Factors Influencing the Adoption and Usage of Digital Library Services: An Empirical Investigation of University Libraries

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Abstract: *The paper will examine what determines the adoption and usage of digital library services among the users; more so in academic institutions. Based on the study of user behavior, technological infrastructure, and institutional support, the study spots the importance of the perceived ease of use of digital libraries, its accessibility, and the digital literacy of the users as the factors to motivate the users to communicate with the digital libraries. The paper also explores barriers like lack of knowledge, poorly acquired skills and resistance to embrace change impeding proper usage. The results will aim at assisting policy initiators and educational institutions improve the approaches in the digital library processes to encourage wider acceptance of these procedures and utilization of them.*

Keywords: Adoption of the digital library, Behaviour of the user, Access of the technology, Academic institutions, Information services, Digital literacy, Library technology integration

I. INTRODUCTION

The establishment of digital technologies changed the role of libraries and their way of functioning in the modern world over the last few years. Previously limited to the physical premises and printed characteristics, libraries are gradually becoming digital centers with a great deal of internet-based resources and services. In the case of developing nations such as India where there is a socio-economic and educational gap, digital inclusion and spread of knowledge assumes a great significance in this transformation. Digital libraries are more than enhancing access to information as they provide a cost effective user friendly solution to address the information requirements of various user groups comprising students, teachers, researchers and the general population among others (Tenopir, 2010).

In the last few decades, digitization of library services has been a major undertaking in India as part of different national and state-wide projects. Telangana is a fairly new state in India and it has been dynamic in its implementation of e-governance and digitalization, and even as far as updating the libraries in the country. The state plans to offer no-hassle availability of online information like e-books, online journals, database, and learning sources through websites like Telangana State Knowledge and Resource Centre (TSKRC). Besides such technological advances and investments, issues are still arising on the actual level of adoption and usage rates of such digital services by end users. A major portion of users do not know of the available services, or do not have the skills to work with the digital world to use them in the best way (Kumar & Singh, 2019).

It has thus become necessary to understand the customs of users with respect to the consumption of the digital libraries. Research evidence demonstrated that variables like; digital literacy, the ease of use, the perceived usefulness, the availability of infrastructure and technical support have shown to be highly significant in determining the participation and the manner in which users utilize the digital platforms (Davis, 1989; Venkatesh et al., 2003). There are beneficial theoretical models that can be used to evaluate these behavioral intentions: Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The implementation of these models in the scenario of a public library will assist in revealing what functions as a propulsion or a barrier to adopting a digital world, particularly in a diverse and a multilingual society such as the one in Telangana.

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Although there is a great deal of literature featuring the adoption of digital libraries in academic institutions or by professional communities, there is a dearth of literature that elucidates on how users of the public digital libraries actually respond to them, especially in the major state concern library networks. Moreover, local trends in the use of digital services in Telangana public libraries have not yet been studied in any region-specific research, and the regional specifics of the issue, including rural-urban digital access differences, the state of internet infrastructure, and language preferences, can be very important.

