

Research Article

Digitizing Print and Electronic Resources of Mid-Level Colleges as a New Norm: Challenges and Opportunities in Nyeri County

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Abstract

Rationale of the study - In the field of library and information science, digitization is no more a novel notion, but it is still a difficult problem to solve. Digitization is the procedure that deals with selecting, processing, changing analogue to digital form, describing, storing, archiving, and disseminating information through a collection of administrative and technical processes and activities. With technological innovations, Digitisation has emerged as a real and practical requirement., allowing for greater access to information sources at anytime, anywhere, and in any location. The objectives including; digitization of mid-level colleges, skills and competencies required for digitization, challenges for digitization and finally propose possible ways to combat issues in digitizing of information resources. *Methodology* - The study adopted a descriptive research design. This survey included seven librarians and institution managers from seven different libraries. A questionnaire for librarians and an interview schedule for managers were used to collect data. The population of both library workers and managers was chosen by means of a census sampling method. The population of both library workers and managers was selected by use of census sampling procedure since the number was small and manageable. Quantitative data were analysed using SPSS Version 25, while qualitative data were analysed using content analysis. The results were presented in tables and frequencies. *Findings* – The study findings revealed the need for library resource digitization that is primarily for protecting collection in danger of extinction, improving the visibility of colleges outputs, Improving the timeless availability of library resources, then promoting remote access to all library users in the selected college libraries, according to the analysis. The results demonstrated that digitalization of library resources in mid-level college libraries is extremely low, and the librarians who work on digitizing library materials lack the necessary training the requisite abilities. Challenges included power supply, database security, infrastructure to manage the process of digitization, staff ability to oversee the process, users' dependence on convectional library materials, as well as methods for improving library resource digitization. *Implications* – The study recommends that there should be setting up backup power sources including; standby power generators, solar-powered systems, Utility power networks, and so on, as well as installing malware, anti-virus, and hack-proof software. *Originality* – Whereas other researches concentrated on digitization of library materials in universities, this study focused solely on digitization of library resources in mid-level colleges.

Keywords

Digital Library, Digitization Barriers, Digitization Process, Library Digitization

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1. Introduction/Background to the Study

Libraries and librarians have been tasked with implementing and instilling the use of new technologies in library services and operations in light of recent advancements in information communication technologies (ICTs) and the explosion of information [20]. As a result, existing print resources have had to be converted to formats and mediums that can be read using these ICTs, resulting in digitalization. The process of converting historical and other materials into digital formats and making them worldwide accessible through the use of digital processes is referred to as digitization [13]. The process of transforming written and printed documents into electronic form is digitization of print and electronic resources. Text, images, music, or a mix of these can all be used to generate content (multimedia). The process of digitization produces a digital document which may be shared via the online.

Digitization process is extremely intricate, time-consuming, and demanding, and it necessitates the use of highly qualified and experienced people to complete it successfully. [10] asserts that libraries and the quality public service delivery are more significantly impacted by technological advancements and their subsequent integration into library and information services. Process of transferring concrete information items to electronic format safeguards the original item and also giving open access to resources which might otherwise be limited due to geographic inequalities [19]. The editing and processing chores that come with digitization include cataloging, indexing, and compression, to name a few.

Two of a library's main goals are met through digitization: accessibility toward existing information materials, maintenance and preservation of works for future. The five requirements driving digitalization of information resources in libraries, as articulated by [6], are conservation, availability, sharing of resource and service provision, prestige as well as visibility, and technological advancement. They went on to say that preservation is the process of extending life of information resources and items from archives through keeping the resources in good shape, also in their original form or in a more resilient form such as digitisation. It is necessary to digitize information resources in order to preserve them, particularly for resources with limited availability, including documents, journals, grey literature, and so on. Digitization decreases manual manipulation, hence decreasing mutilation caused by external pressures and extending the life information resources [20]. The ease of which its materials may be accessed and used regardless of location, is critical. Digitization makes it easier to access library materials. It increases the effectiveness of the method used to find information. It is grounded on idea that digital resources will be easily available over the internet. Digital documents, unlike analog documents, can be viewed, recovered, and reused by anybody. Digitalization facilitates resource sharing and service delivery. Resource sharing is a sort of collaboration in which a group of libraries pool

their resources and operations, according to [4]. It's an action that comes from an official or non-official agreement between libraries to network and share collections and people for their users' advantage and to lower collection development costs, according to [6].

