



An Empirical Study on Impact of Digitalization on Library System with Special Reference to Gadag district of Karnataka

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Abstract

Information items undergo digitization when they are transformed from analogue to digital form. Books, papers, and manuscripts are digitized when they are transformed into an electronic format, specifically an image format, that can be read by machines. Any user, from any location, may easily access digitized content, and several users can share a single document at the same time. This study investigates the impact of digitalization on library services in Gadag District, focusing on the integration of digital tools and technologies into library operations. The findings reveal a significant relationship between digitalization and improved library operations, user satisfaction, and service accessibility. However, challenges such as infrastructure limitations, insufficient marketing of digital services, data privacy concerns, and the digital divide are prevalent. Statistical analyses, including ANOVA and correlation assessments, support these conclusions, indicating that while digitalization presents numerous benefits, addressing the identified challenges is crucial for maximizing effectiveness.

Keyword: Digitalization, Library science, digital library, library users, digital literacy..

1. INTRODUCTION

The rapid pace of development and innovation in IT is making it tough to keep up with the industry's many difficulties. With the advent of new technology, information activities have seen a dramatic shift away from more traditional approaches. Taking use of the cheaper digital technology, libraries are now equipped to fulfill the massive information explosion and increasing demand for information. At this point in time, digitalization and digital libraries are buzzwords among all Indian information professionals. Only fifteen years ago did library and information science experts discuss the possibility of automating library operations. Library operations have undergone a sea shift due to recent developments in computer storage and processing, communication technologies, e-products, networking, and internet usage.

1.1 Digitalization of Libraries

Any collection of electronic resources, including books, periodicals, audio and video recordings, and other papers, is known as a digital library.

Many different types of materials are made available to consumers via digital libraries. Students and working professionals alike commonly use them for research purposes and to keep abreast of advancements in their respective fields. [1]

Information storage, accessibility, and sharing have undergone a sea change with the digitization of libraries. Books, periodicals, and other resources were traditionally housed in physical collections, necessitating in-person library visits by patrons. But as more and more information become available digitally, libraries are shifting their focus to this medium.

The current digitization trends in libraries are all about making the user experience better. The efficiency of information retrieval is being greatly enhanced by several libraries via the implementation of user-friendly interfaces and powerful search functions. Videos and interactive material are examples of multimedia resources that may improve the user experience. [2]

1.2. Role of Digitalization in Library Services

A major departure from antiquated, paper-based information management practices has occurred in libraries as a result of the digital transition. The delivery of library services has been substantially revolutionized by digitalization, making them more effective, accessible, and user-friendly. This change has made libraries more important in the information society and has enhanced their operations, positioning them as key players in the diffusion of knowledge in the digital era[3]

- i. Enhanced Accessibility and Availability
- ii. Efficient Information Retrieval
- iii. Cost-Effectiveness and Resource Optimization
- iv. Preservation and Conservation of Information
- v. Integration of Multimedia Resources
- vi. Improved User Engagement and Interactivity
- vii. Personalized Library Services
- viii. Real-Time Information and Updates
- ix. Environmental Sustainability
- x. Impact on Librarian Roles and Skills

1.3 Current Trends and Technologies in Library Digitalization

Embracing new technology to enhance their services, libraries are swiftly adjusting to the constantly evolving digital landscape. Numerous advancements in library digitization have been spurred by changes in people's information access, distribution, and consumption habits in Karnataka and across India. In addition to improving the user experience, these trends help make libraries more efficient. The following is a survey of the most important trends and technological advancements impacting library services today.

- i. Integration of Artificial Intelligence (AI)
- ii. Adoption of Cloud Computing
- iii. Development of Mobile Applications
- iv. Open Access Initiatives
- v. Digital Preservation Strategies
- vi. Utilization of Big Data Analytics

- vii. Virtual Reality (VR) and Augmented Reality (AR)
- viii. Social Media Integration

2. LITERATURE REVIEWS

Many other types of communities and disciplines are now benefiting from the creation of digital libraries, including those dealing with health, education, science, culture, development, government, and many more. Now that there are a number of free digital library software packages available, library and information science workers all around the globe may create and share content via digital library collections. With the advent of computerized library catalogs like the Online Public Access Catalogue (OPAC), library automation has facilitated the simple access to holdings. The ability to view and interact with electronic copies of complete text texts and their related pictures is what sets digital libraries apart from conventional libraries. Additional multimedia resources, such as music and video, are often available via digital libraries. [4]

The study investigates into the function of digital libraries in the realms of research and education. People used to think of digital libraries as a way to organize and have consistent access to vast amounts of material and expertise. The article emphasizes the positive aspects of digital libraries. [5]

