



Digital Collection Development and Management in University Libraries: Policies, Methods and Techniques

Khurram Shahzad

GC University Lahore

khurram@gcu.edu.pk

Muhammad Ashraf

M. Phil Scholar

ashrafmarri19@gmail.com

Abstract

This study aimed to identify the need for digital collections, exploring the policies and methods employed, assessing the techniques utilized for management and examining the challenges faced by these libraries. Quantitative methodology was incorporated to collect data from library professionals in 60 public and private sector universities. The survey gathered data on multiple dimensions including resource allocation, policy frameworks, digital collection development practices and management techniques such as digital storage methods and cloud-based solutions. Findings revealed a significant demand for digital collection development to meet user expectations and optimize resource accessibility. Most libraries relied on formal policies and diverse methods such as purchasing digital resources and digitizing print materials. However, issues related to limited budgets, inadequate infrastructure and staffing shortages were identified as primary challenges. The study concluded that strategic planning enhanced resource allocation and capacity building for library staff are crucial to overcoming these barriers.

Keywords

Digital Collection Development; Digital Collection Policies; Digital Collection Methods; Techniques; University Librarians; Pakistan

Introduction

Digital collection development refers to the systematic acquisition, organization and management of digital resources in order to fulfill basic informational and research requirements of users in digital settings. Digital collection development involves careful selection, assessment and maintenance of digital assets to ensure their relevance, accessibility and longevity (Branin,



2009). Development of data collection is a crucial aspect of the knowledge life cycle in information centers and libraries. It is crucial for the efficient functioning of any information unit, as highlighted by Vignau and Meneses (2005). Adams and Noel (2008) stated that the development of data collection is one of the most expensive components of library management yet essential to its quality. Reitz (2013) defines collection development as the careful preparation and attainment of a diverse library collection over time.

Kumar et al. (2008) identified collection development components. These include assessing user needs, evaluating the collection, selection policies, managing the choice process, reconsidering and protecting collection resources and organizing resource sharing. In academic libraries, the process of collection development has experienced significant changes in the digital era as highlighted by Mullen (2010) in Mullen (2011). With the rise of toll-based electronic resources in libraries, there is a growing demand to assess and incorporate various forms of open access electronic scholarly content. Librarians are well-informed about open access resources through their libraries and library organizations. However, it is important to have a background understanding of the different types of open access resources and how this movement is impacting librarians' collection building and daily interactions with users.

The authors Giri, Sen and Mahesh (2015) argued that the process of collection development in academic libraries presents several difficulties, one of which is the task of selecting the appropriate quantity of copies for some publications that are needed in numerous copies inside the library. Particularly with regard to rapid advances in the technology, university libraries have the task of creating and maintaining new digital collections for patrons to access. This means that libraries have to develop good policies, strategies and practical procedures how to treat, shelve and store digital collections when more and more physical books turn into digital formats. There are many advantages associated with the possibility of using digital technologies, but there are also many subtle challenges that should be evaluated. In the university libraries various flexible procedures of digital collection acquisition, curation and management remain unfixed. This weakness might result to collection development disparities thereby restraining the integration of library digital resources.



Implementation of digital collections experiences some problem in the ways it is organized, searchable and how one can know where a certain resource may be found. They may not be able to easily search for information using the search tools available in huge databases thus affecting their research and study process. In the context of digital collections, there is an issue of sustainability in terms of the preservation of the source as well as the content. This means that Libraries are confronted with the challenges of format obsolescence, technological changes, as well as digital decay, which poses a serious threat to the loss of the valuable scholarly and cultural content. Digital collections, as most of you are aware, entail complex issues of copyright and licensing. The management of libraries faces multiple legal challenges that include ferreting out compliance with the intellectual property laws in order to offer the users the access they need. Designing e-collections for users is important to address their needs including readers, students, faculties, researchers and other members. Some challenges that libraries will have to face include concerns to do with usability, customization and work-integration concerns (Gregory, 2011; Lavoie 2004).

This research work may help to determine the actual practices prescribed in handling digital collections and identify training needs of the librarians and information professionals that can enhance their practice. Online resources may guide library regulations and processes to fulfill modern user needs as user behaviors shift toward digital consumption. This study can add to library and information science by revealing efficient digital collection management procedures that other institutions might use. The current policies and methods used in digital collection development; the study will provide valuable insights into how universities are formulating strategies for building and managing their digital resources. It will serve as a guide for library administrators and policymakers in refining or creating effective policies that ensure efficient digital resource management while keeping pace with technological advancements. The study on university library digital collection creation and administration addresses digital age challenges and opportunities, improving information access, research and education and leading to the evolution of library actions in a rapidly changing landscape. University libraries often face numerous challenges in transitioning to and managing digital collections, such as financial constraints, lack of trained staff and issues related to copyright and access rights. This study will provide an in-depth investigation into these challenges, offering potential solutions and



recommendations for overcoming the obstacles faced by university libraries in KPK and Baluchistan.

Research Objectives

The objectives of this research are as follows:

1. To identify the need of developing and managing digital collection university libraries.
2. To investigate the policies and methods used developing digital collection in university libraries.
3. To investigate the challenges faced by university libraries in developing and managing digital collection.

Literature Review

Evolution of Digital Collections in University Libraries

Digital collection in university libraries began with computers and information digitization. Electronic databases and catalogs were developed to improve accessibility and information access (Deegan & Tanner, 2002). Internet use and digitalization technology drove digital collection growth. In the late 20th century, institutions realized that digitalization could protect fragile artifacts, provide access to academic materials, and encourage interdisciplinary study (Waters, 2002). Due to the expansion of digital content and multimedia resources, digital material collections have grown significantly. Libraries use e-books, online publications, audiovisual materials, and databases to keep up with academic communication (Borgman, 2007; Farid et al., 2025).