The benefit of digitisation is that it offers a platform for library networking and data duplication. Through digitization, a collection of library materials that is unique and of worldwide significance may obtain reputation, respect, and visibility [14]. Availability of technological developments in IT mandates that libraries and information centers take advantage of technological advancements. As a result, digitalization is an important part of the ICT era's development. To better serve a growing user group, provide improved accessibility to institution's materials in areas of education and long-term learning. Digitization reduces the handling and usage of delicate or mostly used original resource and creates a backup copy for threatened resources including brittle records or books; this allows the organization to improve the technology infrastructure and personnel skills ability in ICT; it fosters a need to improve collaborative materials by cooperating to establish virtual co-ops with other organisations [17].

The digitization of library materials was envisioned as a way of libraries in increasing their significance in the current age of ICT that has shown to be quite beneficial in terms of budgeting and cost controlling. The speed of information explosion, as well as the availability and accessibility through the internet, regardless of time or location, demonstrates this. In order for libraries to coexist and maintain their value as a disseminator of information in the twenty-first century, librarians must work on digitizing library resources [17]. Despite the tangible benefits of digitizing information resources in the procurement, processing, dissemination, accessibility, usage, preservation and conservation of library resources, Nyeri County's mid-level college libraries appear to be on the backburner when it comes to attaining a digitized resources. This has turned into a serious concern in library and information services field, necessitating research into the digitization of print and electronic resources in Nyeri County, Kenya's mid-level college libraries.

1.1. Aim of the Study

The purpose of the study was to investigate the need for digitizing print and electronic resources in mid-level colleges as the new norm in Nyeri County.

1.2. Research Objectives

- 1) To assess the extent of digitization of mid-level colleges in Nyeri county.
- 2) To determine the skills and competencies required for

digitization of mid-level colleges.

- 3) To establish the challenges for digitization of libraries in mid-level colleges.
- 4) To propose possible ways to combat issues in digitizing of information resources.

1.3. Significance of the Study

The results of the study will give information that will assist college administrators (principals) in developing successful operational and planning solutions, as well as a clear path or strategy for digitizing their library's print and electronic materials for convenient access. The findings will benefit students that they will be able to access library resources in any location, removing the need to go to a physical library.

2. Literature Review

Because of the threats to libraries in ICT age of the internet, participating in digitalization of the materials has become a major priority for every library. Digitalization has aroused several scholarly concern over the decades. According to [20], digitization is transforming manuscript into digital data "changing a physical, analog object into a digital, electronic representation [12] claim that "All of the processes involved in creation historical and other documents obtainable online are referred to as digitization. They went on to emphasize that digitalization isn't just for libraries but for other types of information centers. Libraries has three essential requirements, all of which are met through digitization [10]. Maintaining the documents, making them more available and safeguarding the reusability are all part of these needs. Aside from the three major requirements, digitization of print and electronic resources aids in the control of endangered library materials, institutional output visibility, ICT adoption, enhancement of limitless access to information materials, and the displacement of librarian roles in library services. The findings showed that libraries need to digitize print and electronic resources in order to improve library services, access, document retrieval speed, preservation effectiveness, and simultaneous search. As a result, in today's digital world, digitization is essential.

Digitization is the electronic transformation information from a print source to a digital form [2]. [6] avers that it is the change of an object from analog to digital. They went on to note that in the ICT era, a slew of new technologies has emerged and still evolving, enabling for digitization on a wide range of library materials, including objects, papers, photos, sound recordings and so on. Digitization, according to [6], is preserving, liberalizing, and internationalizing accessibility to documents with ultimate purpose of boosting the usability by transforming them to digital format. [15] describes digitization as the transformation of the papers and artwork into the digital pictures in their work.

