources is Facebook followed by Instagram while Twitter and Ask a Librarian are the least used. The results further show that only a few universities provide instructions on how to access and use e-resources. The findings indicate that universities had active communication platforms for marketing e-resources. Furthermore, less than 50% of marketing messages are active and current. It is recommended that marketing e-resources integrated into the library's plans and strategies and this informed by library policies.

Nakhumicha, T. A. (2024). *Access And Utilization Of Information In Digital Resource Platforms For Teaching And Research By Academic Staff In Selected Public Universities, Kenya* (Doctoral dissertation, Kisii University). The results demonstrated that university libraries offer a variety of digital resource platforms, such as websites, institutional repositories, and OPACs. While textual, audio-visual, and video information was available, electronic journals, e-books, and these were the most popular forms of digital content. Users found the digital resource platforms' visual designs unappealing; the overflowing content, poor use of color and images, complex search functions, insufficient filters to help users find pertinent information, and a lack of links to sources outside the collection to be unappealing. Inadequate digital literacy abilities and a delayed adoption of technology by academic personnel led to inefficient access to and underutilization of e-content. Lackluster visual design, insufficient digital literacy, a narrow selection of digital resources platforms, and technological dynamism were the main issues facing academic personnel. In order to provide more access, the study suggested expanding digital resource platforms, creating visually appealing designs, and providing users with ongoing instruction in digital literacy. In university libraries, the study suggested a framework for encouraging the use and accessibility of digital resource platforms.

2.1. Research Gap



Source: Software Generated Report

The word cloud illustrates critical themes tied to **Digital Transformation in Libraries**, particularly focusing on **Usage Patterns** and **Challenges in E-Resource Adoption**. Prominent terms such as **E-Resource Utilization** and **Digital Literacy** emphasize the evolving needs for skill enhancement and adaptability among users. Infrastructure-related challenges are reflected in terms like **Bandwidth Issues**, **Access Points**, and **Subscription Gaps**, highlighting barriers to seamless access. The importance of **Training Programs** and **Marketing Strategies** signals a shift towards user-centered approaches to boost

awareness and effective usage of e-resources. Furthermore, themes like **Technological Dynamism** and **User Experience** stress the role of innovation and intuitive platform designs in fostering adoption. Collectively, these elements underscore the interplay of user engagement, resource accessibility, and infrastructural readiness in the digital transformation journey of libraries.

The studies reviewed highlighted significant patterns and challenges in the adoption and use of electronic resources (e-resources) in academic libraries, particularly in the context of digital transformation. While e-resources are integral to modern academic libraries, enabling access to a wide range of information, their usage hindered by issues such as limited access to subscriptions, poor internet connectivity, lack of training, and user resistance due to inadequate digital literacy. Many users, including students and academic staff, primarily access e-resources from home or their workplace, and face difficulties like slow download speeds, poor platform design, and complex search functions. Additionally, marketing and awareness efforts are often inadequate, with many libraries not fully utilizing social media or providing clear instructions on resource access. Recommendations to enhance e-resource usage include expanding subscriptions, improving digital literacy, enhancing user interfaces, increasing funding for e-resources, and integrating e-resource marketing into library strategies. These findings underscore the need for comprehensive strategies to overcome barriers to e-resource access, ensuring that libraries fully realize the benefits of digital transformation and effectively meet the information needs of their users.

3. Methodology of Study

Content analysis of digital transformation in libraries, specifically focusing on usage patterns and challenges in e-resource adoption, reveals key insights into how library users interact with electronic resources and the barriers they face. Users, including students, researchers, and faculty, frequently access e-resources for academic purposes, such as research, assignments, and literature reviews, primarily through personal devices and from home or workplaces due to time constraints. Despite the widespread adoption of e-resources, several challenges hinder their effective use, including insufficient subscriptions to specialized databases, complex navigation of digital platforms, slow internet speeds, and lack of digital literacy among users. Furthermore, issues like the failure to access full-text articles, inadequate training programs, and the lack of user-friendly interfaces contribute to the underutilization of available resources. To improve access and utilization, libraries must enhance internet infrastructure, provide targeted training for users, and ensure comprehensive subscriptions to e-resources that cater to diverse academic needs.

4. Analysis and Interpretation

4.1. Pertaining to Objective 1:

O1: To identify the usage patterns of digital resources among library users.

