

Digital Libraries, Features, Benefits, Issues and their Major Trends to Library Design for LIS Professionals in Digital Era

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Abstract:

A digital library, digital repository, or digital collection, is an online database of digital objects that can include text, still images, audio, video, or other digital media formats. LIS and computer science professionals face challenges that will lead to improved systems. More and more libraries will have departments and programs in the digital library arena. It will build upon work being done in the information and data management area. This paper is mainly highlights for Digitalization, Features, Review of Literature, Purpose, Review of Literature, Twelve Major Trends in Library Design, Components, Review of Digital Skills for Developing and Managing Digital libraries, Digitization Strategy Framework, Impacts, Benefits, Drawbacks, Personal Qualities for LIS Professionals, Concepts of Web 2.0, Library roles and their services, Revolutionary Changes, Managerial Skills and so on in clearly.

Keywords:

Digital Library, Trends Library Design, Digitization Strategy Framework, Benefits, Managerial Skills.

1. Introduction:

Rapid advances in information technologies have revolutionized the role of libraries. As a result, libraries face new challenges, competitors, demands, and expectations. Libraries are redesigning services and information products to add value to their services and to satisfy the changing information needs of the user community. Traditional libraries are still handling largely printed materials that are expensive and bulky. Information seekers are no longer satisfied with only printed materials. They want to supplement the printed information with more dynamic electronic resources. Demands for digital information are increasing. Library as information service provider has come to rely increasingly on digital information both as supplements to and parallels of print materials. Libraries are also procuring new resources, which are “born digital” that have no print or analogue equivalent - they exist only in digital form. Digitization has become a practical necessity and reality with technology interventions to provide. Digital libraries provide an effective means to distribute learning resources to students and other users.

1.1.Digitalization:

IGI Global: Digitalization is the integration of digital technologies into everyday life by the **digitization** of everything that can be digitized. The literal **meaning of digitalization** gives an apparent idea of development and technology dependent world.

1.2. Business Dictionary:

Integration of digital technologies into everyday life by the digitization of everything that can be digitized.

1.3. What is the meaning of Digitalization of Data?

Digitization is the process of converting information into a digital format. In this format, information is organized into discrete units of **data** (called bit s) that can be separately addressed (usually in multiple-bit groups called bytes).

1.4. Features of Digital Libraries:

- Added value
- Easily accessible
- Information retrieval
- Multiple access
- No physical boundary
- Preservation and conservation
- Round the clock availability
- Space

1.4.1. Characteristics of Digital Libraries- (Cleveland, 1998):

- ❖ DLs are the digital face of traditional libraries that include both digital collections and traditional, fixed media collections. So they encompass both electronic and paper materials.
- ❖ DLs will also include digital materials that exist outside the physical and administrative bounds of any one digital library
- ❖ DLs will include all the processes and services that are the backbone and nervous system of libraries. However, such traditional processes, though forming the basis digital library work, will have to be revised and enhanced to accommodate the differences between new digital media and traditional fixed media.
- ❖ DLs ideally provide a coherent view of all of the information contained within a library, no matter its form or format
- ❖ DLs will serve particular communities or constituencies, as traditional libraries do now, though those communities may be widely dispersed throughout the network.
- ❖ DLs will require both the skills of librarians and well as those of computer scientists to be viable.

2. Review of Literature:

Iris Xie & Krystyna K. Matusiak (2018) the focus of the chapter is to identify digital library evaluation criteria and associated measures. A unique aspect of this chapter is that the authors present the findings of their own study on digital library evaluation purposes, dimensions, criteria, measures, the phases for evaluation, and factors hindering the evaluation in addition to summarizing previous research on digital library evaluation. Masitah Ahmad & Jemal H. Abawajy (2014) this paper, we address the same research problem from a different dimension which is from the perspective of the digital service providers. To this end, we propose a new model suitable for evaluating the performance of digital library services. We argue that the level of QoS provided by the digital service providers have direct impact on the perception and satisfaction of the digital service end-users. Iris Xie & Krystyna K. Matusiak (2016) this chapter presents both theoretical and practical perspectives on developing and selecting digital library management systems (DLMS). It presents research on architectural models of digital library systems and discusses functionality, interoperability, and other design requirements. Furthermore, it provides an overview of the current landscape of DLMS. It discusses the open source versus proprietary systems dilemma and reviews a number of DLMS.

