

IMPACT OF DIGITIZATION ON LIBRARY SERVICES AND USER SATISFACTION IN PRIVATE UNIVERSITY LIBRARIES OF BANGALORE

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ABSTRACT

The rapid development of digital technology has had a significant impact on academic library services, particularly those provided by commercial organizations. The purpose of this study is to investigate the impact that digitization has had on customer satisfaction in Bangalore's private university libraries and to determine how those shifts have occurred. In order to collect primary data, a research methodology that was both quantitative and explanatory was used. A standardized questionnaire based on a Likert scale with five points was sent to 287 library visitors, and they were requested to fill it out. When conducting this study, multiple linear regression analysis was used to investigate the relationship between digital library services, library infrastructure, and the level of satisfaction experienced by library patrons. The findings indicate that the facilities of the library are the most significant factor in influencing the level of satisfaction experienced by library patrons. Nevertheless, the use of digital technology to library services also has a positive and statistically significant impact. In addition, the results emphasize the significance of technological infrastructure, free educational resources, digital platforms, and MOOC support services in the process of enhancing the entire experience that library patrons have. The paper emphasizes the significance of the expanding role of private university libraries as online resource centers for learning, as well as the need of continuous investments in digital infrastructure and staff competence in order to increase the level of satisfaction experienced by librarians and patrons.

Keywords: Digitization, Library Services, User Satisfaction, Private University Libraries, MOOCs, Bangalore

INTRODUCTION

In this day and age of information technology, digitalization provides libraries with a tremendous potential to improve the efficiency and quality of the services they provide [1]. More and more customers are gravitating toward libraries because they provide information offerings that are both quick and dependable. As a consequence of this, libraries are constantly working to enhance the quality of their services and to make their patrons more satisfied [2]. In particular, Article 14, paragraph 3 of Law No. 43 of 2007 Governing Library Services recognizes this transition and emphasizes that all libraries are required to modify their services in order to keep up with the advancements in information and communication technology. As a result of this regulatory obligation, the significance of libraries being able to accommodate new technologies while preserving their relevance and user-friendliness is brought to light.

In order for libraries to meet these ever-evolving requirements, it is vital for them to adhere to specified service standards, which include the enhancement of the quality of their human resources and the professional competence of their staff [3]. When libraries prioritize the requirements of their customers and offer services that are convenient, user-oriented, and efficient in line with the standards that have been set for service, the chance of user satisfaction and patron loyalty improves [4]. In the field of library science, one of the most visible outcomes of technological advancement is the emergence of digital libraries, which are libraries that make use of information technology in order to deliver services in a timely and efficient manner [5-6]. Both Indonesia and India have seen an increase in the use of digital libraries as a means of making knowledge resources more accessible to the general public.

Today's libraries, in addition to storing physical collections, also function as digital information centers that support the needs of academic and research endeavors. There are several examples of this tendency toward the digitalization of service supply, such as the submission of academic work, electronic journals, online book renewal, digital repositories, and Online Public Access Catalogues (OPAC) [7]. The efforts that these services do to reduce the amount of time constraints, boost accessibility, and simplify the process of information retrieval directly result in the enjoyment of its users [8]. Inadequate self-service facilities, a lack of digital infrastructure, staff service orientation gaps, and limited user familiarity with OPAC systems are some of the challenges that continue to persist despite the availability of digital services [9]. Others include a lack of digital infrastructure.

Inconsistencies between the records of the online public access catalog and the real library holdings, a shortage of accessible computer equipment, and the need that users wait in line during peak hours are some of the other difficulties that have a negative influence on the user experience. Things became even more dire as a result of the development of the COVID-19 outbreak, which led to a significant reduction in the number of people physically visiting libraries and altered the ways in which people used to access information [10]. As a consequence of this, libraries should continually work to enhance their service systems in order to make them more effective, responsive, and of a higher quality [11]. Users are the ultimate judges of service quality; hence, assessments of library services must to be centered on the needs of the users [12]. It is impossible to overestimate the significance of user feedback in identifying the parts of library services that are already successful and those that have room for improvement [13].

