

Implementation of Modern Network Technology in providing library services in academic studies

Dissertation submitted in partial
Fulfilment of the Goa University for the
Degree of Masters of Library and
Information Science
(MLIS'c)

Submitted By

Kewal Narendra Naik

Enrolment Number

22P034008



Under the supervision of
Dr. CARLOS M. FERNANDES

*Presented for viva-voce
on 28/4/2023
by*



PROGRAMME DIRECTOR
LIBRARY AND INFORMATION
SCIENCE
D. D. Kosambi School of Social Sciences
& Behavioural Studies
Goa University

D.D. Kosambi School of Social Sciences and Behavioural studies
Library and Information Science Programme

Goa University

Taleigao Plateau, Goa

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DECLARATION

I declare that this dissertation entitled “**Implementation of Modern Network Technology in providing library services in academic studies**” submitted by **Mr. Kewal Narendra Naik** is my original contribution and the same has not been submitted on any occasion for any degree or diploma of this University or other University/Institute. To the best of my knowledge, the present study is the first comprehensive work of its kind from the area mentioned. The literature related to the Modern Network Technology in providing library services investigated has been cited.

Date: - 28 April 2023

Place: - Goa University

Kewal Narendra Naik
Library and Information
Science Programme, Goa University

CERTIFICATE

This is to certify that the Dissertations Title **“IMPLEMENTATION OF MODERN NETWORK TECHNOLOGIES IN PROVIDING LIBRARY SERVICES IN PROVIDING LIBRARY SERVICES”** SUBMITTED BY Kewal Narendra Naik in partial fulfillment of the requirement of the degree of Master of Library and Information Science of Goa University is her own work carried out under my guidance and worthy of examination.

Dr. CARLOS M. Fernandes

Research Guide,

Programme Director

Library and Information Science Programme

Goa University

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Mr. KEWAL NAIK
Master of Library and Information Science
Library and Information Science Programme
Goa University

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Chapter 1 – Introduction

1.1 Modern Network Technology

Libraries are viewed as important information sources and resources for people seeking mission-oriented information. It also serves as a professional services provided by librarians in helping many business originator, researchers, students as well as educators in finding, accessing and utilizing information resources to the fullest extent, especially with regard to electronic resources. Hence the study of latest technology aspect will allow the researchers to learn the topic immensely.

The rapid development of ICT (information and communication technology) has had a great impact on libraries. With this, people have changed the way they think, behave, communicate and work. ICT has turned traditional libraries into digital libraries, where all work is done by computers. Thus, the operation of libraries has changed completely from service-oriented to user-oriented, in which libraries are maintained according to the needs of users. New technologies have been incorporated into library management. As such, libraries have turned into digital libraries, virtual libraries, hybrid libraries, wall less libraries, 2.0 libraries, and more. Even the job and title of Librarian has been changed to Information Officer, Information Scientist and Document Officer etc. We can see that libraries have arrived at our doorstep.

The Digital Library plays a very important role in today's modern technology era. It has introduced the new trends and technologies to libraries, satisfying the users with the need for accurate information since the users are slowly shifting from print resources to e-resources for their academic or research work. Because of various reasons for engaging more in technological world of libraries, reasons such as easy and fast retrieval of information, read anytime , anywhere, all the e-resources are just a click away or present on their mobiles. The types of web modern technologies are used as services in digital libraries are Blogs, audiobooks,, services of e-resources such as e-books, e-journals, virtual library tour, web forms as online reference services, different types of web 2.0 social media tools such as WhatsApp, Instagram, Twitter, Facebook etc. Day to day increasing the demand for modern network technologies also increases the pressure on various academic colleges, University and

Institute libraries as how to implement and make students aware about their digital library with modern technologies.

We may use the Library at any convenient time. Due to new techniques, many new trends can be seen in the field of libraries, namely:

1.2 Trends

- Printed resources of collection to Web based publishing like digital collection e-resources.
- Traditional library services have been changed to modern network technologies.
- Physical reference services have been changed to Online Reference Services Web 2.0 with the help of social media tools.
- Physical orientation programmes has been changed to online training/orientation presentation for users regarding modern technology, ICT applications.
- Closed access has evolved into accessing documents anytime/anywhere through the Internet/digital library.
- Manual indexing and Bibliographies have been changed to Full Text web Databases
- The Manual Library Directory is changed to OPAC (Online Public Access Catalogue) / Web OPAC Manual Information Sharing is changed to the Library Network.
- Convert interlibrary loan service into electronic information delivery

By all this trends which can understand the impact of modern technologies on libraries. The information in this world is increasing at an alarming rate, different types of information; knowledge has been created, generated and disseminated from different parts of the world dynamically. The growth of information has brought a revolution in the field of library. The Information has been changed from printed to e-resources, traditional services to modern network technologies and the technology has changed the every aspect of library that is acquisition, Processing, storage, retrieval and dissemination of information. Also technologies has changed social media tools such as E-mail, WhatsApp, Twitter, YouTube, to help library users in various library

service needs to send them messages, post photos, videos of libraries about its events and exhibitions, library details, notifications etc. (Mittal, A., 2017)

1.3 Modern Technologies and Academic Libraries

Modern technology plays a major role in every aspect of life. It has revolutionized the world with tremendous impact on individuals, organizations, government agencies, etc. Likewise, libraries have changed over time in providing the best possible services/products to their users. University libraries largely show the enormous impact of technological advances. Web-based services, the implementation of new technologies have greatly satisfied users. However, it is the task of academic librarians to identify and understand these technologies in order to align their libraries with user expectations, thereby developing the necessary technology skills. As technology trends increase exponentially, it becomes clear that librarians may not be able to incorporate all trends into their libraries. Therefore, they need to choose technology in a way that can help them in the long run with users' information preferences. However, the university library should be the primary hub where these technologies are experienced in either documentary or actual form, in order to maintain the pioneering position of technology in a higher education institution. The aim of this study was to investigate several emerging library technologies that benefit university libraries.

The advent of different information technology (ICT) trends has led to reestablishment, changing work patterns and the need for new skills, maintaining and categorizing the jobs. Technological advances over the past many years, such as electronic databases, online services, CD-ROMs and the advent of the Internet, have completely changed access to information.

ICT has an impact on all areas of university libraries, especially in the form of strategies for developing library collections. Information and communication technologies provide their users with the ability to provide value-added information services and access to variety of digital information sources. In addition, university libraries also use modern ICT tools and technologies to automate their essential functions, establish efficient and effective resource sharing and collaboration networks, implement information systems, information on management and

development of content repositories of digital local establishments and digital libraries: and initiate ICT-based technology building programs for library users. In some university libraries, ICT has offered their users a special library service called integrated library management, in which all university departments receive online products/journals mainly for their faculty e.g. AGORA etc. The relevant faculty receives a password to access it. . Other e-journals available in university libraries are DOAJ, (i.e. Directory of Open Access Journals), AEJP (i.e. Africa Electronic Journals Project), etc. Information and Communication Technology (ICT) has brought unprecedented change and transformation to academic libraries and information services, conventional LIS such as OPAC, user services, reference services, directory services, current information services, document delivery, interlibrary loans, audio-visual services and customer relations can be provided more efficiently and effectively by using IT- TTs, as they provide convenient, right-place, cost-effective, faster and more up-to-date dissemination and end-user involvement in the library and information service process. The impact of ICT on information services is characterized by changes in format, content, and production methods and content and methods of production and distribution of information products.

The emergence of the Internet as the largest repository of information and knowledge, the evolution of the role of librarians and information science professionals from mediator to facilitator, new tools for information dissemination and the transition from physical to virtual service environments and the disappearance of some traditional information services and the emergence of new web-based innovation (Bharti, L. K., and Verma, S., 2021) (Adhindu, J. O., and Chinyere, D. O., 2015)

1.4 Definitions

Oyedun (2007) defines academic libraries as those libraries that are mainly found in tertiary institutions, they are established to support learning, teaching and research processes. Over the past twenty seven years, academic libraries have been affected by changes in information and communication technology.

ICT is the digital processing and utilisation of information by the use of electronic computers. It comprises the storage, retrieval, conversion and transmission of information. (Ifueko Omoigui Okauru, 2011)

ICT (information and communications technology – or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries. The term is somewhat more common outside of the United States. (Margaret Rouse 2005)

ICT holds the key to the success of modernizing information services. Applications of ICT are numerous but it is mainly used in converting existing paper-print records in the entire process of storage, retrieval, and dissemination. Rana (2009)

1.6 Review of Literature

(Bhagat, M. P., and Khaparde, V.) The study discusses the overview of Advancement technology has more impact on library users services from time to time. The trending technological advancement has bought a lot of changes to library and information services as well as societal expectations from librarians/information experts. So this paper is an attempt to find out some of the major emerging technology trends for libraries and library professionals. The future technology trends in the library complete intelligence-based like social, economic, education, political, environmental and demographics impact on the country. This paper provides a brief introduction to RSS feeds; HTML feeds streaming media, Podcasting, Blogs and Social networks etc.

(Shukla, A., 2018) The study outlines that with the advent of new information and communication technology tools and techniques, information dissemination becomes possible multidirectional i.e.- Library to users, users to library, and user to user. Major role of libraries are to disseminate the knowledge and information to its users whatever they [libraries] have in their collection. Due to the use of modern ICT tools and techniques, libraries can serve their users in better and interactive way. Librarians

have to learn these modern ICT tools and techniques and employ it in their libraries, to provide better and efficient services to their users.

(Dhande, S., 2017) The academic scenario has changed significantly over the years and has undergone tremendous change in assuming new dimension influenced by technology-driven applications. Libraries and information centres are no exception. Traditional library Service is considered poor. Offering a quality service package is amazing tasks for all libraries. Internet-based library services are the most important resources of the Modern library services. The end of library services in the Marathwada region mapping the impact on services is paramount to evaluating libraries and information services. This library provides detailed information about each topic required in the library Facilities essential to providing Internet-based services and information about those services product. If internet providers give all the knowledge, thus the large universities Libraries can impart basic knowledge from the Internet.

1.7 OBJECTIVES OF STUDY:

- 1] To know the different technological infrastructural required in modern libraries.
- 2] To understand the different requirements of modern day library users.
- 3] To know the difficulties faced while implementing the technology in libraries.

1.8 SCOPE OF STUDY:

- The study will highlight the latest technological advancement required in modern day libraries for its clitele.

1.9 HYPOTHESIS:

- Modern day libraries lack technological advancement.
- The library professionals lack confidence in library technology to be used
- The modern libraries lack the real time requirement of library users on Network environment.

1.10 LIMITATIONS OF STUDY:

- The study was limited to the professional college libraries of functioning in Goa.

1.11 RESEARCH METHEDODOLOGY:

- The investigator has browsed all the related literature in books and journals.
- Further the researcher has tried to browse all the literature related to the topic on digital format.
- The researcher had the discussions with experts and academicians on the same.
- The researcher has further prepared a questionnaire on the topic and will be distributed to all the stakeholders.
- The researcher has collated the data and will be analysed and interpret to arrive to a certain conclusion.
- The searcher has used suitable statistical techniques and tools with the help of the chart graphs to get the conclusion in precise clear understanding.

1.12 POPULATION OF STUDY:

- The study has included 100 library professionals and 100 library users users the study.

1.13 ORGANISATION OF STUDY:

Chapter I:	Introduction
Chapter II:	Review of literature
Chapter III:	Library Technology and its concepts
Chapter IV:	Library Technology at national and international level.
Chapter V:	Data analysis and interpretation
Chapter VI:	Findings, suggestion, and conclusion

1.14 CONCLUSION:

- The trending issues and emerging technologies poses challenges not only to the library and information professionals, but to all the users, patrons and scholars and the publishing community as well. Emerging technologies provide librarians with unique opportunity to substantially enhance user centred services and to facilitate and promote collaboration between libraries and their users in this digital era.

1.15 References:

Adhindu, J. O., and Chinyere, D. O. (2015). The Impact of Information Technology on Modern Librarianship: A Reflective Study. *Information and Knowledge Management*.

Bhagat, M. P., and Khaparde, V. (n.d.). Emerging Technologies in Library and Information Science.

Bharti, L. K., and Verma, S. (2021). Use of Emerging Technologies in the University Libraries: A study of review of the literature. *Library Philosophy and Practice (e-journal)*.

Dhande, S. (2017). Web-based Library Services in University Libraries in Marathwada Region in Maharastra.

Mittal, A. (2017). Emerging Technologies and their Impact on the Libraries. *Indian Journal of Science and Technology*.

Peripydi, A. (2017). The impact of digital technologies on academic libraries: challenges and Opportunities. 2(2):46-50.

Shukla, A. (2018). Delivering Library Services through Modern ICT Tools and Techniques.

Wenborn, C. (2018). *Wiley*. Retrieved from <https://www.wiley.com>.

Chapter II – REVIEW OF LITERATURE

2.1 Introduction

For any research work, literature review is very important, to understand the context of your chosen topic. A literature review looks at a variety of articles, books, scholarly journals, and research papers related to the specific topic you're researching and give you the amount of reference information it provides. Rate, analyse, describe, or summarize the work that is relevant to your particular study the research being investigated. In short, a literature review is a simple overview structure and provides the sources you have researched, observed, and referenced while researching a particular topic.

(Priolkar, S. A., and Thorat, S. V., 2022)⁽¹⁾ As we all know how the pandemic had affected the education system. This paper highlights the implementation of the online resources and services provided to the teaching faculty as well as the students. The sudden and unexpected outbreak of the virus forced the library professionals, to ascertain ways of working in a rapid time frame like shifting to digital platform wherever possible and to provide adequate remote services to the users. Given the extrinsic challenges in providing services during a public health emergency, the purpose of this study is to find out how technology became an important for the premier technological institutions of India during the COVID -19 pandemic. The study explores the type of services provided by library staff.

(Kale, D. P., and Jadhav, Y. G., 2022)⁽²⁾ A study that attempted to analyse the library system of the Engineering colleges affiliated with Goa University. A survey was conducted to assess the current situation status of library staff, resources and services, and the current state of library automation available at the Goa Engineering Library. Based on the results of Research it is recommended that librarians take the lead in fully automating the libraries by developing a rich collection of electronic resources. All engineering libraries should give the Importance of Maintaining Digital Institutional Repositories and Providing Web-Based OPACs a service that considers the needs of academic community.

(Dhande, 2017)⁽³⁾ The academic scenario has changed significantly over the years and has undergone tremendous change in assuming new dimension influenced by technology-driven applications. Libraries and information centres are no exception. Traditional library Service is considered poor. Offering a quality service package is amazing tasks for all libraries. Internet-based library services are the most important resources of the Modern library services. The end of library services in the Marathwada region mapping the impact on services is paramount to evaluating libraries and information services. This library provides detailed information about each topic required in the library Facilities essential to providing Internet-based services and information about those services product. If internet providers give all the knowledge, thus the large universities Libraries can impart basic knowledge from the Internet.

(Balaji and Kumar, 2011)⁽⁴⁾ Purpose – The paper aims to describe the current state of use of the new generation of web technologies. Social media and web2.0 features among the technological university library website in south India. We are evaluating the library's website as a leading platform and one-stop portal for information services and to Find out how effective the library's website is at providing web-based information services.

Design/Methodology/Approach – Southern Technological Library India was assessed based on a relative weight checklist. The checklist criteria are: Based on access to library websites, resource search tools, and scholarly content and Web 2.0 Tools. Various problems and challenges in adapting new web technologies.

Findings - Using the latest web development technologies and deploying them to the mainstream web Information services is not widespread as web information services are yet to take off widely in academic libraries. Most university libraries are functioning as usual. The prevalence of library settings and web information services is relatively low.

Originality/Value - As this is an assessment of the existing online information infrastructure Awareness of Web Information, Educational Institutions of Engineering Universities in South India the awareness of web-based information services, their viability, and service values can be enhanced. A benchmark for modern learning, online education and electronic information services Sustainability is emphasized.

(Waghmare, 2022)⁽⁵⁾ The Buddha said that everything is not static and that things are constantly changing. Change is the law of nature. In the physical world, man thinks and speaks and light is his, the only one on earth who solves his thoughts and overcomes problems. Dynamic advances in information and communication technology (digital) have changed the old notion of the library in a digital environment. In addition, modern university libraries are efficient, active, and able to influence their customers without the constraints of global restrictions. Libraries in today's digital environment are now rapidly digitally maintained and accessible worldwide. With the digital library revolution, transformed services for a borderless world and became the lifeblood of the community. A new development in Libraries is the use of DIGITAL to enable digital catering services, the operation of Libraries, reading facilities, and the standardization and leadership of university library activities. Information has evolved from print to digital information, resulting in a major evolution in the mechanisms of university library organization, especially those of leaders, services, facilities and his LIS professionals.

(Kumar, A., 2014)⁽⁶⁾ Purpose –The purpose of this paper is to investigate students' opinions regarding Jawaharlal Nehru University. (JNU), New Delhi, on the use and success of mobile technology in the library environment Provision of better library services and expectations for libraries through mobile technology.

Design/methodology/approach - the study was well structured and concisely conducted survey personally distributed among 200 students studying at Jawaharlal Nehru University in the Academic Session 2012-2013.

Results -The Majority of students favour the use of mobile technology for better services and it is expected by the students that services should be provided to them by libraries through mobile technology. In addition, the study also examines students' opinions on improving their use of the services using mobile technology.

Study Limitations/Implications - The geographic scope of the study was limited to students of JNU in New Delhi library. Research results are limited to this environment only.

Originality/Value - This paper highlights the JNU student's opinion on mobile technology use. Learn technology through the library for better service and also examine student expectations through this technology from the library.

(Faisal, S. L ., 2009)⁽⁷⁾ A modern academic library meets your information needs a new generation of smarter and more tech-savvy new generation user group that prefers an open, self-created online environment that is widely supported by Web 2.0 technology. To reach the user where they are Libraries need to revise their service strategy by integrating tools such as blogs and online social network. Blogs are a useful technology for libraries Informative professional Relations as a Feedback Tool as an interactive and collaborative learning medium Library promotion agency. Online social network Connect like-minded people and share information and ideas and emotions. unprecedented growth in the user base of these networks provide opportunities prior to academic training Libraries that allow you to create and use libraries Active members of these communities. Experience academic libraries in India shows that reaching the user, in their own time and their own space, and Adapting new web technologies which increases productivity.

(Rao, K., Rao., and Bhat, K., 2018)⁽⁸⁾ The application of Information and Communication Technology (ICT) is one of the best practices seen in the world Libraries that enable automation and modernization of library services. Today's environment is digitally driven, Library semi-professionals also play an important role in providing up-to-date information to up-to-date users using modern technology. The purpose of this study was to determine semi-professional perceptions of: Use of ICT in the Manipal Academy of Higher Education Libraries. 58 Library Assistant working in the seven constituent libraries of MAHE at the Manipal campus were included in the study and the data are collected by questionnaire. As a result of research, EasyLib, a library automation software, and The Electronic Public Access Catalog (EPAC) had the greatest impact on semi-professional roles (84.2%) in Providing ICT-enabled services to users. More than 30% percent (31.5%) of semi-professionals were of the opinion that ICT has greatly changed their duties and responsibilities. semi-professionals also believed that they can now provide faster, more accurate, and more up-to-date information services o the Users in library. The results of this study support the need to implement appropriate techniques in the library as they support semi-professionals in library maintenance and supply, as well as in the effective library services for users.