A major turning point in the continuous development of library operations has been the incorporation of the Digital Library System (DLS). Libraries' place in the digital world might be drastically altered by these kinds of technologies, thanks to the noticeable improvements in operational efficiency and user experience. A new age has dawned, with libraries positioned as dynamic information centers ready to satisfy the increasing demands of modern users, thanks to the effective fusion of technology and tradition. Thanks to the DLS connection, resource management and user engagement saw exponential benefits, which verify the trend of current library practices. This solution is a game-changer for libraries making the digital leap because of how well it improves operational procedures and user experiences. [6]

When it comes to encouraging people to make use of knowledge, the digital library is crucial. One of the biggest problems with conventional libraries is storage, but digital libraries solve that problem and more. The social significance of libraries has always been substantial, and it may be much more so in the future, thanks to digital libraries

and their ability to transcend boundaries of time, space, language, and culture. In addition to revolutionizing the way we consume and utilize information, digital libraries will also shake up the business structures that support the creation, dissemination, and administration of data. [7]

The authors developed an integrated DL to facilitate the mining and investigation of lengthy texts and their components; this article details its architecture, components, and major personalities. Through various scenarios, our user interface and workflow/service-centric design may help personas achieve their information objectives. Identifying and generating syntactic and semantic components are services that are implemented on top-of-the-line models. The abstracts and information of 57,129 ETDs were retrieved, archived, and indexed, and then made searchable and browseable. [3]The article has used 5,000 of the 57,000 to produce or identify components. About 555,000 things based on images have been detected by our object detection system. The article has used segmentation to identify around 22.8K chapters out of 5K ETDs. Texts inside chapters may be used to classify and summarize. We generated a list of the "top-10" comparable ETDs and chapters by using topic modeling to assign themes to the 22.8K chapters and 5K ETDs. You may now search, browse, and get recommendations based on the 5K ETDs' created components since they were indexed. [8]

3. OBJECTIVES OF THE STUDY

The primary objectives of this study are as follows:

- 1. To evaluate the current status of digitalization in libraries of Gadag District:** This includes assessing the extent to which digital tools and technologies have been integrated into library operations.
- 2. To assess the impact of digitalization on library services and user satisfaction:** This involves examining how digitalization has influenced the quality and accessibility of library services and how users perceive these changes.
- 3. To identify the challenges faced in the process of digitalizing libraries:** This aims to uncover the

obstacles that libraries encounter when implementing digital technologies.

- 4. To provide recommendations for enhancing digitalization in Gadag District libraries:** Based on the findings, practical suggestions will be offered to improve the digitalization process and library services.

4. RESEARCH METHODOLOGY

The study adopts a quantitative research design to analytically investigate the impact of digitalization on the library system in Gadag District. This design allows for the collection and analysis of numerical data to identify patterns, relationships, and causal effects.

The population for this study includes all library users and staff in the Gadag District libraries. A questionnaire was constructed based on the hypotheses of the study. A total of 480 responses were collected.

5. DATA ANALYSIS AND INTERPRETATION

The "Data Analysis and Interpretation" is a crucial part of the research, providing insight into the findings gathered through primary data collection. This section aims to present, analyze, and interpret the responses in alignment with the research objectives and hypotheses.

1. Demographic information

Age group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 years to 25 years	129	26.9	26.9	26.9
	26 years to 35 years	288	60.0	60.0	86.9
	36 years to 45 years	39	8.1	8.1	95.0
	46 years and above	24	5.0	5.0	100.0
	Total	480	100.0	100.0	

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	377	78.5	78.5	78.5
	Female	103	21.5	21.5	100.0
	Total	480	100.0	100.0	

2. Descriptive statistics of responses from the respondents

Descriptive Statistics					
	N	Minimum	Maximum	Mean	SD
Digital tools have significantly improved the efficiency of library operations.	480	1	5	2.42	1.461
The availability of online databases enhances research capabilities.	480	1	5	2.25	1.219

