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Digital Library: Opportunities & Challenges

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Abstract:

The invention of the concept of digital libraries took place in the 20th century when technology and digitization were gradually growing in pace. It has been controversial yet evolutionary in nature. At present, there is no one particular definition of the digital library. It has evolved to become a dynamic matter, varying from person to person, institution to institution, and at times country to country as well. The present study is an attempt to understand the awareness of digital libraries among the netizens of Hyderabad. It also focuses on opportunities and challenges faced by these libraries. The data required for the study was collected from both primary sources using a structured questionnaire and secondary sources constituting research articles, trusted websites, and published journals. The data collected were analyzed through data visualizations and ANOVA. The study showed that it is important for educational and other institutes to adapt to this emerging concept. Sufficient effective steps are still needed to be taken by the government of India for its nationwide use. With the implementation of the right measures in an already advancing digitization era, digital libraries can become the source of worldwide knowledge.

Keywords: Digital library, Availability, Awareness, Resources, Challenges.

I. Introduction:

In a narrow sense, a digital library is an electronic library that delivers digitized information that is selected, acquired, processed, scanned, organized, stored, managed, and retrieved. Whereas, in the broader sense, it adds up as another sphere of knowledge to the world of cyberspace and

databases. On one hand, it acts as a source of retrieval of information for researchers, students, and other general public. On the other hand, for librarians and practitioners, it acts as a virtual institution for providing similar but relatively extended services. Presently, it can be divided into web-based and app-based digital libraries that include e-books, research papers, journals, etc.

The first provider of ebooks or electronic books is Project Gutenberg which was launched in 1971 by Michael Hart at the University of Illinois, USA. In 2021, it celebrated 50 years of success and continues to serve the world with a variety of ebooks.

After the idea was out in the world, it has gone through many changes. The US program of Digital Library Initiative (DLI) had two phases under which they funded different projects from 1994, like Alexandria Digital Library, Interspace, etc. Though these projects ceased to exist after a period of time, the outcome they produced was a ground-breaking success story of Google by Larry Page and Sergey Brin in 1998. Other major national initiatives to promote the idea were eLib in the UK and EU-funded projects like Dedicated Network of Excellence (DELOS).

In 2018, the Ministry of Human Resource Development (MHRD) with the support of the Ministry of Education under its National Mission of Education through Information and Communication Technology (NMEICT), launched the Digital Library of India (DLI) initiative.

In the present scenario, digital libraries are not limited to the provision of informational resources and archives but also the preservation of such resources for future generations. While developed countries are already widely using well-rounded digital libraries, in developing countries with the main emphasis on India, it remains a topic of the question due to the lack of awareness and accessibility.

II. Review of Literature:

Singh, J., & Kaur, T. (2009), have addressed the need for change in academic libraries with the simultaneous development in technology and knowledge economy, in their study, "Future of Academic Libraries in India: Challenges and Opportunities". It concludes with a recommendation to create a balance between the physical and digital form of publications, i.e, create 'hybrid' libraries as the future of libraries being both user-friendly and expert assist.

Ambati, V.Balakrishnan, et al (2006), present a shared paper, "The Digital Library of India Project: Process, Policies and Architecture", on the establishment of the Digital Library of India(DLI) and the process, planning, and architecture involved to get it working. It briefs the reader about the policies, workflow, and solutions that helped in the smooth run of the project.

Koteswara Rao, M. (2004), in the paper, "Digital libraries: Challenges, Opportunities and Implications", has studied the history of e-resources and explained various concepts of digital libraries in view of traditional libraries. It describes the advantages of digital libraries along with the

legal, social, and other issues that arise with their emergence. The paper concludes with the need for digital literacy among users, change in attitude by university administrators, and restructuring of library activities.

Parida Baman (2004), has highlighted the various services in their research, titled "Emergence of Digital Library Services in India", that digitalization has provided like search engine services, personalized services, web-based services, etc. and the initiatives taken. The paper suggests that library and information professionals should look to resolve challenges and develop their own proficiency and skills to encourage others.

Madhusudhan, M., & Nagabhushanam, V. (2012), have focused on the status of web-based library services in India in their paper, "Use Of Web-Based Library Services In Select University Libraries In India: A Study". It includes an analysis of the kind of web-based services provided, the frequency of use, the problems in accessing the services, and the users' satisfaction in universities. It concludes by stating that many universities are yet to exploit web technologies to their full potential and how librarians play an important role in this whole process.