Collection Management

Collection growth procedures were incorporated into collection management (CM) in the 1980s. According to Johnson (2009), CM encompasses a broader range of decisions associated with collection creation. Atkinson (1998) characterizes collection management as an extension of collection development, while also considering it a broad term encompassing collection development. In Pakistan, indigenous literature analysis reveals that the concepts of collection development and CM were employed interchangeably until 1980. However, as technology



advanced in library science, specialists began to differentiate between these concepts. The literature review highlights that these terms possess distinct meanings, as demonstrated by the works of Evans and Saponaro (2012), Emojoorho (2011), Gregory (2011), Johnson (2009) etc.

The overlapping and complicated structure of the two domains makes the process of moving from collection creation to CM challenging, according to Gorman and Miller (1997). A number of writers have provided functional feature descriptions of CM.

Collection Development in the University Libraries of Pakistan

Pakistan gained independence on August 14, 1947, following the division of India. The Population Census Organization reported 186.5 million people in 2014, up from 135.57 million in 1998. Agriculture is the main source of income for most rural residents. Pakistan includes various ethnic groups language dialects, including Urdu as the national and English as its official language. The country is 50% literate. Pakistan is divided into Punjab, Sindh, KPK, & Baluchistan, in addition to Islamabad. Provinces have divisions, districts, and subdivisions. Pakistan had only two institutions when it was founded: Punjab University and Sindh University in Hyderabad. The Higher Education Commission (HEC) accredited 158 public and private universities in 2014. According to Nkamebe, Udem, (2014), university libraries help academic programs by offering appropriate content, achieving institutional goals, and encouraging academic achievement. However, local literature portrays Pakistani university libraries negatively.

It's possible that early practitioners in Pakistan's library and information science (LIS) area were unfamiliar with the idea of collection development. Less focus was placed on getting gifts from the government and the general public throughout the purchase process in Pakistani university libraries (Haider, 2007). Limited financial resources, a lack of established guidelines, a lack of comprehensive collection development policies, inadequate user and collection assessment, the rapid expansion of electronic resources, the adoption of information and communication technologies, the limited involvement of library associations in standard-setting, the lack of collaborative plans, and a lack of alternative strategies are just a few of the challenges that Pakistani university libraries face when it comes to collection development operations.



According to local literature, Pakistani university libraries typically purchase books and periodicals in order to develop their collections on their own (Ameen, 2005).

According to and Haider (2007), faculty members are essential in selecting and endorsing library resources, which leads to a varied process of collection growth for university libraries. The question of who should choose and propose library items is still hotly debated; some claim faculty members should have this role, while others support LIS professionals taking it on. However, in order to develop strong collections in Pakistani university libraries, academics and LIS specialists must work together efficiently. Pakistan's purchase process is tough. Nearly 90% of educational and research resources originate from the US and UK, according to Haider (1996). The purchase procedure prioritizes collection development over user needs. Patron feedback is not considered.

As noted by Haider (2007), faculty members play a crucial role in selecting and suggesting library materials, which helps university libraries acquire a wide range of materials. Still, there is disagreement about who should be in charge of choosing and suggesting library materials; some want academic members to do this, while others prefer LIS specialists to handle this task. Teachers and LIS specialists must collaborate to build important collection in Pakistani university library systems. In the words of Haider (1996), 90% of Pakistani academic and academic books and materials are imported abroad the US and UK, making acquisition difficult. Additionally, the collection development process does not take patron feedback into account, and the acquisition method prioritizes collection growth over user needs.

Periodicals and magazines are acquired through gifts or exchange programs, but print resources are no longer thought to be important. The current books-to-student ratio is well below the ideal level, and buying international books and periodicals has become difficult due to volatility in foreign exchange prices (Rehman & Ahmad, 2007). Nonetheless, the expansion of electronic resource collections in university libraries has been skillfully overseen by the HEC Digital Library. Universities and other higher education institutions in Pakistan can use the HEC Digital Library's electronic resources for free (Said, 2006), which enables them to obtain the information they need without having to pay for a subscription.



Research Methodology

Quantitative Method

A quantitative research approach was employed in this particular study to collect the data related to digital collection development and management practices of university libraries. Quantitative research is a type of research in which we can count something (countable data) and from those numbers establish patterns or relationship between set target variables to new requirements, allowing for comprehensive variable measurement with quantities expressions produced numerically supported just relying by statistical analysis.

The population of library professionals working in public and private sector universities belonging to Khyber Pakhtunkhwa and Balochistan Province of Pakistan was approached for data collection. The population was comprised of library professionals from a total 60 public and private sector universities across Khyber Pakhtunkhwa and Balochistan. The sample involved professionals who are actively engaged in digital collection management e.g., Librarians and Assistant librarians, Library Managers and other professional staff. A purposive sample of the 60 universities was to investigate the digital collection development and management practices and policies related to managing these materials.

A self-developed questionnaire was designed to collect data from library professionals of public and private sector universities in Khyber Pakhtunkhwa, Balochistan

research tool was confirmed by selectively reviewing each item with experts in digital librarianship and academic research. This test instrument experts reviewed the first draft of survey to see if each item in relation to relevance, clarity and appropriateness with regard to study objectives. This review provided feedback on question phrasing and quality to create mock-ups of improved questions, answers (or response options), presentation ensuring that the tool could capture good data regarding digital collection development and management. This process enhanced content validity of the instrument by making it truly reflect intended aspects of policies, methods and challenges in university libraries. It was reviewed by the research supervisor at several times and necessary corrections were made. It was gone through exhaustive evaluation by the experts in the field. It was also pre-tested on a small number of group before starting data collection.



After conducting a pilot study to confirm the trustworthiness of research tool, Cronbach alpha was calculated for internal consistency. As for the measure of consistency, Cronbach alpha is a good method and have been reputed to be appropriate when greater than 0.7. The reliability of the questionnaire in this study showed a Cronbach alpha value as high as 0.83, thus denoting good level of internal consistency among its items.