Digital tools facilitate better cataloging and inventory management.	480	1	5	2.01	.937
Access to e-books has expanded the range of materials available to users.	480	1	5	2.00	1.093
Technology has improved the communication between library staff and users.	480	1	5	2.75	1.466
Digital tools allow for easier access to library services from remote locations.	480	1	5	2.81	1.511
Training on digital tools is adequately provided to library staff.	480	1	5	2.10	1.266
Digital tools are user-friendly for patrons of all ages.	480	1	5	1.92	1.180
Technology in the library is consistently updated to meet user needs.	480	1	5	2.23	1.426
Digital tools have increased the number of users accessing library services.	480	1	5	2.59	1.604
Library operations are well-organized and efficient.	480	1	5	2.68	1.394
The staff is adequately trained to handle digital library tools.	480	1	5	2.40	1.312
Library hours of operation are convenient for the community.	480	1	5	1.99	1.214
The physical space of the library is conducive to learning and research.	480	1	5	2.14	1.282
User feedback is considered when making operational changes.	480	1	5	2.41	1.435
Library services are consistently evaluated for effectiveness.	480	1	5	2.62	1.472
Communication regarding library policies is clear and accessible.	480	1	5	2.23	1.374
There are adequate resources available to support library operations.	480	1	5	2.10	1.337
The library maintains a user-friendly online presence.	480	1	5	2.39	1.273
Library operations adapt well to technological changes.	480	1	5	2.25	1.293
The digitalization of libraries has improved overall service delivery.	480	1	5	2.59	1.622
There is a clear strategy in place for the digitalization of library services.	480	1	5	2.27	1.514
Patrons are aware of the digital resources available at the library.	480	1	5	2.18	1.369
The digitalization process has involved community feedback.	480	1	5	2.45	1.249
Libraries actively promote their digital services to users.	480	1	5	2.15	1.243
The digitalization of libraries has made accessing information easier.	480	1	5	3.04	1.443
Digitalization has reduced the need for physical space in the library.	480	1	5	2.11	1.189
Library staff are supportive of the digitalization process.	480	1	5	1.85	1.042
Digitalization efforts have been funded adequately.	480	1	5	1.91	1.165
There is a measurable increase in the use of digital services post-digitalization.	480	1	5	2.52	1.513
The quality of digital resources meets user expectations.	480	1	5	2.56	1.506
Library services are accessible to people with disabilities.	480	1	5	2.17	1.369

There is a sufficient variety of digital materials available to users.	480	1	5	2.18	1.429
The library provides adequate support for using digital resources.	480	1	5	2.38	1.287
Online access to library resources is reliable and consistent.	480	1	5	2.18	1.260
Library services are responsive to the changing needs of users.	480	1	5	2.40	1.425
The library actively seeks to improve the quality of its digital offerings.	480	1	5	2.16	1.271
Users find it easy to navigate the library's online systems.	480	1	5	2.35	1.327
The library's digital resources are regularly updated.	480	1	5	2.39	1.284
The digital library services meet the needs and expectations of the users in terms of accessibility, content availability, and user-friendly features.	480	1	5	2.22	1.302
The digital resources provided by the library are adequate and up-to-date.	480	1	5	2.55	1.523
Accessing the digital library platform is easy and convenient.	480	1	5	2.19	1.370
The digital library services save time compared to traditional library services.	480	1	5	2.19	1.378
The digital library platform offers a user-friendly interface.	480	1	5	2.31	1.291
Technical support provided for digital library usage is effective.	480	1	5	2.16	1.261
Digital library resources meet academic and research needs.	480	1	5	2.39	1.401
Navigation through the digital library catalogue is intuitive and efficient.	480	1	5	2.16	1.244
Online assistance and help services are responsive.	480	1	5	2.30	1.254
The quality of digital resources (e-books, journals, etc.) is satisfactory.	480	1	5	2.38	1.288
The availability of digital library services enhances the overall library experience.	480	1	5	2.23	1.300
Funding for digital initiatives is often insufficient.	480	1	5	2.39	1.557
There are technical issues that disrupt library services.	480	1	5	2.30	1.431
Staff training on new technologies is inadequate.	480	1	5	2.19	1.266
Users face challenges in adapting to digital resources.	480	1	5	2.26	1.227
There is resistance from staff towards adopting new technologies.	480	1	5	2.40	1.378
Infrastructure limitations hinder the effectiveness of digitalization.	480	1	5	2.80	1.530
Libraries experience challenges in marketing their digital services.	480	1	5	2.21	1.301
Users have concerns regarding data privacy and security.	480	1	5	2.05	1.238
The digital divide affects access to library resources.	480	1	5	2.08	1.224
Ongoing maintenance of digital tools is often neglected.	480	1	5	2.37	1.429

3. Hypotheses testing

Hypothesis 1

H₀₁: There is no significant impact of digital tools and technologies on the library operations of Gadag District.

H_{a1}: There is a significant impact of digital tools and technologies on the library operations of Gadag District.