Bashir, et al (2019) in "National Digital Library of India: An Overview", provides an overview of the National Digital Library of India (NDLI) initiative taken by the Government of India and understands its advantages, features, collection, and issues in the global digital space. It states that NDLI could act as a national asset in the objective of 'education for all' in India, in conclusion.

III. Objectives of the study:

1. To study the awareness of digital libraries among netizens of Hyderabad.
2. To identify the opportunities and challenges of digital libraries in India.

IV. Opportunities of Digital Libraries:

The scope of digital libraries increases where traditional libraries pose limitations to the people. There is no barrier of space to the creators for providing a large multitude of knowledgeable resources and for the users to access these resources, anywhere and at any time. It vitally helps in the digital preservation and conservation of records of the past and the present for the future. The information can be easily and simultaneously retrieved by the users according to their convenience.

A.P.J Abdul Kalam once stated that 'Digital Library is where the past meets the present and creates a future'. Digital libraries are known to be 'the future libraries'. It is a contributing factor to technology acting as an integrator of the nation and the world. Here people with diverse backgrounds can have access to a humongous amount of resources that are provided on various levels - regionally, nationally, and internationally.

In India, many states like Haryana, Odisha, Telangana, Jammu Kashmir, and Karnataka have already launched digital libraries. The information is mostly state-centric with a part of it dedicated

to national activities. The daily updates of the occurrences in the state and the nation are mentioned along with the availability of academic materials like sample papers for competitive and state board exams, e-textbook, e-magazines, journals, courses, agricultural developments, and much more.

On a national level, IIT Kharagpur developed the National Digital Library of India (NDLI), a Government of India initiative, as mentioned earlier. It plays an important role to empower and encourage learning among people. It has systematically managed information delivered through text and video mediums. The NDLI can be viewed in 11 majorly spoken languages in India. The 90,724,802 digitized resources are provided. Apart from this, it has a separate section called 'Deepak' for disability knowledge to raise awareness about specially-abled people and all information relating to them. Not only can people access this information but also join them to change their lives.

On an international level, digital libraries integrate the citizens of the world. The Internet Archive is considered to be the largest digital library in the world with 778 billion web pages, around 40 million books, 8.4 million videos, and numerous other resources on the internet. There are many other global platforms like Global Digital Library, Digital Library for International Research, and International Children's Digital Library, that serve with an aim of universal access to knowledge and learning.

V. Research Methodology:

A. Data Collection:

The data required for the study was collected through a structured questionnaire. A total of 153 responses were collected through convenience sampling techniques. The secondary data required for the study was collected from trusted websites, published journals, and research articles.

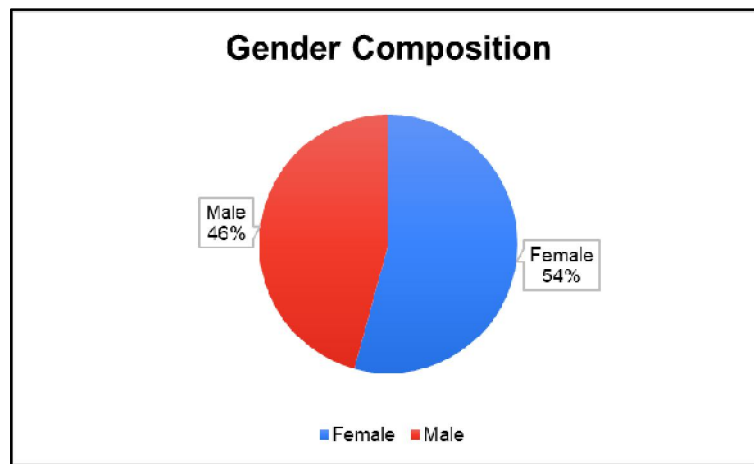
B. Methodology:

Data visualization tools were used to describe the data. ANOVA was used to test the association between age and awareness and usage of digital libraries; gender and awareness and usage of digital libraries.