As a result of the increased availability of information and communication technology, libraries all over the globe are rapidly transitioning into digital locations. The nature of newly established libraries is increasingly digital, and many older libraries are transitioning to digitization in order to better serve their patrons. This global shift has resulted in significant research and development activities being directed on digital libraries. These efforts have been made possible by the change. Academic discourse, conferences, and research contributions have all increased in tandem with the growth of digital libraries in India. International conferences and forums such as ICADL and ICDL have achieved a great deal in terms of raising awareness and providing support for the development of digital library systems. The rigorous peer-review processes and increased circulation of academic papers make them essential, despite the fact that conference proceedings also provide useful insights.

In spite of the fact that the concept of a digital library has broadened to include a greater variety of electronic services and integrated systems, the terms "digital library" and "electronic library" are often used interchangeably. Institutions such as the Indian Institute of Technology, Kharagpur were the pioneers in the introduction of electronic library services. These services include digital repositories, online journal access, database services, and selective information delivery. In the past, projects such as the TERI digital library have shown how digitization has the potential to assist libraries in overcoming communication challenges.

There is a lack of unanimity about the ways in which digitization impacts the pleasure of customers, despite the fact that there are several research on the subject. There seems to be a vacuum in information due to the fact that some research discover a positive association between digital services, library facilities, and user satisfaction, while other studies find no such correlation. As a result of these contradictory findings and the growing significance of digital services in academic settings, particularly in private universities, the purpose of this study is to investigate how the digitization of library services and facilities has affected user satisfaction in the libraries of Bangalore's private universities.

OBJECTIVES

1. To investigate how user satisfaction in Bangalore's private university libraries is affected by the digitalization of library services.
2. To examine how library amenities affect patron happiness in an academic library setting with digital capabilities.

RESEARCH METHODOLOGY

Within the context of patron satisfaction, the overriding objective of this research is to get an understanding of how private university libraries in Bangalore have fared since the transition to digital. The focus of the study is on the ways in which digital library services, infrastructure, and technology-enabled resources have an effect on the behaviors, perspectives, and overall happiness of library patrons with regard to the services provided by the library. This research employs a positivist paradigm-based quantitative research technique in order to accomplish the goals of measuring correlations between variables and putting ideas to the test quantitatively. The objective of this study is to investigate the relationship between the digitization of library services and the level of satisfaction experienced by library customers; hence, an explanatory research technique is used in this investigation.

Research Design and Approach

A particular population was the subject of data collection and analysis, which was carried out utilizing quantitative research methods. According to Sugiyono (2019) [14], quantitative research involves the systematic examination of variables via the use of measurable data and statistical analysis. Through the testing of previously stated assumptions, the objective of this study is to investigate the influence that digital library services and facilities have on the level of satisfaction experienced by library patrons.

Population and Sample

Undergraduates, graduate students, research scholars, and professors who use Bangalore private university libraries in person or online are included in the study. We determined sample size with a 95% confidence interval and 5% margin of error using Raosoft's sample size calculator. We selected 287 people from the anticipated population for the study. The sample included digital and traditional library users.

Data Collection Methods

Primary Data

A Google Forms-based structured questionnaire collected primary data. This technique let us easily collect replies from Bangalore-based private school pupils. The survey evaluated closed-ended items on a five-point Likert scale:

- 1 – Very Unsatisfactory
- 2 – Unsatisfactory
- 3 – Moderately Satisfactory
- 4 – Satisfactory
- 5 – Very Satisfactory

This strategy is dependent on the dependability of the responder as well as the fact that they are frequent individuals that visit the library.

Two points of view were taken into consideration while developing the questionnaire:

Digital Preservation for Libraries Viewpoint, encompassing:

- Availability of digital course materials
- Digital library platforms
- Library networks and resource sharing
- Open Educational Resources (OERs)
- Technical support and digital access facilities
- Copyright and licensing services
- Support for MOOCs (Massive Open Online Courses)

Satisfaction of Users Viewpoint:

- Ease of access to digital resources
- Quality and reliability of digital services
- Support for online learning and MOOCs
- Library facilities and infrastructure
- Overall satisfaction with library services

Secondary Data

Secondary sources of information about digital library services and user satisfaction included records that were maintained by the library, reports that were generated by the institution, research papers, policy papers, and official university publications.