The researcher himself visited the public and private sector university libraries situated in the province of Khyber Pukhtoon Khwa and Balochistan.

Questionnaires were distributed among 60 targeted populations. The library professionals from both public and private sector universities of Khyber Pakhtunkhwa and Balochistan results of the 60 questionnaires distributed, 60 were completed and returned; hence returned for a chronic return rate of 100%. Data was analyzed by using Statistical Package for Social Science (SPSS).

Results

Designation of the Respondents

Table I shows the data highlights the distribution of professional designations involved in digital collection development and management within university libraries. A majority of the respondents (21.7%) held the designation of Librarian indicating their prominent role in shaping and executing policies and strategies for digital collection management. Assistant Librarians comprised 18.3% of the respondents. This figure indicates their active involvement in supporting digital collection activities particularly in implementing methods and techniques for managing digital resources. Senior Librarians and Library Officers each constituted 15% of the participants. Chief Librarians (13.3%) and Deputy Chief Librarians (11.7%) played essential leadership roles. Deputy Librarians made up the smallest proportion at 5%.

Table 1: Designation of the Professional

Option	Frequency	Percentage
Chief Librarian	8	13.3
Deputy Chief Librarian	7	11.7
Senior Librarian	9	15.0
Deputy Librarian	3	5.0



Librarian	13	21.7
Assistant Librarian	11	18.3
Library Officer	9	15.0
Total	60	100.0

Type of Universities

Figure 1 revealed that the majority of respondents, 73.3% were affiliated with public sector universities. This high percentage indicated that public institutions played a dominant role in digital collection development and management initiatives. Public universities often having larger student populations and broader mandates may have prioritized digital resources to meet the diverse needs of their academic communities. In contrast, private sector universities accounted for 26.7% of the respondents. The significant involvement of public sector universities highlighted their pivotal role in the advancement of digital library resources, while the participation of private universities underscored the broader trend of digital collection management across different institutional types.

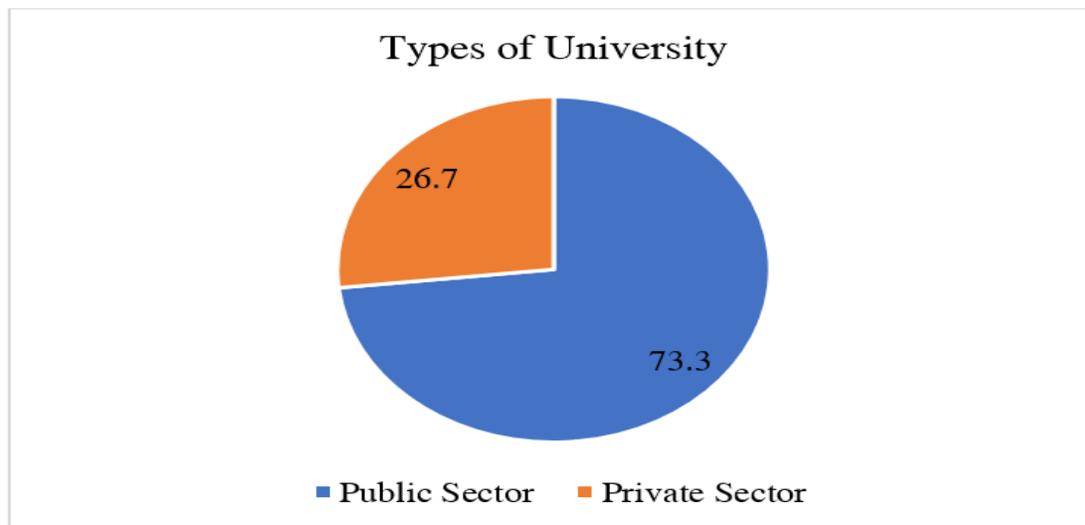


Figure 1. Types of University

Qualification of the Respondents

Figure II demonstrated a varied distribution of professional qualifications among library professionals involved in digital collection development and management. The largest proportion of respondents, 30% possessed an M.Phil degree in Library and Information Science (LIS).

Respondents with a PhD constituted 28.3% of the sample. This figure indicated a substantial representation of highly qualified professionals who likely played leadership roles in policy-making strategic planning and the integration of innovative techniques in digital collection management. The Master's degree in Library and Information Science (MLIS) professionals made up 25% of the study population. Only 16.7% had Bachelor's degree (BS in LIS). Distribution of the obtained qualifications stressed the significance of further education in Library and Information Science for the achievement of effective digital collection development and management viewpoint with reference to the interprofessional cooperation of professionals possessing various levels of academic preparation.