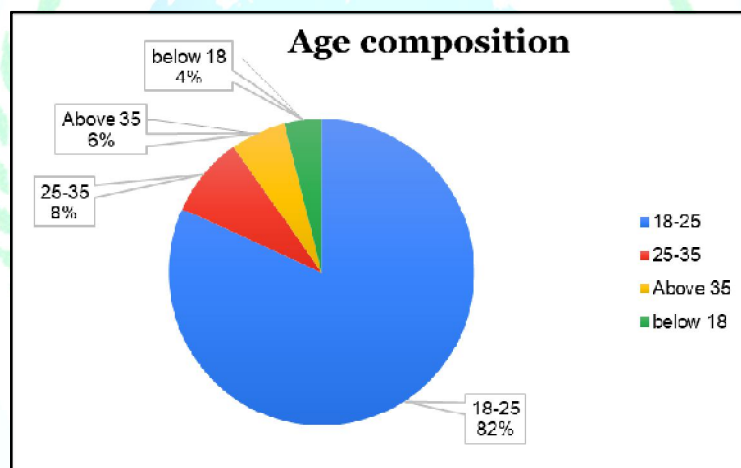
C. Scope and Limitations:

The data collected is limited to the netizens of Hyderabad, leading to analysis of only a small population. It also has limitations of primary data collection techniques.

VII. Data Analysis:



The above graph on gender composition is a representation of the number of male and female respondents in the survey conducted. The females were relatively higher by 54% compared to males who constituted 46%.

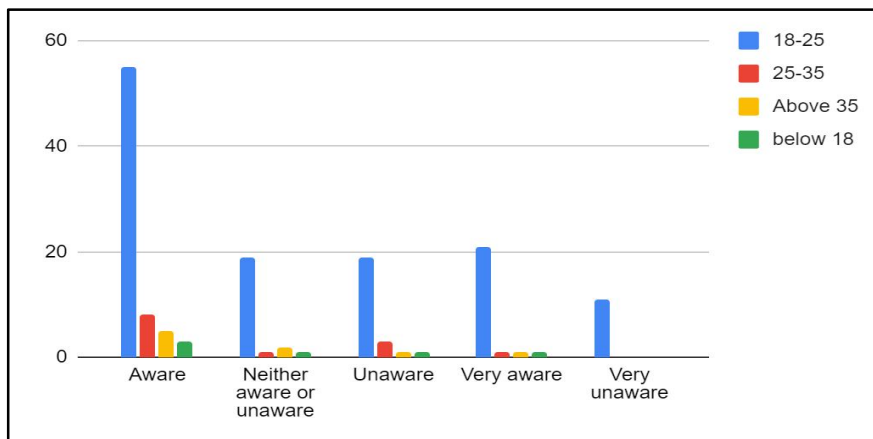


Apart from the gender composition, age composition was also taken into consideration where the majority of the respondents, that is, 82% were in the age group of 18-25. The rest 18% were divided into 4% below 18, 8% in 25-35, and 6% above 35 age groups.

A. Awareness of Digital Libraries:

The most important aspect of the emergence of digital libraries is the awareness of the concept among the people, especially the netizens, to actively use and equally contribute to the same. Below is the analysis of age and gender with the awareness of digital libraries, observing that most of the respondents had varying degrees of knowledge about it.

Age and awareness analysis:



Hypothesis 1:

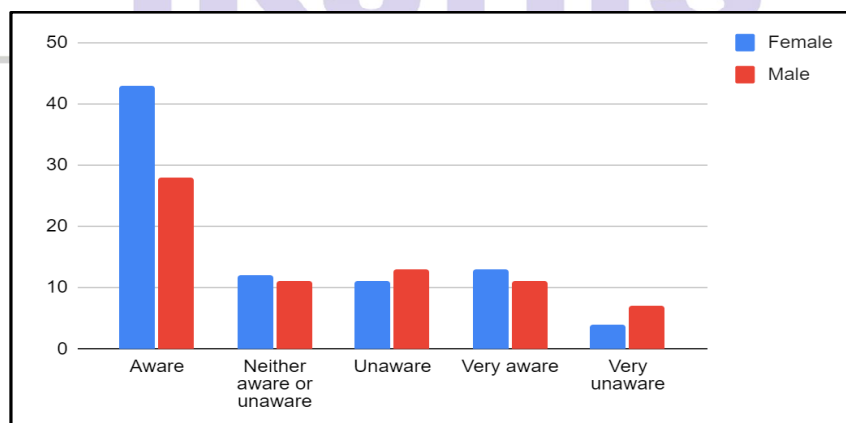
Null Hypothesis (H_0): There is no significant association between age and awareness of digital libraries.

Null Hypothesis (H_1): There is a significant association between age and awareness of digital libraries.

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1080.6	4	270.15	11.117283	0.0105466	5.1921677
Within Groups	121.5	5	24.3	95	3495	73
Total	1202.1	9				

The above ANOVA table shows a P value of 0.57. Since the p-value is greater than 0.05, the null hypothesis is accepted. Hence, the sample suggests that there is no significant association between age and awareness of digital libraries.