Variables of the Study

Dependent Variable (Y): User Satisfaction

Independent Variables:

- X1: Digitization of Library Services
- X2: Library Facilities (digital infrastructure, access tools, and support services)

Data Analysis Technique

An examination of the data that was acquired was carried out using statistical methods. The use of descriptive statistics was utilized in order to provide a description of the demographics and usage patterns of the customers who responded. The study used multiple linear regression analysis in order to find out which variables were associated to which and how strong those relationships were [15]. This was done in order to examine the assumptions that were being employed.

The regression model used in this study is expressed as: $Y=a+b_1X_1+b_2X_2+e$

Where:

- Y = User Satisfaction
- a = Constant
- b_1, b_2 = Regression coefficients
- X_1 = Digitization of Library Services
- X_2 = Library Facilities
- e = Error term

Ethical Considerations

All of the individuals who took part in the research were fully informed of the objectives of the study, and their participation was totally voluntary. The responses were kept anonymous and secret, and the data were solely utilized for academic purposes. The confidentiality of the responses was preserved to the greatest possible standards.

RESULT

Characteristics of Respondents

Those individuals who made use of the resources offered by private university libraries in Bangalore were polled for this research. Members of the academic community, students, and anybody else who might make use of the library's services in person or online were included in this category. The demographics of the respondents revealed that a greater number of females than males used the facilities provided by the university library. This indicates that females are more inclined to make use of the resources that are available to them. Regarding the professions that they held, the majority of those who responded were either students or general academic users such as professors and researchers. This breakdown demonstrates how crucial university libraries are to the capacity of private institutions to promote the learning of students, the research of professors, and the use of digital resources [16].

Table 1. Characteristics of Respondents (n = 287)

Variable	Category	Frequency	Percentage (%)
Gender	Male	119	41.5
	Female	168	58.5
Occupation	Students	182	63.4
	Faculty / General Users	105	36.6
Total		287	100