2.1. Purpose of Digital Library:

- ❖ Expedite the systematic development of procedures to collect, store, and organize, information in digital form.
- ❖ Promote efficient delivery of information economically to all users.
- ❖ Encourage co-operative efforts in research resource, computing, and communication networks.
- ❖ Strengthen communication and collaboration between and among educational institutions.
- ❖ Take leadership role in the generation and dissemination of knowledge

3. Recent Trends & Developments:

- ❖ Collection Development to Content Development
- ❖ Conventional Education to Web-Based Education
- ❖ Conventional Vs Web Based Learning
- ❖ Establishment of Knowledge Commission
- ❖ Impact of ICT on Societal and National Development
- ❖ Impact of Information and Knowledge Society on Education, Training and Research
- ❖ Information Society-Knowledge Society
- ❖ Library Cooperation to Resource Sharing Networks/Consortia
- ❖ Library Professionals to Information Professionals
- ❖ Primary Focus on Professional Knowledge and Skills (Technology, Management and Communication)
- ❖ Recent Trends and Developments in LIS Education and Research
- ❖ Role of Information in Planning, Decision Making, Innovations and National Development
- ❖ Traditional Library to Digital Library

3.1. Trends in Libraries:

- ❖ Community involvement
- ❖ Create an image for the library
- ❖ Delivery at the Time of Need
- ❖ Efficient and Intelligent Workflows
- ❖ Focus on all library groups
- ❖ Focus on emerging technologies
- ❖ Know more about the library's visitors and non-visitors
- ❖ Open Access and Scholarly Communication
- ❖ Reinvent the library's services

3.2. Twelve Major Trends in Library Design (Thomas Sens):

- ❖ Consolidate emerging specialty spaces
- ❖ Design for environmental sustainability
- ❖ Envision the library as place
- ❖ Get creative with funding
- ❖ Invite students and other stakeholders to the table
- ❖ Make collaboration a must
- ❖ Optimize spaces between spaces
- ❖ Plan for change
- ❖ Rethink library programming
- ❖ See that technology drives the bus
- ❖ Take advantage of the commons
- ❖ Use the library to attract and retain top students

4. Table.1. Traditional Libraries Vs Digital or Electronic Library:

Traditional Libraries	Digital or Electronic Library
Print collection	All resources in digital form.
Stable, with slow evolution	Dynamic and ephemeral
Individual objects not directly linked with each other.	Multi-media and fractal objects
Flat structure with minimal contextual metadata	Scaffolding of data structures and richer contextual metadata.
Scholarly content with validation process	More than scholarly content with various validation processes
Limited access points and centralized management	Unlimited access points, distributed collections and access control
The physical and logical organization correlated.	The physical and logical organization may be virtually
One way interactions	Dynamic real-time dialogue
Free and universal access.	Free as well as fee based.

5. Components:

- ❖ Infrastructure
- ❖ Digital Collection
- ❖ Systems function
- ❖ Telecommunication facility
- ❖ Human resources

5.1. Required Infrastructure for developing Digital Libraries:

Seshaiah & Veeraanjaneyulu (2009) discussed the development of a digital library with the Greenstone Digital Library software and included the following steps:

- ❖ Building the digital collection
- ❖ Designing a user-friendly interface for viewing the collection
- ❖ Developing new collections from the file menu
- ❖ Dragging files to enrich the metadata
- ❖ Launching the librarian interface
- ❖ Selecting and applying metadata

