ICT-enabled Information Services Using Web 2.0 in Public Libraries of Tamil Nadu

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ABSTRACT

Web 2.0 technologies have a great deal to offer while providing information services and can be used as a platform to increase the discoverability of digital collections, engage library patrons in library activities, and create online services that promote collaboration, cooperation, communication, and information sharing among public libraries at various levels in a country. The present study focuses on ICT-enabled information services provided by connemara public library and district central public libraries in Tamil Nadu, India. The study also tries to identify the extent to which Web 2.0 tools are used in public libraries to provide information services. A survey method using a questionnaire was adopted to collect data from connemara public library and selected district central public libraries of Tamil Nadu. Findings of the study show that connemara public library and district central libraries in Tamil Nadu are providing ICT-enabled information services but only a minority of these libraries are using Web 2.0 tools for the same. Analysis found that a minority of district central libraries in Tamil Nadu are using WhatsApp (28.57 %), Facebook (23.81 %), YouTube (14.29 %), Blog (9.52 %), Twitter (9.52 %) and Mobile Apps (4.76 %) to provide information services. Analysis shows that district central public libraries are using Web 2.0 to provide only very basic information to the users. Librarians are not exploiting the full potential of Web 2.0 tools in providing information services. This paper will be helpful for library professionals working in public library systems to implement ICT-enabled information services in general and Web 2.0 in particular.

Keywords: Information services; ICT-enabled information services; Social networking media; Web 2.0

1. INTRODUCTION

Public libraries act as a primary point in a community to provide information services to meet the user's ever-changing need for information. Development in information and communication technology has revolutionised how information is collected, displayed, and accessed[1]. The recent increase in the use of mobile devices and social media has given library users unlimited access to the internet and a continuous flow of information. Methods for finding information are evolving as more and more users are getting connected to the internet and its application of ICT continues to permeate every aspect of daily life. The emergence of Web 2.0 platforms and their applications has given public libraries many options to improve information services and provide better access to both print and electronic collection along with greater potential for community involvement [2]. ICT-enabled information services refer to services that use internet and web technologies to deliver information to users. These services leverage the power of the World Wide Web to provide access to various types of information, data, and resources.

Web 2.0 is "a space that allows anyone to create and share information online – a space for collaboration, conversation, and interaction; a space that is highly dynamic, flexible, and adaptable"[3]. Web 2.0 represents a significant shift characterised by the transition from static, one-way communication websites to dynamic, interactive platforms that facilitate user-generated content and collaboration. Web 2.0 platforms empower library users to engage with content rather than passively consume it actively. Users can create, share, and interact with content, leading to a democratisation of information and a more inclusive online environment.

Web 2.0 encourages the creation of user-generated content allowing individuals and communities to express themselves, share knowledge, and contribute to collective intelligence. Web 2.0 platforms facilitate collaboration among users, enabling collective problem-solving, idea generation, and content creation. Mobile-friendly websites and applications enable users to access and interact with web content anytime, anywhere, further blurring the boundaries between online and offline experiences. It has transformed the online landscape, empowering individuals, communities, and businesses to connect, communicate, and collaborate in ways previously unimaginable.

Web 2.0 technologies give public libraries with new opportunity to provide services to users, regardless of where they are located either in urban or rural areas. Web 2.0 helps to create online services that promote collaboration, cooperation, communication, and information sharing among public libraries at various levels in a

state. Web 2.0 enables libraries to provide access to vast amounts of digital resources, including e-books, online journals, databases, and multimedia content allowing users to explore diverse topics and perspectives. Public libraries can play a major role in reducing barriers to learning and fostering lifelong learning opportunities by using Web 2.0 platforms for the creation, sharing, and dissemination of OER, including open textbooks, course materials, and learning modules. Public libraries can curate and promote OER collections, enabling users to access high-quality educational resources freely and legally. Web 2.0 technologies enable public libraries to personalize learning experiences based on user preferences, interests, and learning goals by providing tailored content recommendations, suggesting relevant resources, and providing personalised learning pathways. Web 2.0 facilitates the development and deployment of interactive learning tools and resources, such as online tutorials, quizzes, simulations, and multimedia presentations. These tools enhance user engagement, promote active learning, and provide hands-on experiences that complement traditional library resources and services. Mobile-friendly websites, apps, and responsive design techniques enable users to access library content on smartphones and tablets, supporting flexible and on-the-go learning experiences. Libraries can harness these platforms to crowd-source knowledge, encourage collaborative learning, and facilitate peer-to-peer support among users. Libraries can utilise social networking sites to increase the discoverability of digital collections, engage with users, promote library services and events, and foster online communities of learners. Social networking platforms enable users to connect with peers, share resources, and participate in discussions, enhancing collaboration and knowledge exchange.