Usage Patterns among Postgraduate Students

Postgraduate students are among the most frequent users of electronic resources in academic libraries. According to Mogaka (2024), postgraduate students in Kisii County, Kenya, primarily retrieve online

resources through their personal effort, often accessing these resources from home or their workplace due to their demanding schedules. These users primarily engage with e-resources for research activities, assignment writing, and literature review preparation. However, many face challenges such as the lack of subscription in specific academic fields and difficulty in discovering pertinent information. To address these issues, Mogaka recommends increasing subscriptions to cover all academic programs, improving internet connectivity, and increasing awareness about e-resource availability through targeted social media campaigns.

2. Usage among Academic Staff

Academic staff, especially faculty members, utilize digital resources for teaching, research, and content development. Nakhumicha (2024) found that academic personnel in Kenyan universities primarily engage with e-journals, e-books, and institutional repositories. However, many faculty members struggle with inefficient access due to poor digital literacy skills, unattractive platform designs, and insufficient search functionalities. Academic staff also face challenges related to the delayed adoption of technology in their teaching practices. Nakhumicha suggests that university libraries expand and enhance digital resource platforms and provide continuous training in digital literacy to improve access and utilization of these resources.

3. Usage among Undergraduate Students

Undergraduate students, while also frequent users of e-resources, tend to utilize them for more basic tasks such as assignment completion and coursework research. According to Wagay and Dutta (2024), students at Kashmir University frequently use electronic journals for research proposal writing, literature reviews, and for staying updated on scientific debates. However, their access hindered by issues such as limited access to computers, power outages, slow internet speeds, and a lack of proper training in resource navigation. Wagay and Dutta emphasize that increasing the number of computer terminals, improving internet speed, and providing training could enhance the usage of electronic resources by undergraduates.

4. Usage among Library Staff

Library staff, who play a crucial role in managing digital resources, often engage with e-resources to ensure their accessibility to other users. According to Mommoh and Emmanuel (2024), proper management of electronic information resources (EIRs) in academic libraries is critical for ensuring sufficient and up-to-date information for users. Library staff tasked with maintaining systems that ensure smooth access to e-resources, conducting training for users, and promoting digital resources to faculty and students. Continuous professional development for library staff, including training in the latest digital tools and resource management techniques, is essential for improving e-resource usage across all categories of library users.

5. Usage among Research Scholars

Research scholars heavily rely on e-resources for in-depth research, analysis, and academic writing. Wagay and Dutta (2024) found that postgraduate students at Kashmir University use electronic journals extensively for research-related activities. These users often seek peer-reviewed papers, current awareness, and specific scientific information to aid in their research. However, they encounter challenges such as slow download speeds, power outages, and difficulties in accessing resources from home. The study suggests that improving internet connectivity, increasing the number of access points, and ensuring more comprehensive access to e-journals would significantly enhance the utilization of digital resources among research scholars.

The usage patterns of e-resources vary significantly among different categories of library users, with postgraduate students, academic staff, and research scholars being the primary users. However, each group faces distinct challenges related to digital literacy, access to infrastructure, and resource availability. Addressing these challenges through better resource management, enhanced training, improved internet connectivity, and increased awareness can improve the adoption and utilization of digital resources in academic libraries, ultimately supporting the ongoing digital transformation of library services.

4.2. Pertaining to Objective 2:

O2: To explore the key challenges faced by libraries in implementing and maintaining e-resources.

Limited Funding for E-Resource Subscriptions

One of the primary challenges faced by libraries in the implementation and maintenance of e-resources is inadequate funding for subscriptions to electronic databases and resources. According to Mogaka (2024), many academic libraries are unable to provide access to e-resources in all areas of study due to budget constraints. This issue becomes particularly pronounced in fields that require specialized databases, which are not covered by general subscriptions. As a result, students and faculty may find that crucial information is unavailable through the library's digital offerings, hindering academic research and learning. Mogaka (2024) recommends increasing funding for academic libraries to ensure broader and more comprehensive access to e-resources, enabling libraries to subscribe to a wider range of databases that meet the needs of all academic programs.

2. Technological Barriers and Inadequate Infrastructure

Technological infrastructure is another significant challenge in the implementation of e-resources. Libraries, especially those in developing regions, often struggle with outdated technology, limited bandwidth, and insufficient access points for users. Nakhumicha (2024) highlights that university libraries in Kenya face issues with poor internet connectivity and slow download speeds, making it difficult for users to access e-resources efficiently. Furthermore, libraries may not have enough computers

or terminals to support simultaneous access to e-resources, limiting access during peak usage times. To address this, Nakhumicha (2024) suggests expanding digital resource platforms and investing in better hardware and internet infrastructure to ensure seamless access to e-resources.