Gender and awareness analysis:



Hypothesis 2:

Null Hypothesis (H₀): There is no significant association between gender and awareness of digital libraries.

Null Hypothesis (H₁): There is a significant association between gender and awareness of digital libraries.

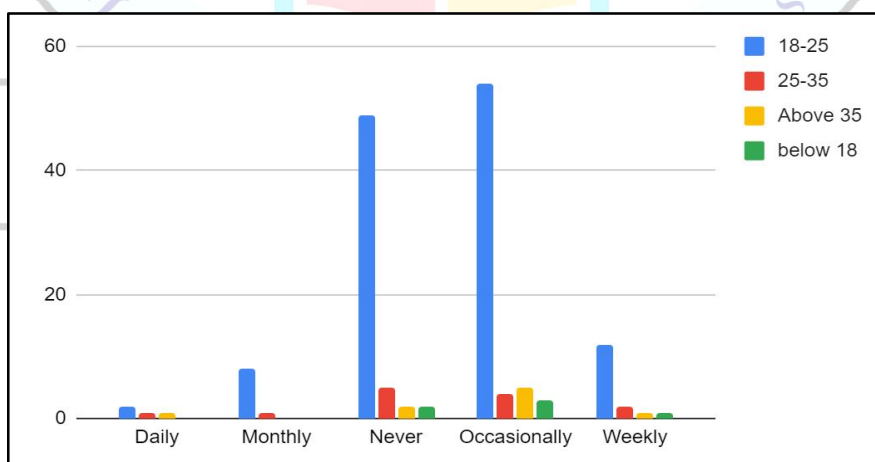
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1080.6	4	270.15	11.117283 95	0.0105466 3495	5.1921677 73
Within Groups	121.5	5	24.3			
Total	1202.1	9				

The above ANOVA table shows a P value of 0.01. Since the p-value is less than 0.05, the null hypothesis is rejected. Hence, the sample suggests that there is a significant association between gender and awareness of digital libraries.

B. Usage of Digital Libraries:

The enormous resources and facilities provided by digital libraries worldwide need to be rightly used to their full potential by the people to promote learning and skill development, in turn making valuable human resources for the future. Below is the analysis of age and gender with the usage of digital libraries, observing that even though more respondents were aware of the concept, the usage was comparatively low.

Age and usage analysis:



Hypothesis 3:

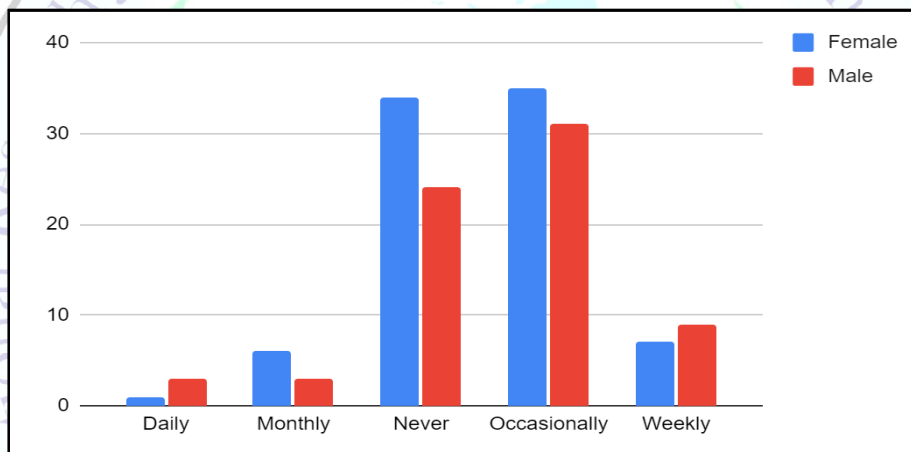
Null Hypothesis (H₀): There is no significant association between age and usage of digital libraries.

Null Hypothesis (H_1): There is a significant association between age and usage of digital libraries.

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	847.8	4	211.95	0.88245090 56	0.49776821 22	3.0555682 76
Within Groups	3602.75	15	240.183333 3			
Total	4450.55	19				

The above ANOVA table shows a P value of 0.49. Since the p-value is greater than 0.05, the null hypothesis is accepted. Hence, the sample suggests that there is no significant association between age and usage of digital libraries.

