

STANDARDIZATION AND SUSTAINABILITY OF DIGITIZATION PROJECTS IN UNIVERSITY LIBRARIES OF PAKISTAN

MUHAMMAD RAFIQ¹, KANWAL AMEEN²

¹Department of Library & Information Science, University of the Punjab, Lahore.
dr.rafiqm@gmail.com

²Department of Library & Information Science, University of the Punjab, Lahore
kanwal.ameen@gmail.com

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ABSTRACT. *University libraries around the world are digitizing their information resources to offer online access to remote users. However, digitization projects in developing countries face the challenges of standardization and sustainability. The purpose of this study was to assess the opinion of the library experts of Pakistan in terms of: Adoption of standards/best practices in digitization projects; Sustainability of digitization projects; Role of cooperation for digitization projects; HEC role in promoting digitization activities; and Ways to promote standardised digitization practices in university libraries of Pakistan. The study opted qualitative research design and 25 in-depth interviews were conducted to collect data. The findings revealed that respondents favoured to formulate and adopt the basic and broad standards for digitization. They considered that sustainability of digitization projects should be ensured by the operating institution while role of HEC and cooperation among operating institutions was considered important to ensure the sustainability of such projects as well as promote the standardised digitization practices in university libraries of Pakistan.*

Keywords: Write three to five key words related to your study separated by ; for example: 'Railway Interlocking System; Moving Block Control; Safety Properties; Formal Methods; Z-Specification.

1. Introduction

Digitization is taking place in all types of the libraries, around the world. University libraries are very much involved to digitize their information resources rich in academic, cultural, and heritage value. The demand for online access to such resources is on rise. Digitization enables the libraries to convert these resources from analogue formats, mainly in print, to digital ones and offer online access to the users residing remotely. The demand for digitized contents is ever increasing worldwide and the same phenomenon is emerging in Pakistan [1]. University libraries in Pakistan have been comparatively better in meeting standards of professional, financial, knowledge and other material resources. Their status has been improved after the active role of Higher Education Commission (HEC) of Pakistan, by providing grants for the ICT based infrastructure development in universities. HEC also initiated HEC-National Digital Library Programme (HEC-NDL) and Pakistan Research Repository (PRR) projects to address the information provision issues for the researchers. It was also revealed that one third university libraries of Pakistan were engaged in digitization projects [2]. However, the aspects of standardization digitization practices and sustainability digitization projects were missing in planning and were not addressed appropriately [3].

Digitization consumes a large number of financial, human, and technological resources. Hence, it was felt necessary to explore the opinion of the library experts of the country to promote the sustainable standardised digitization practices in university libraries of Pakistan.

2. Purpose of the Study. The purpose of the study is to assess the opinion of the library experts of Pakistan in terms of: Adoption of standards/best practices in digitization projects; Sustainability of digitization projects; Role of cooperation for digitization projects; HEC role in promoting digitization activities in university libraries of Pakistan; and Ways to promote standardised digitization practices in university libraries of Pakistan.

3. Literature review. Academic libraries all over the world are digitizing materials [4]. A survey of more than 100 digitization projects in US academic, public and special libraries mentioned that majority of the libraries engaged in digitization projects were from academic libraries [5]. University libraries are major participants of large scale digitization initiatives such as Google Book Search, Open Content Alliance, Microsoft's Live Search Books Publisher Program and Million Book Project.

In the perspective of developing countries, and especially the similarities in social, political and economic environment with Pakistan, India presents a good example. A number of studies [6, 7, 8, 9, 10, 11] discussed the status of digitization and digital library initiatives in India. These studies show that government agencies & departments, NGOs, institutes, and libraries including the academic libraries were engaged in digitization and digital library projects.