5.2. Review of Digital Skills for Developing and Managing Digital libraries:

Pearce & Davis (2006) opined that information professionals should be familiar with new technology for offering digital information services. They must acquire digital skills to work in digital libraries. They should be conversant with systems analysis and design, knowledge of classification and assigning metadata, digitization processes and management of digital collections. **Sreenivasulu (2000)** emphasized that digital librarians must develop competencies for developing and managing digital libraries. They should be skillful in a variety of areas:

- ❖ Knowledge of digital systems, including that of digital library software for developing digital libraries, designing user interfaces and developing digital content.
- ❖ Knowledge of multimedia technology, such as image processing and classifying digital documents;
- ❖ Knowledge of multimedia technology; and
- ❖ Knowledge of video conferencing;
- ❖ Use of speech recognition software;

- ❖ Use of the internet and knowledge of the Web (including navigation, search techniques, virtual reference services and web design);

5.3. Digitization Strategy Framework:

- ❖ Define aspiration.
- ❖ Improve external offerings, such as data products and technology-enabled equipment.
- ❖ Streamline company processes by improving management and support functions.
- ❖ Reinvent business models for data products, data-driven services, and enabled equipment.
- ❖ Develop a digital technology platform, including a secure cloud, big data, and analytics.
- ❖ Build a digital-ready organization and capabilities, which must include governance, culture, and processes.

5.4. Impact of Digital Information Materials on Libraries:

- ❖ Digital information can be cut and pasted from one document into another
- ❖ Digital information can be sent in multiple copies simultaneously over information networks in fractions of a minute or even of a second. There is no need for users with PCs attached to the network to physically go to the library. They can access information via their PCs.
- ❖ Digital information may be free or cheaper than print equivalents
- ❖ Digital information often modifies librarians' roles in various ways
- ❖ ICT has made the transfer of digital information from remote sites possible (Shift from Print to Digital Internet)
- ❖ ICT made information creation in digital format possible
- ❖ ICT made networking and sharing of information resources possible
- ❖ ICT made online access and file transfer possible

6. Benefits of Digital Libraries:

- ❖ Added value
- ❖ Brings together people with formal, informal and professional learning missions
- ❖ Enhanced information retrieval.
- ❖ Improved access: Digital libraries are typically accessed through the Internet and Compact Disc-Read Only Memory (CD-ROM). They can be accessed virtually from anywhere and at any time. They are not tied to the physical location and operating hours of traditional library.
- ❖ Improved information sharing: Through the appropriate metadata and information exchange protocols, the digital libraries can easily share information with other similar digital libraries and provide enhanced access to users.
- ❖ Improved preservation: Since the electronic documents are not prone to physical wear and tear, their exact copies can easily be made, the digital libraries facilitate preservation of special and rare documents and artifacts by providing access to digital versions of these entities.
- ❖ Multiple access
- ❖ Nearly unlimited storage space at a much lower cost
- ❖ No physical boundary
- ❖ Preservation for some print material
- ❖ Provides a friendly interface
- ❖ Provides faster access to information resources
- ❖ Re-allocate funds from some staff, collection maintenance, and additional books.
- ❖ Round the clock availability
- ❖ Supports advanced search and retrieval
- ❖ Supports the traditional library mission of collection, development, organization, access to presentation
- ❖ Universal accessibility

- ❖ Wider access: A digital library can meet simultaneous access requests for a document by easily creating multiple instances or copies of the requested document. It can also meet the requirements of a larger population of users easily.