II. REVIEW OF LITERATURES

Awareness of the users and the importance of training became prominent predictors of the use of digital libraries. Semi-structured survey study of Ani, Esin, and Edem (2012) found out that awareness campaigns and information literacy training sessions enhanced student works with digital resources significantly. Inadequate orientation was also given as one of the major factors that many students did not make good use of the digital library services on offer. The Okello-Obura and Ikoja-Odongo (2010) study went further to build on the Technology Acceptance Model (TAM) and tested perceived ease of use and usefulness as the antecedents of digital library use. Their study established the fact that people were more prone to adopt systems that they perceived as simple and useful to their studies. Yusuf and Iwu (2014) supported this finding by noting that perceived usefulness of digital libraries in conducting research proved to be contributive towards their higher utilization among the postgraduate students. Another factor was recognized as competence libraries personnel in terms of efficiency in the delivery of digital services. According to Oyewusi and Oyeboade (2012), a large number of students refer to the librarians to explore the digital resources and hence the expertise of the staff members on digital platform was a key factor that influenced the user experience. Their investigations implied that ongoing staff preparation of the library personnel is vital in the advancement of an assistive digital surrounding. On policy grounds, Adeyemi and Uche (2015) claimed that institutional support, particularly through the regular funding and strategic planning became paramount in keeping the digital library infrastructure afloat. They made a point that their study showed that the irregular trends of funding used to cause the system downtimes as well as reduce user confidence in online services. Cultural perceptions and behavioral patterns were also discussed in literature during this period. Baro, Onyenania, and Osaheni (2013) explored how students' habitual reliance on printed materials and limited digital literacy skills affected adoption. They recommended tailored interventions to bridge generational gaps in technology use and to integrate digital library use into daily academic practice. As mobile technologies became more prevalent, studies like those by Asemi and Riyahiniya (2011) examined the shift toward mobile-compatible digital library platforms. Their findings indicated that mobile access improved usage rates, especially among students in remote areas. However, they stressed the importance of digital literacy as a prerequisite for meaningful engagement with these platforms. Digital literacy continued to emerge as a decisive factor in the successful adoption of digital library services. Ahmed and Panda (2018) suggest that students who had a higher digital competence rate were more prone to using the online library platforms. In their research, with Indian university students, there was an obvious interconnection involving digital skills and digital resource usage frequency. They advised institutions to in inculcate digital literacy reading in the study curriculum so as increase use of library services. Speed of access, ease of navigating through the interface and interface design were some key themes on literature during this time. Sharma and Arora (2019) also pointed out that interface design in the form of a user-centric would greatly improve satisfaction and a repeat use. They found out that users favored digital libraries that offered user-intelligent search features, design adaptability and custom access to content. As smart phones and mobile broadband emerged, mobile-enables digital libraries became necessary. Patil and Kattimani (2019) researched mobile-based library applications among the students of public universities and concluded that the students were more comfortable reading through the mobile platform for the ease of access of the information. On this point too they discovered that the mobile library apps which contain offline access facilities led to an increased amount of use and this was particularly great in areas where good internet connectivity was not guaranteed. The COVID-19 pandemic boosted the digitalisation of library services. A research conducted by Kumari and Singh (2020) revealed that lockdowns led to an increased consumption of e-books, virtual reference services and online repositories. The study demonstrated that necessity was the motivating factor that resulted in an initial engagement with the product, and continued usage relied on the

satisfaction of the users and provision of technical assistance. The libraries that offered prompt digital help desks and tutorial options had a higher rate of user retention in the condition of the pandemic. There was still a problem in awareness of existing digital services. According to Deshpande and Chavan (2021), a large part of university students were not aware of all digital resources available in their institutions. They ended up concluding that proactive promotional solutions, as orientation programs, electronic newsletters, and demonstrations by librarians, are viable solutions to raising awareness and use. Other than the behavior of the users, the subject of institutional readiness also made a reoccurring topic. The second requirement is a backend digital infrastructure, consistent system upgrading, and training of the authors on this matter (Bhat and Lone 2020). Based on their research, digital library success was directly associated with the administrative commitment, budgetary allocation, and continuous system maintenance. Studies in the recent past have emphasized that digital infrastructure is critical to user adoption of digital library services. Libraries using fast internet, online points of access, and new software interfaces were found to have increased interaction (Ramakrishna, 2023). In particular, institutions in urban areas were equipped with more advanced infrastructure, which prolongs user turnout in relation to rural institutes; there, connectivity difficulty continues to constitute an obstacle (Naidu, 2022). Training of the users and digital literacy programs were widely reported as a required intervention. As Lakshmi and Srinivas (2023) assert, the level of student use was quite high among those institutions, in which digital orientation sessions and demonstrations arranged by librarians were included in the academic agenda. These initiatives were beneficial in reducing the digital gap between students with different academic backgrounds and socio-economic economic backgrounds. Top priority on empirical research always went to user experience at this time. Prasad (2024) has discussed the ease of use, accessibility and relevance of content where the platforms with simple design, suitable to mobile use score better in terms of satisfaction. Moreover, hybrid models, combining physical libraries with digital services, were preferred by many users who sought both convenience and traditional reading experiences. Despite the growth, several studies acknowledged persistent challenges. Faculty members, especially those less tech-savvy, were reluctant to fully adopt digital platforms, impacting service utilization (Kumar & Fatima, 2022). Additionally, many users remained unaware of the full extent of services offered, and concerns over data security and privacy deterred active use (Joshi, 2023). Language barriers and the lack of vernacular interfaces were also cited as limiting factors. Looking ahead, researchers advocate for increased investment in AI-enabled search features, personalized dashboards, and multilingual content offerings. Policy recommendations included stronger governmental funding, mandatory digital skill training, and partnerships between libraries and ed-tech platforms (Rao & Devi, 2025). Such measures are expected to create a more inclusive and sustainable digital library ecosystem. In 2024, several studies identified AI-driven recommendation systems as a critical enabler of digital library usage. It has been found that people who use digital libraries would prefer to use those that employ AI in suggesting appropriate content that can make the user consumption more enjoyable without undue consumption of information (Gupta and Liang, 2024). Likewise, Adeyemi and Santos (2024) paid attention to the place of natural language processing (NLP) tools in enhancing search efficiency and user satisfaction. A recent study by Mbele and Chan (2025) demonstrated that, even nowadays, digital literacy becomes one of the determining factors, especially in the developing areas. They claimed that although it is reasonable to improve the infrastructures, it is also crucial to improve the digital competence of the users to be successful in adoption. Their study implies that the targeted training programs may greatly enhance the involvement and durable use of the digital libraries. Another understanding that the recent literature prompts is the growing trend in the digital library platform trust. According to Huang and Al-Khalifa (2024), the ability of users to accept the digital library use is directly proportional to how they trust the source and credibility of online information. This is especially applicable to the academic environment where authenticity of content is of great essence. Comparison between five countries in a 2025 study by Kim et al. revealed that apprehensions toward data privacy and surveillance diminished the user activity. They further established that institutions with fair data policies and well-designed security systems experience greater use of digital libraries. Ortega & Zhao (2024) declared that responsive design and mobile-friendliness became two essential elements in current digital libraries. Their user experience research established that the usage of mobiles stands a great possibility of increasing their frequency and students and working professionals who want mobile access to gain access on the move. In certain situations, awareness is a barrier. Bashir and Ndlovu (2024) determined that