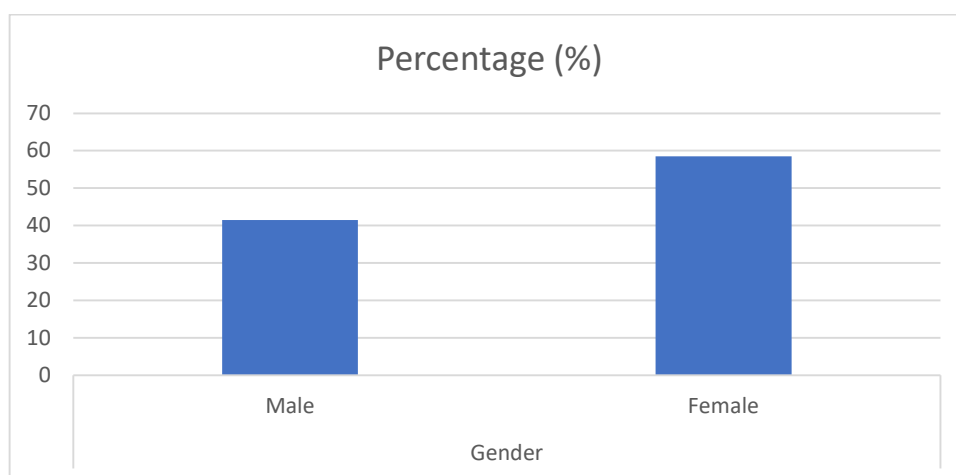


Figure 1. Gender of Respondents

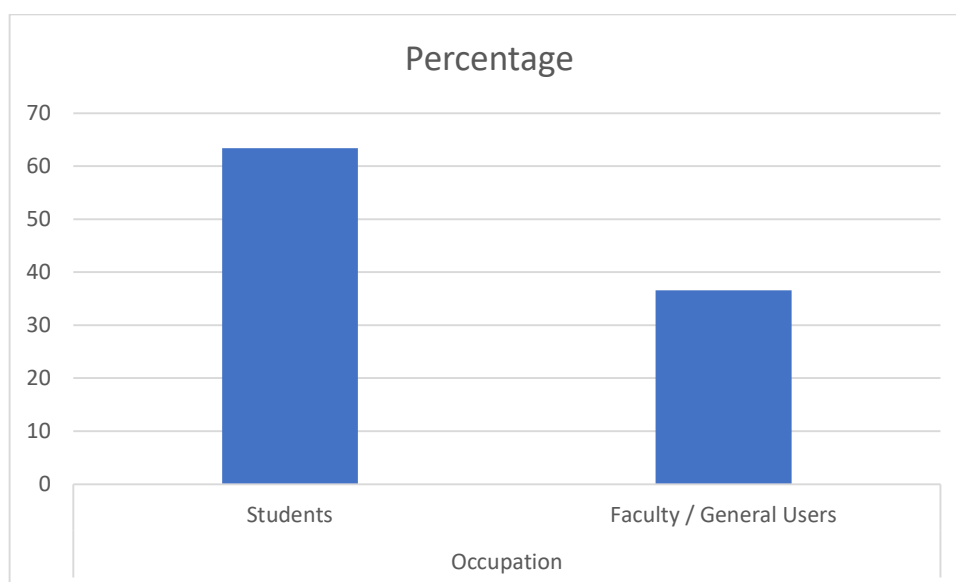


Figure 2. Occupation of the respondents

Classical Assumption Tests

To guarantee the regression model's validity and reliability, traditional assumption tests were run prior to running the regression analysis.

Normality Test

The Kolmogorov-Smirnov test with a single sample was used in order to ascertain whether or not the data had a normal distribution. The data revealed that the residuals followed a normal distribution [17]. This was proved by the fact that the significance value ($p = 0.079$) was more than the threshold value of 0.05. Due to the fact that the data were deemed to be regularly distributed, it was possible to do a multiple linear regression analysis.

Table 2. Normality Test (One-Sample Kolmogorov–Smirnov Test)

Variable	N	Asymp. Sig. (2-tailed)	Result
Unstandardized Residual	287	0.079	Data Normally Distributed

Sig > 0.05 → Normality assumption satisfied

Multicollinearity Test

We examined the values of the Variance Inflation Factor (VIF) and the Tolerance of the data in order to determine whether or not there was multicollinearity. In contrast, the VIF values were much lower than 10, while the tolerance limits for digitalization of library services and facilities were more than 0.10. It has been shown via the data that the independent variables may be included in the regression model simultaneously without causing any multicollinearity [18].

Table 3. Multicollinearity Test

Independent Variable	Tolerance	VIF	Interpretation
Digitization of Library Services (X ₁)	0.635	1.361	No Multicollinearity
Library Facilities (X ₂)	0.635	1.361	No Multicollinearity

Tolerance > 0.10 and VIF < 10

Heteroskedasticity Test

The test for heteroskedasticity was carried out by making use of a scatterplot constructed using standardized residuals. Based on the data, it was determined that the residuals did not adhere to any specific pattern but rather followed a random distribution [19]. As a result of the absence of heteroskedasticity, the regression model may be considered to be valid.

Linearity Test

A significant linear connection between the digitization of library services, library facilities, and user satisfaction was proven by the linearity test, which showed that the Deviation from Linearity significance value was more than 0.05. This indicated the existence of a noteworthy linear connection. Subsequently, the use of linear regression is recommended for the purpose of hypothesis testing.

Table 4. Linearity Test (ANOVA – Deviation from Linearity)

Relationship	F Value	Sig.	Decision
X ₁ , X ₂ → User Satisfaction	0.641	0.849	Linear Relationship Exists

Sig > 0.05 → Linearity satisfied

Multiple Linear Regression Analysis

A multiple linear regression analysis was carried out [20] in order to ascertain the extent to which the digitization of library services and facilities has an impact on the level of satisfaction experienced by library patrons. Following is the equation that was produced for the regression analysis:

$$Y = 29.033 + 0.593X_1 + 0.760X_2 + e$$

Where:

- Y = User Satisfaction
- X_1 = Digitization of Library Services
- X_2 = Library Facilities
- e = Error term

In accordance with the results of the regression analysis [21], the digitization of library services and facilities has a positive and substantial influence on the level of satisfaction experienced by library patrons. Both of the independent variables had significance values that were lower than the threshold of 0.05, which indicates that the hypotheses of the research may be accepted.