The present study focuses on the provision of ICT-enabled information services, types of information, and information services provided using Web 2.0 by Connemara Public Library and district central public libraries in Tamil Nadu. The study also suggests the specific library and information services that can be provided using Web 2.0 by public libraries in Tamil Nadu.

2. LITERATURE REVIEW

A review of the literature conducted in this study tries to analyse the findings of international and national studies done about the adoption of Web 2.0 by public libraries in providing information services.

Walia and Gupta[4] conducted an online survey of 66 national libraries in the world to understand the scenario of Web 2.0 applications adopted by these libraries to provide information services Study found that 42 % of national libraries use one or more Web 2.0 technologies such as RSS, Social Networking Sites, and Microblog. Authors observe that other public libraries willing to adopt web 2.0 technologies can follow the models of the Library of Congress and the British Library. Anttiroiko & Savolainen[5] examined the efforts made by public libraries

in Europe to update their offerings by implementing Web 2.0 technologies. Authors identified that public libraries mostly use Web 2.0 for communication, content sharing, and social networking. The study found that public libraries use technology such as RSS feeds and video streaming to communicate with library users

Cahill[6] provided evidence of the efforts made by Vancouver Public Library (VPL) to transform its website into a true virtual branch, both in terms of the website's functioning and the expansion of its web presence to additional social networking sites. This case study shows that Web 2.0 can be used in a methodical, integrated, and careful manner to improve web-enabled library services without compromising quality or control. Lietzau[7] on behalf of the Library Research Service, Colorado State Library, and Colorado Department of Education conducted a study of 600 public library websites in the USA to find out the adoption of Web 2.0 technologies in providing information services. The study found that public libraries in the USA are very slow in adopting interactive Web 2.0 services and only a few libraries had a web presence with online accounts for users. Less than one-third of public libraries in the United States offer a blog, or reference services through email or chat reference on their websites. The study found that even though larger public libraries were expected to adopt these technologies they were not providing anything beyond the most basic. The author reported that libraries adopting more web 2.0 technologies than the top 20 % of their population group were referred to as "early adopters" and were found to be successful in putting their resources into more advanced web technologies.

Kumar and Thanuskodi[8] presented this study as an attempt to use social media to engage users with public libraries in India. Authors opined that online library services using Web 2.0 keep library users up to date and play a unique role in keeping the patrons informed. The study discussed the way of using Facebook, Twitter, and Weblogs to provide library and information services. The study also analysed the challenges and barriers in the implementation of social network library services in the Indian scenario.

A study conducted by Bhattacharjee & Chanda[9] examined the role of Web 2.0, especially social networking sites in the context of knowledge sharing, information dissemination, and communication in public libraries in India. The study tried to analyse how information services provided by public libraries have changed since the advent of social networking sites. Authors observed that public libraries can increase user access and promote information services by routinely using web 2.0 applications

Ali, Shah, Mamdapur and Khan[10] explored how libraries in Institutions of National Importance in the South Indian states of Karnataka, Kerala, and Tamil Nadu provide web access to their collections and other services with a focus on the usage of web-based library services. Study shows that only a few libraries provide web-based library services. The authors emphasised that most libraries

under study have not completely tapped into the potential of Web 2.0. Additionally, the study emphasised how the Web 2.0 and Web 3.0 environments might improve the standard of web-based library services and suggest new approaches for effective use of web-based library services. The study conducted by Barath & Sudhier[11] tries to outline the presence of social media sites in select public library websites in India. The authors found that only a few public libraries are using social media to share electronic resources. Authors observed that Public libraries mostly use Facebook, Twitter, and YouTube for delivering content and Anna Centenary Library, Chennai has the highest number of followers on social media. The author suggested that public libraries use these Web 2.0 tools to provide extension services, information on library activities, and marketing of library services.

A study conducted by Sarkhel and Khan[12] explored the innate nature of Web 2.0 tools in computer-mediated scholarly communication and information services along with internet access in public libraries. The findings of the study recognise the strength of web 2.0 tools to enhance the library and information services provided to the users. The study identified RSS, Blogs, and Instant Messaging as the most popular in providing web-based information services. Authors also put forth various suggestions for libraries that have recently adopted web 2.0 tools in providing library services. The authors also identify the potential web-enabled information services in providing improved, customer-driven services to the user communities.