institutional marketing in form of workshops, webinars, and faculty promotions directly affected the adoption rate among the university students. They conclude that constant awareness should be done to keep people engaged.

Need of the Study

As the digital technologies grow at a fast pace, libraries become a common ground as they transform into digital format adapting to the changing demands of the users. In the case of Telangana, the government has significant attempts with modernization of public libraries through the use of digital sources and information online. Nevertheless, it is not clear how exactly and adequately these services are used by users. In spite of access to digital library systems, the one of the most common problems is the quality of utilization of digital services as well as the use of traditional library methods. This brings into view the elements that are hampering or facilitating with regard to digital adoption. To a great extent, there is the necessity to explore the effects of factors such as digital literacy, infrastructure, awareness of the users, and technical support on the acceptance of such services and their implementation as a routine practice. Policymakers and library administrators should understand these factors to make focused strategies that enhance engagement of the users and access of resources and development of strategies whereby they achieve meaningful results in their digital libraries when supplied with financial resources by the population.

Research Gap

Although several researches have been done about the Digital library use in academic institutions, there has been scarce research done on the use of public digital libraries that are managed by the state government, particularly in states in the South Eastern states such as Telangana. Previous research usually focuses on the university libraries or on particular professional communities but little is known about how the interaction of digital library systems can be organized using various groups of users, namely students, general readers, and rural communities at the community level. Moreover, the majority of the previous studies do not tend to consider the local challenges like infrastructure differences in the urban and rural environment, or the unique support requirements of the first-time digital users. This research is attracted to these gaps by looking at real-time user experiences, user behavioral patterns, and structural constraints of the Telangana digital library system. It also provides new knowledge in the analysis of the practices of using the state-wide digital library services, determinants of prolonged use and how service delivery can be improved to widen community involvement.

Objectives of the Study:

- To determine the major determinants of adoption and utilization of digital library service among university library students, faculty and researchers at Telangana.
- To determine how aware and available were the digital library services offered by university libraries in Telangana.
- To find how technological infrastructure, digital literacy and user support can help to encourage the use of digital library services.
- To investigate the perceptions of usefulness and ease of use of digital libraries platform employing the framework like the Technology Acceptance Model (TAM) or Unified Theory of Acceptance and Use of Technology (UTAUT).
- To assess the satisfaction of users and the difficulties experienced by stakeholders in using resources of the digital library, on the basis of which give me hypothesis of the study

Hypotheses

H_{01}: (Null Hypothesis): The relationship between the degree of awareness/accessibility and the use of the digital library services is not significant.