(Mandalia, H., and Parmar, D., 2017)⁹⁾ Information and communication technology (ICT) has a tremendous impact on human life as with all walks in the learning circle. It turns out that the use of ICT is progressing a notable high-speed segment in library and information management and services. Modern Advances in ICT have brought new ways of generating, managing information and dissemination. Medical students regularly use ICT to access library resources an online database that meets your learning needs. This paper outlines the use of ICT. Medical students uncovered the impact of modern technology at CU's Central Library. Shah Medical College, Surendranagar. Here, researchers tried to explain the need and usage of various tools and technologies of ICT by medical students. This research closed questionnaire distributed to her 172 library patrons used. An ICT facility on the campus of C.U.Shah Medical College and Hospital. Out of 141 total (82%). I received the survey and analysed the data. Various parameters combined in this study frequency of library visits, Internet access and use of electronic resources, attitudes, etc. Ratio of medical students to ICT, use of ICT to access library resources, impact of ICT On the impact of ICT on medical learning and research, library services, and satisfaction. Or the survey found that the majority of respondents agreed and considered ICT to be essential. Promoted medical education and research and used her ICT for various purposes in the library As a goal and preferably daily and weekly. Most respondents were very positive about the impact of ICT on the use of libraries and their services

(Das, K., 2019)⁽¹⁰⁾ The invention of new technology has dramatically changed the traditional way of making a living. Way of thinking and even our educational system. And the library isn't far beyond that change. in the early decade of books is kept in Almirah as a symbol of honour. Later became a collection centre, and today's libraries are thought to be repositories of knowledge. New technologies and terminology were introduced daily into the library and library science classes. as a result Services provided by the library will be updated, including security systems. This paper It is the most trusted and cutting-edge technology associated with library security. The system is Radio Frequency Identification or RFID for short. This paper describes the implementation of RFID in the Assam University Library with some key findings and proposals.

(George, N. T., 2020)⁽¹¹⁾ This study evaluated cloud computing technologies in the Provision of library services at Ignatius Ajul University Education (IAUE), Rivers state. More precisely, research attempted to evaluate the cloud computing technology used by Libraries, Cloud Computing Applications, Benefits and Issues of Cloud Computing Technology at IAUE library. A descriptive survey design was used for this study. The study group consists of 15 librarians working in the IAUE library in Rivers State. The entire population was used in the study, so there was no sampling. This means that the population was of a easy to handle size. The instruments used in the study were Self-designed 4-point rating scale questionnaire in which the responses evoked based on study objectives. Average and standard deviation were used to analyse the collected data. Investigation found that Google, YouTube and Google Apps are the Cloud technologies used in IAUE library. Also the Libraries used cloud technologies in the areas of cataloguing and classification, distribution, acquisition and consolidation Management system and web OPAC. Low capital Spending on services in demand and economies of scale amongst others are found to be advantageous of the cloud Computing. The Challenges against the Cloud Computer Technology for Library Services and Practices include security and privacy, computing power, Reliability, availability, and portability. The study have found that cloud computing to be very important and its utilization in library services will improve Efficiency in packing, retrieving, and storing information and recommended that the library reserve more Cloud technology integration for easy information providing services inside and outside the facility.

(Davidova, I., Marina, O., Slianyk, A., and Syrov, Y.)⁽¹²⁾ The author documents the growing role of online design for Ukrainian library strategy. Its components are identified and their roles in the social networks as one of the library's main communication channels the emphasis is on the digital environment. Emphasis is placed on the need to use social networks a network that forms a library brand, a network that builds a communication system Consumer and Marketing Activities.

(Punchihewa, C. N. D., 2018)⁽¹³⁾ Web 2.0 is a popular technology that creates new ways of communicating, networking, building partnerships, sharing resources. Web 2.0 Technology helps libraries use less innovative web-based services fewer studies have been conducted to identify the usage of Web 2.0 tools by Sri Lankan Library.

The purpose of this work is to examine the types of Web 2.0 application employed and to clarify the purpose of the introduction of Web 2.0 application at Sri Lanka University Libraries. Sri Lankan government University Libraries under the Sri University Grant Commission (UGC). Sri Lanka was recruited as the research population of the study and total population was considered as a sample. Content analysis techniques were employed in this study for the fifteen state university libraries in Sri Lanka. Survey tools are the checklist consists of 60 checkpoints based on similar checklists found in the Research literature related to studies conducted on Web 2.0 applications and their use. Data collection was conducted by retrieving the webpages of these university library websites less than a month old. All other libraries except one university library 14 university libraries have deployed at least one Web 2.0 application main features of their website. Out of the seven Web 2.0 tools included in according to the survey, Real Simple Syndication and social network services are the most popular applications while Blogs, vodcasts, and podcasts applications are less popular. Instant messages and Wiki were not implemented by any of them. Sri Lankan Academic Libraries Should Focus more on delivering Web 2.0 Applications their library website meets and becomes the needs of today's modern user and also to be Compatible with frequently changing technologies.

(Lwoga, E. T., 2011)⁽¹⁴⁾ Purpose – This paper aims to the extent in which Learning and Web 2.0 Technologies used to support learning and teaching in African university, with a special attention to public universities in Tanzania.

Design/methodology/approach – A Data were collected through a combination of 'content analysis' and 'semi-structured interviews'. For this study, we conducted semi-structured interviews 6 out of 8 ICT staff Public University of Tanzania in 2011.

Results – The study found that E-Learning and Web 2.0 technologies are still in their infancy stages in the public universities. However, there were many respondents' Enthusiasm for development potential of e-learning and Web 2.0 tools in their university.

Practical implications – research endeavours promote academic research into the need for Innovative Web 2.0 technology in learning and learning teaching and acceptance of these emerging nations technology in higher education in Africa institution.

Originality/Value – The Study provides empirical Findings on e-Learning and Web Use 2.0 higher education especially Tanzanian context. This research further research on the use of Web 2.0 technology in higher education.

(Muneja, P. S., and Abungu, A. K., 2013)⁽¹⁵⁾ This paper aims to examine the adoption and application of Web 2.0 tools in library delivery services in selected libraries in Tanzania. This paper explores how librarians Adopt tools to improve the services. This study examines the Web 2.0 tools used by users. Libraries that provide services, factors that affect the use of Web2.0 tools, and challenges and perspectives on their use. The study reveals that Tanzanian librarians have started using various Web 2.0 tools to varying degrees; the most common tool is Facebook. The findings also reveal that the librarians are motivated to use this tools because they are free, open source, and relatively easy to use. Resource sharing, communication, and service promotion are the main reason these tools are used. Challenges include unreliable power and internet access. Better resource awareness, better communication, interested in using the library. Recommendations suggest institutions need to develop strategies promote the use of new technologies and alternatives to reliable energy sources such as: solar and generator.

(Toraskar, S. S., 2022)⁽¹⁶⁾ Academic institutions provide education, and this education is embedded in the library. As you know, the library is the heart of every academic institution, and the library, like this plays the role of the heart as a purifier that gives the body pure blood. Academic libraries must act as a central gateway for library users to access, search, transform, and consume information resources. In this era of information explosion, the era of ICT (Information and Communication Technology) , academic libraries are undergoing transformation, but library professionals provide the best possible service to academic library users and they need to redefine that role. In today's electronic environment, librarians must work independently or in teams to deliver service-oriented and user applications, guides, programs, projects, and services. Librarians use innovative ideas to engage library patrons. To keep up with modern technology and attract more library patrons, professionals need to adopt best practices. My work focuses on all kinds of best practices that serve the goals and motivations of the library's academic objectives, as well as those best suited to NAAC's objectives.

(Krishnan, V., 2021)⁽¹⁷⁾ Web technology has transformed into a giant slice of life, changing the way the One communicates with the Earth. This energy to mobile phones by customers has opened up a variety of opportunities to create total flexibility in libraries and data organizations where libraries can reduce the risk of exclusion. Libraries tend to be where they are and want to access information they share from points. This material researches online library organizations such as creating library websites, database access, record approvals, OPAC, podcasting, RSS feeds, wikis, and ontologies.

(Canuel, R., and Crichton, C.)⁽¹⁸⁾ Purpose: The purpose of this paper is to assess how Canadian academic libraries have responded to the rapidly evolving mobile environment, identify gaps in the service offerings, as well as suggest areas for future development.

Methodology: We conducted a survey of mobile content and services provided by the libraries of Association of Canadian Universities (AUCC) member institutions. Based on this research, he describes the current state of mobile libraries in his academic libraries in Canada. A review of the literature puts the research into a broader context.

Results: Only 14% of AUCC Libraries currently drive any kind of mobile web presence, with mobile sites outperforming downloadable apps. It highlights content and examples of services to illustrate current trends and provide insight into future directions for mobile service development.

Practical Impact: This study raises awareness of the importance of mobile technology for academic libraries and the need to address the lack of mobile content and services offered by most post-secondary institutions in Canada. It also identifies best practices from the 4,444 libraries surveyed.

Uniqueness/Value: This is a first-of-its-kind survey of how Canadian academic libraries have responded to the mobile environment. The value of this study is to help identify and address deficiencies in the mobile content and services that libraries provide, and to shed light on the library's efforts to address user needs in this area.

(Adhinu, I. A., Nancy, A. E., Chibuke, U. E., 2018)⁽¹⁹⁾ This paper aims to investigate the application of Information and Communication Technology (ICT) for effective user education programs in a federal university library in south-eastern

Nigeria. This study was guided by seven research questions consistent with the research objectives. The design chosen for this study was a descriptive research study design, staff of Nnamdi Azikiwe University, Awka, University of Nigeria, Nsukka and federal government libraries, all with at least a first degree as a librarian. The librarians of Owerri Institute of Technology formed a research collective. Her study population of 4,444 in three libraries included her 12, 52, and 32 respondents, respectively. A targeted sampling technique was employed. The study sample size was 96 librarians. Data were collected using an observational checklist and questionnaire. Collected data were analysed using percentages, means, tables and frequency counts. The results indicate that ICT resources are available and used for user training programs in these surveyed federal university libraries. Results also show that the methods adopted for the application of ICT in the user education programs of university libraries included seminars, lectures, demonstrations, virtual tours, orientations and tours. ICT is widely used in library undergraduate user education programs. Lending staff had advanced skills in applying her ICT to user training programs. ICT contributes significantly to effective user education programs in the university libraries surveyed. There are a number of constraints and strategies that can be adopted to improve the use of ICT in user education programs at the libraries under study.

(Chisenga, J., 2006)⁽²⁰⁾ Organizations, such as governments, in the world today are taking benefit of the various possibilities furnished with the aid of using current Information and verbal exchange technology (ICTs). To libraries, ICTs gift an possibility to offer value added statistics offerings and get right of entry to to a huge sort of virtual-primarily based totally statistics assets to their clients. Further, libraries also are the usage of current ICTs to automate their middle functions, put into effect green and powerful library cooperation and useful resource sharing networks, put into effect control statistics systems, broaden institutional repositories of virtual nearby content, and virtual libraries; and provoke ICT-primarily based totally potential constructing programmes for library body of workers and statistics literacy programmes for library users. However, for maximum libraries in sub-Saharan Africa, such as the SCANUL-ECS region, use of ICTs is in large part confined to conventional library automation, i.e. changing guide operations with the aid of using computerised methods. Innovative use of statistics and verbal exchange technology in

libraries isn't great and it's far made difficult, if now no longer impossible, with the aid of using numerous demanding situations or constraints, such as loss of finances to preserve the ICT infrastructure, lack of ability with the aid of using librarians/libraries to hold up with the tempo of trends in ICTs, insufficient ICT centres withinside the libraries, loss of body of workers with suitable capabilities to control ICTs each on the strategic and operational levels, absence of institutional rules and techniques to aid and manual the use of ICTs, and absence of ok information and capabilities to control virtual statistics assets and to address troubles referring to copyright highbrow belongings rights in a virtual statistics environment.

(Cummings, J., Merrill, A., and Borrelli, S., 2009)⁽²¹⁾ Purpose - The purpose of this paper is to conduct research to better understand the nature of handheld mobile computing use by academic library patrons; and to know if there is a high demand for using library services on these small screen devices.

Design/methodology/procedures - surveys are created to measure whether people want access Small screen OPAC. In addition, the survey attempts open-ended questions gain a broader understanding of the impact and implications of handheld mobile computing Academic Library Service.

Findings - A total of 58.4% of respondents who were having a handheld web-enabled device indicate that they would search library using a small screen device such as a PDAs or web-enabled mobile phone OPACs.

Originality/Value - Proliferation of portable mobile computing devices such as PDAs Internet-enabled mobile phones should be investigated for their impact on libraries. In this study, Academic library patronage and potential demand for library catalogue usage with handheld mobile computing devices.

(Bhoj, H. S., 2020)⁽²²⁾ The application of mobile phone technology in all aspects of our daily lives cannot be ignored by institutions and facilities including: Libraries. Libraries in developed countries have therefore embraced the mobile phone revolution for its effective and efficient services. But in contrast, mobile-based services are nowhere near the academic libraries of India. You still accepted by academic and research libraries. This paper reports findings on mobile-based library services in various libraries from India. The purpose of this survey was to collect user opinions

regarding the use of mobile phones in library services. An attempt was made to find out whether they will be interested in using such services.

(Chukweuke, C., and Onuoha, j., 2019)⁽²³⁾ This paper focuses on the application of ICT in academic libraries as an emerging trend in the delivery of academic library services. In the 21st century library, we can certainly expect to see the changes in different areas of service delivery. However, this paper believes that the introduction of ICT in these libraries will facilitate this change. Literature suggests that ICT applications in libraries are the most important due to their many advantages. These advantages include: Increase the effectiveness and efficiency of library services, reduce the time it takes to access, locate and retrieve information, save physical library space, etc. Among the many advantages in library service delivery, some academic libraries have not yet fully exploited these ICTs in their services. Some academic libraries using these ICTs face a number of challenges in their use. This white paper seeks to clarify the impact of ICT on service delivery and the challenges facing the application of ICT in academic libraries. In summary, ICT is an important factor for the development of libraries and the progress of library service delivery, and this paper aims to introduce ICT to academic libraries in order to improve the effective and efficient delivery of library services. Full application is recommended.

(Shukla, A., 2018)⁽²⁴⁾ With the advent of new information and communication tools and technologies, information can: Spread in various directions becomes possible multidirectional i.e.: Library to User, User to Library, Library to Library, and from user to user. The primary task of libraries is to disseminate knowledge and information to users whatever they [libraries] have in their collection. By using the latest ICT tools and technologies in the library you can serve your users better and more interactively. Librarians learn these latest ICT tools and technology and use them in our library to provide better and more efficient services to our users.

(Jones, F. P., and ESQ, M. U., 2022)⁽²⁵⁾ In the age of globalization, where the world is networked, information exerts its power. This can be achieved with ICT through permanent preservation and widespread dissemination. ICT continues to be a driving force in matters of national progress and development. Information is power. Because power is a virtually inexhaustible resource and essential to life. A necessary tool for

sustainable development in all sectors of every country. The study we concluded that ICT is a general term referring to the technology used. We collect, store, process and transmit information in various formats. The library is one of the most used institutions for management, dissemination and preservation knowledge. Library collections include both physical and all digital materials or electronic information resources and services provided by the library. But, Libraries play a very important role in facilitating access to global information. Knowledge resource. The library's goal is to provide services that meet the needs of its users. Libraries have been provided by needs and wants, and the incorporation of ICT into library services, a perfect opportunity to do so. One of the recommendations Governments must play and contribute to ICT in the provision of library services timely and effective measures for the sustainable development of the country Useful information helps build society.

(Gross, J., and Leslie, L., 2008)⁽²⁶⁾ Purpose - This paper reports on adoption and evaluation of Learning 2.0 programs. Pilot program at Edith Cowan University Libraries in 2007.

Design/methodology/approach - we are investigating whether Learning 2.0 is suitable for training eight of us early adopters. Library staff for new Web 2.0 technologies. The program was established Employee progress graphed over nine weeks via blog Program implementation stage. At the end of the day, focus groups are held to Members of the pilot group answered questions about program relevance and their learning effectiveness.

Result - Last but not least, the study found that library staff responded positively to the program because it adheres to the principles of adult education. For our purposes, Learning 2.0 is the ideal training package.

Originality and value - this paper is unique in that Edith his Cowan University Library was the first Australian. University libraries adopt Learning 2.0.

(Xie, I., and Stevenson, J., 2013)⁽²⁷⁾ Purpose – The purpose of this paper is to investigate the applications of social media in digital libraries and identify related problems.

Design/methodology/approach – A total of ten institutions were selected from the following cultural institution types – public libraries, academic libraries, museums,

government, and international organisations – to represent a variety of digital libraries developed or sponsored by different types of organisations. The social media applications were examined with regard to the following aspects: types of social media, placement of social media, updating social media, types of interactions, and types of functions.

Findings – This study presents the types of social media applications in the selected digital libraries and further characterises their placements, update frequency, types of interactions between digital librarians and users, as well as various types of roles they played. In the process of analysis the authors also identified problems related to lack of standards, creating two-way communication channels, and the lack of education functions.

Study Limitations/Implications - Further research needed to expand research institution options Digital libraries make a more representative choice, especially for institutions in remote locations North America and Europe. It's also important to do a thorough content analysis of social media Identify patterns and functions that social media performs. In addition, the authors make targeted comparisons. Social media tools such as Twitter and Facebook at all institutions. to fully explore Why certain social media tools are implemented in digital libraries is important Surveys or interviews with digital librarians in digital libraries of various types of cultural institutions. In addition, users may be surveyed to gather opinions regarding their use of social media.

Originality/Value - This study does more than just examine the current state and problems of social media. Provides suggestions for judicious use of social media as well as application to digital libraries Connect users with digital libraries.

(Mukhopadhyay, P., and Das, S. K., 2008)⁽²⁸⁾ Library 2.0 is a loosely defined model of a modernized form of library service. A shift within the library world in the way that services are provided to users. The focus Based on user-centric change and participation in creating content and community. Or Library 2.0 concept is borrowed from Business 2.0 and Web 2.0 and follows some of them. The underlying philosophy is the same. This includes online services such as using OPAC. Increased flow of information from systems and users to the library Since 2.0, library services are constantly being updated and re-evaluated to provide the best possible service to library users. Library 2.0 also seeks to involve library users in its design and

implementation. Library services by encouraging feedback and participation. Proponents of this concept the library 2.0 service model will finally replace the traditional one-way services that have characterized libraries for centuries the changing role of library 2.0 in today's digital environment.

(Chaloeyprach, W., and Ketmuni, M., 2020)⁽²⁹⁾ This study was funded by the Research and Development Institute, Rajamangala University of Technology Thanyaburi. Purpose of this An exploratory study helped 1) determine student acceptance levels for the use of mobile library applications and 2) Examine factors 3) Student satisfaction surveys that influence student acceptance to use mobile library applications; and 4) suggest some guidelines for the future development of mobile library applications.

Faculty of Humanities, Rajamangala University of Technology Thanyaburi (RMUTT). The 400 students of the Faculty of Humanities RMUTT are those using library services were selected by a convenience sampling. A questionnaire (IOC = 0.977, α = 0.970) served as the research instrument. Data were analysed by percentage, mean, standard deviation, t-test, f-test, Pearson's correlation coefficient, and multiple regressions. Or the survey results showed a high level of student acceptance (=3.93) for using mobile library applications. Attitude (=4.01), usefulness (=3.93), ease of use (=3.91), and intention to use (=3.86). Overall student satisfaction the mobile library app usage rate was high (=3.86). According to the hypothesis test, the difference in frequency of use is Goals for learning how to use, advice, and use mobile library applications influence student receptivity to using the library Mobile applications at the level of 0.05 statistically significant differences. Multiple regression analysis predicted usability Mobile library applications, perceived ease of use, perceived usefulness, attitudes, and satisfaction influenced intent to use. To do so In order to improve the performance of the mobile library application, the students suggested that the manual of the mobile library application be written in Thai. Online user support should be available through the application and full text downloads should be available.