Sulistyo-Basuki [12] provided an overview of digitized collections within universities in Indonesia, starting from the Ganesha Digital Library Network in 1998, which developed into the Indonesian Digital Libraries Network (IDLN), with 87 private and institutional members. The State Ministry of Research and Technology has distributed document digitizing software (Docushare) to universities, and this has been used to digitize more than 14,000 documents by APTIK (Asosiasi Perguruan Tinggi Katolik di Indonesia or Association of Catholic Universities in Indonesia) Library Network. The author has also described a number of digitization activities carried out by a large number of universities, Islamic institutions, and technology information kiosks. In Malaysia, 13 university libraries were found engaged in digitized their theses, exam papers, students' projects, publications of academic staff and university, and photographs [13].

Nigerian universities were also involved in digitization of theses and one in digitization of past question papers [14]. The library of University of Nigeria, as of December 2008, scanned 23477 theses, 8106 publications, and 3121 proposals and seminar papers. The library has uploaded 13139 files and 12130 files have been linked through library website [15]. The literature revealed that university libraries in developed as well as developing countries are significantly involved in digitization activities.

4. Research Design & Methodology

The data presented in this study is the sub set of data collected during a PhD study. The study opted sequential mixed method design. However, the data presented here belongs to QUAL strands that was based on qualitative research design to explore the opinion of the library experts. Twenty-seven library experts from different parts of Pakistan were selected on the basis of their positions, experience and established expertise in librarianship of Pakistan. The consultation with some senior knowledgeable professionals was also made. The attention was given to ensure diversity of the sample and representation of all the four provinces of the country.

The interviewees were given option to talk in English or Urdu languages to avoid language barrier in the pursuance of the real insight from interviewees. The interview themes were explored in an exhaustive manner. The duration of the interviews varies from 20 to 45 minutes. The recorded interviewees were coupled with notes during and just after the interviews.

The thematic analysis of textual data was conducted. The recorded interviews were transcribed in English with professional objectivity. Summary of analysis was extracted from the interview transcripts manually. Interpretations, comments, and quotes from the transcripts have been used to explain the contents. The study ensured the anonymity of the interviewees by referring the quotes from interview transcripts without the names of the persons.

5. Data Analysis. The interviewees' characteristics (Table 1) show that 16 respondents belong to public sector institutions and nine from private sector. Out of 25, nineteen respondents were library practitioners and six

were teachers in library schools. Provincial representation also showed representativeness.

Table 1: Interviewees' characteristics

<i>Variables</i>	<i>Freq.</i>	<i>Percentage</i>
<i>Type of Parent Institution</i>		
Public sector	16	64
Private sector	9	36
<i>Primary Role</i>		
Library Practitioner	19	76
Faculty/Teaching	6	24
<i>Provincial Representation</i>		
Punjab	7	28
Sindh	12	48
Balochistan	1	4
Federal Area/Capital	5	20

5.1. Adoption of Standards/Best Practices. The respondents were asked to opine their intentions about the adoption of international standards and best practices of digitization in university libraries of Pakistan. The analysis of their input is shown in table 2.

Table 2: Adoption of standards/best practices for digitization work (N=25)

<i>Contents Analysis of the Responses</i>	<i>Freq.</i>
Need to opt/follow some basic standards	21
HEC, National Library of Pakistan, and Pakistan Library Association should formulate some sort of broad/basic standards for digitization work	9
Standardization is a necessity for resource sharing, collaboration, and compatibility	5
International standards may be adapted to meet indigenous requirements	4
Digitization activities should not be deferred for the prospective standards formulation	1

Overwhelming majority (21) of the interviewees agree to follow basic standards for digitization work. Nine considered that bodies of higher education (HEC), librarianship (National Library), and professional association should formulate these standards. Five interviewees explicitly mentioned the benefits of standards adoption and consider that adoption of standards can help in resource sharing, collaboration and interoperability. Four interviewees considered that international standards may be adapted for local needs. However, one clearly mentioned that digitization activities should not be deferred for the prospective standards formulation.

Interpretations and Discussions. The interviewees' opinions depicted that a vast majority (21 out of 25) of them considered it important to have uniform standards for digitization in libraries to proceed for resource sharing, collaboration, and interoperability. It was suggested that the proposed standards should be broad and basic instead of rigid. It seemed logical as there is variation in libraries' local situations, and it is a common practice in the world. It establishes the need to formulate a broad outline for digitization standards. The broad standards will help out the libraries to alter this basic set of standard on adoption stage to meet their specific needs.