Previous researches concentrate on identifying the various Web 2.0 tools used in public libraries. These researches did not highlight the specific library services provided using specific Web 2.0. User awareness studies and information literacy studies regarding which Web 2.0 to provide which type of services and several users using these tools are not studied in detail. This study tries to fill this research gap by identifying the information services and type of information provided by state-level and district-level public libraries in Tamil Nadu.

3. OBJECTIVES OF THE STUDY

The main aim of the present study is to find out the provision of ICT-enabled information services through public libraries in Tamil Nadu. The study tries to identify the Web 2.0 tools used and the types of information provided using them by connemara public library and district central public libraries in Tamil Nadu. The study also tries to point out the extent to which Web 2.0 tools can be used in public libraries in Tamil Nadu to provide information services.

4. SCOPE AND METHODOLOGY

This study focuses on public libraries in the state of Tamil Nadu. It is a state in South India with a hoary antiquity, bound on the north by Andhra Pradesh and Karnataka, on the west by Kerala, on the east by the Bay of Bengal, and on the south by the Indian Ocean. This state has a population of about 7.21 crore (2011 census) with a literacy rate of 80.09 %. Tamil Nadu is the first state in India to enact the Public Libraries Act drafted by Dr. S.R. Ranganathan in 1948. The public library system in Tamil Nadu is under the Department of Education. The directorate of public libraries is given the authority to manage the day-to-day functions of connemara public library, the designated state central library under the provision of the Tamil Nadu Public Libraries Act 1948, and district central libraries located in each district of Tamil Nadu. The district library officer in each district is in charge of the district central libraries. He is also the charge of branch libraries and village libraries which come under each district central library. A total of 32 district central public libraries are functioning in 32 districts of Tamil Nadu. A sample size of 27 district libraries was obtained by applying the Krejcie and Morgan formula. Simple random sampling was used to select the sample. A total of 21 district central public libraries along with connemara public library responded to the study with a response rate of 77.78 %.

A survey method using a questionnaire was adopted to collect data from connemara public library and selected district central public libraries of Tamil Nadu. The study focuses mainly on the type of information and information services provided using Web 2.0 by connemara public library and selected district central public libraries of Tamil Nadu questionnaire was designed to collect data about the provision of information services, use of Web 2.0 in providing information services and types of information provided in connemara public library and district central public libraries in Tamil Nadu. A pilot study was conducted by distributing questionnaires to five district libraries in Tamil Nadu. The questionnaire was revised as per suggestions given by the librarian. The reliability and validity of the tool were measured using Cronbach's Alpha and the value of Alpha is 0.861 which is higher than 0.5. Therefore instrument is reliable for data collection for this study.

5. DATA ANALYSIS AND RESULTS

Data collected from Connemara Public Library and district central public libraries in Tamil Nadu were analysed, tabulated, and discussed under the following headings.

5.1 Provision of ICT-enabled Information Services in Connemara Public Library and District Central Libraries of Tamil Nadu

Public libraries use ICT to provide information about resources, services, and current updates on events conducted by the library. Table 1 shows the location, year of establishment, provision of ICT-enabled information services, and website URL of connemara public library and selected district central public libraries in Tamil Nadu.

Connemara public library was built in recognition of library services in 1896 by Lord Connemara during the British era. The library was given the status of state central library in 1950 under the provision of the

Table 1. Provision of information services in Connemara public library and district central libraries, Tamil Nadu