(Hovoruka, V. B., Semenova, Larysa. A., and Semenova Liudmyla. A., 2019)⁽³⁰⁾ This article examined current global trends that require significant changes in education and training library infrastructure. Analysis of these trends and the current

state of education development. The library field provided an opportunity to understand the implementation of network technologies that may impact Activities of academic institutions. Methods. Popularity of long-range technology at this stage because it best meets the emerging needs of modern library network users. The Authors identified the factors of popularity and scale of network technologies and studied their impact on different technologies. Aspects of practical activities in university libraries. Result. Practical experience in science and technology DNURN's library, named after his academic V. Lazaryan, shows the use of modern networking Technologies that have changed, improved, or expanded the service reach of the library institution. Conclusion Research enables the acquisition of new knowledge and work skills from the acquisition of library professionals to mobile Information technology. By introducing these technologies into actual work, Contribute to improving the service format for remote users.

(Ayo-Olafare, F. R., 2020)⁽³¹⁾ Advances in technology have brought many changes to libraries and information services and social expectations of librarians/information professionals. Librarians are expected that the system will also change to provide user-oriented services. A trending web technology used worldwide to provide library services to people. Any Librarians who can't keep up with trending topics and don't embrace the latest technology Serving users is left out and redundant in the field of informatics. Therefore, it is very important for librarians/information professionals to make changes to suit their system. Ensure knowledge and skill updates and use of new web technologies providing library services. Based on this fact, this paper attempts to identify global trends, Libraries and Information Science Topics and Emerging Technologies for Readers to Read and Focus on them for particularly effective library services.

(Hamad, F., Al-Fadel, M., and Fakhouri, H., 2022)⁽³²⁾ Digital skills are required to operate and manage e-library infrastructure and services. Therefore, there is an urgent need for assessing the level of digital skills of academic library librarians in Jordan. It is also important to examine the impact of digital skills on technology acceptance among Jordan librarians. A questionnaire was developed and used it to collect the required information from the University Library of Jordan. This result demonstrates the high digital competence of the librarians, and also shows the results of the biggest

challenge librarians face in acquiring the necessary skills is financial. Most importantly the level of Digital skills positively impacting the acceptance and use of technology by academic librarians in Jordan. It is known that there are factors such as Gender, age, experience, speciality, and type of library did not affect results. The results of this research will help you explore the skills and competencies required by information professionals and serves as a guide for competency development and curriculum updates in Librarianship and information science at an International level.

(Hamad, F., Fakhuri, H., and Jabbar, S. A., 2020)⁽³³⁾ The library has a large amount of data that helps to improve the quality of the library services. Modern library data resources have the characteristics of big data where library can use big data methods to achieve reform and innovation, including resource transferring, resource utilization, social identity and thinking innovation. Librarians are aware that big data can lead to better informed decisions and can change the user experience. The work investigates the concept of big data from the perspective of the information technology department employees of three major University Libraries of Jordan. This work seeks to uncover big data, analytics and challenges of academic Libraries in Jordan. A review of research on big data in libraries was conducted, and an overview of applications and research directions in this area is presented. The Current state of big data in Libraries in Jordan is discussed and challenges associated with it are explored.

(Parabhoi, L., Bhattachariya, N., and Dhar, R., 2017)⁽³⁴⁾ This chapter deals specifically with the use of QR codes in libraries. Full form of a QR code is a quick response code. QR code technology is like a barcode technology. The differences between barcode technology and QR code technology is that barcode technology can only process information in horizontal direction, and QR code technology can process information in both horizontally and vertically direction. QR code technology is widely used as a medium to convey messages to the end users. QR codes are primarily used in libraries for promotional purposes of their services. Today QR code technology is widely used in many libraries for quick access to resources.

(Kumbar, B. S., and Mulla, K. R., 2021)⁽³⁵⁾ This article aims to provide the reader with a comprehensive background to better understand current knowledge and to

emphasize the importance of research on web technologies. This paper is based on his literature search to identify literature published from 2005 to 2021 and is about web technologies and tools used to deliver innovative library services. The study is an attempt to track innovative web technology tools; applications in library Services; types of services offered using the Web Tools. Problems faced by professionals in the use web tools by analysing published scholarly literature on the topic. The researchers identified and analysed 60 research papers highly relevant to web technologies and their tools, and its application. The finding of the study show a wide variety of web tools and services provided in innovative way. The article focused on web technologies, web tools, social networks, blogs, instant news, RSS feeds, and their applications in the library. The work highlights the results and research work undertaken Previously, on web technologies and their tools used for library purposes. It's a guide for researchers to choose the right way of research to carry further His/hers research activities.

(Ekoja, I. I., 2011)⁽³⁶⁾ This paper reaffirms the importance of ICT as a tool for efficient and effective libraries providing services related to the collection, processing, storage and distribution of information. Nigerian Librarians are encouraged to acquire ICT skills to function in the modern information environment to maximize the benefits derived from the use of ICT. This requires a library to automate their services that allows us to operate an internet platform with all the advantages it offers. Using Internet libraries can own websites through which links can be provided for their users to numerous open source material considering most of them don't have access to paid databases. Libraries can also operate information communities and derive benefits from their operations and use Web 2.0 tools such as Facebook, RSS feeds, wikis, blogs, podcasts, Flickr, tagging, MySpace etc for web visibility, improved information generation, processing, distribution, access and utilization as well as facilitating two-way communication between them and the user.

(Afolabi, A. F., Abidoye, J. A., 2011)⁽³⁷⁾ This paper examined the integration of information and communication technology (ICT) into library operations for Effective library services. The paper also reviewed the need for effective use of ICT as the best tool for libraries to use to help educational researchers and students in this information explosion era to ensure effective service. The paper among other things

describes various ICT resources that can be used for effective library operations and services. The paper also highlights the benefits and challenges of integrating ICT into library operations. The paper ended with a discussion possible solutions to various challenges to successfully integrate ICT into library operations for effective service

(Bosque, D. C. D., Leif, S. A., and Skarl, S., 2012)⁽³⁸⁾ Purpose: This paper provides an overview of how libraries are using Twitter in academic settings.

Design/methodology/procedure: This study analysed the current status of 296 Twitter accounts drawn from a random sample of academic libraries. Nineteen different criteria were considered, focusing on three categories: layout and design, content and number of tweets, and account followers.

Findings: Only 34% of the libraries in the study had Twitter accounts, and the characteristics varied widely among libraries, it is clear that they are able to communicate well with their users via Twitter.

Study Limitations/Impacts: The main limitation of this study is how often changes twitter.

Practical implications: This paper provides a snapshot of how libraries are currently using Twitter today.

Originality/Value: This paper provides an overview of trends in academic library. Twitter accounts which could be useful to librarians who are considering launching a twitter accounts for their libraries.

(Islam, M. M., and Habiba, U., 2015)⁽³⁹⁾ The focus of this study is to discover the uses, purpose, importance and problems faced by the library and information expert in social media marketing. For this study Public Universities (17), Private Universities (24) and Specialized Libraries (5) in Bangladesh were selected as a research sample. The results of this paper show that most of the libraries use Facebook and LinkedIn to market their library and information services. Most libraries use social media to market library products and services and to share library news and events. Video conferencing, advertising, and research purposes. Distribute the online version of the questionnaire at each library in Bangladesh. Library experts also provided necessary suggestions and opinions about ways of improving library services using social media.

(Arif, M., and Mahmood, K., 2010)⁽⁴⁰⁾ Purpose – The purpose of this study was to explore the patterns and scale of adoption of Web 2.0 Technologies by Pakistani librarians.

Design/methodology/approach - the study was conducted using web-based survey software (SurveyMonkey) and the Pakistan-based LIS email discussion groups. Professional librarians who serve in all types of libraries participated in the survey.

Results – Instant messaging, blogs, social networks, and wikis were the most popular Web 2.0 technologies. Librarians have incorporated such technology into their work and personal lives. Sex, length of professional experience and place of work do not affect frequency of use while Perceived Internet usage skill level and perceived ease of use of Web 2.0 frequency. Lack of computer skills and the low availability of computer and internet facilities were the major Barriers to Web 2.0 Adoption for Librarians. Awareness and training programs equip librarians with Web 2.0 technologies.

Study limitations/implications - Due to use of non-probability/non-representative values, sampling method, the results cannot be generalized.

Practical implications – This study sensitizes LIS professionals to its use of advanced technology in a professional environment. The results of this study contribute to the Successful Adopting Web 2.0 in Libraries

Originality/Value - This is the first study on the prevalence of Web 2.0 technologies in Pakistani librarianship.

(Dessai, K. D.,)⁽⁴¹⁾ Information and communication technology (ICT) plays a very important role in libraries. This article discusses various ICT-based tools and their usefulness in today's modern libraries. The importance of these ICT-based tools is collection, storage, implementation and dissemination of information to the users.

(Lad, A. T.,)⁽⁴²⁾ This article discusses the efficient use of modern technologies and trends in providing better services and managing libraries and information centres in a rational manner. Technologies such as barcodes, RFID and electromagnetic systems are important technologies that ensure library security will be discussed. These modern technologies are gradually being implemented in technical colleges, NITs and IITs in India. This is the inevitable need of the modern information age.

(Ajagekar, R. H.,)⁽⁴³⁾ The article introduces the concept of Virtual Reference Service (VRS) in academic libraries. Information and reference services have always been a key component of library services. They provide personalized assistance to library users to access information resources tailored to their needs. This article attempts to describe the model of information and reference services in a digital library environment. This article highlights emerging virtual reference service (VRS) formats and models, including email and web forms, Ask librarians, online chat references, video conferencing, and reference services. Collaborative digital survey, etc.

(Shinde, M. G.,)⁽⁴⁴⁾ The modern "information services" of any library, no matter how good, provides information only when requested. Most information services work is actually done by most libraries, and while this can be denied, all information services are ultimately based on methods and documents, of the library. Even a department store or resort "Information Desk" isn't fortunate enough to have omniscient staff to explicitly state here that the term "Information Services" is in a particular sense, source The roots of Information Services clearly show how they arise under a particular set of conditions, and although they may exist sporadically in library order types, evolving them with systematically and on a large scale is an exceptional achievement of the scientific and industrial research library. This study tried to apply the concept of library organization development. For this purpose, a library is viewed as an organization, a complex social unit deliberately designed to achieve a specific goal or set of goals. Libraries are the lifeblood of human knowledge and they are the primary sources of information. Libraries play a very important role in shaping educational careers at different levels: primary, lower secondary, upper secondary and higher education levels; As such, libraries play an important role in the advancement of human life. The libraries of the 21st century are designed not only as a storehouse of knowledge, but also as an indispensable source of progress for the next ages in all areas of life.

(Bharti, K. L., and Verma, Shilpi., 2021)⁽⁴⁵⁾ The main objective of the study was to review the literature regarding the use of emerging technologies by academic libraries. The main objective of the research is to examine the underlying literature regarding emerging technologies used in academic libraries and to explore the changing role of academic librarians in well-equipped libraries. This modern

technology. The study also focuses on the attitudes of librarians towards this modern environment. The findings of the study revolve around four themes, namely: “emerging technology in academic libraries”, “librarians’ attitudes towards emerging technologies”, “technological compatibility among librarians” and “barriers to implementation of emerging technologies”. However, while much research has been done in academic libraries on emerging technologies, this research is primarily aimed at enhancing the library's understanding of these expanding technologies and information science profession.

(Saxena, A., and Yadav, R. D., 2013)⁽⁴⁶⁾ Digital technology has provided faster access to information, and it has also challenged libraries to rethink and reshape their services by embracing technological changes. Today, mobile phones are an integral part of everyday life and are changing the way we connect and interact with the world. In this changing landscape, mobile technology will be a powerful assistant for libraries to strengthen their relationships and provide enhanced user-oriented services to existing users. Libraries are most likely to reach remote users who are deemed unconnectable due to lack of support. The article discusses the need, advantages, difficulties, obstacles and solutions to facilitate the deployment of mobile technology in libraries. It also explores the type of infrastructure the library requires to provide these services in the library.

2.2 References:

- Priolkar, S. A., and Thorat, S. V. (2022). *IMPLEMENTATION OF ONLINE RESOURCES AND SERVICES DURING COVID19 PANDEMIC: A STUDY OF INSTITUTE OF NURSING EDUCATION, BAMBOLIM GOA. International Journal of Advance and Applied Research.*
- Kale, D. P., and Jadhav, Y. G. (2022). *LIBRARY SYSTEM AND SERVICES IN ENGINEERING COLLEGES WITH SPECIAL REFERENCE TO GOA STATE. International Journal of Advance and Applied Research, 10(1), 681-691*
- Dhande, S. (2017). *Web based Library Services in University Libraries in Marathawada Region of Maharashtra. International Journal of Library and Information Studies, 7(4), 136-142*
- Balaji and Kumar. (2011). *Use of web technology in providing information services by south Indian technology universities as displayed on library website. Library Hi Tech.*
- Waghmare, D. (2022). *EVOLVING DEVELOPMENTS IN WILLINGDON COLLEGE LIBRARY, SANGLI IN DIGITAL ENVIRONMENT. International Journal of Advance and Applied Research, 10(1), 196-200*
- Kumar, A. (2014). *Students opinion about the success of mobile technology in libraries: A case study of Jawaharlal Nehru University (JNU), New Delhi. New Library World, 471-481*
- Faisal, S. L. (2009). *Blogs and Online Social Networks as User Centric Service Tools in Academic Libraries: An Indian Library Experience. ACADEMIA.*
- Rao, K., Rao., and Bhat, K. (2018). *Perception of Semi-Professionals in using ICT in Manipal Academy of Higher Education Libraries. DESIDOC Journal of Library & Information Technology, 38(5), 369-374*
- Mandalia, H., and Parmar, D. (2017). *Use and Impact of the Modern ICT in Central Library of C.U. Shah Medical College and Hospita, Gujrat, India. The International Journal of Indian Psychology, 4(3).*
- Das, K. (2019). *Implementation of RFID System in Modern Libraries: A Study on University. Retrieved from RFID System Assam: <https://ir.inflibnet.ac.in/bitstream/1944/2345/1/16.pdf>*
- George, N. T. (2020). *Assessment of Cloud Computing Technologies for Library Service Delivery in Ignatius Ajuru University of Education, Port Harcourt, Nigeria. International Journal of Applied Technologies in Library and Information Management,*
- Davidova, I., Marina, O., Slianyk, A., and Syrov, Y. (n.d.). *Social Networks in Developing the Internet Strategy for Libraries in Ukrain. Retrieved from CEUR WS: <https://ceur-ws.org/Vol-2392/paper10.pdf>*
- Punchihewa, C. N. D. (2018). *How do Sri Lankan University Libraries Employ Web 2.0*

Tools in Providing Web Based Library Services? : A Comparative Study. Journal of the University Librarians Association of Sri Lanka, 21(1), 18-35.

Lwoga, E. T. (2011). *Making learning and web 2.0 technologies work for higher Learning Institute in Africa. emraldinsight.*

Muneja, P. S., and Abungu, A. K. (2013). *Application of Web 2.0 tools in Delivering Library Services: A Case of Selected Libraries in Tanzania.*

Toraskar, S. S. (2022). *NAAC RECOGNIZED BEST PRACTICES IN ACADEMIC . International Journal of Advance and Applied Research, 10(1), 571-578*

Krishnan, V. (2021). *Role of Web Technology in Modern Library Services: An outlook. IJIRT .*

Canuel, R., and Crichton, C. (n.d.). *Canadian academic libraries and the mobile web.* Retrieved from researchgate.net:

https://tspace.library.utoronto.ca/bitstream/1807/33920/1/Mobile_Web.pdf

Adhinu, I. A., Nancy, A. E., Chibuke, U. E. (2018). *Application of Information Communication Technologies (ICT) for effective user education programme in federal university libraries in south east Nigeria. International Journal of Library and Information Science.*

Chisenga, J. (2006). *INFORMATION AND COMMUNICATION TECHNOLOGIES: OPPORTUNITIES AND CHALLENGES FOR NATIONAL AND UNIVERSITY LIBRARIES IN EASTERN CENTRAL AND SOTHERN AFRICA.* Retrieved from CORE:

<https://core.ac.uk/reader/290476270>

Cummings, J., Merrill, A., and Borrelli, S. (2009). *EMERGENT TRENDS IN LIBRARY SERVICES DELIVERY: THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN ACADEMIC LIBRARIES. Library Philosophy and Practice (e-journal).*

Bhoj, H. S. (2020). *Mobile based library services. IP Indian Journal of Library Science and Information Technology, 61-64.*

Chukweuke, C., and Onuoha, j. (2019). *EMERGENT TRENDS IN LIBRARY SERVICES DELIVERY: THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN ACADEMIC LIBRARIES.* Retrieved from researchgate.net.

Shukla, A. (2018). *Delivering Library Services through Modern ICT Tools & Techniques.*

Jones, F. P., and ESQ, M. U. (2022). *THE ROLE OF ICT IN THE PROVISION OF LIBRARY SERVICES: A PANACEA FOR SUSTAINABLE DEVELOPMENT. INTERCONTINENTAL ACADEMIC JOURNAL OF LIBRARY AND INFORMATION SCIENCE.*

Gross, J., and Leslie, L. (2008). *Twenty-three steps to learning Web 2.0 technologies in an academic library.*

Xie, I., and Stevenson, J. (2013). *Social media application in digital libraries.*

Mukhopadhyay, P., and Das, S. K. (2008). *Towards Library 2.0: Designing and*

Implementing the Modern Library Service. Retrieved from ResearchGate:
<https://www.researchgate.net>

Chaloeyprach, W., and Ketmuni, M. (2020). *The Acceptance of Using Library Mobile Application of the Students at Faculty of Liberal Arts, Rajmangala University*. *Psychology and Education Journal*, 58(1), 1471-1475.

Hovoruka, V. B., Semenova, Larysa. A., and Semenova Liudmyla. A. (2019). *NETWORKING INFORMATION TECHNOLOGIES AS A METHOD INNOVATIVE CHANGES IN ACADEMIC LIBRARIES*

Ayo-Olafare, F. R. (2020). *GLOBAL TRENDS AND EMERGING TECHNOLOGIES IN LIBRARIES AND INFORMATION SCIENCE*. *Library Philosophy and Practice (e-journal)*, 1-12.

Hamad, F., Al-Fadel, M., and Fakhouri, H. (2022). *The effect of librarians' digital skills on technology acceptance in academic libraries in Jordan*. *Journal of Librarianship and Information Science*.

Hamad, F., Fakhuri, H., and Jabbar, S. A. (2020). *Big Data Opportunities and Challenges for Analytics Strategies in Jordanian Academic Libraries*. *New Review of Academic Librarianship*.

Parabhoi, L., Bhattachariya, N., and Dhar, R. (2017). *Use of QR Code in Library*

Kumbar, B. S., and Mulla, K. R. (2021). *TRACE THE INNOVATIVE WEB TOOLS USED IN LIBRARY SERVICES AND SERVICES PROVIDED USING THEM: A LITERATURE REVIEW*. *International Journal of Humanities and Social Sciences*.

Ekoja, I. I. (2011). *Modern ICT Tools: Online Electronic Resources Sharing Using Web 2.0 and Its Implications For Library and Inform,ation Practice in Nigeria*. *Samaruournal of Information Studies*.

Afolabi, A. F., Abidoye, J. A. (2011). *Integration of Information and Communication Technology in Library Operations Towards Effective Library Services*. *Journal of Educational and Social Research* .