It was suggested to proceed in this regard by reviewing the standards/best practices of other countries and formulating the indigenous standards according to local needs. Nine interviewees considered that professional associations, HEC, and National Library have a role in formulation of standards for digitization

practices. There are a number of best practices and digitization standards currently in practice around the world. The respondents suggested that it seems more practical if HEC, the epic body of higher education, initiate the process of standard formulation. It was also observed that respondents considered that the adoption of standards may happen very easily by the pursuance of the HEC. Nevertheless, libraries should not defer digitization work because of delay in standards formulation. It was also expressed by the respondents that it is more appropriate to formulate and opt agreed upon standards at this stage as libraries are at infancy stage of digitization.

5.2. Sustainability of Digitization Projects. Sustainability is an important issue associated with digitization projects. Digitization projects require continued provision of institutional commitment, funding, availability of skilled human resources, regular updating technological infrastructure, etc. The project that cannot be sustained is wastage of resources and time. The interviewees were asked about the ways to ensure the sustainability of digitization projects in university libraries of the country.

Table 3: Sustainability of digitization activities/projects (N=25)

<i>Contents Analysis of the Responses</i>	<i>Freq.</i>
Sustainability should be ensured by the operating institution/s	12
Fee based access to digitized contents may be used to generate funds for sustaining digitization	10
Ensure the sustainability at the planning stage	5
Libraries need recognition from higher authorities and users	3
Mutual collaboration among universities	2
Legal framework	1

Twelve interviewees considered that sustainability should be ensured by the operating institution/s. Fee based access for sustainability purpose was mentioned by ten interviewees. Five interviewees expressed that libraries need to ensure sustainability on planning stage and the funding may be ensured in advance for requisite years. Libraries need recognition from concerned quarters to sustain digitization activities, pointed out by three interviewees. Two opined that collaboration among universities is a way to sustain digitization projects. One interviewee considered that a legal framework is necessary for sustainability.

Interpretations and Discussions. Ten interviewees favoured to raise money by fee based full text access to generate the funding for digitization projects. University libraries hold valuable resources that have potential to generate funds to sustain digitization projects. Nevertheless, many other interviewees rejected the idea of fee based access to generate funds for such projects, a university librarian of a multi-campus international university said:

Money has to come from somewhere. These projects cost a lot of money. They are expensive. I don't think you will ever fully recover the cost unless you become a commercial publisher. Some commercial vendors make a lot of money. I think about Elsevier, Science Direct. They are making billion dollars from scholarship and academic information. But I don't think in developing country, like Pakistan, it makes any sense, as no one can afford to pay.

Twelve interviewees considered that sustainability should be ensured by the operating institution/s. Some interviewees suggested spending a proportion of the library's regular budget on digitization activities/projects to sustain. Some mentioned to maintain separate budget for digitization activities which may come either from students' fees or from research and development (R&D) funds of the university. Some suggested to address sustainability issue at planning stage. It was stated that addressing sustainability during planning stage is important.

Some respondents considered that sustainability of such projects may be accomplished by the recognition of digitization projects by showcasing the benefits of digital access and digitization. Some

mentioned initiating small digitization projects (pilot projects) by the library's regular budget. Offering d-access to such resources will ultimately get the recognition for library as well as digitization activities by the users and higher authorities.

Only one interviewee considered the provision of legal framework and collaborative efforts for sustainability of digitization activities/projects. Legal framework was mentioned as a formal project approved by competent authorities. In any case libraries need approval.

It was also observed by the researcher that interviewees were not fully aware about sustainability issues of digitization projects. Majority of the people were thinking about sustainability in terms of finance only. They did not talk about the sustainability of technology, skills, etc.