3. Lack of User Training and Digital Literacy

A lack of training in using e-resources is a key challenge in ensuring the successful implementation and maintenance of digital resources in libraries. As pointed out by Mommoh and Emmanuel (2024), both library staff and users often lack sufficient training to effectively navigate and utilize e-resources. Users, particularly students and faculty with limited exposure to digital tools, may struggle to locate relevant information or make full use of the available digital resources. The rapid pace of technological change, requiring ongoing training and updates, compounds this problem. Mommoh and Emmanuel (2024) recommend continuous training programs for both library staff and users to improve digital literacy and enhance the efficient use of e-resources.

4. Resistance to Change and User Acceptance

Resistance to adopting e-resources is another challenge that libraries face in their digital transformation efforts. Wagay and Dutta (2024) note that some students and faculty are reluctant to shift from traditional print resources to digital alternatives, primarily due to unfamiliarity with digital tools or scepticism about the quality of electronic content. Additionally, some users may prefer physical copies of materials and may not be comfortable navigating online databases. This resistance can impede the widespread adoption of e-resources and hinder the effectiveness of digital resource implementation. To overcome this challenge, libraries must engage in awareness campaigns and promote the benefits of e-resources, emphasizing ease of access, cost-efficiency, and the vast range of up-to-date content available.

5. Inadequate Technical Support and Maintenance

Maintaining e-resources requires dedicated technical support to address issues related to platform functionality, system errors, and user queries. Nakhumicha (2024) found that libraries often lack sufficient technical staff to provide the support needed to ensure smooth operations of digital platforms. Additionally, the constant updating of platforms and the integration of new e-resources can be a complex and resource-intensive process. Without ongoing technical support, libraries may face difficulties in keeping systems up to date, ensuring security, and troubleshooting issues promptly. Mommoh and Emmanuel (2024) stress the importance of having a well-trained technical support team in place to manage the installation, maintenance, and troubleshooting of digital platforms to ensure uninterrupted access to e-resources.

6. Copyright and Licensing Issues

Copyright and licensing concerns pose another significant challenge for libraries in the adoption and maintenance of e-resources. Libraries must navigate complex copyright laws and licensing agreements, which often restrict the sharing or redistribution of digital content. This is particularly true for e-books, e-journals, and multimedia resources, where libraries may be limited in terms of the number of users who can access a resource simultaneously. As Mogaka (2024) suggests, libraries must ensure that they have appropriate licenses for the e-resources they provide, which can be an ongoing challenge due to the fluctuating costs of licenses and restrictions imposed by publishers. Without clear and adequate licensing agreements, libraries may risk non-compliance with copyright laws, potentially leading to legal issues.

7. Inefficient Discovery and Search Functions

The discovery of e-resources is another challenge, as many libraries use complex digital platforms that may not offer intuitive search functions. Nakhumicha (2024) found that users in Kenyan universities often struggled with poorly designed digital platforms that had complex search functionalities, ineffective filters, and an overwhelming amount of unorganized content. This makes it difficult for users to find the information they need, leading to frustration and decreased utilization of e-resources. Nakhumicha recommends enhancing the design of digital platforms to improve usability, offering more refined search tools, and ensuring that platforms are easy to navigate for users of all levels of digital literacy.

8. Sustainability and Long-Term Access

Ensuring the long-term sustainability of e-resources is another key challenge. Libraries must constantly evaluate the cost-effectiveness of their subscriptions, manage renewals, and decide which resources to retain or discard based on changing academic needs and financial constraints. Wagay and Dutta (2024) note that many libraries face difficulties in maintaining long-term access to certain e-resources due to rising subscription costs, making it harder to ensure continuous access to critical content. Libraries need to carefully manage their e-resource collections, making decisions based on usage data, user needs, and budget limitations to maintain a sustainable digital resource portfolio.

The libraries face several challenges in the implementation and maintenance of e-resources, ranging from inadequate funding and technological barriers to resistance from users and copyright issues. Overcoming these challenges requires a multi-faceted approach, including increased investment in infrastructure, continuous training programs, user engagement initiatives, and the establishment of effective technical support systems. By addressing these challenges, libraries can better facilitate the adoption and efficient use of e-resources, supporting the ongoing digital transformation of academic libraries and improving access to critical information for users.

4.3. Pertaining to Objective 3:

O₃: To investigate the role of training and support programs in enhancing the effective use of e-resources.