Bosque, D. C. D., Leif, S. A., and Skarl, S. (2012). *Libraries A aries Atwitter: T twitter: Trends in Academic Libr ends in Academic Library Tweeting*. *Reference Services Review*.

Islam, M. M., and Habiba, U. (2015). *Use of Social Media in Marketing of Library and Information Services in Bangladesh*. *DESIDOC Journal of Library & Information Technology*.

Arif, M., and Mahmood, K. (2010). *The changing role of librarians in the digital world: Adoption of Web 2.0 technologies by Pakistani Librarians*. *The Electronic Library*.

Dessai, K. D.,. (n.d.). *ICT Based Tools and its Benefits in Libraries*.

Lad, A. T.,. (n.d.). *Modern Trends and Technologies for Managing Library and Information Centres: Barcode RFID and Electromagnetic Systems*.

Ajagekar, R. H.,. (n.d.). *Virtual Reference Service in Academic Libraries*.

Shinde, M. G.,. (n.d.). *Role of Information Services rendered by College Library Education in Modern Era*.

Bharti, K. L., and Verma, Shilpi.,. (2021). *Use of Emerging Technologies in the University Libraries: A Study of Review of Literature*. *Library Philosophy and Practice (e-journal)*.

Saxena, A., and Yadav, R. D. (2013). *IMPACT OF MOBILE TECHNOLOGIES ON LIBRARIES: A DESCRIPTIVE STUDY*. *International Journal of Digital Library Services*.

Chapter III – Library Technology and its Concepts

3.1 Introduction

The central role of the library is to promote and facilitate the efficient use of the information in all form by its entire user's. The most important goal is to provide the library clientele access to information regardless of format, regardless of location the information is saved. The secondary goal is to make this access available from anywhere. The network is an essential partner in this exercise as it facilitates access to vast information service. Modern networking technologies have the potential to improve library services in many ways. Continuous improvement in networking technology helps libraries to reduce the cost of providing information, creating new opportunities for the library play their role in providing information to their end users.

The information network has changed the traditional library system into an electronic system. The information network must educate its Users who were familiar with the library as a physical place to consult books, talk to reference librarians and browse is now considered through information network technology. Clientele's receive library services without going to fixed places. For many years, library services have assumed the responsibility on searching and providing information on specific request. The modern network technology must ensure that information can be quickly found or and delivered from a large universe. The workstations in the library are now well equipped for dial-up and Internet access, etc. (Network based Information Services)

3.2 What are Modern Libraries?

The term Library 2.0, first coined was Michael Casey in 2006 on his blog Library Crunch, refers to a number of modern technological changes that are having increasing impact upon libraries, its staff and their users, and how they could interact with themselves about modern library services. The application of concepts and technologies of Web 2.0 applied to the library services and collections is named as "Library 2.0". It is a concept that defines new genera of library services geared towards the needs and expectations of today's library users. (Arora, J., 2009)

3.3 Characteristics of Modern Library

Modern libraries have a social function by publishing knowledge publicly available. It plays two central roles first, it acts as a local hub of information and knowledge and secondly a local gateway to the national and global knowledge. They also serve as a gateway to the world of Children's knowledge by providing a wide range of books to ignite them through efforts to develop reading habits in children early age

- It Selects, procures, organizes and delivers the broadest possible spectrum up-to-date, high-quality information resources for heterogeneous user populations as and when it is needed.
- The Modern Library is a member of a regional or national network in order to cater the Users Information needs, as at times information resources available with it may not meet the exact need of the user.
- The Modern library maintains an accessible website and relies on technology to maintain and improve its services.
- It makes coordinated efforts to provide services as and when the users need them, besides providing location-based services.
- It provides reference services and User education programme to its users on regular basis. And it also conducts information literacy programs for its users.
- Communicates and connect with users on a regular basis by telling them about its resources to attract them and ensure maximum utilization means of the resources.
- Provides free Internet access, high-speed broadband, Wi-Fi facilities which are required by students and researchers to write theses, research activities, job search, etc.

- It provides space for students and users to hold exhibitions and community meetings. It provides a “quiet area” and space for group discussion.
- The Modern library is accessible and friendly to users with physical disabilities. It has an assistive Technology Centre to provide access for visually impaired users to use computer and the Internet resources. It also provides resources in alternative formats to help users who are unable to print.
- Continuously evaluates its collections and services by gathering feedback from its user population, develop and improve them based on feedback received from the user. (Modern Library Services)

3.4 Need for Modern Library Services

Historically, libraries have been "local" service organizations that serve the information needs of their users. Users go to the library and refer to various sources of information as needed. Over the past three decades, the emergence of modern Internet technologies, telecommunications, and other related areas such as computing, management information systems, and information recovery systems have had a dramatic impact on library operations and the environment. Libraries are constantly changing and evolving as they exist. We have no power to choose, change, or grow, but we must survive and maintain our preeminent position as a centre of knowledge and learning. Many reasons explain this social phenomenon. Technology has brought about revolutionary changes in every field.

Users' information search behaviour changes. Library must be modified and adapted to meet the information needs of its users. Libraries need to make information available to users when, how, and in what format. The new generation, commonly referred to as Millennials or Internet users, are accustomed to working in an online environment.

User expectations and needs are multiplying. They are no longer satisfied with location-based library services as they want information services beyond the physical library walls.

Libraries are encouraged to migrate based on their patrons' expectations and needs. Libraries can implement new technologies that provide innovative information services to maintain their customer base and attract new customers. Libraries are endangered if they do not adapt to new offerings of modern services in accordance with the needs and expectations of their users.

In summary, we can say that modern library services are mandatory because of the following reasons:

- Change the user's information search behaviour;
 - Increasing user needs and expectations;
 - Availability of technology which enables availability and accessibility.
- (Modern Library Services)

3.5 Advantages of Modern Network Technologies in Libraries

User Friendly Aid: Familiarity with their own devices and technologies that help user's access information quickly and without orientation or any training. Mobile technology users using the facilities on mobile phones such as Short messaging service (SMS), instant messaging (IM), web browsing, email for easy communication. Most of these features come pre-installed on mobile devices or optionally on a data plan.

Ability to Access Information: The information can be accessed from anywhere at any time will be of great help to users who cannot visit the library physically and also the Library by using the modern technology provide on-going links of essential information resources to their users according to their needs and study interests.

Time Saving: Users are not needed to record information about resources while browsing and searching library resources on different digital sources using Internet technology or waits at library transaction counter to renew/reserve books and hence the time of the user is saved.

Location Awareness: Modern Network Technologies allows libraries to provide location-based services/content positioning system (GPS) capacity. Libraries can direct users to the location of documents or services through maps and navigation tools.

Access to Print-Disabled Users: Modern Network Technologies helps to provide oral services to visually impaired and physically disabled users.

3.6 Disadvantages of Modern Network Technologies in Libraries

The Computer viruses, lack of standardization of scanned information, rapid degradation characteristics of scanned materials, different display standards of digital products and related problems, health-hazardous nature of screen radiation, etc. sometimes makes the digital library disabled.

Copyright: Digitization violates copyright law because an author's ideological content can be freely transferred by others without their consent. Therefore, one difficulty to overcome for Modern libraries is how to disseminate information using Modern Network Technologies.

Access speed: As more and more computers are connected to the Internet, its access speed decreases reasonably. If new technology does not develop to solve the problem, in the near future the Internet will be flooded with error messages.

High initial cost: Infrastructure costs and facilities of Modern Network Technologies used in Library services i.e. hardware and software costs; different technological equipment's cost, Communication circuit rental is generally very high.

Not Reliable: The Users are not ready to switch from proprietary print to the electronic data. Users such as scholars, researchers do not trust the articles in

electronic form for their scholarly review and research yet and are not perceived as valid contributions in the publish cycle.

Lack of Trained Staff: Since most library staff which is trained in traditional library services are not trained properly to use internet or technology in modern library services so they lack the skills needed in modern library. Therefore the services provided by then do not meet the trends and needs of the user's.

(Saxena, A., and Yadav, R. D., 2013) (Advantages and Disadvantages of the Digital Library)

3.7 Modern Library Services

Electronic Resources:

Earlier libraries purchased, processed, organized, and distributed various publications resources like books, magazines, newspapers, magazines, etc., now they can actively buy their electronic forms such as e-journals, e-books, electronic theses and theses and online databases. Libraries subscribe electronic resources and provide access these resources through the Internet.

Electronic resources are also known as online resources. These include “Digital born” material which has been produced directly online and in print resource has been scanned and digitized.

The term "database" is used to refer to a collection of records each of which may have numeric, text, or image data. The database is usually located in a searchable format. This means there is a search facility or search engine that helps users to find, locate, and get the information they need. Library catalogues, OPACs, full text, and bibliographic databases are all sample databases.

As these resources are accessible over the Internet, they are also known as online resources. Before the advent of the Internet, these online databases were available in print source or on CD-ROM. The Databases example is given below:

- The Journals published by Elsevier are available online through the database commonly known as Science Direct.

- The books, series, magazines published by Springer are accessible online through a database called Springer Link.
- The Bibliographic databases provide references to published information such as J-Gate, Scopus, etc. These databases provide abstracts of articles. The users can read summaries and make informed judgments about the relevance of the article to their research needs.

Resource Sharing:

Resource sharing means the sharing of resources (of each other) by two or more library. It is also an attempt by libraries to share information resources and services which may be limited or specialized and may not be available to a single library. No library can be self-sufficient for many reasons such as richness of information, variety of documents, lack of space, lack of staff. They form corporations and networks to share online resources such as databases, online journals and books, theses and dissertations. The libraries form an association or network or cooperative organization to shop and share resources and services. These associations or networks are commonly known like consortia.

Some examples of Consortia are:

INDEST (Indian National Digital Library in Engineering Sciences and Technology)
<http://paniit.iitd.ac.in/indest/>

India's National Digital Library of Engineering Sciences and Technology was established by the Ministry of Human resources and Development in 2003. It has the following goals:

- To Subscribe E resources for members of the consortium at highly discounted rates.
- To extend the benefits of corporation-based subscriptions beyond the core members of other engineering and technology organizations.
- To find more ways to cooperate and interact among members libraries and other corporations.

UGC-INFONET Digital Library Consortium

<http://www.inflibnet.ac.in/econ/>

UGC-INFONET Digital Library Consortium was established in 2003 by former President of India, after providing internet connection to universities under program UGC-INFONET, to provide access and promote the use electronic journal among researchers and scholars in the country. The goals of the consortium are:

- To provide access to scholarly electronic journals, full-text and bibliographic electronic databases to a large number of universities and colleges;
- To promote quick and efficient access to academic content for users;
- Create and promote the use of ICT in teaching and learning activities of the country;
- Extend the advantages of the corporation to its associate members;
- Provide training for users, librarians, researchers and teachers members of universities and colleges.

Many libraries have joined the e-journal association to gain access to Databases as well as to access to full-text journals for their users. Libraries can now deliver links to full-text journals and articles within journals. With these facility the user can get access to full-text journals on their personal computers, browse the article and, if found useful, can print it on their desktop.

Remote Access:

Libraries provide their users with a "single sign-on" feature for remote access resources. In it, a single UN/PW is provided to members, who can access all Library resources without going to the library. For example, libraries that use EZproxy for authentication and access software provided by OCLC. It gives users remote access to Library licensed content.

Union Catalogues and Web OPAC:

The union catalogue is a combined library catalogue that describes the collection of several libraries. Web-based OPACs and Union Catalogues are useful to the library because they help locate and request materials from other libraries for document delivery and interlibrary supply.

Digital Reference Service:

A digital reference service is an electronic reference service where users interact with computer or other Internet technology to communicate with reference personnel, without being physically present. Communication channels used in digital References are chat, video conferencing, e-mail, voice over IP, or instant messaging. It is also known as Virtual Reference Service, Online Reference and Remote Access referral service.

E-Mail:

This is the electronic mail facility that allows you to send messages from one person's computer to another over a network or the Internet. Library provides e-mail referral services. The e-mail addresses of the referral staff/librarian is provided on the Libraries website, the readers can write and ask for help for their information needs or any other aspect related to the library. It's very convenient for users because they can ask for help without going to the library. In online environment, readers are free to submit their questions, unlike the face or to deal with contexts where users may be hesitate to ask questions and ask for help.

FAQ:

This represents frequently asked questions. This is a file or list of frequently asked questions with answers in the form of question and answer format. The FAQ Offers help to the users by providing information on various aspects, activities and issues of the library. Librarians prepare a list of frequently asked questions which they frequently received from the library, and provide the answer, and store it on the library's website. Readers can access FAQs to get answers to their related questions from their library matters.

Web 2.0 Tools:

Web 2.0 tools are web-based utilities that allow users to access, contributions, descriptions, and webcast content in various formats, such as text, video, audio, images and graphics. Some popular web 2.0 based websites is Flickr which can be used to share photos, YouTube to share videos, Last.fm for sharing audio and MySpace for sharing text information. These websites allow users to create, describe,

publish research, collaborate, share and convey online content in many forms. Libraries use Web 2.0 tools to transfer control of information to the user. Libraries may use blogs as a promotional tool to inform patrons of changes, additions, and other developments in library and collection services, share library photos, events and podcasts and vodcasts. Libraries are also actively adopting the use of these tools to serve their users and attract potential users. These tools help libraries proactively provide their resources and services to their users.

IM (Instant Messaging) and SMS (Short Text Messaging):

Instant messaging allows online communication between two or more people using short text messages over the web in real time. Reference staff be able to answer reference, guidance, or policy-related questions via instant messaging and SMS. Reference staff should be very brief and points when replying to instant messages (IMs) and short text messages request (SMS). If the answer to a query is long, the employee can ask the user provide an e-mail address and give him more information on the subject in context or encourage readers to visit the library. Users find instant messaging and messaging useful for convenience, anonymity, and quick support. University library using instant messaging provide a virtual referral service, improve access to other services and provide up-to-date information to users. It also acts as an additional support to facilitate interaction with users.

RSS Feeds:

RSS stands for Real Simple Syndication or Rich Site Summary. The technology, on one hand allows a website (or electronic publisher) to list the latest published updates using a technology called XML; on the other hand, it allows web users to follow new updates on selected websites. Like a personal search wizard, an RSS feed reader that accesses predefined web pages, searches for updates and retrieves it automatically on the user's screen. It gives users a way to syndicate and repost content on the Web. Users republish content from other websites or blogs on their site or blog, aggregating content on other websites in single place and ostensibly distilling the website for their personal use. Libraries have created RSS feeds that users can subscribe to, including updates on breaking news, collection elements, new services, and new content in the subscription database. They also republish the content on their website.

Podcasting:

The word "pod casting" is derived from two words, namely "broadcasting" and "iPod" (Apple Computer's popular MP3 player). Pod casting is defined as a "process to capture audio digital media files that can be distributed over the Internet using RSS feeds to playback on portable music players as well as on computers. Users can subscribe to this feeds and automatically download this files directly into their PC's audio management program. A podcast is distinguished from other digital media formats by its ability to be informative, auto-subscribe and download when new content is added, using aggregators or feed reader capable of reading feed formats like RSS or Atom. Some libraries use podcasts to support library-oriented programs. Leverage podcasting and other consumers Technology as a means to deliver library content and services is a big step forward for librarianship.

Vodcasting:

"VOD" in Vodcasting means "video on demand". It is identical to podcasting. While podcasting is used to play audio files, vodcasting is used to broadcast video content. Like podcast content, vodcast content can be played on a laptop or on personal multimedia assistant (PMA) device.

Social Bookmarking

Social Bookmarking Services Social bookmarking is a method of storing, organizing, searching and managing bookmarks of web sites using descriptive metadata. In a social bookmarking system, users can save links to web pages that they want to remember and /or share with other users. These bookmarks can be made public, or saved privately or shared only with specified people or groups of people. The authorized people can usually view these bookmarks chronologically, by category or tags, or via a search engine. Most social bookmark services encourage users to organize their bookmarks with informal tags instead of traditional browser-based system of folders, although some services feature categories / folders or a combination of folders and tags. These services also enable viewing of bookmarks associated with a chosen tag, and include information about the number of users who

have bookmarked them. Some social bookmarking 5 9 services also draw inferences from the relationship of tags to create clusters of tags or bookmarks.

3.8 Modern Library Services Used In Academic Studies

There are many types of modern academic library services, these include: Web-based library services, social media services, makerspaces, innovative library services, research/project support services, embedded library services, personalized library services.

3.9 Web Based Library Services

Web-based library services are services provided online or through a website. Examples of web-based library services include virtual library tours, Ask-A-Library, real-time services, web-based user training, web forms, message boards, and more.

- a) **Virtual Library Tours:** The library's websites provide a guide to providing a virtual library tour. Library websites provide virtual guides to library facilities, including library collection, types of services provided, library staff, library OPACs, and the facility as a whole, all available infrastructures that the library has.
- b) **Ask-a-Librarian:** Ask-a-Librarian is an Internet-based question-and-answer service that connects patrons with librarians with specialized knowledge and skills in conducting accurate research. In this service, users are invited to submit their questions via email or web form and answers are provided through the same platform.
- c) **Real Time Services:** Real-time services are interactive services in which patrons can speak directly to the reference librarian, independent of location and time. Instant feedback is provided using chat or video conferencing technologies, where librarians have the opportunity to ask users questions to clarify their queries before giving immediate answer.

- d) **Web Based User Education:** Web-based user education provides users with a high degree of interactivity and flexibility. Libraries use web-based user education, for example, to navigate the library, teach basic library skills, use library OPACs, search web-based library databases and electronic resources, and teach information literacy.
- e) **Library Webpage:** The library webpage can be set up as gateways to look up library information. It provides integrated access to the metadata of a library's multiple databases, e-journals, and library catalogues, and provides detailed information about the library and also provides access to all IT services such as library collection, library timings, library working hours, list of subscribed journals online, CAS/SDI/Reference service, popular materials based on circulation operations, reservations, user comments, etc. are provided by a library. With the help of the library website, the library can easily disseminate its services and facilities to the university community around the world.
- f) **Webcasting:** Webcasting is a method of broadcasting live audio and video in real time to a worldwide audience via the Internet. This is a "broadcast" over the Internet. Streaming technology is used here to deliver the same content to multiple viewers/listeners simultaneously. It is not necessary to download content before viewing it. A webcast can broadcast live or on demand. In the field of LIS, the Library of Congress (LoC) provides webcasts of audio and video resources such as lectures on history, performing arts, culture, science and technology, through its website for webcasts.
- g) **Webforms:** Webforms are forms left on library websites that allow users to make suggestions and comments on library services. Some examples are online registration form, interlibrary loan request form; Ask a librarian form, etc.
- h) **Bulletin Board:** This is an electronic communication forum that stores announcements and posts related to a topic, topic or common interest.

(Mbagwu, F., and Iroeze, P. C., 2021) (Gavit, B. K., 2019) (Thankachan, S., 2015 - 2016)

3.10 Social Media Services

21st-century academic libraries must adapt social media to current user needs and market library resources and services. Social media services not only market library services and products, but also make libraries and librarians visible among library users, their institutions and beyond. With social media, users interact with librarians in a digital environment. Social media services may be provided in university libraries using social networking sites such as; LinkedIn, Facebook, Whatsapp, Blog, Twitter, YouTube and others.

- a) **LinkedIn**: LinkedIn is used to build professional relationships and market library services among librarians from other libraries around the world. Librarians use LinkedIn to connect with other professionals around the world. It can be used to solicit their ideas and professional expertise.
- b) **Blogs**: Libraries use blogs to keep their users updated with developments in the field of library management. Blog is mainly used as a newsletter.
- c) **Twitter**: This social networking site allows libraries to post short text messages (called tweets). Twitter is an advertising tool for marketing library products and services. It is used to market reference materials and library services. Twitter is used to announce library opening and closing times, new arrivals, library staff, library events, and more for users.
- d) **YouTube**: YouTube is one of the social networking sites that allow users to upload and share videos, watch them, comment on them and like them. YouTube is used in the library to share videos about many events held at the library. Videos of conferences and seminars held at the library are shared via YouTube. YouTube is a channel that advertises services, resources, and places that can be especially helpful for newcomers - students and teachers.