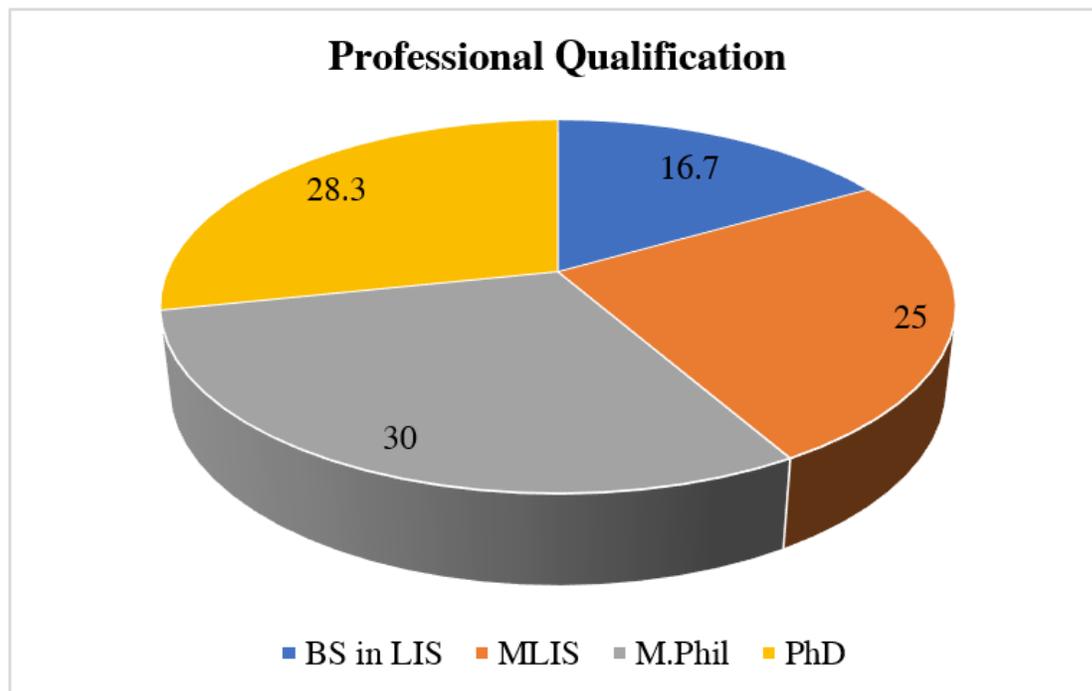


Figure 2. Professional Qualification

Professional Work Experience

Table 2 showed a range of professional work experience among those involved in digital collection development and management in university libraries. The largest group, comprising 30% of respondents, had between 6 to 10 years of professional experience. A close second was the group with 1 to 5 years of experience, accounting for 23.3% of respondents. Respondents



with 11 to 15 years of experience made up 21.7% of the sample. Those with 16 to 20 years of professional experience represented 18.3% of the respondents. Finally, 6.7% of the respondents had more than 20 years of experience.

Table 2: Professional Work Experience

Professional Experience	Work Frequency	Percent
1-5 years	14	23.3
6-10 years	18	30.0
11-15 years	13	21.7
16-20 year	11	18.3
Over 20 years	4	6.7
Total	60	100.0

Need of Developing and Managing Digital Collection in University Libraries

Table 3 presents the perceptions of respondents regarding the need for developing and managing digital collections in university libraries. The majority of respondents (35.0% SA, 50.0% A) supported the need for developing and managing digital collections in their libraries, as reflected by a mean score of 4.07 and a standard deviation of 1.023. This indicates a strong consensus among respondents that enhancing digital resources is a critical requirement. There was minimal disagreement, with only 6.7% expressing strong disagreement, showing the widespread recognition of the importance of digital resources in university libraries.

A significant portion of respondents (40.0% A, 20.0% SA) agreed that library users frequently demand information in digital formats. However, some respondents remained neutral (16.7%) or disagreed to some extent (15.0% DA, 8.3% SDA). The mean score for this statement was 3.48 with a standard deviation of 1.214, suggesting neutral agreement with some variability in opinions. This reflects the growing trend of user preference for soft copies but also highlights the need for libraries to assess user demands more systematically.

Respondents also acknowledged the need to manage existing digital collections, with 43.3% agreeing and 21.7% strongly agreeing. However, a notable proportion remained neutral (21.7%) and some expressed disagreement (5.0% DA, 8.3% SDA). The mean score was 3.65 with a standard deviation of 1.132, indicating overall neutral opinion but with some divergence



in opinions. This suggests that while many see the value in maintaining digital collections, there may be challenges or uncertainties about the best approaches to management.

They believe that digital collection development enhances library service effectiveness was shared by most respondents (26.7% SA, 45.0% A). Nevertheless, some participants disagreed (5.0% DA, 15.0% SDA) and 8.3% were agreed. The mean score was 3.63 with a standard deviation of 1.340, reflecting overall agreement but with some mixed views. These findings underline the perceived potential of digital resources to transform library services while acknowledging possible limitations in implementation.

In as much as, digital collections were considered to have a positive effect in reducing space constraints 30percent agreed while 26.7percent strongly agreed. However, 15.0% each said neutral or disagree and 13.3% strongly disagreed. The mean score was 3.42 with standard deviation of 1.381 which is slightly spread out compared to other statements. This means that while many can appreciate that saving space through digital collections is important to most people, there are others who may not see this as important or may be falling short of challenges associated with digital collections.

The availability of new media resources and collections for search and access has been recognized by 63.3 % of the respondents strongly agreed and 26.7% agreed. But 26.7% said they strongly disagreed and further, 5.0% and 6.7% were recorded to have a neutral or disagree view respectively. This led to a mean of 3.40 so it is 0.51 above the midpoint and a variable standard deviation of 1.669. Though most respondents cited the benefits of using digital collections, this is pierced by high levels of disagreement common in such LMCs' indicators as lack of experience in using digital tools or instrumental deficiencies.

Consequently, the results point to a big awareness on digital collection development and management in university libraries. The views of respondents highlighted the advantages of the use of digital resources to strengthen service efficiency, satisfy user needs and combat spatial limitations. However, the variability in responses, especially regarding ease of access and space-saving benefits, suggests areas for improvement, including user training, better digital infrastructure and more effective collection management strategies.



Table 3: The Need of Developing and Managing Digital Collection in University Libraries

Sr. No.	Statement	SA	A	N	DA	SDA	M	SD
1	There is a high need of developing and managing of digital collection in our library.	21 (35.0%)	30 (50.0%)	5 (8.3%)	0 (0.0%)	4 (6.7%)	4.07	1.023
2	Library users also demand information in soft form.	12 (20.0%)	24 (40.0%)	10 (16.7%)	9 (15.0%)	5 (8.3%)	3.48	1.214
3	There is a need to manage the digital collection that is already existed in our library.	13 (21.7%)	26 (43.3%)	13 (21.7%)	3 (5.0%)	5 (8.3%)	3.65	1.132
4	Digital collection development and management will improve the effectiveness of library services.	16 (26.7%)	27 (45.0%)	5 (8.3%)	3 (5.0%)	9 (15.0%)	3.63	1.340
5	Digital collection development and management will minimize the space problem	16 (26.7%)	18 (30.0%)	9 (15.0%)	9 (15.0%)	8 (13.3%)	3.42	1.381
6	It is easy for library users to search and access digital collection through digital sources	23 (38.3%)	14 (23.3%)	5 (5.0%)	4 (6.7%)	16 (26.7%)	3.40	1.669