Gender and usage analysis:



Hypothesis 4:

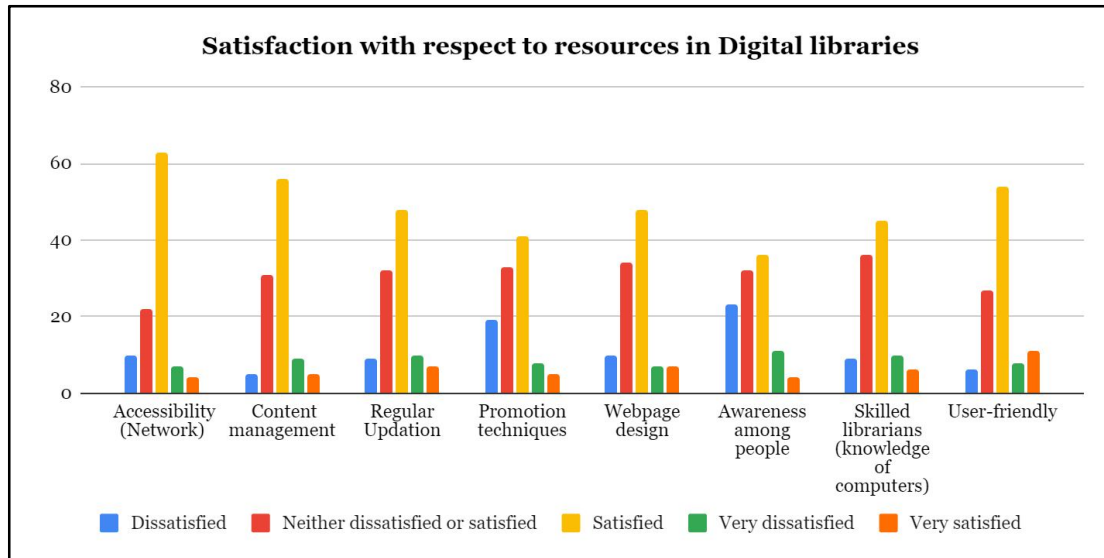
Null Hypothesis (H_0): There is no significant association between gender and the usage of digital libraries.

Null Hypothesis (H_1): There is a significant association between gender and the usage of digital libraries.

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1695.6	4	423.9	31.87218045	0.000942275 8225	5.192167773
Within Groups	66.5	5	13.3			
Total	1762.1	9				

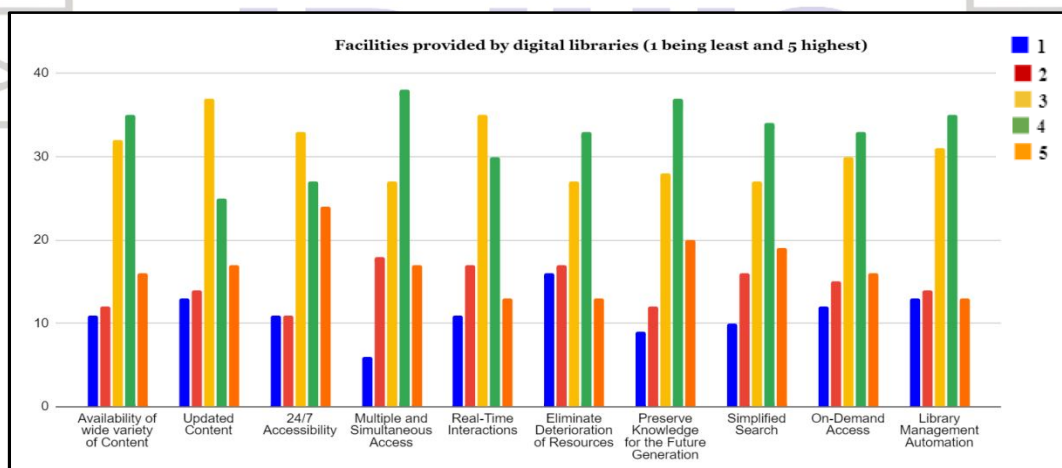
The above ANOVA table shows a P value of 0.0009. Since the p-value is less than 0.05, the null hypothesis is rejected. Hence, the sample suggests that there is a significant association between gender and the usage of digital libraries.