- e) **Flickr**: Flickr is used to share photos online. It is also an efficient online photo sharing and management service. Lots of high quality images from the library are uploaded using this platform.
- f) **WhatsApp**: It is one of the social networking sites used in modern times to market library products and services. WhatsApp is an instant messaging platform that allows users to make calls, send and receive messages, documents, links, photos and even videos. The Owerri Federal University of Technology Library has introduced its use in its integrated library services.
- g) **Short Messaging Services (SMS)**: Short messaging services (SMS) is used to send notifications when items are ready to be picked up. They can also send alerts notification reminder of due-date.

3.11 Makerspaces

Makerspace is also part of the modern services that university libraries can offer. Makerspace is a space created by university administration within the library to allow researchers to come together to create, innovate, collaborate, and share ideas. Makerspace is a mechanism that encourages students to experiment and learn outside of the classroom and outside the usual structure of assignments. Libraries can not only provide space for this service, but also provide the information and digital literacy needed to find and evaluate information sources that can aid learning with Makerspace technology. The university library offers this service if it can provide the space and manage the associated costs. Okpala (2016) cites Zenith Library Technology, Tools and Operations that can make creative spaces possible in academic libraries such as: space in the library; 3D printer; 3D Scanner; Digitized technology; software-autocard, auto desk, etc. ; Furniture, tables, chairs, whiteboards, dusters, etc. ; Consumables (super glue, electrical tape, sandpaper, model paint and acetone); Electricity; Internet access to social media for the opportunity to collaborate and publicly display Child Brain Welding Equipment/Products; cutter, e.g. Knife, Big Screen Camera, Sewing Machine, Needle, Scissors, Audio Equipment, Microphone, Speaker, etc.

3.12 Innovative Services

The impact of technology on the delivery of information services has transformed the traditional services of academic libraries into modern services. This change affects both Libraries and Librarians. Academic libraries must shift from a focus on physical resource management and related services to converting resources and services into digital formats to support teaching, learning, and research. Libraries, for their part, must be innovative and creative if they are to remain relevant within the institution, the profession, and society at large. They have to think outside the box. Libraries and librarians should participate in the following innovation services, which are also part of modern university library services.

- a) **Electronic Services and e-Resources:** The provision of e-services and e-resources by the library is one way that distance learners with limited time can access the library externally via Internet access. Instead of printed media, access is now available in electronic formats such as CD-ROMs, OPACs, e-journals, e-books, e-references, and ETDs.
- b) **24 hours Library Services:** Thanks to new technology, libraries can now offer 24/7 services to their users. The library now offers users 24 hours access to their subscribed databases anywhere and anytime.
- c) **Instant Messaging:** The library uses SMS and email to send notifications to patrons about overdue, fines, and new arrivals of library materials (books and periodicals) to their users.
- d) **Chat Services:** Chat services refer to any kind of communication that takes place over the Internet and are also used to provide library services.
- e) **Provision of spaces in the library:** Gone are the days when academic libraries were only used for self-study and considered a silent zone. Modern libraries now offer rooms to their users. Some libraries now have play corners, relaxation areas with TVs, and discussion rooms where users can interact and

complete group tasks. Some libraries also offer interactive boards with online tutorials, and some also offer Makerspace.

- f) **Liaison Program**: Some university libraries have introduced liaison program with the faculties to conduct orientation/user education program at each department. Though this means librarians and libraries are building closer relationships with faculty and students.
- g) **Research Commons**: Research commons is a space reserved by several university libraries for faculty and graduate students to collaborate on research reports. Internet facilities are provided to enable them to generate good search results. It's a place for seminars and presentation opportunities, and a place to find out what other researchers are up to.
- h) **Digital Library**: Some libraries may decide to digitize their services. A digital library is a library in which collections are stored in digital format and accessible to users through computers. Digital content can be stored locally or accessed remotely over a computer network.
- i) **Radio Frequency Identifier**: Modern libraries, especially in developed countries, use radio frequency identifiers to upload and download their information sources in electronic form. Users use RFID to check in and out of library materials.
- j) **Open Access Catalogue (OPAC)**: Some libraries now use OPAC instead of a manual index as a search engine for printed and e-books from various publishers and authors with links to the full text.

3.13 Research Project Support Services (RPS)

Research project support service is one of the modern services provided to users carrying out research/project related activities of organizations. The following services are provided: instructions on how to use anti-plagiarism software to check the

originality of your research. How to use grammar software to check grammar, the best way to search for electronic resources, what citation styles to use, and how to use reference management software to allow researchers to cite author appropriately. These and other services are provided by librarians to patrons of the library performing research.

3.14 Embedded Library Services

Integrated library services are library services provided by librarians outside the library boundaries. Librarians, instead of waiting in the library to be consulted by users, bring services into their comfort zone. This service can be provided to the user online or to the user's physical location, e.g. classroom or conference room, dormitory, office, room/faculty, etc.

3.15 Personalized Services

Library services that are provided to meet the unique information needs of an individual or a group of users are known as personalized services. In this service, the profile of the user must be known, i.e. the field of study, research interests, contact details of the user, e.g. e-mail address among others. This information will help the librarian to assist the researcher in providing relevant materials, packaging them, and making them available for use.

Access: (Mbagwu, F., and Iroeze, P. C., 2021)

3.16 Role of Librarians in the Internet Age

There is a general feeling or apprehension among experts that the role of librarians would be insignificant in the internet age. This apprehension is completely unfounded, in fact, their role will not diminish in the Internet age, as long as they learn and develop themselves. Librarians need to know and use new tools and technologies to deliver user-centric services. They are expected to provide services beyond the four walls of the library, wherever and whenever users need it. This can be easily done if librarians are willing learn and implement new tools and technologies in their daily work.

There is a flood of information means there is too much a lot of information and users are overwhelmed with it. At this stage, librarians must play an important role. They are required to notify users that everything available on the Internet may or may not be reliable. They have to teach users how to navigate the Internet and evaluate the quality of information they find. Librarians should use their skills to become guardian of essential knowledge, to guide the users through an online world. They are also expected to play an active role in creating, promoting and implementing new models for disseminating of academic information such as institutional repositories, ETDs, etc.

In the age of the Internet, librarians are network instructors in addition to being knowledge keeper. They are required to:

- Acting as value-added information experts,
- Adopt and integrate digital services with traditional services
- Have good negotiation skills. They have to negotiate with vendors in order to complete licensing of e-journals and online databases for remote access; make consortia agreements for economical subscription prices.
- Have the skills in persuading the government to finance digital projects.
- Know the latest technological developments and be well informed know how to harness the potential of technology tools to deliver efficient service for users.
- Ensure access to on-site and external electronic resources. They should know the various print and online resources and have the skills to develop and maintain a sound collection, keeping in view the objectives of the parental goals organization.
- Develop a close working relationship with users to provide and personalized services.
- Use Web 2.0 tools such as blogs, podcasts, and vodcasts to provide services and connect with users.
- Arrange, procure, organize, and maintain content in alternative formats for visually impaired users. They should also make sure that library as a physical place is accessible to users with reduced mobility.
- Have good communication skills to work with others in a friendly manner.

- Have good managerial and communication skills. They should be able to analyse, make sound decisions, and know when to seek advice.
- They have to promote their services to users. They should know how to communicate with users and make them happy with their services.

Thus, it can be seen that librarians have a challenging to play in the Internet age. Their roles are not fixed but continuously evolve over time and progress of the technological development. Librarians will have an important role in the future, regardless of technological progress. As Technological development can never replace "people" interface” provided by the librarian.

Access: (Modern Library Services)

3.17 Challenges Faced by Academic Libraries in Offering Modern-day technological services

Shifting from Print resources to E-resources Libraries is caught in the middle between print resources and electronic resources. Navigating the transition from print to digital remains a major challenge for academic librarians. IT management Modern network technology is a complex and difficult task. Defining the Modern Technologies is a major management challenge. It is very difficult in a world where hardware and software are changing at an extraordinary rate.

Inadequate funding: Inadequate funding for acquisition organizations to provide or implement modern services is a major challenge for academic libraries. For example, it takes money to provide a library with both electricity and the Internet, which is often not readily available and inadequate. Funds are needed not only to purchase facilities, but also to maintain them.

Technical Infrastructure: To use modern networking technology in academic libraries for academic research, infrastructure such as software, hardware, internet equipment, and other physical devices are required to provide easier, faster and more comprehensive access to information. The lack of stable technical network

infrastructure in terms of servers, physical cabling and wireless access points is a challenge faced by academic libraries.

Lack of professional skills: Due to a lack of technical and management skills, professionals in an academic library are unable to manage electronic resources. Therefore, the shortage of qualified professional staff who can understand the implementation of modern technology and who can set up or manage digital libraries are the challenges identified.

Managing of New Generation Learners: Academic libraries which have not yet implemented modern library services will find it very difficult to meet the information needs of a new generation of learners. A new generation of learners are learners who are accustomed to online media and always want it delivered that way. Libraries that do not have the staff to manage this group of users risk losing the library users.

Privacy/ Confidentiality: Maintaining privacy and security is another issue in accessing information online. To control software piracy, copying or downloading all content from any electronic source at once, the right to obtain information and the right to deny or prohibit access is essential and therefore a delicate challenge between privacy and the right to information. Securing one network from another to maintain the confidentiality of information is another matter of securing databases on the Internet and Intranet.

Lack of clarity in perspective: The biggest challenge for librarians in the knowledge society seems to be the lack of clear vision and general direction. There should be a common vision and an integrated common plan that should be shared among university librarians, which will provide unity of purpose. Academic librarians should become capacity builders and facilitators of the knowledge society.

Unawareness of the Potential benefits of ICT: Some Academic libraries remain in the dark. Especially those from less developed countries. Some of them are still not aware of the benefits of using IT to provide library services in the modern world. (Mbagwu, F., and Iroeze, P. C., 2021) (Smith, M. Q., 2005): (Shivakumar, G.T., 2017)

3.18 Conclusion

It can be understood from the chapter that the requirement to offer contemporary services in academic libraries lies in the libraries and librarians being aware of different types of Modern library services using Modern network technologies, acquiring the right facilities and having the personnel with right skills to offer the services to all the users. Libraries and Librarians should also be aware of the aggressiveness of society and be prepared to handle any challenges that may nullify the offering of contemporary library services. This Chapter tells us that:

- The Library professionals should always be aware about the latest developments in the field.
- Librarians should make themselves more relevant in this digital age.
- Academic libraries should accept and implement the modern library services.
- Massive training of the library personnel should be done
- The Academic Libraries and librarians should adapt all the emerging trends and requirements to meet their user's needs.
- They should ensure that the required facilities to provide the services are put in place and skilled professionals should be given a chance to handle the services.
- Library schools should be upgraded to include courses with ICT contents and more awareness among the students should be created about the Modern network technologies in libraries. (Mbagwu, F., and Iroeze, P. C., 2021)

3.19 References:

Advantages and Disadvantages of the Digital Library. (n.d.). Retrieved from lisdunetwork.com: : <https://www.lisedunetwork.com/advantages-anddisadvantages-of-the-digital-library/>

Arora, J. (2009). *Innovative Technologies for Building Libraries of Tomorrow.* Retrieved from INFLIBNET CENTRE: <https://ir.inflibnet.ac.in/handle/1944/1460>

Ayo-Olafare, F. R. (2020). Global Trends and Emerging Technologies in Libraries and Information Science. *Library Philosophy and Practice.*

Gavit, B. K. (2019). Web Based Library Services. *Library Philosophy and Practice (e-journal).*

Mbagwu, F., and Iroeze, P. C. (2021). *Academic Libraries - Modern Day Services and Challenges.* Retrieved from research gate: https://www.researchgate.net/publication/352957667_Academic_Libraries_Modern-Day_Services_and_Challenges

Modern Library Services. (n.d.). Retrieved from National Institute of open schooling: <https://nios.ac.in/media/documents/SrSecLibrary/LCh014.pdf>

Network based Information Services. (n.d.). Retrieved from egyankosh: <https://egyankosh.sc.in/handle/123456789/25581>

Saxena, A., and Yadav, R. D. (2013). Impact of Mobile Technologies on Libraries. *International Journal of Digital Library Services.*

Shivakumar, G.T. (2017). IMPACT OF DIGITAL ERA ON ACDEMIC LIBRARIES: IT'S PLAY WITH LIBRARY PROFESSIONALS. *International Journal of Library and Information Science.*

Smith, M. Q. (2005). THE IMPACT OF INFORMATION AND COMMUNICATIONS TECHNOLOGY CHANGE ON THE MANAGEMENT AND OPERATIONS OF ACADEMIC LIBRARIES.

Thankachan, S. (2015 - 2016). Modern Library and Information Servies.

Chapter IV: Library Technology at International and National Level

4.1 Introduction

Library Technology in libraries is now at National and International level. Library Technology in the libraries is executed and used in different libraries in different ways. This chapter gives a gist of implementation of Modern Network library Technology in libraries at International and National level to see how different libraries provide different types of services to their patrons through Modern Technologies in the possible ways.

4.1.1 Library Technology at International Level

4.1.2 Library of Congress, U.S.

The Library of Congress was established on April 24, 1800, when President of the United States John Adams approved the \$5,000 budget allocated by Congress as the capital of the United States moved from Philadelphia, Pennsylvania, to Washington, D.C. The Library of Congress is the largest library in the world with millions of books, recordings, photographs, journals, maps and manuscripts in its collections. Libraries preserve and provide access to a rich, varied, and enduring source of knowledge that informs, encourages, and engages you in your creative and intellectual endeavours.

The National Library Service (NLS) is a braille library and free audiobook service for people with temporary or permanent vision loss, blindness, or other physical, cognitive, or otherwise impaired reading makes it impossible for them to use conventional printed materials. Although a national network of cooperative libraries, NLS circulates books and magazines in braille or audio format that can be downloaded instantly to their mobile devices.

Access: <https://www.loc.gov/>

Modern Network Technologies – Mobile Apps of LOC and its Services

The Congressional record App:

The daily version of the Congressional report can be read on your iPad, iPhone and iPod touch. The Congressional Records application is brought to you by the Library of Congress using data provided by the Office of the Secretary of State

Aesop for Children:

The Aesop for children interactive book is designed to suit readers of all ages. The book contains more than 140 classic fables, accompanied by beautiful illustrations and interactive animation.

LOC Collections:

Through mobile technology we can explore the library of congress digital collections. The LOC is the largest library in the world. Use of LOC collections to access iconic photos, historic maps, films, newspapers, manuscripts and sound recordings. To celebrate the 220th anniversary of its founding's, the LOC had announced the release of the LOC collection app, the premiere mobile app that puts the National library's digital collections in the hands of users everywhere. In addition to providing an easy, accessible way to search and explore the library's growing digital collections, LOC collections allow users to curate personal galleries of items in the libraries collections for their own reference and for sharing with others. Items currently featured in an app include audio recordings, books, videos, manuscripts, maps, newspapers, noted music, periodicals, photos, prints, and drawings. "The Library of Congress collection can now fit in your pocket", said librarian of Congress Carla Hayden. Users can currently find the app for iPhone and iPad at the library's website or the iTunes store. An android version of the app is stated for released later in 2020.

Access: <https://www.loc.gov/>

Duplication Services:

The Duplication service of the LOC provides digital, microfilm and paper copies, as well as custom reproductions for a fee from the Library's collections.

The Duplication Services provides access to the collections of the Library of congress through the provision of multiple reproduction formats and copy options for a fee. When you place an order with them, they have searcher Services to ensure you get exactly what you need.

4.1.3 National Library of China

The National Library of China (NLC) serves as the national publishing archive, the national bibliographic centre, the national antique book preservation and preservation centre, and the national antique book museum. Key responsibilities of NLC include: collect and preserve publications at home and abroad; national coordination on archiving and preservation of documents; provide information and referral services to the central government, national authorities, civil society organizations and the public; research on theory of library science and development of library administration, and introduce to other libraries in China; fulfils its function in international cultural exchange through participation in the activities of the International Federation of Library Associations and Organizations (IFLA) and other relevant international organisations, as well as such as promoting exchange and cooperation with other libraries in China and abroad.

Access: <http://www.nlc.cn/newen/>

Modern Network Technologies Used in Providing Library Services

NLC Mobile Digital Library:

NLC provides a mobile digital library service that launches certain topics such as NLC news and events, Culture Express, recommended books, and information search based on its own resources and reviews. Updated frequently.

This service requires the reader's mobile phone to have GPRS available. After registering from "Zhangshangguotu" website on NLC website or WAP site, download mobile digital library client software and install it on mobile digital library phone. This service allows readers to customize or cancel a specific service or scan for updates. Users can also proactively update based on suggestions. NLC does not

charge any fees for services, but mobile service providers may charge GPRS charges, which will incur costs.

China Digital Library for Visually Impairment:

CDLVI complies with WCAG2.0 and XHTML1.0 for barrier-free web design and technical rules; It also applies to screen readers especially for the visually impaired. 10 columns of CDLVI include:

News, E-Books, Music Reviews, Webinars, Latest Announcements, Reader's Guide, New Books, CDLVI Introductions, Links, Site navigation. CDLVI holds the service strategy of “Three Core NLC Strategies (i.e. Librarians, Science and Technology, and Services)” to create information sharing opportunities for the visually impaired.

Digital Television Service:

NLC's digital television service is implemented by the Library in cooperation with Beijing Gehua CATV Co., Ltd.'s network. The service allows Beijing's 3 million digital TV households to receive NLC's digital TV-friendly resources and services through its cable television network.

NLC will provide services on "NLC Conference", "NLC Exhibition", "Reading through TV", "NLC Collection Treasure". A selection of audience-oriented content and more personalized services are also available through an interactive portal.

Information commons(IC):

IC is a one-stop information environment created by NLC to meet users' comprehensive needs for space, resources and services. It is a completely new type of library service that is user-centred, resource-based, technology-driven, service-oriented and innovation-oriented, while integrating resource sharing and non-disclosure physical space. Its features include digital resources, user communities, human services, networking platforms, and knowledge-based spaces.

IC includes an online learning area, an online research area, a special service area, an experience area for a national cultural information resource sharing project, an e-commerce area, a network communication area and a media centre.

Access: <http://www.nlc.cn/newen/>

4.1.4 National Library of U.K

The UK National Library provides access to the most comprehensive research collection in the world. They provide information services to the academic, business, research and scientific communities.

Their collection of over 170 million items includes artefacts from all eras of written civilization. The library maintains a national archive of print and digital publications, adding approximately three million new entries to our collection each year. They have a lot of books, but we have a lot more. Our London and Yorkshire locations feature everything from newspapers to sound recordings, patents, prints and drawings, maps and manuscripts. Our inspiring exhibits interpret these collections and tell their stories to the public.

Access: <https://www.bl.uk/>

Modern Network Technologies Used in Providing Library Services

High quality printing:

Recreate your digital photos, illustrations and paintings to high specifications on premium paper or canvas.

Process

Once they receive your digital files, they use their large format fine art printers to create high-quality physical prints and send them back to you, flat or in protective tubes within 10 days. Worldwide shipping is available.

Choose from a variety of paper weights and textures, including fine and glossy exhibition paper, satin photo paper and soft grain cotton, in sizes A5 to A0 or custom sizes up to 112 wide cm.