Name of the library	Location	Year of est.	Provision of ICT-enabled information services	Website URL
Connemara Public Library	Chennai	1896	Yes	http://www.connemarapubliclibrary.org
District Central Library	Sivagangai	1952	Yes	http://sivagangai.tnlla.in/
District Central Library	Thirunelveli	1952	Yes	http://thirunelveli.tnlla.in/
District Central Library	Tiruchirapalli	1952	Yes	http://tiruchirapalli.tnlla.in/
District Central Library	Salem	1953	Yes	http://salem.tnlla.in/
District Central Library	Udnamandalam	1953	Yes	http://nilgiris.tnlla.in/
District Central Library	Thoothukudi	1954	Yes	http://thoothukudi.tnlla.in/
District Central Library	Trippur	1954	Yes	http://tiruppur.tnlla.in/
District Central Library	Thiruvannamalai	1955	Yes	http://thiruvannamalai.tnlla.in/
District Central Library	Vellore	1959	Yes	http://vellore.tnlla.in/
District Central Library	Chennai	1960	Yes	http://chennai.tnlla.in/
District Central Library	Thanjavur	1961	Yes	http://thanjavur.tnlla.in/
District Central Library	Virudhanagar	1961	Yes	http://virudhunagar.tnlla.in/
District Central Library	Dindigul	1963	Yes	http://dindigul.tnlla.in/
District Central Library	Dharmapuri	1965	Yes	http://dharmapuri.tnlla.in/
District Central Library	Madurai	1970	No	http://madurai.tnlla.in/
District Central Library	Erode	1980	Yes	http://erode.tnlla.in/
District Central Library	Kanyakumari	1982	Yes	http://kanyakumari.tnlla.in/
District Central Library	Karur	1997	Yes	http://karur.tnlla.in/
District Central Library	Thiruvallur	1998	Yes	http://tiruvallur.tnlla.in/
District Central Library	Perambalur	2001	Yes	http://perambalur.tnlla.in/
District Central Library	Villupuram	NP	Yes	http://villupuram.tnlla.in/

Tamil Nadu Public Libraries Act 1948. It is also one of the four depositories for Indian publications under the provision of Delivery of Books and Newspaper Act, 1954.

Table 1 lists the selected district central libraries and their years of establishment in ascending order. Table 1 shows that nine district central libraries were established in 1950, five in 1960, one library in 1970, two in 1980 a two in 1990. District central library, Perambalur is the latest in 2001. This shows that the Directorate of Public Libraries in Tamil Nadu is giving great importance to establishing a public library system in each district. Twenty district libraries that responded to the study along with Connemara Public Library provide ICT-enabled information services. All the libraries have websites and the websites of all these district central libraries are developed and maintained by the Directorate of Public Libraries, Tamil Nadu. The domain of each website is "tnlla. in" (Tamil Nadu Local Library Authority).

Analysis shows that connemara public library and twenty district central libraries in Tamil Nadu are providing ICT-enabled information services and further section analyses the extent to which ICT-enabled information services are provided by these libraries.

5.2 Types of ICT-enabled Information Services Provided using ICT by Connemara Public Library and District Central Libraries of Tamil Nadu

From Fig. 1, it is clear that 28.57 % of district central libraries in Tamil Nadu use WhatsApp, and 23.81 % of district central libraries use Facebook. YouTube was found to be used by 14.29 % of district central libraries. Less than 10 % of district central libraries use Blog (9.52 %), Twitter (9.52 %) and Mobile Apps (4.76 %) to provide information services

It was found that none of the libraries use LinkedIn, Instagram, Pinterest, Wikis, Podcast, Rich Site Summary (RSS), Google Business, and Video game stores to provide information services. Only a small minority of district central public libraries in Tamil Nadu have adopted Web 2.0 tools. Analysis shows that public libraries in Tamil Nadu have a long way to go in providing ICT-enabled

Table 2. Types of ICT-enabled information services provided by Connemara public library and district central libraries of Tamil Nadu

Information services	Connemara public library, Tamil Nadu	Number of district central libraries	
		n	%
Internet access	**Yes**	20	95.24
Library website	**Yes**	21	100
Digital library	**Yes**	20	95.24
Access to e-resources	**Yes**	2	9.52
Reference services	**Yes**	8	38.10
Virtual reference services	**No**	0	0
Current awareness/alert services	**Yes**	15	71.43
Social networking media	**No**	8	38.10
Career information services	**Yes**	12	57.14
Community information services	**No**	4	19.05
E-governance information	**No**	0	0
Digital services to children	**No**	4	19.05
Services to differently-abled	**Yes**	14	66.67

information services. Directorate of public libraries, Tamil should take a crucial leadership role for that to become a reality in upcoming future

5.3 Types of Information Provided through Web 2.0 Tools by District Central Libraries of Tamil Nadu

Information that can be provided by public libraries through Web 2.0 can be diverse including both librarian-generated content and user-generated content. Librarians of district central public libraries using Web 2.0 tools were asked to identify the information they provide using these tools. Responses are shown in Table 4.

Table 4 shows that seven district central public libraries (33.33 %) use web 2.0 tools for providing library news, information about the library, and sharing photographs. Six district central public libraries (28.57 %) use web 2.0 tools to provide information such as general news, alerting services about new arrivals, alerting services about lectures/ events, and marketing of library services. Information regarding the availability of Information sources is provided by five district central public libraries. None of the district central public libraries use Web 2.0 for searching for information sources, library orientation, resource guidance, or chat box for providing reference services.