6.1. What Challenges are faced by your Library in your Digital Transformation Journey?

- ❖ Employee Pushback
- ❖ Lack of Expertise to Lead Digitization Initiatives
- ❖ Lack of Overall Digitization Strategy
- ❖ Limited Budget
- ❖ Organizational Structure

6.1.1. Issues & Challenges in creating Digital Libraries- (Cleveland, 1998):

- ❖ Access
- ❖ Audio/Visual materials
- ❖ Big Data
- ❖ Born Digital, web harvesting
- ❖ Copyright
- ❖ Digitization,
- ❖ Issues with digital asset management systems (DAMS) or institutional repositories (IR)
- ❖ Metadata,
- ❖ Metadata: Item-level description vs collection descriptions
- ❖ Naming, identifiers, and persistence,
- ❖ Process management / workflow / shift from projects to programs
- ❖ Proof of Value
- ❖ Rights issues (copyright, privacy)
- ❖ Security
- ❖ Selection – prioritizing users over curators and funders
- ❖ Skills & Jobs
- ❖ Standards
- ❖ Storage and Preservation
- ❖ Technical architectures,
- ❖ The Art of Connecting Everything
- ❖ The building of digital collections,
- ❖ Understanding & Anticipating Impact

6.2. Drawbacks of Digital Libraries:

Digital libraries, or at least their digital collections, unfortunately also have brought their own problems and challenges in areas such as:

- ❖ Copyright
- ❖ Costs are spread and many become hidden
- ❖ Difficulty in knowing and locating everything that is available, and differentiating valuable from useless information.
- ❖ Digital preservation
- ❖ Equity of access
- ❖ Exorbitant cost of building/maintaining the terabytes of storage, servers, and redundancies necessary for a functional digital collection
- ❖ Inefficient or nonexistent taxonomy practices (especially with historical material)
- ❖ Information organization
- ❖ Interface design
- ❖ Interoperability between systems and software
- ❖ Job loss for traditional publishers and librarians

- ❖ Lack of preservation of “best in class”
- ❖ Lack of preservation of a fixed copy (for the record and for duplicating scientific research)
- ❖ Lack of screening or validation
- ❖ Quality of Metadata
- ❖ Training and development
- ❖ User authentication for access to collections

7. Personal Qualities for LIS Professionals:

Before one ever sits in a library science related classroom, there are numerous skills and abilities that help highlight someone as being right for a position in this field. These natural talents and personality traits help one stand out as a good candidate for a position as a librarian. Basic personal traits and skills that are important to have include:

- ❖ A desire to work around people
- ❖ A love of knowledge and learning
- ❖ Basic affinity for working with large volumes of information
- ❖ Broad overall knowledge of life and the world
- ❖ Computer skills
- ❖ Ethical
- ❖ Friendly
- ❖ Good with numbers
- ❖ Love of books
- ❖ Personable
- ❖ Strong organizational skills

7.1. Skills for life Online:

- ❖ Evaluating and using online tools
- ❖ Knowing who and what to trust online
- ❖ Making the most of online networks
- ❖ Presenting yourself to best advantage online and managing your digital identity
- ❖ Searching effectively
- ❖ Using Wikipedia

7.2. Concepts of Web 2.0:

- Collaboration
- Community
- Ownership
- Perpetual state of being in beta
- Personal data
- Personalization
- Radical trust
- Remixable
- Self-expression
- Sharing
- Transparency
- Web-based
- Wisdom of crowds

7.3. Changing Library Roles:

- Libraries as Consumers
- Libraries as Intermediaries & Aggregators
- Libraries as Publishers
- Libraries as Educators
- Libraries as R&D Organizations
- Libraries as Entrepreneurs
- Libraries as Policy Advocates

7.4. Changes in Library Services:

- Database searching
- Electronic reference
- E-publishing
- Information literacy program
- Library promotion and marketing
- Online access to library catalogues, databases and the Internet
- Online circulation service
- Online/offline access to digital resources
- Public relations services

8. Digital Competencies for developing and Managing Digital Libraries are divided into three main Categories- (Masrek, 2012):

- ❖ Digital competencies for developing digital libraries;
- ❖ Managing digital libraries; and
- ❖ Digital competencies to protect digital contents.