On the basis of the discussion, it comes out that the library leaders think that the sustainability of digitization projects needs to be ensured by the parent institution/s or internal resources (e.g. library's regular budget, R&D funds, etc.), and then external resources (e.g. HEC, National and International funding bodies, etc.) can be solicited. Collaborative approach like developing some consortia or resource sharing networks may also help in this regard. But libraries need to plan well and need to adopt a formal approach of project management with the approval of concerned authorities. Sustainability may be accomplished with a proper planning well in advance.

5.3. Cooperation for Digitization Projects

Collaborative approach is considered a winning strategy in digitization projects. Institute of Museum and Library Services believed that 'collaboration is emerging as the strategy of the 21st century' (Martin 2003). Collaborative approach and cooperation play a pivotal role in the long term success of digitization projects. Hence, the interviewees were asked to share their opinion about the necessity of cooperation and how it can be achieved.

Table 4: Cooperation for digitization (N=25)

Contents Analysis of the Responses	Freq.
Cooperation between the Library and IT department of a university	19
HEC role	19
Collaboration among the university libraries	18
Role of library associations	3
HEC should formulate a group consisted of librarians, IT professionals and other stakeholders to promote cooperation	2
Collaboration depends on the university administration	2
Personal biases of library leaders is a barrier	1

Cooperation between university library and its IT department was mentioned by 19 interviewees, equal number of interviewees considered that HEC's role is important to promote the collaboration among university libraries in digitization projects. Eighteen interviewees emphasized the need of collaboration among university libraries to promote digitization projects. Role of library associations was also mentioned by three interviewees. Two interviewees mentioned that collaboration among university libraries depends on the decision of the university administration. Two respondents proposed that HEC should formulate a group consisting of librarians, IT professionals and other stakeholders to promote cooperation. It was also mentioned that personal grudges of library heads are a barrier to promote collaboration among university libraries.

Interpretations and Discussions. The success of digitization projects largely depends on the effective applications of ICTs. It calls for IT skills which are not necessarily available with librarians. Hence, in majority of cases, it depends on the support of universities' IT departments. A majority of interviewees (19) considered the need for cooperation between the library and IT departments of the university for successful execution of digitization projects. But some interviewees said that the cooperation between IT dept. and the

library is not always there. IT personnel have their own domain and they don't want anybody to interfere. Therefore, sometimes libraries do face more resistance from within the organization. IT personnel domineer over the library staff during decision making process about technological applications to implement in library.

Eighteen interviewees considered that the collaboration among university libraries is inevitable for the success of digitization projects. They feel libraries should share their lessons learned from digitization activities. The notion of mutual cooperation in this regard was emphasized also while talking about sustainability. The library community acknowledges the need of sharing resources, networks, consortia, etc. Nevertheless, unfortunately, the history of librarianship in the country does not present impressive examples of resource sharing setups. Beside the role of head librarians, the parent institutions' agreeing on cooperation is more important. Library managers can suggest to the higher administration the vitality of cooperation, yet the final authority to go for it lies with the university's higher administration. However, the researcher observed during study that there may be issues in sharing of funds, but librarians may initiate cooperation and sharing of skills, learned experiences, technological infrastructure, etc.

5.4. HEC Role in Promoting Digitization Activities. HEC is the epic body of higher education in Pakistan. HEC provides funds, infrastructural support, and administrate the policies of higher education. It was seemed logical to find out the views of interviewees about the role of HEC in promoting and sustaining digitization activities. The data is presented in table 5.

Table 5: Role of HEC in promoting digitization activities (N=25)

Contents Analysis of the Responses	Freq.
HEC has a major role to play	10
HEC should support training programs	9
HEC should provide funds specifically for digitization projects	8
HEC's major role is about policy making and coordinating	6
HEC should provide digitization equipment/apparatus (hardware & software)	5
HEC should formulate a working group/committee to coordinate digitization projects	5
HEC is the federal level institution, it should work as a central body in digitization projects of universities	2

Ten interviewees considered that HEC has a role in promoting digitization activities in university libraries. HEC should support training programs, nine interviewees mentioned. Eight saw financial support from HEC specifically for digitization projects, while six considered that HEC has a major role about policy making and coordination in terms of digitization projects. Five interviewees explicitly mentioned that HEC should formulate a working group to coordinate digitization activities as well as provide hardware and software to university libraries for digitization projects. Two interviewees said that HEC should work as a central body for the execution of digitization projects in university libraries.