Benefits

- Whether for personal or professional use, it's a convenient way to reproduce high-quality images in a variety of formats, papers and sizes.
- Using our state-of-the-art printers, you can expect top quality archival copies of the original artefacts.

Multispectral assessment:

Discover what lies beneath the layers visible to the naked eye

Process

An exploratory approach to assess whether there are hidden layers from previous work below the currently visible layers in a flat 2D element.

Using specialized photographic equipment and techniques in our London studio, our experts will determine if further detailed multispectral work is required.

The output is a TIFF or JPEG file, or a printout on photographic paper.

Benefits

Identify articles suitable for further scientific imaging work such as reflectance transform imaging (RTI).

Access: <https://www.bl.uk/digitisation-services>

4.1.5 National Library of Singapore

The National Library of Singapore was established in 1995. The Library has largest public reference collection covering social sciences, a comprehensive collection of local works and historic collections from the Raffles Library and Museum.

And the libraries and archives promote reading, learning, information literacy, and a greater appreciation of Singapore's history and heritage. The digital resources consist of eBooks, audiobooks and a plethora of online resources in NLB's collection.

Access: <https://www.nlb.gov.sg/main/about-us>

Modern Network technologies Used in Providing Library Services**NLB Mobile App:**

The NLB Mobile app is your personal library, anytime, anywhere. Read your favourite eBooks and e-magazines on the go with the NLB Mobile app.

Features:

With NLB Mobile, you can enjoy these services on the go or even at home:

Borrow and read/listen

- Borrow e-books and audiobooks and read/listen to them online
- Read magazines and online newspapers
- Borrow from the library using the app instead of at the borrowing stations

Transact

- Pay unpaid fees and/or penalties with PayPal or credit card.
- Check and/or renew your loans.
- Stock up on library items.
- View the titles you've borrowed from the library in the last three years.
- Update your contact details such as email address and mobile number.
- Switch between family member accounts for quick access to library transactions.
- Quickly connect to NLB websites by scanning QR codes

E-card

- Use electronic cards to borrow items from library borrowing stations, pick up pre-ordered items, make payments, etc.

Find, share and recommend titles

- Search library catalog
- Add your favourite titles to your favourites
- Easily share titles on Facebook, Twitter and WhatsApp
- Suggest titles for NLB and see all your suggestions

Find libraries and events

- Search and register for events held in our library
- Locate nearby libraries based on your current location
- Easily get the library address, directions and opening hours

Access: <https://www.nlb.gov.sg/main/services/faqs/NLB-Mobiles>

Document Delivery Service:

We can provide and distribute copies of materials from the physical collections (books, magazines, newspapers, microfilm) in our library.

Document delivery is a fee-based service and delivery of documents is subject to copyright restrictions under Singapore law.

Eligibility

- Institutional or corporate member of the National Library Council
- Government Ministries and Legal Department in Singapore
- Foreign Libraries and those residing outside of Singapore

Shipping method

- Email for scanned/digital copies
- Mail registered to send duplicate prints
- Self-collect at 8th Floor, Information Counter, Lee Kong Chian Reference Library.
- For those collecting documents on behalf of others, the collector must present the following documents as a form of verification: Email exchange between the requester and the National Library staff handling the request.

Payment methods

- PayPal
- Pay now
- Credit Card - (Visa/MasterCard)

Access:<https://www.nlb.gov.sg/main/services/Reference-and-Research-Services/Document-Delivery-Service>

4.1.6 National Library of Australia

Libraries were established under the National Libraries Act (1960), which defined the role, corporate governance and financial management framework of libraries. As a statutory mandate within the Communications and Arts portfolio, the Library is subject to the Public Governance, Performance and Accountability Act 2013, which provides a framework for reporting and accountability.

Many national library regulations regulate access to and conduct of library property, and access to and use of library materials. Library management is the responsibility of the Library Council. The Librarian is Dr. Marie-Louise Ayres who was appointed on March 2, 2017. The National Library of Australia is committed to providing

Australians with a high level of customer service. With your support and feedback, we strive to continually improve our service to the Australian community by responding to the changing needs of our users. By providing access to national library collections and services. By preserving historic buildings for future generations.

Access: <https://www.nla.gov.au/>

Modern Network Technologies Used in providing Library Services:

Computer and Internet Access:

You can access the Internet through our computer in the library's reading room. Our computer runs on Windows 10 and has Microsoft Word 2013, Publisher 2013, Excel 2013 and PowerPoint 2013 installed; as well as Internet Explorer and Chrome to access the Internet.

Our free Wi-Fi network is available throughout the library and can be used on wireless-capable devices, such as laptops, mobile phones and tablets . No username or password is required, but there are terms and conditions that you must read and accept in order to log in. We also provide printing, photocopying and scanning facilities in all reading rooms.

Access: <https://www.nla.gov.au/visit-us/facilities-for-visitors/computers-internet>

Visual and Hearing Aids:

In the main reading room you can use:

- Optelec Clearview C video magnifier to magnify the image on the computer screen
- JAWS screen reader software (available on PC)
- Mouse trackball
- Screen Magnification

If you are deaf or have hearing or speech difficulties, contact us through the National TTY Relay Service: 133,677, speaking and listening: 1300 555 727, or via Internet Relay.

The theatre downstairs is equipped with induction loops for better sound quality for visitors with hearing aids. The hearing is currently available in the boardroom and the Ferguson room.

Assistance for Visitors with low-vision and blindness

BindiMaps: The National Library has launched a new indoor navigation system optimized to help visually impaired or blind guests navigate safely and independently to different areas of the building.

BindiMaps is a mobile app that acts as a personal navigation system with audio guides guiding users to their indoor destination. 200 Bluetooth beacons have been installed in the public areas of the National Library and by using the BindiMaps app, visitors will be directed to the desired location.

The app uses watch face orientation, and a helpful trick is to calibrate your mobile compass before you arrive.

Access: <https://www.nla.gov.au/visit-us/facilities-for-visitors/accessibility>

4.2 Library Technology at National Level

At National level, following are the examples of Library Technology of different libraries.

4.2.1 National Library of India, Kolkata, West Bengal

The National Library, the largest of the libraries in India, is one of only four designated libraries entitled to receive under the Delivery of Books and Magazines (Public Libraries) Act 1954, a copy copies of every publication published anywhere in the country. Library is a permanent repository of all reading and printed materials produced in India or written by any foreigner published anywhere and in any language.

The origins of the National Library go back to the old Calcutta Public Library, founded in the first half of the 19th century. The Calcutta Public Library was founded largely on the initiative of Mr. J. H. Stoqueler, English publishing house. The library was opened to the public on March 21, 1936 on the ground floor of the residence of Dr. F.P. Strong, Civil Surgeon.

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Modern Network Technologies Used in Providing Library Services

Modernisation Activities:

In order to aid with the library's modernization initiatives, the Computer division was founded in 1988. It all began with an HP 3000 minicomputer. For tasks related to bibliographic control, MINISIS, an RDBMS, was implemented.

The library transitioned to a client-server setup in 2001, using a SUN E450 as the server. 98 HP Pentium III PCs are currently being used as nodes in the development of a campus-wide network.

Digitisation

The scanning and archiving of rare and brittle books and other documents are under way. English books and documents published before 1900 and Indian publications of pre-1920 are considered for digitisation. So far 9140 selected books in Indian and English languages have already been scanned—a total of over 3, 20,000 pages.

Some of the notable titles that have been archived on CD are:

- East India Company documents, e.g. Report on East India Company labour involved in cotton production (1788)
- A selection of recordings from Bengali (1826)
- Prabasi, a newspaper in Bengali
- Land Colonization Report

The first book stored on CD is titled:

- The Fam'd Romance Rendered in English by Charles Cottrell (1667)
- The Voyages of Jean Struys in Muscovy (1720)
- Calcutta Monthly Magazine (1797)
- Arunodoi (an Assamese monthly) (1846, 1853 and 1856-8)
- Pothi Bhai Valam, in Punjabi (1891)

Access: https://www.nationallibrary.gov.in/home/modernisation_programme

4.2.2 Anna Centenary Library Chennai

Anna Centenary Library (ACL), a modern library was inaugurated on 15th September 2010 on the 102nd birth anniversary of former Tamil Nadu Chief Minister,

Dr. C. N. Annadurai, commonly known as “ANNA”. Due to his great interest in books and libraries, the library was named the "Anna Centenary Library". Foundation stone laid on August 16, 2008, completed shortly and declared open to the public from September 20, 2010.

The construction area of this centralized air-conditioned library is 3,75 thousand square feet, including the ground floor and 8 floors. Currently, it hosts five thousand books covering a wide variety of topics to meet the information needs of the public, academic community, and business. Our library has a Braille section, a private reading section, a children's section, a newspaper and periodical section, a Tamil book section, an English book section and a digital library. In addition, the library has a conference room that can accommodate 150 members.

Access:<http://www.annacentenarylibrary.org/2011/01/anna-centenary-library-acl-is-newly.html>

Modern Network Technologies Used in Providing Library Services

State Level Seminar on Competencies of LIS Professionals for Managing Smart Libraries:

Competencies refer to the minimum level of performance that employees expect to perform their job roles or assigned tasks efficiently and effectively. This workshop is an attempt to identify, discuss and share experiences about the increasing nature of technological changes and the career challenges they face in the modern world and achieve to enhance range of professional skills required to successfully adapt and manage the evolution of technology. This workshop is an attempt to have discussions and raise awareness of the changing aspects of ethics and professional ethics and its challenges and prospects.

Access:<http://www.annacentenarylibrary.org/2017/11/state-level-seminar-on-competencies-of.html>

Braille Section:

This section contains 1500 braille books, 145 e-books, and 1080 audiobooks.

Braille reader:

This section is equipped with an updateable braille display reader. Entire book in Tamil or any other Indian language and English can be stored and indexed in braille reader. The visually impaired can select a book in any language, stored in a braille reader, and read it line by line and page by page. Navigation commands in braille format can be used and navigated easily. Each Reader can store an average of 1000 Books of 300-pages.

Braille Conversion:

This section contains software tools that convert text written in Tamil, English or any other Indian language into braille text for visually impaired readers.

Braille Embossing:

This section has a double-sided embossing machine for embossing braille text. Embossing machines have many convenient features that make printing braille information and resources faster and easier at an economical cost.

Software Tools:

The visually impaired have access to computers equipped with assistive software tools that help:

- Using the computer with voice commands
- Convert text files to speech
- Daisy formatted books reading
- Easy to search and look up
- Read audiobooks and reference texts

Access: <http://www.annacentenarylibrary.org/2011/02/sections.html>

4.2.3 Krishnadas Shama Goa State Central Library

Krishnadas Shama, The Central Library of the State of Goa, India, is the oldest public library in India. It was created on 15 September 1832 by Viceroy Dom Manuel de Portugal e Castro as "Publica Livraria". It began as "Academia Militar de Goa" (Military Training Academy). In 1836 the name was changed to 'Bibliotheca Publica' and enriched with bibliography transferred from monasteries run by religious orders that had been suppressed in 1834. However, in the same year, the library was moved to the facility where the city proceedings were held. Collections of mathematics and

military science were left to the university and books on administrative and legislative matters were transferred to the Secretariat library.

On February 15, 1897, the Library's status was elevated to National Library and renamed "Bibliotheca Nacional de Nova Goa". In March 1925, it was merged into the Instituto Vasco da Gama (Instituto Vasco da Gama) and redesigned as "Biblioteca Nacional Vasco da Gama". According to Decree-Law No. 38684 of 18 March 1952, the privilege of "Deposito Legal" (delivery law) was applied to this library and accordingly, the library received all publications from Portugal and the Maritime Provinces.

From September 1959, Bibliotheca was separated from the Institute and placed under the administrative control of "Services de Instrucao e Saude" (Education and Health Services); it was later renamed to Biblioteca Nacional de Goa. The pre-liberation collection consists mainly of books and magazines in Portuguese, French, Latin, and English, and very few books in vernacular such as Konkani and Marathi. The total pre-release collection was about 40,000 volumes.

Access: <http://centrallibrary.goa.gov.in/about-us#block-mainnavigation>

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Book Issue and Return corner:

The library has a regular registration system as well as an automatic check-in system using RFID technology.

Touch Screen Monitors:

To facilitate the catalogue browsing, it is provided at the entrance via a touch screen monitors.

Book Drop Box:

The library taking into account the requirement of the reader at the late hours has set up a Book Drop Box to facilitate the return of books using RFID technology.

Access: <http://centrallibrary.goa.gov.in/first-floor-return-section>

Kids Internet Browsing Centre:

To help the kids to find online information available on the internet, 12 computers are available in this section with low heighted chairs and cubicles.

Audio Visual Hall:

A well-equipped audio hall is set up to enhance extracurricular activities for younger readers with the latest amenities such as DVD players, home theatre doubly sound systems and 103-inch Television set.

Access: <http://centrallibrary.goa.gov.in/children-section>

Research Scholar Cubicles:

Keeping the requirement in mind, scholars, researchers and writers of the library have developed well-equipped research cubicles with computer and internet and other facilities on a rental basis.

Access: <http://centrallibrary.goa.gov.in/circulation-section>

Data Imaging Centre:

This centre will scan and digitize all the old documents for the purpose of preserving and reaching the readers for research as and when needed.

Book Conservation Laboratory:

A high-tech preservation laboratory using the latest chemical technology is established to process/conservate the books for National prosperity.

Access: <http://centrallibrary.goa.gov.in/rare-books-and-goals>

4.2.4 Central library IIT Mumbai

IIT Bombay Central Library is like IIT Bombay – user-focused, innovative and driven for excellence. The library has always benefited from the institute's culture, which is a pioneer in the application of new technologies and is far different from many libraries in the country. The Knowledge Management Centre Library, both in print and digital, ensures seamless discovery and access to these academic resources, and provides faculty, students, and staff professional support staff to find, evaluate, manage and use these resources. It provides a high-quality atmosphere for both thoughtful and

collaborative work and study. Its collection of approximately 4.4 lakh items is used by more than 11,000 members and others. The library makes extensive use of social media to enhance communication and interaction and has created a blog to post current and interesting information and news.

IIT Bombay has developed an excellent collection of books, journals and non-literary documents in the fields of science, engineering, technology, humanities, social sciences and management. Building collections – a core activity for the Library that has undergone a transition from a print-only environment in which all of their acquisitions are in paper format, to print and online formats, and online-only format. The library currently subscribes to more than 90% of journals in an online-only format. The library's collection includes books, e-books, CD-ROMs, journals, theses, reports, standards, brochures and other reading materials as of March 2021.

Access: <https://www.library.iitb.ac.in/about-us/our-library/>

Modern Network Technologies Used in Providing Library Services

Facility for visually impaired students:

IIT Bombay has created a new facility for visually impaired students at IIT Bombay's Central Library. This facility was inaugurated on January 4, 2017 by Professor Devang Khakhar, Director of IIT Bombay. The facility was established with the aim of empowering and encouraging visually impaired students to pursue study or research.

IIT Bombay has purchased modern supporting equipment such as:

- JAWS – screen reader (Version: 17.0.2729)
- BRAILLE EMBOSSE/printer
- OPEN BOOK scanning and reading software (Version: 9.0.1757)
- Eye-PAL ROL – portable scanner and reader
- PERKINS STANDARD BRAILLER
- Online book access - Sugamya Pustakalaya (677374 titles) (for blind/non printing people only - To use this feature, please register with email id IITB).

“It is a positive step towards social inclusion. I urge library regulators to keep an eye on new technologies and the best software releases. We may explore the possibility of having individual facilities for each blind student in the future. We want more and

more talented students to join the Institute and we assure them all the help we can get them to thrive,” said Professor Devang Khakhar, Director of IIT Bombay.

Reference Service:

The reference service is an important service provided by the library. It helps users make full use of the resources available in the library. It provides advice on the use of library resources and services, helping to access e-journals, e-books, databases, multimedia resources, and more. And organize library orientation programs for new users.

It also maintains a collection of reference works including encyclopaedias, dictionaries, bibliographies, manuals, technical data, yearbooks, atlas, bibliographies, CD-ROMs, audiotapes audio and video, etc. References are marked "R" and rare references are marked "RR". Collections marked "RR" are kept under lock and key.

The reference section also contains videos and DVDs. The viewing room is open to the Institute's students, staff, and faculty from 9:30 a.m. to 5:30 p.m. every working day.

Grammarly

Urkund – Plagiarism check software

Turnitin – Plagiarism detection tool

Access: <https://www.library.iitb.ac.in/services/>

4.2.5 Vikram Sarabhai Library, IIM Ahmedabad

The Vikram Sarabhai Library (VSL) is named after Dr Vikram Sarabhai, a world-renowned physicist and founding director of IIMA. It was established in 1962 and is one of the best managed libraries in Asia. The library is open 24X7. The mission of the library is to facilitate convenient, user-friendly access to current, global and relevant information by identifying, collecting, organizing and retrieving information in other formats (print and non-print) to meet the information needs of the college fraternity of IIMA to meet their teaching, research, and consulting, training and learning needs.

Access: <https://library.iima.ac.in/>

Modern Network Technologies Used in Proving Library Services

Online Chat:

The online chat service (Tawk.to) best serves library users by providing instant and fast reference service. This service helps users get basic level information about library services and resources in chat mode.

Library Android App:

Vikram Sarabhai Library App provides links to various library services and resources. The new "Knowledge@IIMA" feature provides links to faculty directories, IIMA research articles (sourced from Scopus), doctoral theses, and more.

Users can install the app via Google Play Store OR scan the QR code to access the app directly.

Kindle E- Book Reader:

Vikram Sarabhai Library offers "Kindle E-Reader Lending Service" to encourage and support paperless reading. Currently, there are 20 e-readers, Kindle Paper White and Kindle Voyage, as well as an unlimited bundle of Kindle e-books*.

Eligibility:

Members of the IIMA community, including faculty, students, staff, RAs, and AAs, can borrow Kindle e-readers.

Location:

The lending service of Kindle e-readers is available at VSL's lending counter.

Loan rules:

Loan period: 15 days

Renewal: Once

Restriction: 1 Kindle per person to borrow

Unlimited Kindle eBook subscriptions:

*Kindle Unlimited offers 1 million titles. Users can store up to ten books at a time.

Virtual Reality (VR) App (Sahel):

Visiting the Virtual Library includes a virtual five-story tour with an audio guide; it explains all the library services and facilities available on the respective floor.

How to experience VR application (Sahel):

Step 1:

Download (link) and install the VR. App

Step 2:

Sign in with your library's OPAC ID

Step 3:

Use any VR headset (Link)

Step 4:

Explore the catalogue and explore the Vikram Sarabhai Library.

Thematic Book Display:

The library regularly organizes book exhibitions on various topics. The library displays books on specific topics, specific events, a specific date, the work of specific people, a list recommended by a celebrity, and more. Here the user can see a list of these displayed books.

Access: <https://library.iima.ac.in/>

4.3 INFLIBNET

INFLIBNET stands for "Information Network and Libraries". Library networks are an important means of sharing resources. A library network is a network of two or more linked libraries. These libraries exchange information electronically with each other and are interconnected. The Library and Information Networking Centre (INFLIBNET) is a University Diversity Centre (IUC) independent from the University Grants Commission (UGC). INFLIBNET uses state-of-the-art technology to modernize university libraries and is connected to information centres across the country via a nationwide high-speed data network that makes the most of India's information.

INFLIBNET is a key link that facilitates scholarly communication between Indian researchers and scholars. This is a major national program launched in 1991 by the University Grants Commission headquartered at the Gujarat University campus in Ahmedabad.

Started as an IUCAAT project and it became an independent interuniversity centre in 1996.