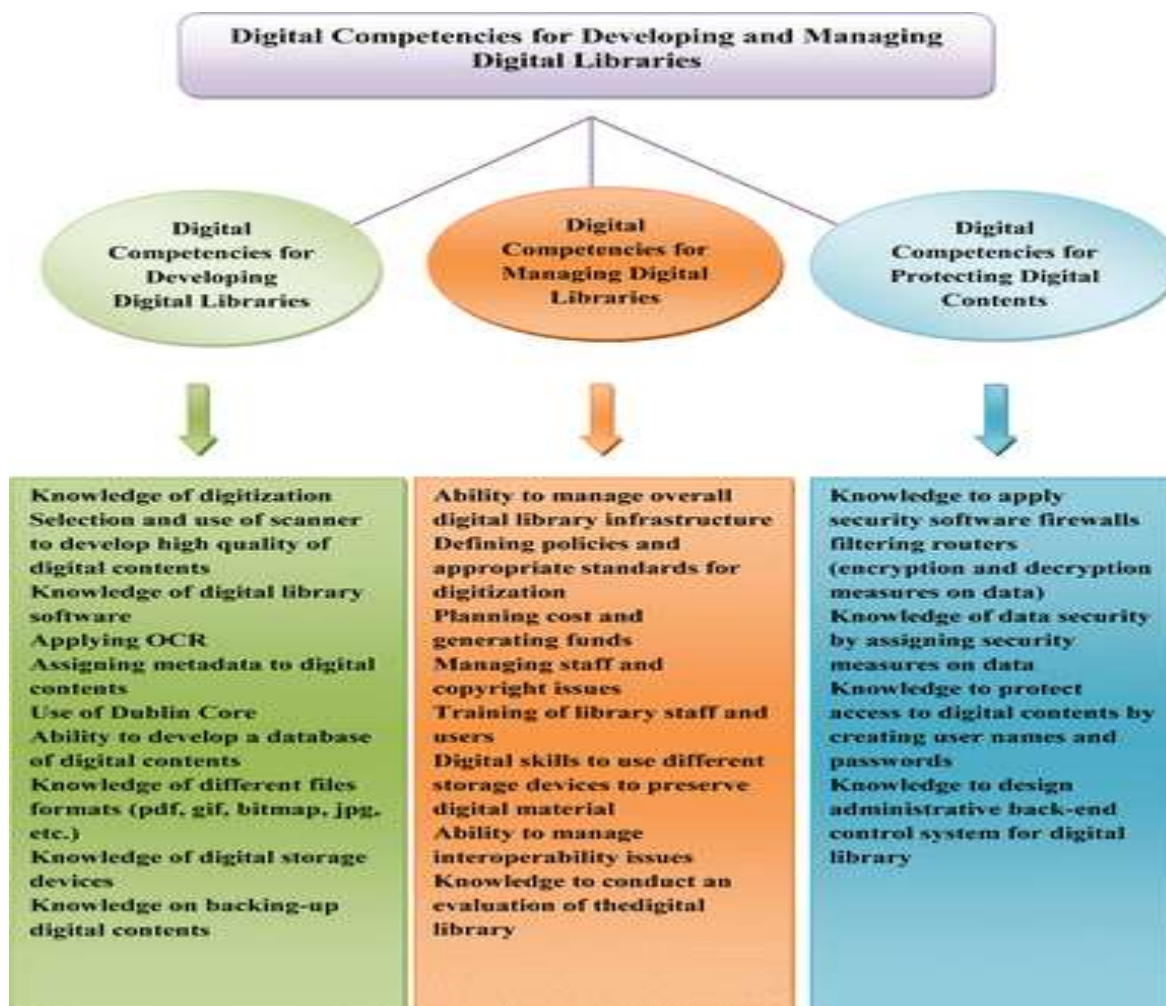


Figure.1.