Improving Digital Literacy and User Competence

Training programs play a crucial role in enhancing the digital literacy of library users, enabling them to effectively utilize e-resources. According to Mommoh and Emmanuel (2024), continuous training programs for both library staff and users are essential for improving their understanding of electronic information resources (EIRs). These programs equip users with the necessary skills to navigate complex databases, conduct efficient searches, and access relevant resources. Without proper training, users may struggle to make full use of the library's digital offerings, leading to underutilization of available e-resources. When users receive proper guidance on how to access, download, and use electronic journals, e-books, and databases, they become more confident and efficient in their research and academic activities, ultimately enhancing their overall experience.

2. Enhancing Search Skills and Resource Discovery

One of the key benefits of training and support programs is the improvement of search skills and resource discovery. Libraries often host workshops or provide tutorials on how to use advanced search techniques, filters, and Boolean operators to refine search results in digital platforms. Nakhumicha (2024) emphasized that the lack of training in these areas can lead to inefficiencies, such as users spending excessive time searching for relevant content or failing to find appropriate resources. By teaching users how to effectively utilize search functionalities, training programs ensure that users can quickly locate the information they need, thus increasing the likelihood of e-resource usage. This also reduces frustration and enhances the overall satisfaction with the library's digital services.

3. Building Confidence and Overcoming Technological Barriers

Training programs help library users overcome technological barriers, which can be a significant obstacle to the effective use of e-resources. Many users may be hesitant or intimidated by digital platforms due to their unfamiliarity with technology, especially older students or faculty members who have limited experience with online research tools. Muneja (2024) noted that a lack of digital literacy lead to users avoiding or underusing e-resources, even when they are available. Training programs, therefore, help build users' confidence in interacting with digital resources, addressing issues like navigating databases, accessing full-text articles, and utilizing various e-resource tools. By creating a comfortable learning environment, libraries can ensure that users feel more confident in adopting e-resources, leading to greater utilization.

4. Offering Personalized Assistance and Support Services

Support programs are essential for offering personalized help to users who encounter difficulties while using e-resources. Mommoh and Emmanuel (2024) argue that user-centric support services, such as one-on-one training sessions, help desks, and online support, are crucial in addressing specific issues faced by users. For instance, some students or researchers may have trouble accessing certain e-journals, managing digital citations, or downloading resources due to technical issues or subscription problems. Providing personalized assistance helps to resolve these issues quickly, ensuring that users do not abandon their research tasks out of frustration. Additionally, libraries can train support staff to handle common technical problems, thereby ensuring users receive prompt assistance, which enhances the overall usability and satisfaction with e-resources.

5. Increasing Awareness of Available Resources

Training and support programs also help increase user awareness of the full range of e-resources available in the library. Many users are unaware of the diverse digital resources offered, such as specialized databases, archives, and multimedia content, that could significantly benefit their academic work. As Wagay and Dutta (2024) found, many students are primarily aware of and use only electronic journals, missing other valuable digital resources like e-books, research reports, or multimedia learning tools. Training sessions that highlight the breadth of e-resources available, as well as how to access them, can significantly increase utilization. This awareness ensures that users take full advantage of the library's digital offerings, improving the overall impact of the library's resources on their academic success.

6. Facilitating Remote Access and Flexible Learning

With increasing numbers of users accessing e-resources remotely, training programs that cover remote access techniques and tools are essential. Many libraries offer online tutorials, webinars, or video demonstrations that teach users how to access e-resources from home or while traveling. According to Mogaka (2024), postgraduate students frequently access e-resources from their homes or workplaces due to time constraints. Training programs that provide clear instructions on how to log in remotely, access resources via VPNs or proxy servers, and use cloud storage tools can ensure that users continue to access and utilize e-resources even when not on campus. This flexibility significantly increases the utility of e-resources, as it accommodates users' busy schedules and diverse locations.

7. Supporting Research Collaboration and Academic Work

Training programs also foster better collaboration among researchers and academic staff by teaching them how to share and collaborate using digital resources. As highlighted by Nakhumicha (2024), many academic staff members in university libraries have trouble in utilizing e-resources for collaborative research due to a lack of familiarity with online platforms or digital collaboration tools. Training that

focuses on utilizing citation management tools, online research platforms, and collaboration spaces can improve the collaborative potential of digital resources. Researchers who trained to use tools like reference managers (e.g., EndNote, Zotero) or cloud-based document sharing platforms (e.g., Google Drive, Dropbox) are better equipped to collaborate efficiently, enhancing the overall research output of an academic institution.