The Objectives and function of INFLIBNET are as follows:

- Establish and promote means of communication to facilitate better transmission and reception of information that can support scholarship, teaching, research and education with the cooperation and participation of the relevant authorities.
- Establish a computer communication network for libraries of universities, colleges, UGC information centres, important national institutions and R&D institutions and information centres, etc. can be connected and avoid duplication.
- To step up computerization activities and services in libraries and information centres throughout the country according to the same standards.
- Develop uniform standards and guidelines on technology, methods, processes, hardware and software, and services in all libraries to exchange, exchange and share information for use. Make optimal use of resources and facilities and keep them up to date.
- Improve the efficiency of information management and services at libraries and information centres throughout the country. Developing a national connection network. Provide reliable access to library archives for online publication of collections of research essays/dissertations, books, monographs and non-literary manuscripts), audio-visual, computer data, multimedia, etc.
- Provide bibliographic information with origin, summary, etc. aggregated through databases created nationally by the NISSAT Regional Information Centre, the University Grants Commission Information Centre, the City Network, and other facilities for reliable access and for national and international respectively.
- Set up online portals to access national and international databases on the network and information centres.

- Methods of developing techniques for recording valuable information in the various Indian languages digitally.
- Information on the use of resources Union Catalogue, through Inter Best Library Loan, catalogues such as production, and collection development to avoid duplication of possible acquisitions.
- Essays available in entire country research to provide information about serials, research sources to enable the availability of content anywhere /, how many books, managerial even at a distance and nonbook users and it is available for internet and documents. By availing the facility of Union List.
- Creating databases for projects, institutions, etc. to provide online information services.
- To promote cooperation among libraries, documentation and information centres in the country so that resources can be used by strong resource centres to help the weaker resource centres, and
- Training and development of human resources in the field of computerized library operations and networks to establish, manage, and sustain INFLIBNET.

4.4 INDEST

The "India National Association of Digital Library Technology and Engineering (INDEST)" was established in 2003 by the Ministry of Human Resource Development (MHRD) on the recommendation of a group of experts appointed by the ministry. ITI Delhi has been designated as the headquarters of the corporation to coordinate its activities. The association was renamed the INDEST-AICTE Association in December 2005, with AICTE playing a central role in the registration of its approved technical schools and organizations as members of the Association. Association for selected electronic resources with much lower subscription rates. The association registers engineering and technology organizations among its members and subscribes to electronic resources to them at discounted subscription prices and favourable terms. The ministry provides funding for electronic resource registration to 62 centrally funded government organizations including IIT, IISc Bangalore, NIT, ISM, IIIT, IIM, NITTTR and a few others that are considered members. Core of the

Association. The benefits of a consortium-based electronic resource subscription are not limited to its core members but are extended to all educational institutions as part of its open proposal. 60 government-funded technical schools have access to selected electronic resources with financial support from AICTE and 102 universities/institutions joined the Consortium in the self-funded category in 2012. The total membership of the Consortium has now increased to 1235.

The INDEST-AICTE Consortium is the most ambitious initiative undertaken in the country to the date. It is the largest group by number of member organizations in Asia. The association solicits the best prices possible and negotiates terms from publishers based on the strength of current and potential member organizations. The association subscribes to more than 12,000 e-journals from a number of publishers and aggregators. Association websites stores a searchable database of journals and member institutions that locate journals subscribed to by the Consortium, their URLs and detailed information about member institutions.

Principal Consortia Functions

- Cataloguing services
- Collections sharing
- Electronic content licensing
- Electronic content loading/presentation
- Interlibrary loan/document delivery
- Preservation
- Training
- Union lists/shared online catalogues

Other functions:

- i) Subscription of electronic resources available to members of the Consortium with significantly reduced registration rates and on the best terms;
- ii) Extend the benefits of consortium-based subscriptions beyond core membership to other technology and engineering organizations;
- iii) Provide training to users and librarians of member organizations on registered e-resources with the aim of optimizing the use of registered e-resources;
- iv) Find more methods of cooperation and interaction between member libraries and other corporations in the country;

v) Improve the scientific productivity of member organizations in terms of publication quality and quantity

4.5 References:

International Libraries

Library of Congress: <https://www.loc.gov/>

Modern Network Technologies used in providing library services:
<https://www.loc.gov/>

National Library of China: <http://www.nlc.cn/newen/>

Modern Network Technologies used in providing services: <http://www.nlc.cn/newen/>

National Library of U.K: <https://www.bl.uk/>

Modern Network Technologies used in providing services:
<https://www.bl.uk/digitisation-services>

National Library of Singapore: <https://www.nlb.gov.sg/main/about-us>

Modern Network Technologies used in providing services:
<https://www.nlb.gov.sg/main/services/faqs/NLB-Mobiles>
<https://www.nlb.gov.sg/main/services/Reference-and-Research-Services/Document-Delivery-Service>

National Library of Australia: <https://www.nla.gov.au/>

Modern Network Technologies used in providing library services:
<https://www.nla.gov.au/visit-us/facilities-for-visitors/computers-internet>
<https://www.nla.gov.au/visit-us/facilities-for-visitors/accessibility>

National Library

National Library of India, Kolkata, West Bengal:

Modern Network Technologies used in providing library services:
https://www.nationallibrary.gov.in/home/modernisation_programme

Anna Centenary Library Chennai:

<http://www.annacentenarylibrary.org/2011/01/anna-centenary-library-acl-is-newly.html>

Modern Network Technologies used in providing library services:
<http://www.annacentenarylibrary.org/2011/02/sections.html>

Krishnadas Shama Goa State Central Library: <http://centrallibrary.goa.gov.in/about-us#block-mainnavigation>

Modern Network Technologies used in providing library services:
<http://centrallibrary.goa.gov.in/first-floor-return-section>

<http://centrallibrary.goa.gov.in/children-section>
<http://centrallibrary.goa.gov.in/circulation-section>
<http://centrallibrary.goa.gov.in/rare-books-and-goals>

Central Library IIT, Mumbai: <https://www.library.iitb.ac.in/about-us/our-library/>
Modern Network Technologies used in providing library services:
<https://www.library.iitb.ac.in/services/>

Vikram Sarabhai Library, IIM Ahmedabad: <https://library.iima.ac.in/>
Modern Network Technologies used in providing library services:
<https://library.iima.ac.in/>

INFLIBNET Network

INDEST Network
<https://www.icolc.net/participating-consortia/indest-aicte-consortium-merged-e-shodh-sindhu>

CHAPTER V - DATA INTERPRETATION AND ANALYSES

5.1 INTRODUCTION – User’s responses

This chapter deals with interpretation and analysis of the detailed used for the study. The study consists of “Implementation of Modern Network Technology in providing Library services in Academic studies.” The data collected has been presented in tabular and graphical form. The total responses come from 53 respondents from all over Goa academic colleges.

5.1.1 For what purpose do you visit the library?

Table 1 Purpose of visiting the library

Purpose	Frequency	Percentage%
To read books	38	71.7%
To seek information	39	73.6%
To use internet	7	13.2%
To read Newspaper	9	17%
For research work	23	43.4%
To find out about exhibitions and events	4	7.5%
To use offline/online databases	6	11.3%
As a quiet study area	23	43.4%

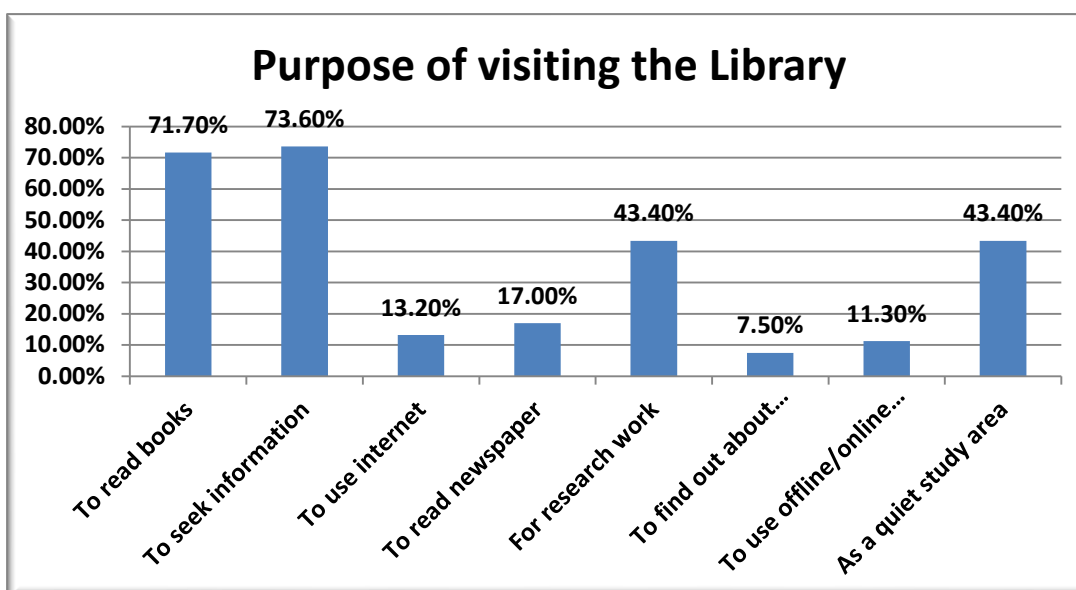


Figure 1 Purpose of visiting the library

The question was asked to the library users of their purpose to visit the library. So from the graph it is noted that majority 39(73.6%) respondents said that they visit the library to seek information for knowledge, assignment works. Whereas 38(71.7%) of respondent responded that they visit the library for the purpose to read books. While on the other hand 23(43.4%) of respondent said that they visit the library for their research works to find and research information. Respondent with same number responded that they visit the library because they like the library as a quiet study area without any destruction. While 9(17%) of respondents said that they visit the library to read newspaper. 7(13.20%) of respondent said that they visit the library to only use internet. Minority 6(11.3%) of respondent said that they visit the library to use offline/online databases. And only 4(7.50%) respondent responded that they visit the library only for the purpose to find out about different exhibitions and events.

5.1.2 How frequently do you visit the library?

Table 2 how frequently you visit the library

How frequently do you visit the library	Frequency	Percentage%
Everyday	6	11.30%
Once in a week	17	32.10%
Once in a month	7	13.20%
Occasionally	17	32.10%
More than twice in a month	6	11.30%

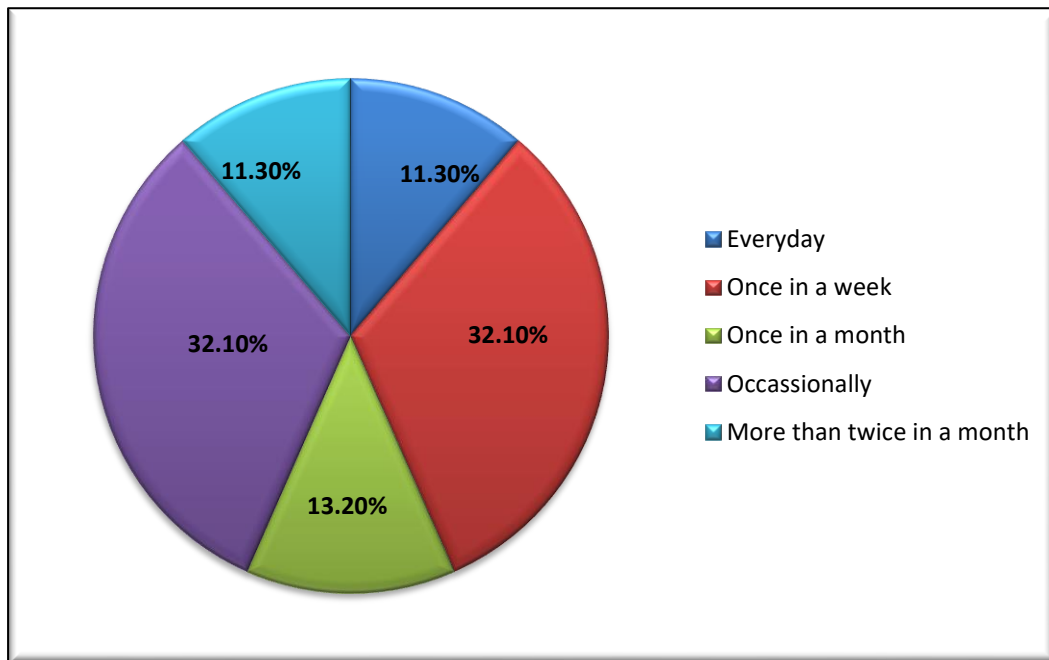


Figure 2 How frequently do you visit the library

Respondents were questioned that how frequently they visit the library. 17(32.10%) of respondent that is maximum respondent said that they visit the library once in a week, similarly same number of respondents said that they give occasional visits to library. Followed by 7(13.20%) of respondent responded that they visit library once in a month. While 6(11.30%) of respondent said that they visit the library everyday, and also same number of respondent replied that they visit the library more than twice in a month.

5.1.3 Is your Library Automated?

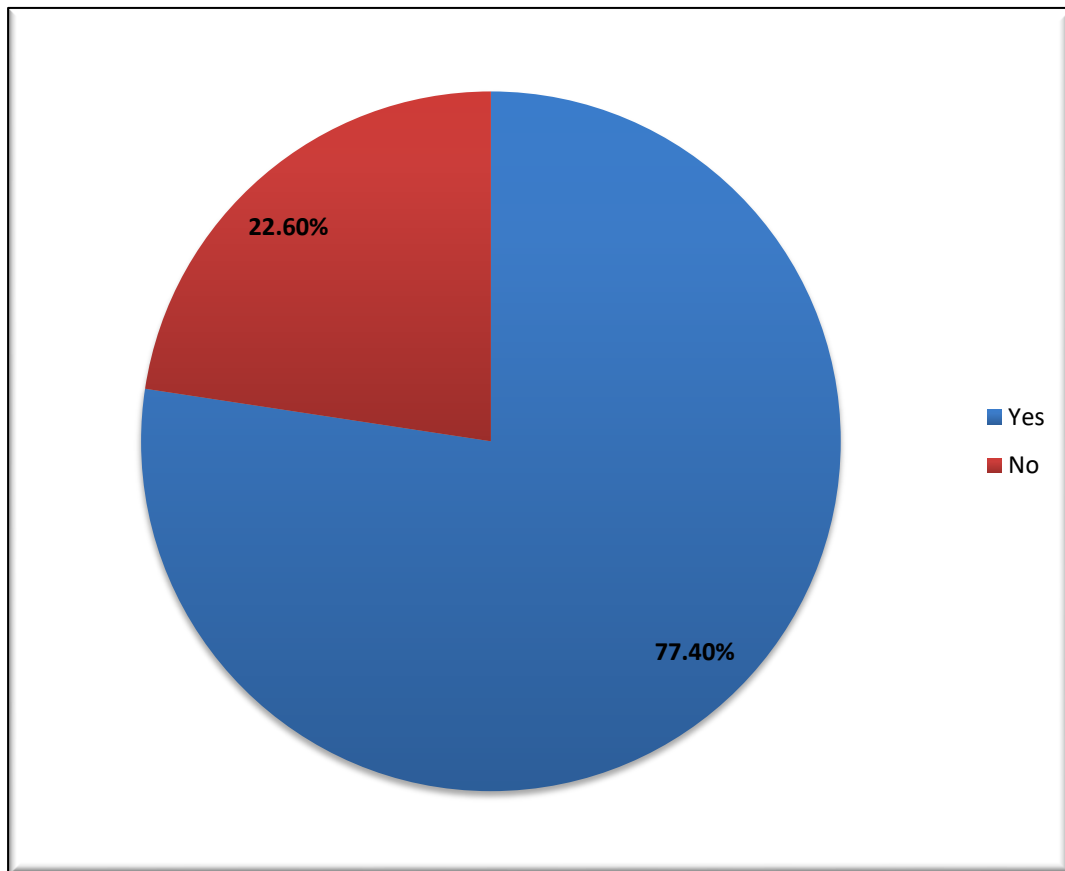


Figure 3 Is your library Automated

When the respondents were asked if their library is automated or not, most of them that is 77% of respondent said that yes their library is automated, while 22.60% of respondent said no their library is not automated.

5.1.4 If yes, please tick the activities provided by your library?

Table 3 Library Activities provided

Activities	Frequency	Percentage%
Issue and Return of books	37	75.5%%
Self-check in and check out	22	44.90%
OPAC	21	42.90%
Article Indexing	9	18.4%
Reservations	8	16.3%
Online ordering	4	8.2%

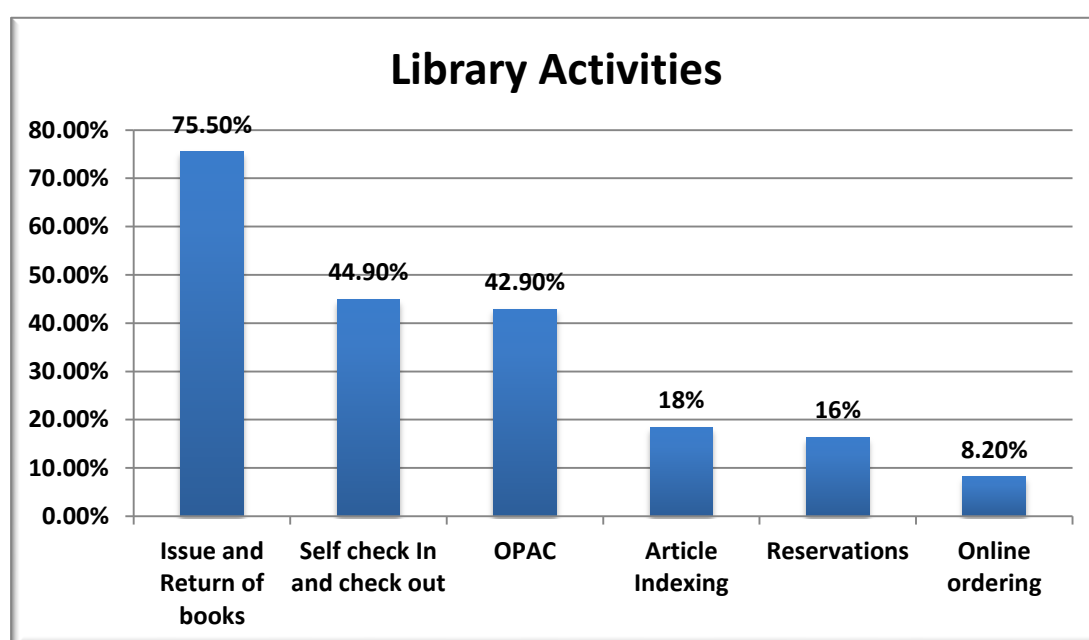


Figure 4 library Activities

From the above graph and the table it is noted that majority 37(75%) of respondents responded that issue and return of book activity is provided in their automated library. Followed by 22(44.90%) of respondents said that self-check-in and check-out are the activities provided in their automated library. Whereas 21(42.90%) of respondents said that OPAC activities are provided in their automated library. While 9(18.4%) of respondents said that article indexing is the kind of activity provided in their

automated library. Minority 8(16.3%) of respondents responded that reservation activities are provided in their automated library and only 4(8.20%) respondent said that online ordering is the activity provided in their automated library

5.1.5 Availability of computers in your library?

Table 4 Availability of computers

Availability of computers	Frequency	Percentage%
Zero to five	23	43.40%
five to ten	21	39.6%
ten to fifteen	6	11.30%
fifteen to twenty	3	5.70%

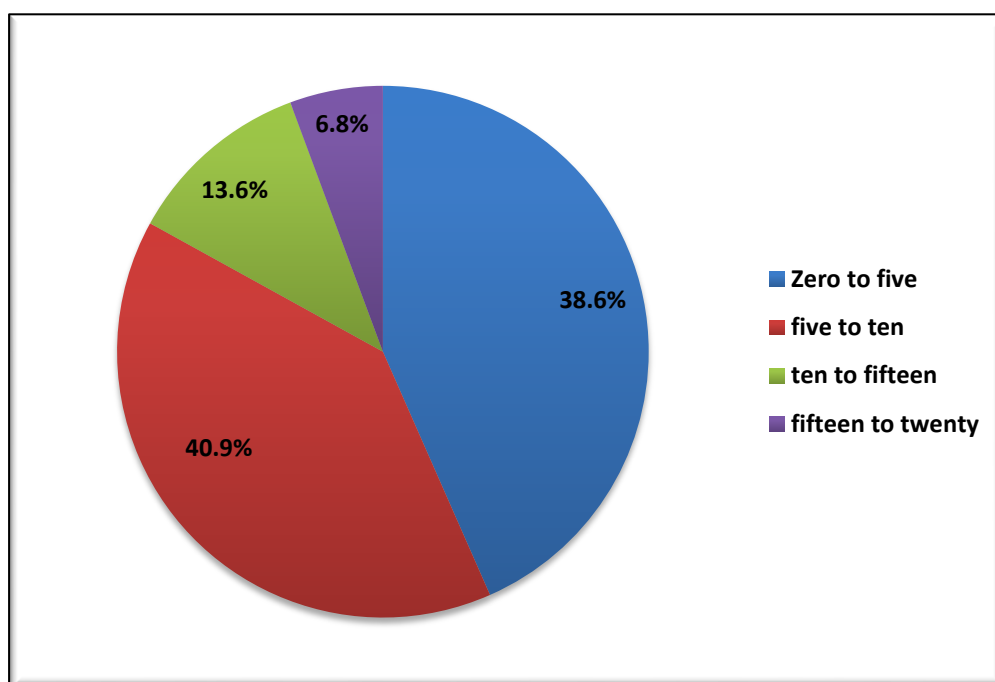


Figure 5 Availability of Computers

Respondents were questioned about the availability of computers in their library. Maximum 40.9% of respondent responded that their library has 5-10 computers. Followed by 38.6% of respondent replied that their library has 0-5 computers. 13.6%

of respondent said that 10-15 computers are present in their library. And the least only 6.8% of respondent said that their library has 15-20 computers.