Table 5. Multiple Linear Regression Results

Dependent Variable: User Satisfaction

Variable	B	Std. Error	Beta	t	Sig.
Constant	29.033	4.215	—	6.887	0.000
Digitization of Library Services (X_1)	0.593	0.271	0.197	2.188	0.029
Library Facilities (X_2)	0.760	0.278	0.260	2.730	0.007

Both independent variables are statistically significant ($p < 0.05$)

Library facilities have a stronger standardized beta value

Table 6. Model Summary

R	R Square	Adjusted R Square	F	Sig.
0.623	0.388	0.384	4.850	0.032

38.8% variation in user satisfaction explained by digitization & facilities

Furthermore, the outcomes of the F-test give further evidence that the independent variables have a considerable influence on the level of pleasure experienced by users. The digitization of library services and facilities explains 38.8 percent of the variation in user satisfaction, according to the coefficient of determination (R^2), which is 0.388. Other factors, which are not accounted for in the model, have an

effect on the remaining 61.2% by themselves. Although library facilities appeared as the leading factor among the two independent variables, it seems that digital infrastructure, access tools, and technical support had a more substantial influence on user satisfaction in private university libraries. This is because library facilities emerged as the leading factor.

Analysis of Digital Library Services and MOOC Support

Consumers put a high value on digital learning support systems and services that relate to massive open online courses (MOOCs), according to research that was conducted on digital library services. It was found that campaigning for massive open online courses (MOOCs), providing copyright services, and providing course management tools all received the highest average overall grades. These results illustrate how libraries are playing an increasingly important role in the digital learning ecosystems of private universities and in online education [22]. The constantly high mean values across all digital service indicators demonstrate that library customers have high expectations for the digital platforms, e-learning resources, and technical help that libraries offer. This is shown by the fact that the mean values have remained consistently high.

Table 7. Mean Scores of Digitized Library Services (MOOC & Digital Infrastructure)

Digital Service Component	Mean
MOOC Management Software	4.25
Copyright Services	4.18
Publicity & Promotion of MOOCs	4.10
Embedded Digital Content	4.08
Use of Open Educational Resources (OERs)	4.06
Technological Infrastructure	4.04

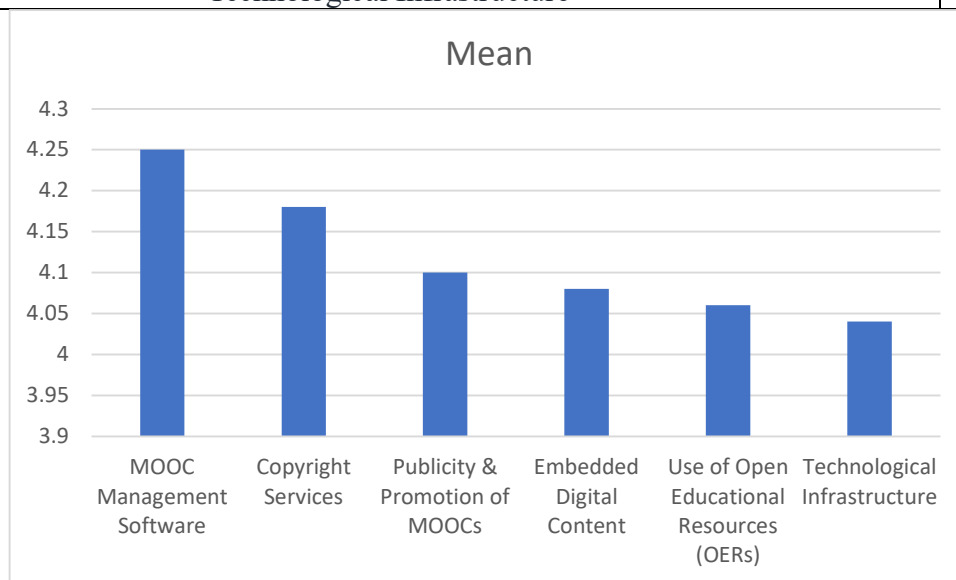


Figure 3. Mean Scores of Digitized Library Services (MOOC & Digital Infrastructure)