8. Continuous Learning and Adaptation to Technological Changes

The digital landscape is continually evolving, and libraries must ensure that both their staff and users stay updated with the latest technologies and e-resource management strategies. Training programs seen as a continuous process rather than a one-time event. According to Muneja (2024), ongoing training helps users adapt to new features, interfaces, and technological advancements in digital platforms. As new e-resources and tools introduced, libraries need to provide regular workshops and training sessions to ensure users can fully utilize these tools. This continuous learning process ensures that the users' skills remain up-to-date, fostering greater engagement and utilization of e-resources over time.

Training and support programs are integral to the effective utilization of e-resources in libraries. They not only enhance users' digital literacy, confidence, and search skills but also provide personalized assistance and increase awareness of available resources. By facilitating remote access, supporting collaborative research, and promoting continuous learning, training programs ensure that library users can maximize the potential of digital resources. Ultimately, well-structured training and support programs significantly contribute to the efficient and effective use of e-resources, enhancing academic productivity and research outcomes.

5. Conclusion

The digital transformation of libraries marks a significant milestone in the evolution of information access and dissemination. By integrating e-resources such as e-books, e-journals, and digital databases, libraries have redefined their role from being mere custodians of physical collections to dynamic facilitators of knowledge in the digital age. This transition has not only improved user access to information but has also enriched the learning and research experiences of diverse user groups. However, the shift towards digital resources is accompanied by challenges that require strategic interventions to ensure inclusivity and efficiency. One of the critical challenges faced by libraries is the disparity in digital literacy among users and staff, which often limits the effective utilization of e-resources. Tailored training programs and user-centric support services are essential to bridge this gap and empower users to navigate the digital landscape efficiently. Additionally, financial and infrastructural constraints hinder libraries from subscribing to extensive resource databases and upgrading digital systems. Enhanced funding and institutional policies are imperative to address these limitations and enable libraries to offer comprehensive and up-to-date resources.

Furthermore, understanding user behavior and preferences plays a pivotal role in optimizing the adoption of e-resources. Insights into usage patterns, such as the preference for remote access and the purpose of resource utilization, can guide libraries in designing personalized services and improving resource accessibility. Collaborative efforts between libraries, academic institutions, and technology providers are essential to overcome barriers and foster a seamless digital ecosystem. In conclusion, while digital transformation has brought unparalleled opportunities for libraries to enhance their services, addressing the associated challenges is crucial for sustaining their relevance and impact. By prioritizing user training, infrastructure development, and strategic collaborations, libraries can continue to be vital institutions in the digital era, empowering users and contributing to the broader knowledge economy. The future of libraries lies in their ability to adapt to technological advancements while maintaining their commitment to inclusivity, accessibility, and user satisfaction.

Reference

- Bah, U. M. (2024). From books to bytes: a systematic review of the role of Information and Communication Technology (ICT) in academic library administration. *Jurnal Intelek*, 19(2), 25-44.
- Benard, R., & Msoffe, G. 24. Attitude of Undergraduate Students Towards the use of E-Resources at Sokoine University of Agriculture, Tanzania. *Re-Imagining Library and Information Services in the Digital Era/editors, Tom Kwanya, Irene*, 245.
- Chakraborty, K., Shukla, A., & Upadhyay, N. (2024). E-resources licensing in Artificial Intelligence (AI) Environment: Practices and Innovative Ventures.
- Isiaka, A. O., Soliu, A., Aremu, B. A., Bamidele, B. A., Saba-Jibril, S., & Ibitoye, A. R. (2024). The evolving role of libraries in the fourth industrial revolution: navigating digital transformation. *Library Philosophy and Practice*, 1-26.
- Nakaziba, S., & Ngulube, P. (2024). Harnessing digital power for relevance: status of digital transformation in selected university libraries in Uganda. *Collection and Curation*, 43(2), 33-44.
- Nakhumicha, T. A. (2024). *Access And Utilization Of Information In Digital Resource Platforms For Teaching And Research By Academic Staff In Selected Public Universities, Kenya* (Doctoral dissertation, Kisii University).
- Mogaka, J. M. (2024). *Utilization Of Electronic Resources By Postgraduate Students In Selected Academic Libraries In Kisii County, Kenya* (Doctoral dissertation, Kisii University).

- Mommoh, R. L., & Emmanuel, V. O. (2024). Electronic information resources management in academic libraries. *Journal of Library Services and Technologies*, 6(2), 136-154.
- Muneja, P. S. (2024). Assessment of the effectiveness of online e-resources marketing tools in university libraries. *Global Knowledge, Memory and Communication*.
- Sasikumar, A., & Sunil, M. V. (2024). Optimizing E-Resource Utilization in Business School Libraries: A Lean 6 Sigma Approach. *Educational Administration: Theory and Practice*, 30(5), 3428-3439.