Note: Strongly Agree = 5, Agree= 4, Neutral= 3, Disagree= 2, Strongly Disagree=1

Policy Framework for Digital Collection Development

Figure III provides an analysis of whether university libraries have formulated any policy or framework for the development of digital collections. A majority of respondents (61.7%) reported that their libraries had formulated policies or frameworks for digital collection development. Conversely, 38.3% of respondents indicated that their libraries had not yet established any formal policies or frameworks for digital collection development. The findings

reveal a divide among university libraries concerning the formulation of policies for digital collection development. While a majority had adopted structured approaches, a notable proportion lagged behind. This underscores the need for greater awareness and effort to establish frameworks that can support the growing demands for digital resources and enhance library services. Libraries without policies may benefit from prioritizing the development of guidelines to ensure the efficient and sustainable growth of their digital collections.

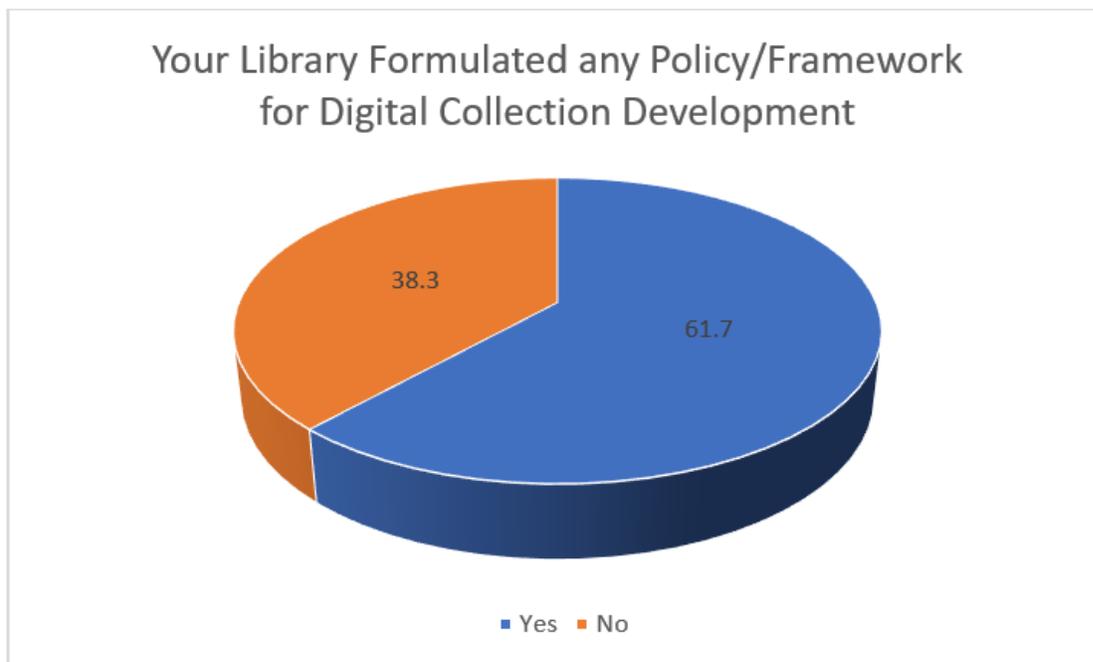


Figure.3. Your Library Formulated any Policy/Framework for Digital Collection Development

Relevant Methods Adopted by Libraries for Developing Digital Collection

Table 4 provides insights into the methods employed by university libraries for developing digital collections, categorizing the responses into "Yes" and "No" for each method. Only 8.3% of libraries reported purchasing digital collections directly from publishers, while a significant 91.7% indicated they did not adopt this method. The digitization of print materials was reported by 28.3% of libraries, whereas 71.7% had not adopted this approach. None of the libraries reported the submission of e-theses by research students as a method for developing digital collections. A minimal 3.3% of libraries used databases provided by the Higher Education Commission (HEC) for developing digital collections, while 96.7% did not utilize this resource.



Resource sharing with other digital libraries was adopted by 28.3% of libraries, while 71.7% did not engage in such collaborations. Only 15.0% of libraries reported using open access Internet sources for developing their digital collections, while 85.0% did not rely on this method. A mere 13.3% of libraries subscribed to e-books through databases, whereas 86.7% did not adopt this practice. The use of open access digital libraries and repositories was reported by 15.0% of libraries, with 85.0% not employing this approach. The data revealed that most university libraries had not adopted many of the relevant methods for developing digital collections. Methods such as purchasing from publishers, using HEC databases and encouraging e-thesis submissions were significantly underutilized. The low adoption of open access resources and resource-sharing initiatives suggested missed opportunities for enhancing digital collections. Libraries that had adopted methods like digitizing print materials and resource sharing represented a minority.

Table 4: Relevant Methods Adopted by Library for Developing Digital Collection

Sr. No.	Option	Yes		No	
		<i>f</i>	%	<i>f</i>	%
1	Purchasing digital collection from publishers'	5	8.3	55	91.7
2	Through digitization of print material	17	28.3	43	71.7
3	Submission of e-theses by research students	0	0.0	60	100.0
4	Use of HEC databases	2	3.3	58	96.7
5	Digitization of print material	13	21.7	47	78.3
6	Resource sharing with digital libraries	17	28.3	43	71.7
7	Use of open access Internet sources	8	15.0	51	85.0
8	Subscribing e-books from databases	8	13.3	52	86.7
9	Use of open access digital libraries & repositories	9	15.0	51	85.0

Library Formulated any Policy/Frame Work for Managing Digital Collection

Table 5 examines whether university libraries had formulated policies or frameworks for managing digital collections acquired from various sources. A majority of respondents (55.0%) reported that their libraries utilized E-print as a framework for managing digital collections. On the other hand, 45.0% of libraries reported using D-Space as their preferred platform for managing digital collections. The data revealed that both E-print and D-Space were widely used by university libraries for managing digital collections. Although E-print was slightly more prevalent, D-Space remained a strong alternative, showcasing the libraries' efforts to implement



frameworks for efficient digital resource management. These platforms played a vital role in enhancing the organization, accessibility and preservation of digital content in university libraries.