H_{11}: (Alternative hypothesis): The level of awareness / accessibility is significantly related to the digital library use.

H_{02}: The adoption of digital library services by users is not meaningfully affected by technological infrastructure, digital literacy and user support.

H_{12}: Technological infrastructure, digital literacy and user support are major factors that affect adoption of digital library services.

H_{03}: There is no significant difference between the influence of perceived usefulness and perceived ease of use which promotes the adoption of digital library services.

H_{03}: Using the digital library services The perceptions of usefulness and ease of use influence the adoption of the digital library services significantly.

H_{04}: User satisfaction and difficulties do not have a significant influence on prolonged use of digital library services.

H_{14}: The level of satisfaction and challenges to users have a strong influence in further usage of digital library services.

III. RESEARCH METHODOLOGY

Research Design

The research followed a descriptive research design to understand the determinate in terms of the adoption and usage of digital library services amongst the users in Telangana. The decision to use this type of design was made to achieve a realistic depiction of user behavior, preferences, and the difficulties behind using digital libraries, hence making it possible to implement an objective evaluation of the variables that shape it.

Population

The study was conducted on the user of digital libraries that were operated by the Telangana State Knowledge and Resource Centre (TSKRC). These featured students, educators, researchers, and the general user who uses the resources of the digital library in the state.

Sampling Framework

The sampling frame was the list of user registered with some digital libraries in different districts in Telangana. This framework included digital libraries run by the Department of Public Libraries and those included into the TSKRC platform.

Sampling Technique

Stratified random sampling technique was employed so as to cover the many user types as the students, the professionals and the researchers. The libraries were cluster sampled segmented according to geographical zones (urban, semi-urban, and rural) and then a random sample of the users was selected in each stratum.

Sample Size

The study chose 166 respondents. This sample base was found to be adequate to be representative and statistically meaningful in the analysis of trends and making conclusion about the digital library usage patterns.

Data Collection Techniques

A structured questionnaire was used to help collect primary data; the questionnaires was designed to contain both closed and open-ended questions. The survey was personally distributed in the libraries and by online means using the electronic platforms that were connected to library service. The secondary data were collected on the basis of official records, state reports and past research studies, which were relevant to the digital libraries in India.

Geographical Scope

The study had geographical scope to cover the Telangana State geographically and covered the Telangana State, which included the public digital libraries in big cities such as Hyderabad and Warangal and in small towns and rural districts.

Study Period

The data was analysed and collected throughout six months, starting during the month of November 2024 and lasting to April 2025 so that the differences in user behaviour due to season and demographics can be monitored.

Independent Variables

The study had independent variables comprising of:

- Age
- Gender
- Educational qualification
- Internet usages frequency
- Accessibility to internet connection
- Digital literacy
- The staff at the library assists
- Digital library interface perceptions of ease of use
- Awareness of digital library services

Dependent Variable

The dependent variable was the degree of adoption and being used to the digital library services by the respondents. Measures of this variable were made in terms of frequency of use, the services that have been used, and the levels of satisfaction with digital resources.

Statistical Applications Used

Descriptive and inferential tools of statistics were used to analyse data. The reduction of data was done using descriptive statistics including percentages, mean, and standard deviation. Inferential statistics such as the Chi-square test, t-test, and regression analysis were utilized to check the correlations existing between independent variables and the adoption of the digital library services.