C. Resources in digital libraries and their satisfaction level among the respondents:



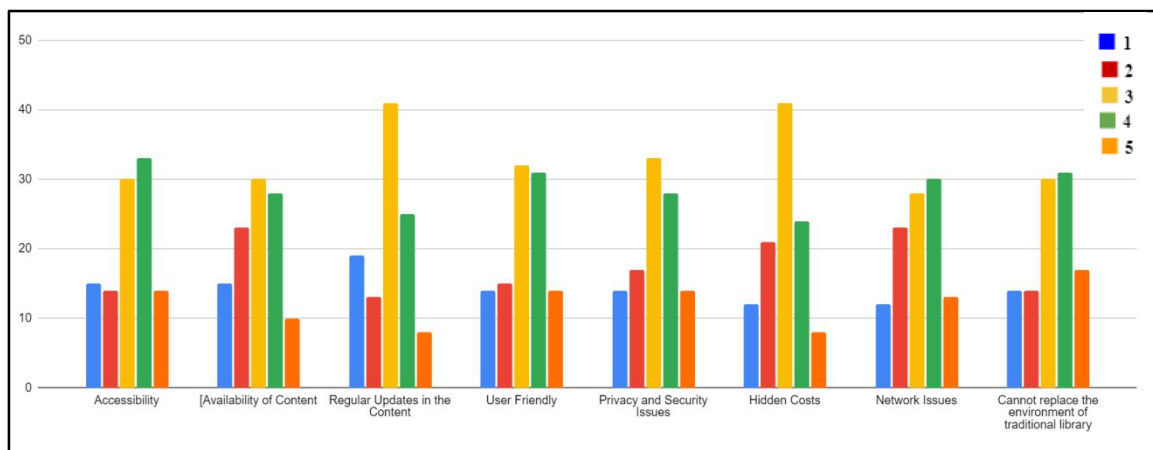
The above graph shows the satisfaction of respondents concerning the resources linked with digital libraries. The respondents are satisfied or very satisfied with digital libraries providing a user-friendly virtual atmosphere. The accessibility of digital libraries has a proportionately positive response. Awareness and promotion are two factors that go hand in hand with each other. And from the study, it is found that awareness among people about digital libraries is the most dissatisfying factor and promotional techniques used by the various institutes is after it. The other factors having a neutral response suggest an essential strengthening of resources like web page design, regular updation, content management, and skilled librarians.

D. Facilities provided by digital libraries (1 being the least and 5 highest)



The above graph shows the opinion of respondents regarding the facilities provided by digital libraries in their overall experience. The respondents have highly rated the 24/7 accessibility of digital libraries, followed by the preservation of knowledge for future generations and simplified search. Multiple and simultaneous access to content has received a relatively positive response. The ratings of library management automation and updating of content, known to be important aspects of digital libraries, indicate a need for improvement in those areas.

E. Challenges for the success of digital libraries (1 being least and 5 highest)



The above graph is a representation of the challenges of digital libraries. The majority of the respondents find it difficult to replace the environment of traditional libraries with digital libraries. This could be a result of the possibility of a lack of engaging in-app or web-based experience. Network issues, privacy, and security issues, user-friendly digital environment, and accessibility have more or less the same degree of high ratings, implying that more efforts should be put in by the practitioners and other authorities to minimize these problems. Hidden cost and regular updation have a comparatively neutral response, hinting at a requirement to look into these matters as well to develop all-round digital libraries.

VIII. Conclusion:

The survey has revealed that the main reasons for respondents who have not used digital libraries are either the non-availability of facilities or unawareness of facilities. They are readily interested to use the facilities in future if known to them. Most of the institutes are providing the facilities of digital libraries but are lacking in the area of promotion. And a significant proportion does not have the provision itself. Educational institutes and workplaces need to adapt to this emerging concept.

There was a poor response regarding familiarity with the National Digital Library of India (NDLI), where more than half of the respondents were either partially or completely unaware of its existence. Making it evident that after the launch of the initiative, sufficient effective steps still need

to be taken by the government of India for its nationwide use.

Findings show that digital libraries can have an increasing scope in the future as most of the respondents have accepted the concept. With the implementation of the right measures in an already advancing digitization era, digital libraries can become the source of worldwide knowledge. The following are a few suggestions of measures that can be taken -

- In educational-based institutions, librarians should promote digital libraries with an enhancement of communication and skills.
- Resources of digital libraries in institutions should be of wider choice, not just limited to the syllabus.
- The concept of digital libraries should be encouraged by the government among the whole population of the nation, especially from a young age.
- Content recommendation and content management options should be there in digital libraries according to the reading preferences.
- Features like goal setting, time spent and target completion on a daily and yearly basis should be included in digital libraries to make the digital presence more engaging.
- The digital libraries in India should maintain consistency and have regular content updates.

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