Analysis shows that district central public libraries are using Web 2.0 to provide only very basic information to the users. Librarians are not exploiting the full potential of Web 2.0 tools in providing web-enabled information. District central public libraries must use any available method to provide information about resources and library collection available in the library to users and underutilisation of Web 2.0 which has a maximum outreach to the public can be identified as a major drawback of the public library system.

6. FINDINGS AND DISCUSSION

Findings of the study show that Connemara Public Library and district central libraries in Tamil Nadu are providing ICT-enabled information services but only a minority of these libraries are using web 2.0 tools for the same. It is disheartening to say that Connemara Public Library a well-known State Central Library and has a long history among public libraries has not at all adopted Web 2.0 in providing ICT-enabled information services. Analysis shows that district central public libraries in Tamil Nadu are using Web 2.0 to provide only very basic information to the users. These district central libraries use Web 2.0 tools such as WhatsApp, and Facebook. YouTube, Blog, Twitter, and Mobile Apps

Table 3. Use of Web 2.0 tools for providing information by public libraries in Tamil Nadu

Use of Web 2.0 tools for providing information	Connemara public library Chennai	Number of district central libraries	
		n	%
Provided	No	8	38.10
Not Provided	**Yes**	13	61.90
Total		**21**	**100**

to provide information services. The study found that librarians of Connemara Public Library and district central libraries in Tamil Nadu are not exploiting the full potential of Web 2.0 tools in providing information services. This situation can be improved only if the Directorate of Public Libraries, Tamil Nadu plays a major leadership role in advocating the use of Web 2.0 in providing information services to the users and providing adequate ICT infrastructure and skilled staff.

Interactive website: Develop a user-friendly, interactive website that enables library users to browse the catalog, recommend books, access digital resources, and participate in conversations by posting comments, reviews, and ratings.

Create virtual book clubs: where librarians can introduce new arrivals and library patrons can participate in online book discussions, exchange book recommendations, and express their opinion on library collection.This
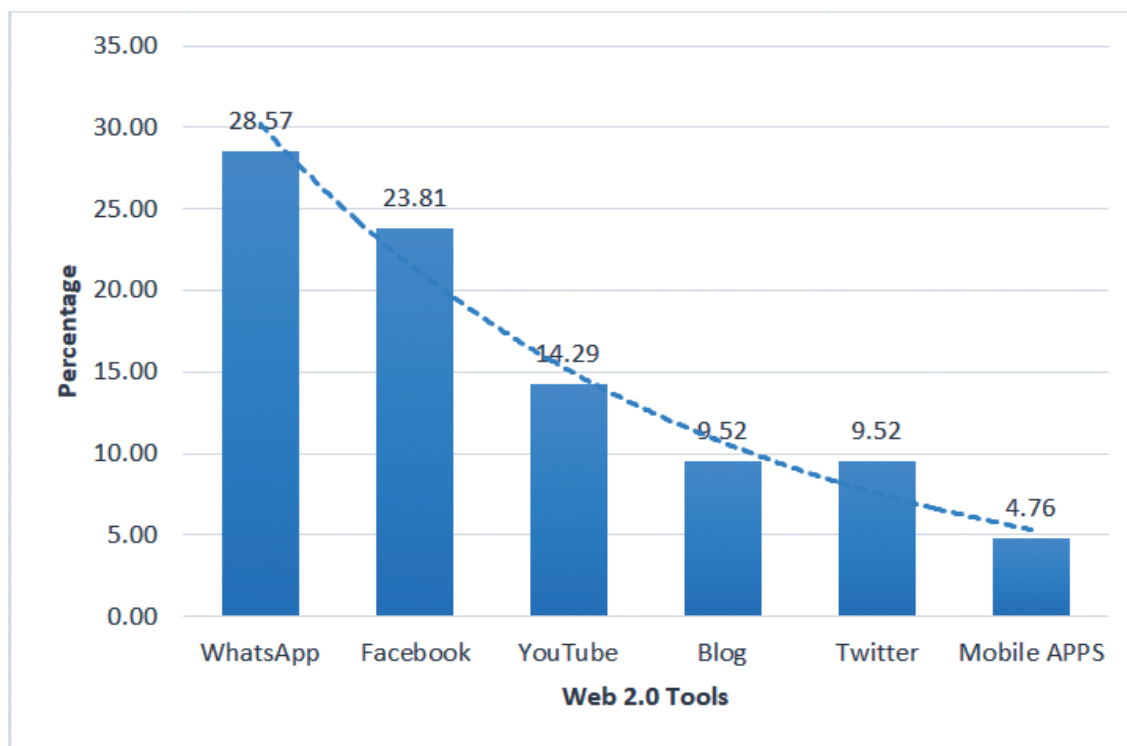

Figure 1. Web 2.0 tools used by district central libraries in Tamil Nadu.