Table 5: Library Formulated any Policy/Frame Work for Managing Digital Collection

Option	Frequency	Percent
Eprint	33	55.0
D-Space	27	45.0
Total	60	100.0

Methods and Techniques Adopted by Library for Managing Digital Collection

Table 6 presents an analysis of the various methods and techniques used by university libraries to manage digital collections. Among the listed techniques, the use of digital library software was the most commonly adopted method, reported by 41.0% of respondents. This indicated a notable effort by some libraries to integrate dedicated software solutions for managing digital collections efficiently. However, a majority (58.3%) had not adopted this method, highlighting room for broader implementation. The use of external hard disks and web space was reported by only 13.3% of libraries, with 86.7% not utilizing these methods. A minimal 8.3% of libraries reported developing databases and only 16.7% used cloud storage for managing digital collections. The use of hosted services and physical storage media, such as CDs and DVDs, was reported by only 8.3% of libraries, with 91.7% not adopting these methods. Developing websites or organizing digital content through computer folders was reported by just 5.0% of respondents, with 95.0% not using these methods. No libraries reported using any other methods beyond those listed in the survey. The findings revealed that university libraries exhibited limited adoption of advanced and diverse methods for managing digital collections. While digital library software showed relatively higher usage, other techniques such as cloud storage, web space and database development were significantly underutilized. Traditional methods like CDs/DVDs and folders also saw minimal adoption.



Table 6: Methods and Techniques Adopted by Library for Managing Digital Collection

Sr. No.	Option	Yes		No	
		f	%	f	%
1	Use of digital library software	25	41.0	35	58.3
2	Use of external hard disks	8	13.3	52	86.7
3	Use of web space	8	13.3	52	86.7
4	Developing databases	5	8.3	55	91.7
5	Use of cloud storage	10	16.7	50	83.3
6	Use of hosted service	5	8.3	55	91.7
7	Use of CDs/DVDs	5	8.3	55	91.7
8	Developing website to manage digital	3	5.0	57	95.0
9	Developing different folders in computer	3	5.0	57	95.0
10	Any other	0	0.0	60	100.0

Challenges Faced by Library in Developing and Managing Digital Collection

Table VII highlights the challenges university libraries encountered in developing and managing their digital collections. The most challenge identified was limited funding, with 36.7% of respondents strongly agreeing and 45.0% agreeing that it posed a substantial barrier. The mean score of 3.87 suggested that insufficient financial resources consistently hindered libraries’ ability to expand and enhance their digital collections. Managing copyright and licensing was another notable challenge, with 21.7% strongly agreeing and 26.0% agreeing. The mean score of 3.38 reflected moderate concern over navigating legal complexities related to digital resource management. Technical issues, such as system crashes or data loss, were reported as significant challenges by 16.7% of respondents who strongly agreed and 51.7% who agreed. The mean score of 3.63 highlighted the impact of unreliable infrastructure on managing digital collections. The challenge of balancing the preservation of older digital materials with acquiring new ones was highlighted, with 15.0% strongly agreeing and 50.0% agreeing. The mean score of 3.50 indicated a moderate level of difficulty, reflecting the ongoing struggle to allocate resources and prioritize between preserving legacy collections and meeting contemporary user demands. Limited staff expertise was perceived as a barrier by 26.7% of respondents who strongly agreed and 40.0% who agreed. The mean score of 3.50 suggested a moderate concern, underscoring the need for targeted training programs to enhance staff capabilities in digital collection management. The digitization of print materials emerged as a considerable challenge, with 28.3% strongly agreeing and 36.7% agreeing. The mean score of



3.58 indicated that transforming physical collections into digital formats required substantial resources, including specialized equipment and expertise. The selection of appropriate materials for digitization, such as books, theses and journals, was a challenge for 28.3% of respondents who strongly agreed and 41.7% who agreed. The mean score of 3.55 reflected the complexities involved in determining the relevance and priority of materials for digitization. The findings revealed that university libraries faced multifaceted challenges in developing and managing digital collections. Limited funding, technical issues and copyright concerns were the most pressing issues, while balancing preservation and acquisition, staff expertise and material selection were also notable barriers.

Table 7: Challenges Faced by Library in Developing and Managing Digital Collection

Sr. No.	Statement	SA	A	N	DA	SDA	M	SD
1	Limited funding poses a significant challenge to expanding the digital collection.	22 (36.7%)	27 (45.0%)	0 (0.0%)	3 (5.0%)	8 (13.3%)	3.87	1.334
2	Keeping up with copyright and licensing issues is a challenge for the library in managing digital resources.	13 (21.7%)	26 (26.0%)	2 (3.3%)	9 (15.0%)	10 (16.7%)	3.38	1.415
3	Technical issues such as system crashes or data loss affect the management of digital collections.	10 (16.7%)	31 (51.7%)	6 (10.0%)	13 (21.7%)	0 (0.0%)	3.63	1.008
4	Balancing between preserving older digital materials and acquiring new ones is a challenge for the library.	9 (15.0%)	30 (50.0%)	7 (11.7%)	10 (16.7%)	4 (6.7%)	3.50	1.142
5	Limited staff expertise in digital collection management is a barrier for the library.	16 (26.7%)	24 (40.0%)	6 (10.0%)	2 (3.3%)	12 (20.0%)	3.50	1.444
6	Digitization of print material	17 (28.3%)	22 (36.7%)	8 (13.3%)	5 (8.3%)	8 (13.3%)	3.58	1.344
7	Selection of material (books, thesis, journals	17 (28.3%)	25 (41.7%)	2 (3.3%)	6 (10.0%)	10 (16.7%)	3.55	1.431