8.1. Basic Competencies:

While those personal qualities are all important aspects of a career in this field, they only make up the foundation on which to build. Learning various skills through classwork is a must for entering a position as a librarian and there are numerous core competencies worth taking a look at. These basic competencies include:

- ❖ Ability to use technology and to use it to enhance the overall effectiveness of a library, including web based methods of improving technological access to information.
- ❖ Good overall knowledge of archiving and filing information as well as maintaining databases and reference information.
- ❖ Capable of evaluating resources and finding the best ones for addressing different questions or issues.
- ❖ Ability to quickly and professionally search databases, internet resources, and catalogs to find needed information.
- ❖ Ability to communicate well with library staff as well as with all patrons and guests
- ❖ Deep knowledge of books. Good librarians usually read a variety of genres and types of books so that they can help to advise readers as to good books for their reading level and their interests.
- ❖ Ability to promote reading
- ❖ Ability to present information clearly and in an interesting manner
- ❖ Some public speaking skills may be required as well
- ❖ Strong level of customer service skills
- ❖ Ability to adapt to new tools, systems, and situations as they arise – library and information technology is constantly evolving and shifting and librarians must be able to evolve along with it
- ❖ Good overall knowledge of pop culture and current events may not be needed but can help with facilitating patrons' needs
- ❖ Team player

- ❖ Ability to help overcome issues by focusing on solutions instead of on the problems
- ❖ Organizational skills that are enhanced through regular additional efforts
- ❖ Must maintain a solid overall understanding of different issues that confront libraries of all sizes

8.2. Standards & Best Practices:

The need for “standards” and “best practices” is universally felt but so differently defined as to render the objects of desire almost meaningless.

- ❖ For information that helps digital libraries flatten their own learning curves;
- ❖ For some community-wide agreement about the minimum level of data creation practices that promise to support the library in its various roles of integrating access to, supporting use of, and managing electronic information content;
- ❖ For benchmarks that help “consumers” evaluate digital library collections and services.

8.3. Tips for Creativity & Innovation:

- ❖ Be Curious
- ❖ Daydream
- ❖ Fresh view
- ❖ Learn from your mistakes
- ❖ SWOT Analysis
- ❖ Take a risk
- ❖ Visualizing

8.4. Revolutionary Changes:

- ATM Revolution
- Authorship Revolution
- Cellular Revolution
- Digital Reservation Revolution
- Electronic Revolution
- Information as Commodity Revolution
- MTV/Video Games Revolution
- Mutability Revolution
- Network Revolution
- New Majority Student Revolution
- Personal Computing Revolution
- User Expectation Revolution

785. Skills of Librarians 2.0:

- Able to look at new technologies and services with a critical eye
- Are agile
- Aren't afraid of taking risks
- Build their networks
- Create partnership
- Don't give up easily
- Keep up
- Market ideas and communicate effectively
- Question Everything
- Understand their users



8.6. Library Managerial Skills at Various Levels:

- Communication Skills
- Conceptual Skill
- Controlling Skills
- Decision-Making Skills
- Human Skill
- Leading Skills
- Organization Skills
- Planning Skills
- Presentation Skills
- Technical Skill
- Time Management Skills

8.7. Ten Skills Librarians need for the Future- (Laura Montgomery):

- ❖ Change management
- ❖ Collaboration
- ❖ Creativity and innovation
- ❖ Developing and managing space
- ❖ Digital Information management
- ❖ Digital literacy
- ❖ Influencing and negotiation
- ❖ Marketing
- ❖ Proving value
- ❖ Supporting research in a digital world

9. Conclusion:

- Digital libraries provide an effective means to distribute learning resources to students and other users. Planning a digital library requires thoughtful analysis of the organization and its users, and an acknowledgement of the cost and the need for infrastructure and ongoing maintenance
- Modern day libraries are more concerned with their digital collections
- Librarians are trying to redefine their discipline in order to describe, house and access all manners of computer stored information
- Digital libraries will build upon work being done in the information and data management area.
- Librarians need to develop domain knowledge to understand their clients
- Librarians, users and systems developers alike must cope with the changing and emerging technological environment to adequately respond to user needs
- Libraries promote reading which results in scholarly communication, knowledge creation and enlightenment.
- Libraries provide an economically efficient method of organizing information and knowledge that are relevant to our needs.
- In future libraries will be judged by their overall relevancy to the people they serve

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