2.1. The Extent of the Library's Digitisation Prints and Electronic Materials in Mid-Level Colleges

The organizations select collections for digitization based on the objectives they aim to accomplish. Each choice would be considered alongside a cost-benefit analysis for both the users and institution. Subject experts who are acquainted with both the collection and the usage should be the key decision-makers. The primary criteria for digital change are accessibility and easy to use, rather than physical weakening. Digital transformation attempts would be guided by goals rather than the technology [15]. Organizations considering digitalization programs ought to research on what others do in the past and examine the successes, failures and lessons learned. The choice of materials could be motivated by the desire to teach and offer an access of rare and valuable artifacts. Collection selected for digital change typically necessitates preservation and the conservation treatment prior to the shooting or scanning.

The objects to transform ought to be picked after the comprehensive understanding of needs of the users. Even if they own the physical item, libraries and librarians may find it challenging to establish if they have legal rights to scan and exhibit. Institution should digitize the content and make it available to the public if they have the legal right to do so. Only if it does not possess the copyright an institution chooses to digitize the collections for internal use. It is possible that material is delicate or that it will have a lot of use [2]. Digital conversion should not be chosen for materials of little use or in low demand, as the time, resource, and financial costs are not justified. Digitization does not take the role of collection development. Digital substitutes should not be utilized to replace the original analog item even if you may be trying to save shelves space. In order to serve its customers, a library should gather microfilm copies of fragile newspapers before deaccessioning them.

2.2. Skills and Competences Required

The increasing role of information technology in library services in recent years suggests that librarians would need to learn innovative skills when managing digital information systems. [16], avers that the overall competences, knowledge, abilities and attitudes required to develop, store, organize, retrieve and distribute digital information in digital libraries are referred to as digital information system management. Librarians must be taught to accept the dynamics and difficulty of the digital world due to the changing environment of librarianship due to the rising amount of information available in electronic format.

A librarian ability to act as the digital information qualified, digital familiarity employee and correspondent is mirrored by a wide set of abilities, attitudes, and beliefs [18]. Internet skills, which is the capacity to navigate, browse, filter, retrieve and

access digital information, have been classified by [7] as necessary skills and competences for librarians on the digitalization of print and electronic library resources. The ability to give digital references, search network databases, and navigate through a variety of digital sources and websites. Competency in web publication, archiving, automated communications, preservation, and storage, as well as content conversion and downloading strategies. Proficiency in multi-media indexing, image processing, interactive online communications, and visualization is referred to as multi-media skills [15].

Speech recognition abilities, as well as conference tools such as teleconferencing and video conferencing. Digital information system abilities include on-ramps and off-ramps, as well as the twists and turns of digital acquaintance. The ability to change print materials, maintain compact Disc-Read Only Memory (CD-ROM), generate databases and transform print materials to digital media. To make process of obtaining the skills and proficiencies easier, [5] emphasized the sensitization and retraining of analogue librarians on appreciation, usage and subsequent application of ICT technologies to the library services mainly in the approach of the digital librarianship.

Digital librarians' responsibilities, according to [8], include selecting, obtaining, conserving, organizing, and handling the digital materials. They should be able to strategize, implement and support the digital services including information triangulation, consultation and transmission, as well as create a digital library's technological architecture. They should produce, maintain, and disseminate high-value information items, as well as provide a user-friendly network interface for the digital library. In a network setting, they should be able to secure digital intellectual property and assure information security. Librarians should be trained in technical knowledge of digitization process according to [3], so that they can gain necessary skills such as practical skills in metadata, checking and confirming digitized materials for eminence control and selecting hard & software. According to [18], in order to manage digital libraries, organize digital knowledge and information, disseminate digital information from computer-held digital information, provide digital reference services and electronic information services, and provide knowledge on mining from emerging knowledge warehouses, digital librarians must develop skills and sophisticated competencies. They should be able to handle large-scale digitization, digital storage and digital protection projects, as well as provision of universal accessibility to and retrieval of the digital knowledge and organize and categorize digital records and knowledge.