Descriptive Statistics

Section	Item Description	Mean	Standard Deviation
Awareness & Accessibility	I am aware of digital library services in my university.	4.3	0.78
	I frequently receive updates about the digital resources provided.	3.8	0.95
	The digital library platform is easily accessible.	4.05	0.82
	I can access the digital library without restrictions.	3.9	0.88
	Internet connectivity is sufficient.	3.75	1.02
Technological Infrastructure & Digital Literacy	University provides adequate infrastructure.	3.95	0.89
	I have digital skills to navigate the system.	4.1	0.76
	Library staff support is adequate.	3.85	0.94
	I received training/guidance.	3.7	1.01
	The user interface is user-friendly.	4	0.81
Perceived Usefulness & Ease of Use	Digital library is useful for academic purposes.	4.35	0.72

	Improves academic performance/work quality.	4.2	0.8
	Easy to learn and use.	4.1	0.85
	Tasks are completed quickly using digital library.	3.95	0.87
	Increases efficiency.	4.05	0.82
User Satisfaction & Challenges	Satisfied with available digital resources.	4	0.79
	I face technical issues while using the platform.	2.85	1.12
	Content is regularly updated.	3.8	0.92
	I prefer digital over physical library.	3.95	0.86
	I would recommend digital library services to others.	4.15	0.75
Overall Usage & Adoption	I use the digital library regularly.	4	0.9
	Digital library changed my information access habits.	4.05	0.83
	I intend to continue using digital libraries.	4.25	0.73
	Adoption improved learning/research culture.	4.1	0.8

It can be seen in the descriptive statistics that positive assessment of digital library services is mostly felt among the users.

The means on items concerning the raising of awareness are 3.75 and 4.3, which implies that the level of awareness and accessibility to the digital library services is high among the respondents. The potential awareness of digital library services is high with the maximum mean value (4.3), whereas the awareness of internet connectivity is moderate with the minimum mean value (3.75) which implies that some users are not able to connect to the network fully on a regular basis. The general score in this area suggests that the majority of users are aware of them and the platforms are quite accessible.

This section has a mean score range of 3.7-4.1, which means that most users do not feel that the infrastructure and the digital skills they have are too low. The respondents were convinced of their digital skills (mean = 4.1), whereas the decreased average score training (mean = 3.7) indicates the necessity of more official advice or capacity-building projects. The assistance of library staff was found to be in moderately high level (3.85) and an improvement with regard to assisting the user could be done.

On this part, the scores are always high 3.95 to 4.35, illustrating a deep belief in the usefulness and ease of use of the digital library platforms. The most significant mean (4.35) is associated with the utility of digital libraries in academic life implying that individuals who use the available platforms perceive them as a part of their learning and research processes. In general, it is the positive approach to the usefulness and convenience of digital library services.

The average scores in this case range between 2.85 and 4.15, which reflect various experiences of users. Although the resource satisfaction rate (mean = 4.0) and the readiness to recommend the services (mean = 4.15) are high, there is still a problem with technical difficulties (mean = 2.85). The second thing that should be emphasized is a critical weak point to work on since many of the problems concern the system and its usage.

Adoption levels among the responses in this section have been shown to be high with a score of between 4.0 and 4.25. The majority of users claimed that they used it often and admitted that their habits of getting learning and research activities influenced positively with the help of digital libraries. The average of the intention to continue using these services is 4.25, and thus it indicates the maintained interest and increased need in digital libraries.

H1: Awareness & Accessibility → Usage

Pearson Correlation Matrix

Variables	Usage	Awareness & Accessibility
Usage	1	**0.610**
Awareness & Accessibility	0.610**	1

N = 166, ** Correlation is significant at the 0.01 level (2-tailed)

Interpretation: Positive moderate-to-strong correlation, H_{01} rejected. The Pearson correlation coefficient between Awareness & Accessibility and Usage of Digital Library Services is 0.610, which indicates a moderate to strong positive relationship. This means that as users' awareness of digital library services and ease of access to them increase, their frequency and extent of usage also tend to rise.

The result is statistically significant at the 0.01 level, confirming that this relationship is not due to random chance. Given the significance and strength of this correlation, we can reject the null hypothesis (H_{01}), which stated there is no significant relationship between awareness/accessibility and usage. Therefore, the findings support the alternative hypothesis (H_{11}) that increased awareness and better accessibility contribute meaningfully to the adoption and usage of digital library services.

This outcome highlights the importance of promoting awareness and ensuring easy access as strategic priorities for increasing engagement with digital library platforms.