etc) for digitization

Note: Strongly Agree = 5, Agree= 4, Neutral= 3, Disagree= 2, Strongly Disagree=1

Discussion

The findings of the study reveal that the majority of respondents (85%) either strongly agreed or agreed that digital collection development is a necessary step forward, underscoring a clear consensus that digital resources are essential for enhancing the relevance and functionality of modern university libraries. With a high mean score of 4.07, the data reflects a robust commitment to digital transformation in academic library services. This strong agreement reinforces the broader trend in higher education toward digitalization and the demand for more accessible and flexible resources for students and researchers. User demand emerged as a critical driver in the push for digital collections, with 60% of respondents affirming that library users often request digital formats. Although the agreement was not as strong as for the general need for digital development, it still indicates a shift in user expectations towards digital accessibility. This insight emphasizes the necessity for university libraries to conduct systematic assessments of user needs and preferences in order to align collection development with evolving demands. At the same time, the mixed responses suggest gaps in understanding user behavior or perhaps inconsistencies in data collection mechanisms, pointing to the need for improved analytics and feedback tools.

The study also highlights an acknowledged necessity for effective management of existing digital resources. Approximately 65% of respondents agreed or strongly agreed with this sentiment, yet the moderate mean score (3.65) and notable neutral or negative responses indicate ongoing uncertainties or limitations in managing digital collections. This reflects potential organizational and infrastructural challenges, including inadequate policy frameworks, insufficient training, or lack of standardized procedures for handling digital content. Such variability stresses the importance of developing structured digital asset management systems and investing in professional development for staff. There was also widespread belief that digital collection development contributes significantly to enhancing library service delivery. However, the presence of 20% disagreement suggests skepticism among some professionals about the practical benefits or the library's capacity to implement such changes effectively. Similarly, while many respondents appreciated the space-saving advantages of digital resources, divergent



opinions persisted, indicating that infrastructural readiness and user acceptance may influence perceptions of these benefits. These findings hint at the presence of deeper systemic issues—such as limited funding or technological constraints—that can hinder the optimal utilization of digital formats.

While a large number of respondents agreed that digital collections improve access to new media resources, the wide standard deviation in responses (1.669) points to considerable disagreement, likely arising from varying levels of digital literacy or unequal availability of digital tools across libraries. This reinforces the need for equitable investment in digital infrastructure and comprehensive training programs to ensure all library professionals and users can benefit from digital initiatives. A closer look at the policy landscape reveals that a majority of university libraries have formulated digital collection development frameworks, but a substantial proportion—over one-third—have not yet done so. This divide suggests uneven levels of strategic planning and commitment to digital advancement across institutions. Libraries that lack such policies may struggle to develop their collections systematically, leading to inefficiencies and missed opportunities in resource development, preservation, and user engagement. Therefore, there is a clear need for policy advocacy, inter-institutional collaboration, and knowledge sharing to support underprepared libraries in establishing effective digital strategies.

The methods adopted for digital collection development further illustrate the limitations of current practices. The study reveals a low uptake of widely recognized methods such as purchasing from publishers, digitizing print materials, and using HEC-provided databases. Particularly concerning is the absence of mechanisms for collecting institutional digital outputs such as e-theses. This lack of adoption reflects a significant gap between available technological opportunities and their practical implementation. Limited use of open-access resources and resource-sharing platforms also suggests underutilization of cost-effective solutions that could strengthen the breadth and depth of digital collections. In terms of digital collection management, Eprint and D-Space emerged as the dominant platforms used by university libraries, which is encouraging. Their usage indicates some level of technical preparedness and commitment to proper digital resource stewardship. However, the broader picture of management techniques reveals a disappointing scenario: less than half of the libraries use digital



library software, and even fewer leverage modern tools like cloud storage, web-based solutions, or database development. This implies a need for greater investment in modern digital infrastructure and capacity building to expand the use of contemporary management tools.

The challenges faced by university libraries in developing and managing digital collections are both systemic and operational. Limited funding was the most pressing issue, with nearly 82% of respondents identifying it as a major obstacle. This financial constraint hinders not only the acquisition of digital resources but also affects infrastructure upgrades and staff development. Other prominent challenges included technical issues, copyright and licensing complexities, and limited staff expertise. These barriers highlight the multifaceted nature of digital collection management, where financial, legal, and human resource elements intersect. Additionally, the difficulties associated with digitizing print materials and selecting appropriate content for digitization further illustrate the resource-intensive nature of transitioning to digital formats.

Recommendations

Based on the findings of this study, several main recommendations can be made to enhance the development and management of digital collections in university libraries. These recommendations aim to the challenges identified, optimize existing methods and tools and ensure that university libraries can effectively meet the growing demand for digital resources.

1. This work established that a major challenge faced by university libraries in expanding and sustaining rich digital collections was inadequate funding. To this challenge, universities should target digital collection development in their financial area, which would provide adequate and long-term funding for both structural investments and collection purchasing.
2. The survey revealed that although most universities had put in place policies or framework for digital collection development the proportion without had remained high. In this context, it is crucial that all university libraries have and implement profound guidelines that would set out strategies for the procurement, organization and maintenance of digital libraries.
3. The study identified that many of the university libraries utilized a number of restricted strategies to handle digital collections including digital library software and simple



storage methods. The rapid development of telecommunication technology reveals the need for the libraries to increase the use of digital management facilities, such as higher levels of cloud storage, many intelligent methods of cataloging systems, and data management systems.