2.3. Challenges Associated with the Process of Digitizing Print and Electronic Resources

Digitalizing print and electronic resources, according to [9], ensures that data is kept without being damaged, deleted, or

altered. Digitizing library resources and other information materials, however, has inherent restrictions. According to [11], the following challenges exist:

Digitization is a difficult idea to grasp. In terms of digitalization, the majority of Nyeri County's mid-level college libraries are still in the dark. They lack appropriate understanding, as a result of which the majority of libraries have yet to be digitized, a few libraries have just attempted library automation, and some are still using manual systems. Lack of funds to support software upgrades and staff digitization training being one of the most hurdles to library digitization in the mid-level college libraries [15]. A few libraries have a dedicated budget for digitization making it difficult for them to get started.

Skilled employees are in short supply. The digitization of any library necessitates the use of trained workers. The digitization process necessitates knowledgeable people with appropriate technical and ICT skills, which are lacking in Nyeri County's college libraries. The majority of library employees lack that degree of knowledge. Inadequate infrastructure and technology, with almost all libraries lacking the essential digitization capability. There is a significant level of digital illiteracy among library workers, as well as unreliable electricity, outdated data transmission equipment, and a lack of technical experience.

Copyright issues are another impediment to college libraries digitizing their collections. Copyright infringement should be avoided at all costs. Copyright authorization is also not required for materials published prior to 1922. [1]. Whose property is it, and who owns it? Copyright legislation and ownership rights should be thoroughly understood before selecting print resources for digitization. Physical possession does not mean the reproduction rights are owned by institutions. The most important selection criteria for digitalization would be the copyright status of source materials. Is it possible to acquire digitization approval? Will the institution be able to manage the rights to utilize the digital assets after they have been digitized? Is the staff aware of the copyright act's context?

The continual change in computer hardware and software due to improvements in operating systems, programming languages, and storage media makes technological obsolescence a barrier for digitization and digital preservation. College administrators and librarians are unaware of the current library trend. Because most libraries in Nyeri County do not have connections to other libraries throughout the world, they are oblivious of global library development and new library trends. Furthermore, college administrators rarely push their employees to go above and beyond the call of duty in order to obtain information from renowned libraries and from a worldwide perspective. As a result, libraries are frequently behind the times due to a lack of organizational and institutional support, particularly from top management, which fails to provide the needed commitment to digitization and thus continues to operate in analogue mode.

3. Research Methodology

The research used a descriptive survey design, which summarizes the characteristics of the population or phenomenon under investigation. It was used to collect data on the digitization of print and electronic resources in Nyeri County's mid-level college libraries.

The research was conducted at P. C. E. A Tumutumu Training college library, Outspan medical college, Nyeri National Polytechnic, Mathari medical library, Mathenge technical college, Mukurueni technical college, and Mathira polytechnic college in Nyeri County. They were chosen since they're all community colleges with libraries.

Seven librarians from seven libraries, as well as managers from those colleges, were target population, with a sample size of same number, or 14 responders. The census method was used in the study for both librarians and college administrators. Because the number of respondents was manageable, the census method was adopted. Two types of data gathering instruments were used by the researcher. That is a structured self-administered questionnaire for the librarians and an interview schedule for the college managers.

With the use of the computer package statistical package for the social sciences (SPSS) application software the researcher examined quantitative data acquired through surveys using the descriptive statistics such as frequencies and percentages. Content analysis was used to examine the qualitative data gathered through interviews.

4. Results and Discussion

4.1. Extent of Digitization of Print and Electronic Resources

Only one library in Nyeri County has attempted to digitize its collection, according to the conclusions of the study on the level of library resource digitization. Lecture notes, books, and research projects written by college students, as well as lecture notes made by college lecturers, are among the digital resources. This means that the level of digitization was low due to financial constraints and copyright restriction. Inadequate or no finance to acquire infrastructure such as scanners, high resolution cameras, repository software such as DSpace, Eprints etc lead to slow process of digitization. Staff having no particular training in digitization.