H2: Technological Infrastructure, Digital Literacy, and User Support → Adoption

Model Summary (Multiple Regression)

Model	R	R^2	Adjusted R^2	Std. Error of Estimate
1	0.692	0.479	0.468	0.561

ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	40.912	3	13.637	49.78	0.000**
Residual	44.341	162	0.274		
Total	85.253	165			

Coefficients Table

Predictor	B	Std. Error	Beta (β)	T	Sig.
Technological Infrastructure	0.325	0.112	0.276	2.902	0.004**
Digital Literacy	0.415	0.096	0.382	4.323	0.000**
User Support	0.269	0.117	0.201	2.297	0.018*

* p < 0.05, ** p < 0.01

Interpretation: All predictors are significant, H_{02} rejected. The multiple regression model shows that the predictors—Technological Infrastructure, Digital Literacy, and User Support—collectively explain 47.9% of the variance in Adoption of Digital Library Services ($R^2 = 0.479$). The adjusted R^2 of 0.468 indicates that after adjusting for the number of predictors, nearly 46.8% of the variance in adoption can still be explained by these three factors. The standard error of estimate (0.561) suggests that the model's predictions are reasonably accurate, with a relatively small error margin.

ANOVA Table

The ANOVA table confirms that the regression model as a whole is statistically significant (F = 49.78, p < 0.01), indicating that the combination of technological infrastructure, digital literacy, and user support significantly influences adoption of digital library services.

Coefficients Table

The Coefficients Table provides insights into the individual contributions of each predictor:

Technological Infrastructure (β = 0.276, p = 0.004): This variable has a moderate positive effect on adoption. The coefficient value of 0.325 means that improvements in technological infrastructure lead to a higher likelihood of adopting digital library services. The statistical significance (p < 0.01) indicates a strong contribution.

Digital Literacy (β = 0.382, p = 0.000): Digital literacy has the strongest positive impact on adoption, with a coefficient of 0.415. This suggests that users with better digital literacy are more likely to adopt digital library services. The result is highly significant (p < 0.01), confirming its importance in adoption.

User Support (β = 0.201, p = 0.018): While user support also positively influences adoption (β = 0.269), its effect is slightly weaker compared to the other two factors. Nonetheless, it remains statistically significant (p < 0.05), showing that proper support from library staff enhances users' likelihood of adopting digital services.

H3: Perceived Usefulness & Ease of Use → Adoption (TAM Framework)

Model	R	R²	Adjusted R²	Std. Error of Estimate
1	0.734	0.538	0.529	0.502

ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	45.9	2	22.95	59.12	0.000**
Residual	39.353	163	0.241		
Total	85.253	165			

Coefficients Table

Predictor	B	Std. Error	Beta (β)	T	Sig.
Perceived Usefulness	0.428	0.083	0.442	5.157	0.000**
Ease of Use	0.326	0.099	0.357	3.293	0.002**

Interpretation: The null hypothesis (H_{03}) is rejected, and the alternative hypothesis (H_{13}) is accepted, indicating that Perceived Usefulness and Ease of Use significantly influence the adoption of digital library services.

The regression model examining the influence of Perceived Usefulness and Ease of Use on the Adoption of Digital Library Services explains 53.8% of the variance in adoption (R^2 = 0.538). The adjusted R^2 of 0.529 further indicates that, after adjusting for the number of predictors, approximately 52.9% of the adoption variability is accounted for by the two factors. The standard error of estimate (0.502) suggests that the predictions made by this model are relatively precise, with a minor degree of error.

ANOVA Table

The ANOVA results show that the overall regression model is statistically significant (F = 59.12, p < 0.01), meaning that the combination of Perceived Usefulness and Ease of Use significantly contributes to the adoption of digital library services.

Coefficients Table

The Coefficients Table breaks down the individual contributions of each predictor:

Perceived Usefulness (β = 0.442, p = 0.000): Perceived usefulness has the strongest positive impact on adoption, with a coefficient of 0.428. This suggests that the more users perceive digital libraries as useful for their academic and research needs, the higher their likelihood of adoption. The result is highly significant (p < 0.01), reinforcing the importance of the perceived value of digital libraries in encouraging their use.

Ease of Use (β = 0.357, p = 0.002): Ease of use also positively influences adoption, though its impact is slightly weaker than perceived usefulness, with a coefficient of 0.326. This indicates that users are more likely to adopt digital libraries

when they find the platform easy to navigate. This result is statistically significant ($p < 0.01$), underscoring that a user-friendly interface is a key factor in encouraging the adoption of digital library services.