Interpretations and Discussions. HEC has certain authority in overseeing the state of higher education in Pakistan. HEC evaluates and rank universities according to the criteria it has established. Universities need to meet HEC requirements for getting funds. HEC is playing a major and basic role in the transformation of Pakistani Universities into world class institutions of learning and research. Hence, it is logical to think about a basic and pivotal role of HEC in the promotion of digitization projects in university libraries.

Nine interviewees considered that HEC should provide support in human resource development of libraries especially to train them for digitization activities. They mentioned that HEC can support: local and foreign trainings of the librarians; arrange exchange programs; provide travel grants; and funding for training programs, etc.

Funding is the basic need for the digitization initiatives. Eight interviewees considered that HEC should provide funds specifically for digitization projects. This sort of support will accelerate digitization projects. As one respondent stated, 'With the support of HEC, libraries can accomplish the projects in a couple of years that will, otherwise, be completed in a decade'. HEC put a huge amount of funds to implement HEC-NDL Program

which has enabled the online access to more than 40,000 e-books and 23,000 e-journals from renowned publishers. It has also initiated PRR to digitize MPhil and PhD theses produced in Pakistani universities. However, HEC has not channelized any efforts to offer any support to digitize the special collections available with the libraries. The respondents consider that financial support of HEC specifically for digitization projects will be instrumental to push the libraries to initiate and accomplish digitization of such collections.

Technological infrastructure, including hardware and software, is a fundamental requirement to successfully carry out digitization projects. Five interviewees considered that HEC should provide the hardware and software required for digitization projects. Although HEC has launched PERN project in 2002, currently in phase II, and grandly enhanced the technological infrastructure of the universities yet the majority of university libraries are missing the standardized automation and digital library software. The support by HEC in supplying digital technology equipment including scanner, servers, computers, etc. along with a standardised software of digital library may be instrumental to accelerate the digitization projects in libraries, mentioned by some respondents.

Six interviewees assume the HEC's major role in policy formulation and coordination of digitization activities as one respondent said, 'HEC may provide a common platform for all the university libraries to sit together and devise a mechanism for digitization'. Five interviewees explicitly mentioned that HEC should formulate a formal working group/committee to coordinate digitization projects. HEC may formulate a committee of university librarians and chairpersons of some computer science departments to work and plan a national digitization project, one interviewee said.

Hence, the respondents considered the role of HEC as: policy maker; coordinator; financier; and enabler. The indigenous situation of librarianship misses the collaborative networks. It was also noted under the heading of cooperation that libraries' leadership have reservations to sit together because of their personal grudges. The researcher's perception is that the problem is not only the mind-set of librarians but the university authorities' also. HEC's role seems influential in this regard. HEC can formulate and implement basic standards; provide funds; and push the universities to collaborate in digitization projects. However, it depends on the libraries and library community. HEC will never come forward unless library community and libraries approach HEC with some solid programs of action.

5.5. Ways to Promote Standardised Digitization Practices

Interviewees were asked to sum up their recommendations to propose the ways to promote the standardised digitization practices in libraries. The respondents presented an array of thoughts, Table 6.

Table 6: Ways to promote standardised digitization activities (N=25)

<i>Contents Analysis of the Responses</i>	<i>Freq.</i>
Active programming of seminars, workshops, conferences, etc. to promote the concept	12
Approach authorities/HEC for support	8
Collaboration by developing resource sharing networks, consortia, etc.	7
Initiate pilot projects in the beginning	6
Share lessons learned	5
Incorporate course contents related to digitization in library schools' curricula	4
Work for some legal framework and legislations for libraries and digitization projects	3
Marketing of the resources	2
PLA should formulate an expert committee	2

Twelve interviewees proposed to launch an active programme of seminars, workshops, conferences, etc. to promote the concept of digitization along with approaching concerned authorities like HEC, etc. for support (eight interviewees); taking collaborative approach in digitization projects by developing resource sharing networks, consortia, etc. (seven interviewees); initiating pilot projects in the beginning (six interviewees); sharing of the lessons learned by libraries who are engaged in digitization activities (five interviewees);

incorporating course contents related to digitization and digital libraries in library schools' curricula (four interviewees); working for a legal framework for libraries and digitization projects (three interviewees); marketing of the library resources (two interviewees); and formulating an expert committee by Pakistan Library Association (PLA) to work and advise digitization related matters (two interviewees).