Library Infrastructure and Service Readiness

The outcomes of one-sample t-tests, which demonstrate that all aspects of the library setup are statistically significant, demonstrate that the vast majority of respondents are in agreement that digital infrastructure is essential for providing quality library services. A number of important emphasis areas have been brought to light, including:

- Copyright and licensing services
- Technological infrastructure
- Digital platforms for MOOCs
- Open Educational Resources (OERs)
- Publicity and promotion of digital learning
- Embedded digital content and mobility support

The findings of this study underline the fact that private university libraries, in addition to offering access to digital materials, also include integrated systems, policy support, and user-oriented services into their digitization initiatives.

Table 8. Mean Scores of Library Professionals' Digital Competencies

Competency Area	Mean
Proficiency in English Language	4.25
Evaluation of MOOCs for Curriculum Fit	4.25
Advanced Information Services	4.24
Preservation of MOOCs as Archives	4.24
Active Involvement in MOOC Instruction	4.24
Coordination Between Departments	4.22

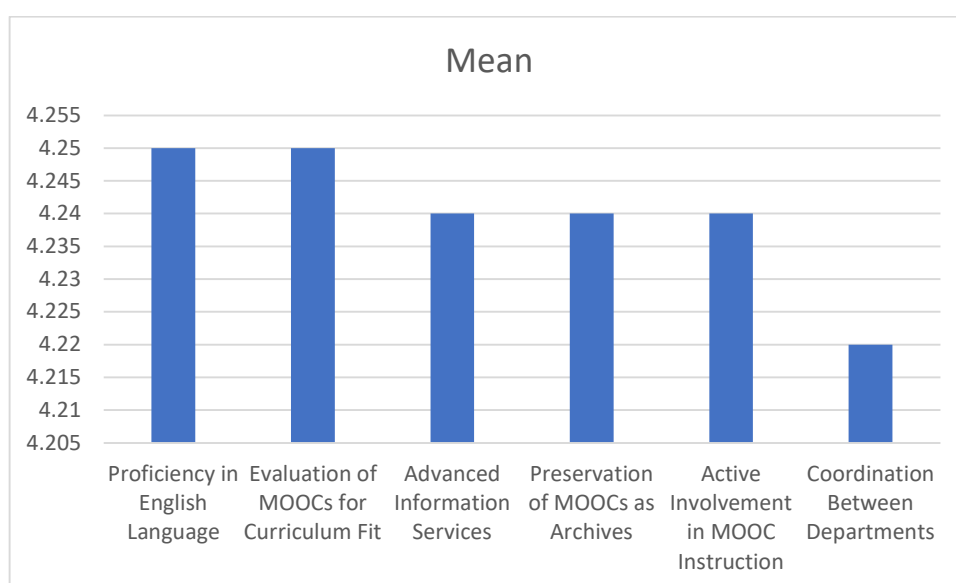


Figure 4. Mean Scores of Library Professionals' Digital Competencies

Library Staff Competencies and Digital Skills

The preparedness of library workers to support digital services was another area of emphasis that was investigated throughout the investigation. The results bring to light the significance of training and the development of skills for those who work in different libraries. For example, the following competencies were evaluated by the participants:

- Proficiency in English
- Evaluation of MOOCs for curriculum suitability
- Advanced information services

- Digital technology knowledge
- Active participation in online instruction

with the utmost significance. If libraries want to make the most of digitization and make their users happier, they need to fill the current skill gaps, according to the statistically significant t-test findings.

CONCLUSION

After implementing digitalization, the study indicated that private university libraries in Bangalore had increased levels of happiness. The combination of well-developed library facilities with digital services such as massive open online courses (MOOCs), open educational resources (OER), and new digital platforms results in improvements in accessibility, efficiency, and the overall user experience. When compared to the other categories that we considered, the facilities of the library had the biggest influence on the level of satisfaction experienced by users. This underscores the importance of having a robust technological infrastructure and support services. According to the findings, in order for private university libraries to meet the requirements of the contemporary academic community, they need to place a strong focus on digital transformation, continuous infrastructure development, and the training of all of its staff members.

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