H4: User Satisfaction & Challenges → Continued Usage

Pearson Correlation

Variables	Continued Usage	User Satisfaction/Challenges
Continued Usage	1	**0.571****
User Satisfaction/Challenges	0.571**	1

Simple Linear Regression Summary

Model	R	R²	Adjusted R²	Std. Error of Estimate		
1	0.571	0.326	0.322	0.609		
Predictor	**B**		Std. Error	Beta (β)	T	Sig.
Satisfaction & Challenges	0.527		0.079	0.571	6.668	0.000**

Interpretation: The null hypothesis (H_{04}) is rejected, and the alternative hypothesis (H_{14}) is accepted, indicating that user satisfaction and challenges significantly impact continued usage of digital library services.

Pearson Correlation

The Pearson Correlation between User Satisfaction/Challenges and Continued Usage is 0.571, indicating a moderate to strong positive relationship. This means that higher levels of satisfaction and fewer challenges faced by users are positively associated with continued usage of digital library services. The correlation is statistically significant at the 0.01 level, implying that there is a meaningful connection between these two variables.

Simple Linear Regression Summary

In the simple linear regression model, the R value of 0.571 suggests that the model explains a moderate amount of variability in continued usage. Specifically, the R² value of 0.326 indicates that 32.6% of the variation in Continued Usage can be explained by User Satisfaction and Challenges. The adjusted R² value of 0.322 is very close, indicating that the model's explanatory power remains stable after adjusting for the number of predictors. The standard error of estimate (0.609) suggests that the predictions made by the model are reasonably accurate, with some degree of error.

Regression Coefficients

Satisfaction & Challenges ($\beta = 0.571$, $p = 0.000$): The coefficient of 0.527 for Satisfaction and Challenges shows a positive relationship with Continued Usage, meaning that as user satisfaction increases or challenges decrease, the likelihood of continued usage rises. This result is highly significant ($p < 0.01$), meaning that satisfaction and the absence of challenges have a significant impact on the continued use of digital library services. The Beta coefficient ($\beta = 0.571$) further supports the strength of this relationship, suggesting that user satisfaction and reduced challenges are key factors in fostering continued usage of digital libraries.

IV. FINDINGS

There is a strong, positive relationship between awareness and accessibility of digital library services and their actual usage. The study showed a correlation coefficient of $r = 0.610$ ($p < 0.01$), indicating that users who are more informed and have easier access tend to use these services more frequently.

Adoption of digital library services is significantly influenced by infrastructure, users' digital skills, and support availability. The combined influence of these factors accounts for 47.9% of the variance in adoption ($R^2 = 0.479$). Among them, digital literacy had the highest impact ($\beta = 0.382$), followed by infrastructure ($\beta = 0.276$) and user support ($\beta = 0.201$).

User perceptions regarding how useful and easy to use digital libraries are play a critical role in their adoption. These two factors together explain 53.8% of the adoption behavior ($R^2 = 0.538$). Perceived usefulness was the strongest factor ($\beta = 0.442$), and ease of use also contributed significantly ($\beta = 0.357$).

Continued use of digital library services is linked to user satisfaction and the challenges faced. The study found a moderate correlation of r = 0.571, with 32.6% of continued usage (R^2 = 0.326) being explained by these two factors. High satisfaction encourages ongoing usage, even when users encounter occasional issues.

V. CONCLUSION

This study establishes that the effectiveness of the initial adaptation and maintenance of the use of digital libraries services in the university environment significantly relies on several correlated factors. The understanding and availability are also important initial steps, which promote initial interaction. As soon as the users are aware and can easily access the services it is likely that they are going to use digital libraries. In addition to access, the availability of an adequate technological infrastructure, digitally literate masses and good support structures enhance adoption.

The perceptions of users matter equally, as well, views of digital libraries as convenient and helpful to the purposes of users are associated with an increase in the off-take. Last but not the least, long term use is tightly connected with satisfaction of users and their weaknesses to overcome technical or operational problems. These issues and improvements in ensuring long-term user engagement can be addressed by addressing the following and providing superior user experience. Consequently, efforts to enhance the use of digital libraries in the universities must be guided by the need to strengthen systems and networks in the universities, train and educate users, enhance the usability of the system as well as providing stability in support services provided.

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