Interpretations and Discussions. The respondents mentioned the need of active programming of seminars, conferences, training programs, and lectures to promulgate the concept of digitization, enhance knowledge and skills of the library professionals. Interviewees considered that library associations and library schools may play an effective role in this regard. Library schools, particularly, may offer continuous education programs as well as incorporate course contents related to digitization in their regular programmes of study, as proposed by four interviewees. A chief librarian from Lahore proposed 'Trainer of the Trainers Program'. He said:

For training purposes, we can initiate trainer of trainers program. These trainers may be sent to India, Singapore, etc... Afterwards, we can use their expertise to train other trainers. We can also use "Video Conferencing" facilities that have provided by HEC to different universities for the digitization training purposes.

A good number of interviewees proposed that library community of Pakistan should approach the concerned bodies and higher authorities like HEC to convince them to provide active support for digitization activities/projects. The findings under the heading of 'HEC Role in Promoting Digitization Activities' in this chapter also highlighted this aspect as interviewees considered a big role of HEC to promote digitization activities. Of course, libraries need to make the authorities realize that it is the need of the hour and if we will not do it today, we cannot meet the demands of the present and future academia, one respondent said. It was also expressed by the respondents that library associations especially Pakistan Library association (PLA) should formulate an expert committee of librarians to propose an appropriate plan; and approach the authorities to implement the proposed plan.

However, it will be appropriate to start small scale digitization projects and exhibit the output to concerned quarters (university administration, funding authorities, as well as users) to seek their support for digitization projects. This is an important recommendation also revealed under the heading of 'Execution of Digitization Work' in this chapter. Pilot projects are important to influence the broad base of stakeholders like users, university administration, etc.

Moreover, libraries need to adopt collaborative approach in digitization projects as proposed by seven interviewees. Consortia and resource sharing networks may play a pivotal role to accelerate digitization activities/projects. It is also necessary to push the university libraries doing digitization to share their learned lessons and experiences, expressed by respondents. Sharing of experiences will open up the avenue of cooperation of likeminded people and institutions. Researcher's perception is that if university libraries of Pakistan have to make a success story in digitization projects in the long run, collaboration is the most appropriate strategy.

Three interviewees mentioned the need for legal framework and legislations for libraries as well as digitization. Legal framework is very much essential especially in collaborative projects, as one chief librarian having vast experience in library automation stated, 'Libraries need to convince and then make formal bonds with legal framework on the back of libraries to initiate collaborative digitization projects'.

The respondents also see the role of marketing as an important one. University libraries of Pakistan have unique collections in Sanskrit, Gurumukhi, Urdu, Hindi, Sindhi, Arabic, etc. and they need to market this material. Through marketing, libraries can receive the attentions of higher authorities and national and international funding agencies that will ultimately help them to ensure funding for digitization of special collections, respondents articulated. Hence marketing strategy, if executed properly, has the potential to be pivotal in getting funds and support for digitization activities/projects in universities.

6. Conclusion

In the light of collective input obtained through in-depth interviews, it is revealed that respondents favoured to formulate and adopt the basic and broad standards for digitization. They considered that sustainability of digitization projects should be ensured by the operating institutions. They also perceive the necessity of cooperation between library and IT departments as well as operating institutions to successfully initiate and accomplish digitization projects. HEC role was considered core for promoting the standardized digitization

practices. The respondents proposed an active program of seminars, workshops, etc.; collaboration; and approaching higher authorities to promote standardised digitization practices in libraries.

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