4. A significant barrier identified was the limited expertise of staff in managing digital collections. To address this, libraries should invest in continuous professional development programs for library staff, focusing on the specific skills required for digital collection management.
5. The survey established that e-theses by research students were not submitted to most libraries and that open access resources were scarce. In the same way and for the same purpose, universities should promote the deposit of e-theses and dissertations in institutional repositories.
6. The technical challenges faced by university libraries in managing digital collections, such as system crashes, data loss, and inadequate infrastructure, must be addressed through investment in reliable technology and infrastructure. Universities should upgrade their IT systems, ensuring they have the capacity to support large-scale digital collections and provide seamless access to users.
7. Collaborative efforts among university libraries can significantly enhance the scope and quality of digital collections. Libraries should explore opportunities for resource sharing with other academic institutions, national libraries, and digital repositories. This could involve participating in consortia for acquiring digital resources, collaborating on digitization projects, or exchanging digital content.
8. As university libraries continue to expand their digital collections, it is crucial to adopt strategies for the long-term preservation of digital resources. Libraries should develop and implement comprehensive digital preservation policies that address the challenges of format obsolescence, data degradation, and the evolving technological landscape.
9. The study indicated that many library users were not fully aware of or proficient in accessing digital collections. To overcome this, libraries should offer training sessions and informational materials to users on how to search, retrieve, and utilize digital resources effectively.



10. The study also revealed the need for university libraries to better assess user demands when developing digital collections. Libraries should implement systematic methods to gather user feedback, such as surveys, focus groups, and usage data analysis, to better understand the needs and preferences of their academic community.

Conclusion

The findings of this study show the growing recognition of the importance of digital collection development and management in university libraries. While platforms like Eprint and D-Space are being used by several libraries, the overall use of advanced tools and techniques remains low. Key barriers such as inadequate funding, technical limitations, and insufficient staff expertise further complicate the digital transformation process. Therefore, it is imperative for university libraries to adopt well-defined policies, invest in infrastructure and capacity building, and explore collaborative approaches to strengthen their digital capabilities. Addressing these issues will enable libraries to deliver more accessible, efficient, and future-ready services to their academic communities.

References

- Adams, H. R., & Noel, K. K. (2008). *Collection development policies and procedures*. Libraries Unlimited. <https://doi.org/10.5860/crln.69.10.655>
- Branin, J. J. (2009). Digital collections: Development and management. *Library Journal*, 134(9), 30-33.
- Vignau, D., & Meneses, J. (2005). Modern approaches to collection management. *Journal of Library Administration*, 43(1), 81-94.
- Reitz, J. M. (2013). *Dictionary for Library and Information Science*. Libraries Unlimited.
- Kumar, K., & Kumar, A. (2008). Collection development in the electronic environment: A case study. *Collection Building*, 27(4), 141-145. <https://doi.org/10.1108/01604950810913706>
- Mullen, L. (2010). The digital library and collection development. *Library Resources & Technical Services*, 54(4), 258-267.
- Mullen, L. (2011). The evolving role of librarians in the digital age. *Journal of Academic Librarianship*, 37(1), 9-18.
- Giri, A., Sen, B., & Mahesh, T. (2015). Challenges in academic library collection development: A survey of New Delhi libraries. *Library Philosophy and Practice*. Retrieved from <http://digitalcommons.unl.edu/libphilprac/>
- Gregory, V. L. (2011). *Collection development and management for 21st century library collections: An introduction*. Neal-Schuman Publishers. <https://doi.org/10.1080/14649055.2005.10766151>
- Lavoie, B. (2004). The open archives initiative: Technical standards for resource sharing. *Library Trends*, 52(2), 308-324. <https://doi.org/10.1353/lib.2004.0056>



- Deegan, M., & Tanner, S. (2003). *Digital preservation: Sustaining cultural heritage in the digital age*. Facet Publishing.
- Borgman, C. L. (2007). *Scholarship in the digital age: Information, infrastructure, and the Internet*. MIT Press. <https://doi.org/10.7551/mitpress/6987.001.0001>
- Johnson, P. (2009). *Fundamentals of collection development and management* (2nd ed.). American Library Association. <https://doi.org/10.5860/crl.70.4.363>
- Atkinson, R. (1998). *Collection management and development: Challenges of access in a digital age*. American Library Association. <https://doi.org/10.4324/9781003062583>
- Evans, G. E., & Saponaro, M. Z. (2012). *Collection management basics*. Libraries Unlimited. <https://doi.org/10.4324/9781003062583>
- Emojorho, D. (2011). Collection management in university libraries in Nigeria. *African Journal of Library, Archives and Information Science*, 21(1), 41-52.
- Farid, G., Warraich, N. F., & Iftikhar, S. (2025). Digital information security management policy in academic libraries: A systematic review (2010–2022). *Journal of Information Science*, 51(4), 1000-1014.
- Gorman, M., & Miller, R. H. (1997). *Collection management for the 21st century: A handbook for librarians*. Greenwood Press. <https://doi.org/10.4324/9781003062583>
- Nkamnebe, A., Udem, M., & Nkamnebe, A. (2014). Evaluating university libraries: Challenges and strategies. *Journal of Library & Information Services*, 58(3), 142-158.
- Haider, M. (2007). Problems in library acquisitions in Pakistan. *Library Management*, 28(6/7), 398-410.
- Ameen, K. (2005). Use of collection development policy in university libraries of Pakistan. *Collection Building*, 24(4), 141-146. <https://doi.org/10.1108/01604950510633194>
- Haider, M. (2007). Problems in library acquisitions in Pakistan. *Library Management*, 28(6/7), 398-410.
- Haider, S. J. (1996). Acquisition processes in Pakistani university libraries: A review. *Library Review*, 45(4), 28-34. <https://doi.org/10.1108/00242539610121539>
- Rehman, M., & Ahmad, I. (2007). The impact of exchange rates on library acquisitions in Pakistan. *Pakistan Library & Information Science Journal*, 38(3), 90-105.
- Said, R. (2006). The role of HEC Digital Library in academic libraries in Pakistan. *Library Resources & Technical Services*, 50(3), 154-162.