4.2. Skills and Competencies of Librarians' on the Digitization of Print and Electronic Resources

After determining the need for digitization of the mid-level colleges under consideration, the study looked at the abilities and competencies that should be possessed by pro-

fessionals in the response to the requirements for the digitization of print and electronic resources. Findings revealed that librarians possessed considerable number of skills needed for digitalization of library materials, but that they were insufficient. Among the abilities and competencies cited were the ability to operate a computer system, ability to operate scanners, the digital cameras, other digitization equipment, ability to change traditional information resources into digital imageries and the capacity to use electronic databases, knowledge of cloud storing, backups and electronic preservation skills, awareness of copyright laws, intellectual rights, ability to assess copyright limitations before transforming print resources and also abilities in practicing ethical principles in electronic collection accessibility.

4.3. Challenges to Digitization of Library Resources

Despite inherent value of digitizing print and electronic resources, findings revealed that limited funding the digitization process, lack of trained and adequate personnel and staff capability in managing digitization process, copyright and lawful issues i.e. the intellectual property rights, inadequate infrastructure such as scanners, storage systems, users relying on traditional print resources, loss of data due to hardware and software obsolescence and failure, power supply and print and electronic resource security are all obstacles to digitization. Unclear digitization policies and strategies for prioritizing resources to be changed to electronic format. This emphasizes how critical it is to make a determined effort to address these challenges.

4.4. Solutions to Challenges on Digitization of Library Resources

Respondents agreed that all of strategies suggested by the researcher including soliciting on increased funding for library budget, staff skill growth through teaching on digitization skills, repository management through attendance of workshops and conferences in managing of the digital libraries, copyright law which should exclude librarians from digitization practices where there should be clear copyright strategies for digitizing information resources, inclusion of digitization of sections when planning for the library building, refining in technical infrastructure, advancement internet connectivity, implementation of consistent backups, and file migration, promoting user awareness through conducting an orientation programs, developing guides, flyers and virtual tutorials on accessibility of digitized information, there ought to be a consistent software update to inhibit cyber dangers, establishing a well-organized technical commodious space with good lighting, ventilation and finally the library user education that should include expertise needed for the use of digital libraries hence implementation.

5. Conclusion

In conclusion, research has looked into how much print and electronic items are being digitized in mid-level college libraries. Little research has been done on how mid-level college libraries digitize their collections. According to the conclusions of this study, the digitalization of print and electronic materials in Nyeri County's mid-level college libraries is unsatisfactory. The study also found that library personnel lacked the essential skills and capacities to digitize their collections. The research also identified significant barriers to the digitalization of print and electronic materials in mid-level college libraries, which necessitate quick adaptation if those institutions' users require remote access. To achieve successful and efficient digitalization of print and electronic resources in Nyeri County's mid-level college libraries where adequate attention need to be paid to the recommendations in this study.

6. Recommendations

Based on the findings, the following recommendations are made: Donors and parent organizations should be approached for additional financial assistance by college authorities. County governments in Nyeri should collaborate with college administrations to offer adequate financing so as to increase their digital library resources. It is critical to highlight the necessity of the library staff training in order to get all of the necessary digitalization abilities. On-job training and other refresher courses ought to be made available for library staff skill improvement. Furthermore, as part of the digitization process growth strategy, frequent employee training in colleges should be created a habit through seminars, workshops, conferences, and refresher courses on software administration, server maintenance, and D-space database management, College managers should formally recognize digitization as a core academic and administrative function, not a side project, there should be integration of digitized resources into teaching and learning, Students should actively participate in improving digitization services. This will make the digitization of both print and electronic resources more efficient.

Abbreviations

SPSS	Statistical Package for the Social Sciences
ICT	Information Communication Technology
IT	Information Technology
CD-ROM	Compact Drive Read Only Memory
Dspace	Database Space
P.C.E.A	Presbyterian Church of East Africa

Author Contributions

Lucy Wanene Mugera is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflict of interest.

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