The finding of the previous study conducted by Lietzau[7] found that the adoption of Web 2.0 was slow in public libraries in the USA and this finding is similar to the present study. The literature review identified that Web 2.0 tools have been extensively used in public libraries in Europe compared to public libraries in India.

7. SUGGESTIONS

The adoption of Web 2.0 has immense potential to enhance web-enabled information services provided through public libraries. It greatly improves access to the library collection and user experience. The main focus of such services should be to promote collaboration, social engagement, and user-generated content. Public libraries should have a dynamic and interesting online presence that creates a feeling of community and caters to the changing needs of its patrons by embracing Web 2.0 technology and ideas. The following suggestions can be used by public libraries in South India to come forward and embrace Web 2.0 tools to provide information services productively.

Table 4. Information provided through Web 2.0 tools by district central libraries of Tamil Nadu

Web 2.0 tools	Number of district central libraries	
	n	%
General news	6	28.57
Library news	7	33.33
Information about library	7	33.33
Availability of information sources	5	23.81
Searching for information Sources	0	0
Alerting services about new arrivals	6	28.57
Alerting services about lectures/ events	6	28.57
Review about new books	2	9.52
Chatbox	0	0
Library orientation	0	0
Resource guidance	0	0
Sharing photographs	7	33.33
Marketing of information services	6	28.57

will help librarians to understand user preferences and ensure participation in building the library collection

User-generated content: Encourage users to submit book reviews, create reading lists, and share their favorite reads. This will help in building a community-driven content repository.

Social media presence: Maintain a lively presence on well-known social media platforms like Facebook, Twitter, and Instagram. Post updates about events, new arrivals, and other pertinent information regularly.

Blog and newsletters: Start a library blog to highlight book suggestions, author interviews, and library events. Use an online newsletter to keep subscribers up to date on upcoming events in the library.

Collaborative resource collection: Involve the community in the digitisation of historical archives, local history preservation, or oral history collections, create and share information online resources using Pinterest with the help of users

Creating a mobile app: For the library to enable users to access materials, control their accounts, and get push notifications about upcoming activities and new content. eg: e-Sarvajanika Granthalaya created by the Directorate of Public Libraries, Karnataka provides curated content in Kannada and English.

Online reference services: Offer live chat or virtual reference services to assist users with research inquiries and other information needs.

Create video tutorials and guides: To assist users in navigating library resources, doing efficient catalog searches, and utilising other online services.

Gamification: Use gamification components to make visiting the library more entertaining and engaging. Users can acquire points or badges, for instance, by going to events or borrowing books.

8. CONCLUSION

The emergence of new technologies and their immediate acceptance by the new tech-savvy generation has challenged public libraries to adapt, evolve, and redefine their collection and services. Public libraries need to continuously experiment with new technologies such as Web 2.0 to enhance library services and provide more responsive, modern, and dynamic public library services satisfying the information needs of their community. With the proliferation of mobile devices, libraries can leverage Web 2.0 technologies to deliver learning resources and services to users anytime, anywhere. Web 2.0 technologies have transformed the learning landscape in libraries, empowering users to access, create, and share knowledge in innovative ways. By harnessing the power of Web 2.0, libraries can enhance the learning process, promote information literacy, and support the diverse learning needs of their users. Public libraries should be taking leadership roles in tapping the potential of new digital technologies

to provide creative spaces to users and circulation of new ideas in the community. Web 2.0 is an ideal tool for introducing collaborative and social spaces in a public library system to satisfy its primary objective of providing access to all kinds of information and knowledge readily available in the library as well as cyberspace.

Web 2.0 will give public libraries in Tamil Nadu a greater role in providing community information services, digital services to children, and e-governance services through community participation. This will attract more users to the state as well as district-level public library thereby increasing the membership of the library as well as introducing new services to the users. Public libraries will need to revamp their infrastructure, the level of competencies of their library staff, and an adequate number of staff if they have to fulfill all these new roles entrusted to them.

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Her contribution to this study is to conceptualise of idea for this paper and provide overall guidance in drafting the paper and every step involved in the process of correcting the paper.