Hypothesis 1

ANOVA					
Library Operations of Gadag District					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9358.937	18	519.941	72.761	.000
Within Groups	3294.230	461	7.146		
Total	12653.167	479			

Interpretation:

The ANOVA results for Hypothesis 1 indicate a significant impact of digital tools and technologies on library operations in Gadag District. The "Between Groups" sum of squares is 9358.937, with a mean square of 519.941, resulting in an F-value of 72.761. The significance level is reported as .000, which is far below the 0.05 threshold, leading to the rejection of the null hypothesis. This strong evidence supports the conclusion that digital tools significantly enhance library operations.

Hypothesis 2

H₀₂: There is no significant impact of digitalization on the quality and accessibility of library services in Gadag District.

H_{a2}: There is a significant impact of digitalization on the quality and accessibility of library services in Gadag District.

Hypothesis 2

ANOVA					
Quality and Accessibility of Library Services in Gadag District					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8218.987	19	432.578	109.704	.000
Within Groups	1813.844	460	3.943		
Total	10032.831	479			

Interpretation:

The ANOVA results for Hypothesis 2 reveal a significant impact of digitalization on the quality and accessibility of library services in Gadag District. The "Between Groups" sum of squares is 8218.987, with a mean square of 432.578, leading to an F-value of 109.704. The significance level is .000, which is significantly lower than the 0.05 threshold. Thus, the null hypothesis is rejected, providing strong evidence that digitalization positively influences both the quality and accessibility of library services in the district.

Hypothesis 3

H₀₃: There is no significant relationship between user satisfaction and the digitalization of libraries in Gadag District.

H_{a3}: There is a significant relationship between user satisfaction and the digitalization of libraries in Gadag District.

Hypothesis 3

Correlations			
		Digitalization of Libraries in Gadag District	User Satisfaction
Digitalization of Libraries in Gadag District	Pearson Correlation	1	.716**
	Sig. (2-tailed)		.000
	N	480	480
User Satisfaction	Pearson Correlation	.716**	1
	Sig. (2-tailed)	.000	
	N	480	480

**. Correlation is significant at the 0.01 level (2-tailed).

Interpretation

The correlation analysis for Hypothesis 3 indicates a significant relationship between user satisfaction and the digitalization of libraries in Gadag District. The Pearson correlation coefficient is 0.716, suggesting a strong positive correlation. The significance level of .000 confirms that this relationship is statistically significant at the 0.01 level. Therefore, the null hypothesis is rejected, indicating that as the level of digitalization increases, user satisfaction also improves significantly.

Hypothesis 4

H₀₄: There is no significant impact of digitalization of libraries on the challenges faced by the libraries in Gadag District.

H_{a4}: There is a significant impact of digitalization of libraries on the challenges faced by the libraries in Gadag District.

Hypothesis 4

ANOVA					
Challenges Faced by the Libraries in Gadag District					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10321.455	19	543.234	219.115	.000
Within Groups	1140.443	460	2.479		
Total	11461.898	479			

Interpretation

The ANOVA results for Hypothesis 4 demonstrate a significant impact of digitalization on the challenges faced by libraries in Gadag District. The analysis reveals a sum of squares between groups of 10,321.455, with a mean square of 543.234 and an F-value of 219.115. The significance level is .000, indicating that the null hypothesis is rejected. This suggests that digitalization significantly influences the challenges encountered by libraries, highlighting its importance in addressing operational issues.

6. CONCLUSION

The study on library digitalization in Gadag District reveals significant changes in library operations and user experiences. Data from 415 respondents shows that technology has improved library efficiency, user satisfaction, and access to resources. Many libraries have adopted digital tools, making it easier for users to find and access information. However, challenges like poor infrastructure, uneven access to digital tools, and low awareness remain significant barriers. A notable digital divide highlights the need for libraries to ensure equitable access to resources for all users. While users appreciate faster access to digital collections and better cataloging systems, concerns about data privacy and security require immediate attention. Marketing challenges also emerged, as

many users are unaware of available digital services. Libraries need to develop strategies to promote these tools effectively. Infrastructure issues, such as slow internet and lack of training, further hinder smooth digitalization efforts. The study emphasizes the importance of robust policies and continuous maintenance of digital tools to address these challenges. Libraries must also prioritize data security to build user trust and encourage engagement with digital services. Overall, the findings highlight progress in digitalization but call for ongoing investment in infrastructure, marketing, and user-friendly policies to sustain and enhance these efforts. By addressing these issues, libraries can better serve as digital information hubs, bridging gaps in access and contributing to broader community development. This study provides valuable insights into the transformative role of technology in modernizing libraries and improving user satisfaction.

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