5.1.6 Does your library provide web based library services for the users?

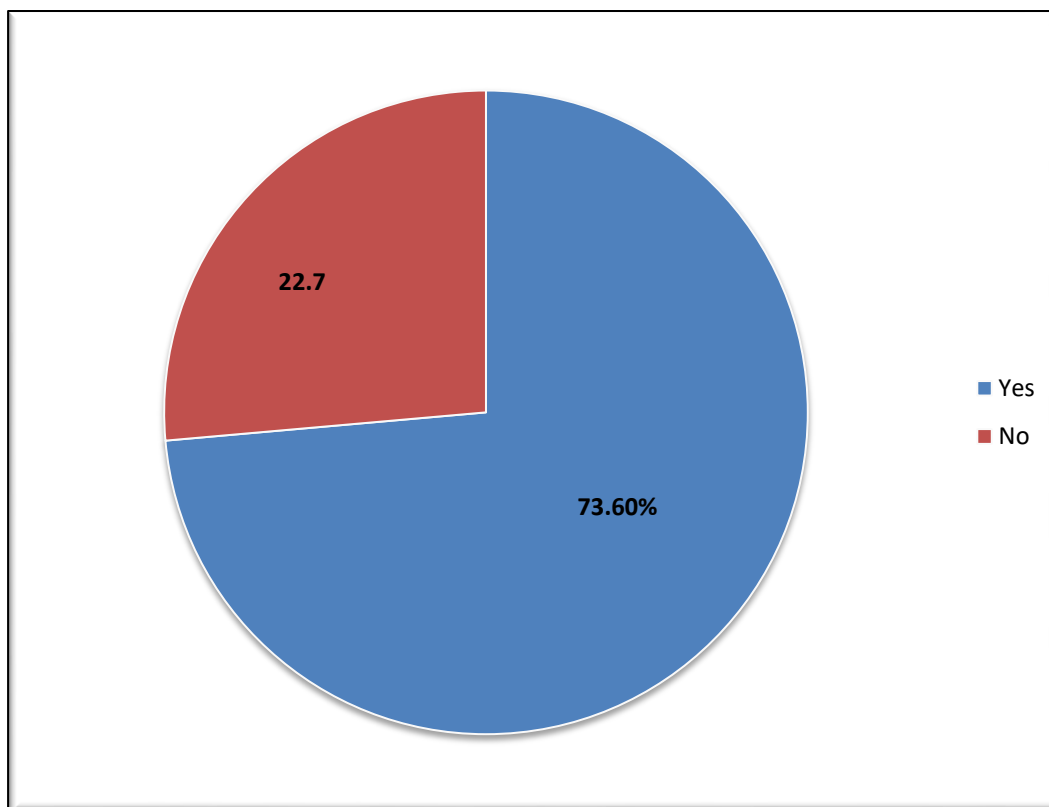


Figure 6 Web based library services

The above pie chart shows the responses of respondents when they were asked about their library providing web based library services for the users. 73.60% that is exactly respondent gave a positive response and said “Yes” that their library do provide Web based library services for students and users. While 22.7% that is respondent said “No” their library don’t provide any web based library services to the users.

5.1.7 If No, please rate the following reasons on 5 point scale.

Table 5 reasons for not providing Web based library services

Reasons	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Lack of infrastructure facilities	4	6	10	2	1
Lack of awareness about web based tools among library staff	3	7	7	5	1
Lack of technical knowledge for library staff	6	3	6	6	2
Insufficient technical staff in the library	2	9	7	2	3
Lack of internet connectivity	4	7	8	2	2

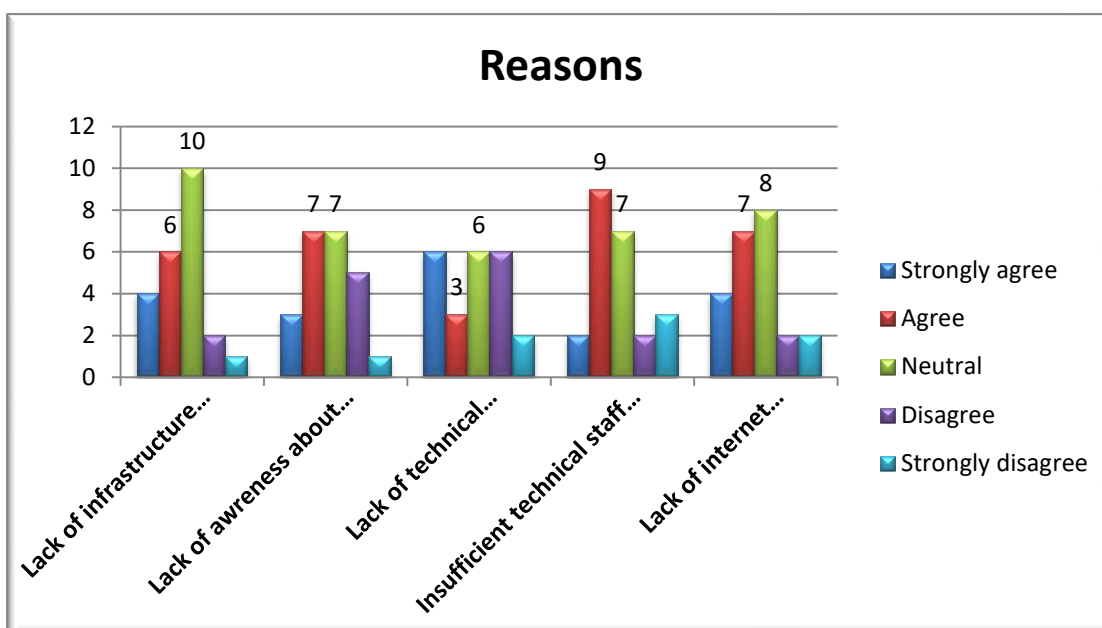


Figure 7 Reasons for not providing web based library services

The respondents were asked the question about providing web based library services to them, and if web based services are not provided then what are the reasons. 5 respondents strongly agree that lack of infrastructure in their library is the reason for not getting exposed to web based library services, 7 respondents said that they agree, majority 11 respondents were in neutral response, 4 respondents completely disagree that lack of infrastructure is not the reason for their not providing them web based library services, and only 2 responded they strongly disagree. In terms of lack of awareness, 4 respondents responded that they strongly agree that lack of awareness about web based tools among library staff is the reason of their library for not offering them web based library services, 8 respondents agree, majority 9 respondents said were in neutral response, 7 respondents completely disagreed, and least 2 respondents strongly disagree on this reason to getting the web based library services. Whereas for other 6 respondents said that they strongly agree that lack of technical knowledge for library staff is the biggest constrain for library for not providing them web based library services, 3 respondents said that they agree, most number of respondents 10 were neutral in their decision, 8 respondents responded that they disagree that lack of technical staff is the reason behind they not getting revealed to web based library services, and only 2 respondents strongly disagree. 2 respondents said that they strongly agree that in sufficient technical staff to handle all technological things is the important reason of their library for providing them web based library services, 10

respondents agree, same number 10 respondents were neutral, 4 respondents said they disagree on this factor of insufficient technical staff in library, and only 3 respondents were strongly disagreed. In terms of internet 5 respondents said that lack of internet connectivity has been the constant problem for their library for not offering then the web based library services, 9 respondents replied they completely agree on this reason, 10 respondents were in a neutral decision, 3 respondents were disagreed that internet connectivity is not an issue for their library and least only 2 respondents were in an opinion that they strongly disagree on this factor.

5.1.8 Whether your library has a website by which you can search the catalogue and seek information?

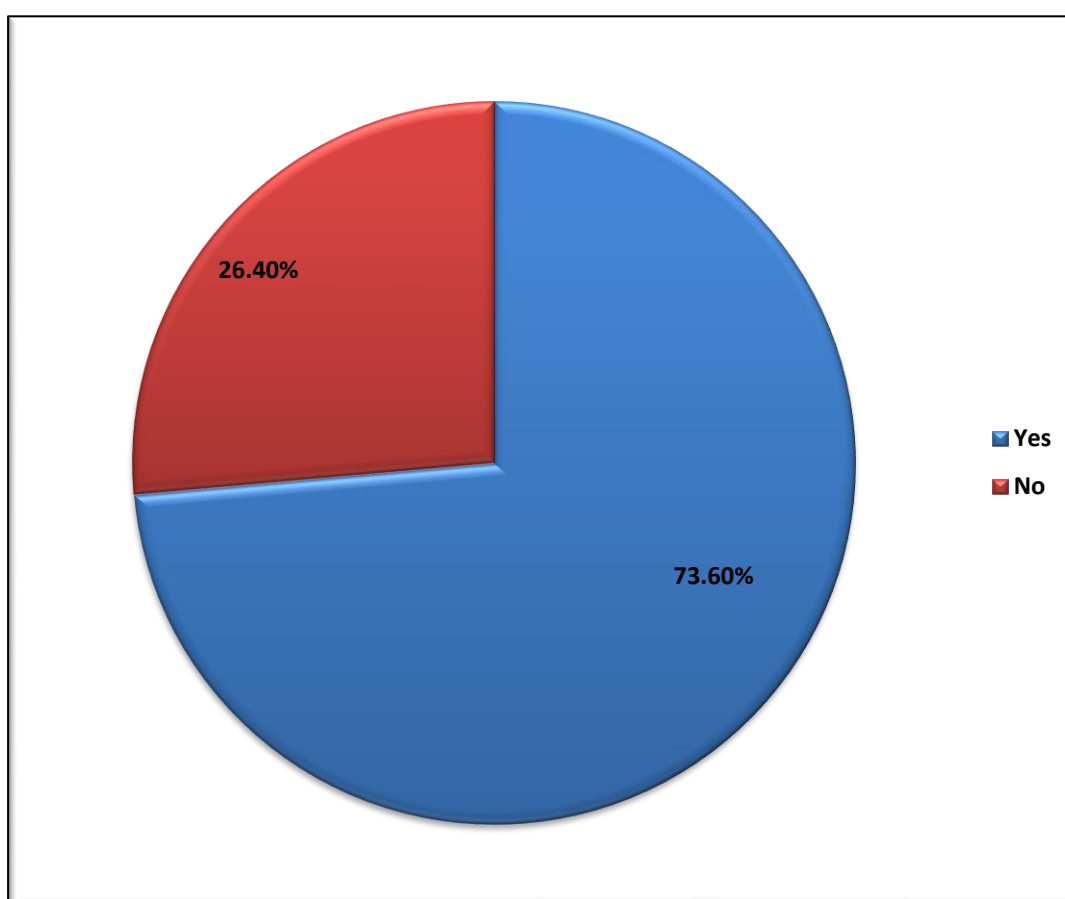


Figure 8 Library website

When the respondents were questioned whether their library has a website by which they can search catalogue or seek information. Most of them that is 73.60% of

respondent responded positively and said “Yes” that their library has a website by which they can search catalogue and seek information. While minority of them that is 26.40% of respondent said “No” and disagreed that their library don’t have any website by which they can search catalogue or seek information.

5.1.9 If yes, what are the library services provided by your library through library website?

Table 6 Library websites services

Website Library Services	Frequency	Percentage%
E-Books	38	81%
Audiobooks	8	17%
E-Journals	22	46.80%
OPAC	17	36.20%
Ask-A-Librarian	13	28%
Current awareness service	13	28%
Podcasting	2	4.30%
Bulletin Board	6	12.80%

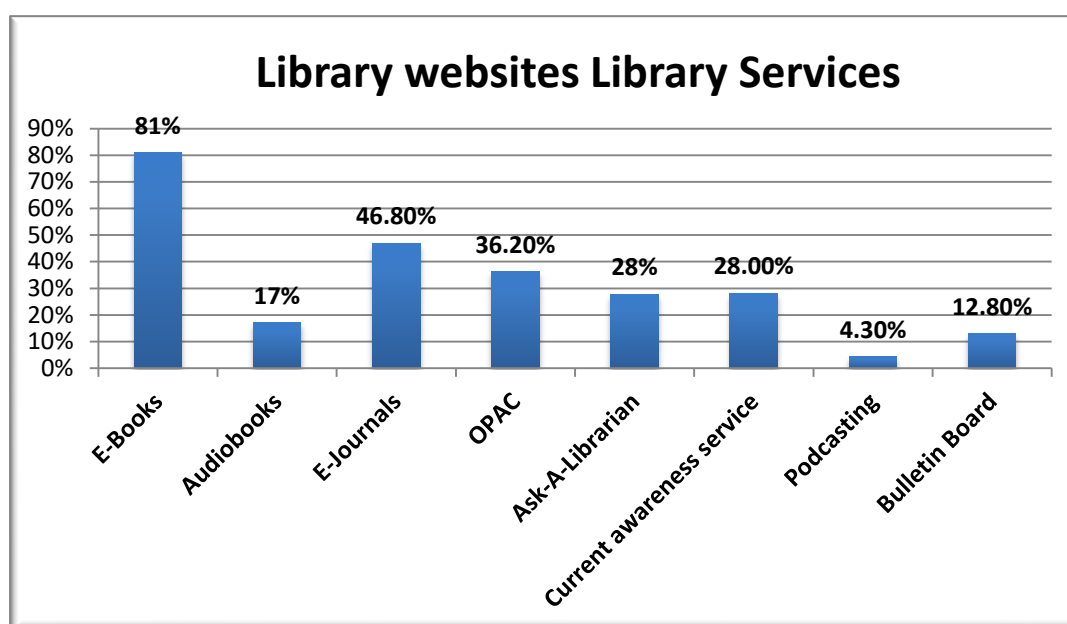


Figure 9 Library website library services

The above bar graph shows the analysis of different library services provided to them through their library website. Majority that is 38(81%) of respondents responded that different types of E-books service is provided by their library through their library website. Followed by 22(46.80%) of respondents replied that E-Journals services are provided by their library through their library website. Whereas 17(36.20%) of respondents responded that OPAC services are the major service provided by their library through their library website. While 13(28%) of respondents said that Ask-A-Librarian is the library service their offered by their library through website. Similarly with the same number respondents responded that CAS library service is provided by their library website to get current knowledge. 8(17.5%) of respondents replied that the unique audiobooks service is provided through their library website. Minority 6(12.80%) of respondents responded that bulletin boards services are provided through their library website and lastly 2(4.30%) of respondents said podcasting library service is provided.

5.2 What are the factors that made you choose E-resources technology over printed resources?

Table 7 E-resources over Printed resources

Factors	Frequency	Percentage%
Easily Accessible	42	79.2%
Less time consuming	31	58.5%
Easy to carry everywhere	32	60.4%
Read anytime	32	60.4%

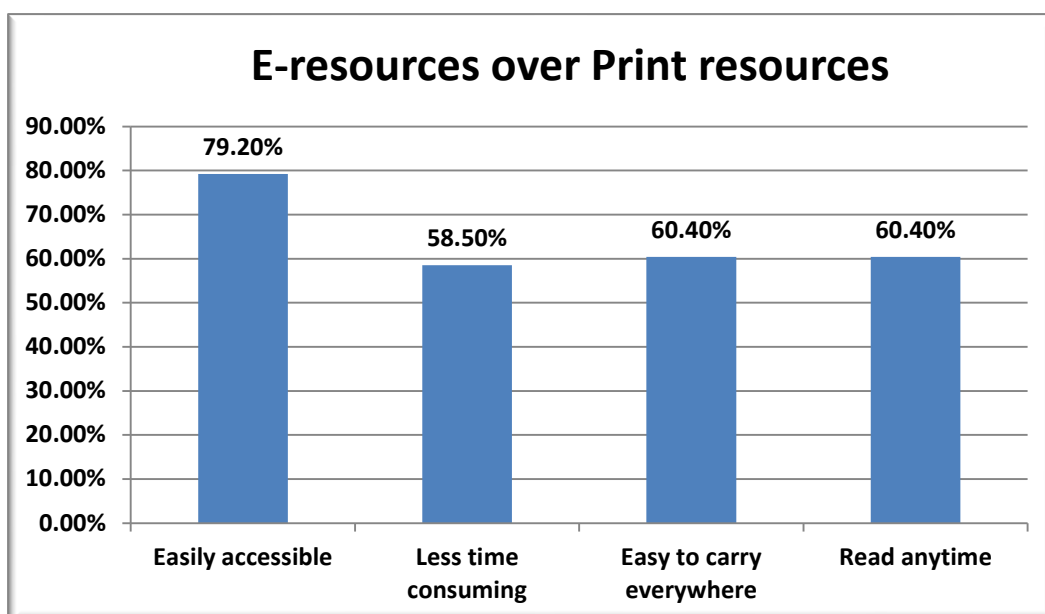


Figure 10 E-resources over print resources

The question was asked to all the respondents about factors that made them choose E-resources over printed resources. So Majority 42(79.2%) of respondents said that they chose e-resources over printed resources because they are easily accessible. Secondly 32(60.4%) of respondents said that easy to carry everywhere is the effective factor for which they chose e-resources over printed resources. Same number of respondents said that read anytime is the factor for which they chose e-resources. And 31(58.5%) of respondents feels that less time consuming is the important factor for which they chose e-resources over printed resources.

5.2.1 Mode of access of E-resources?

Table 8 Mode of access of E-resources

Mode of access of E-resources	Frequency	Percentage%
PC	20	43.40%
Smartphone	36	83% %
Laptop	22	49.10%
Tablet	9	20.8%

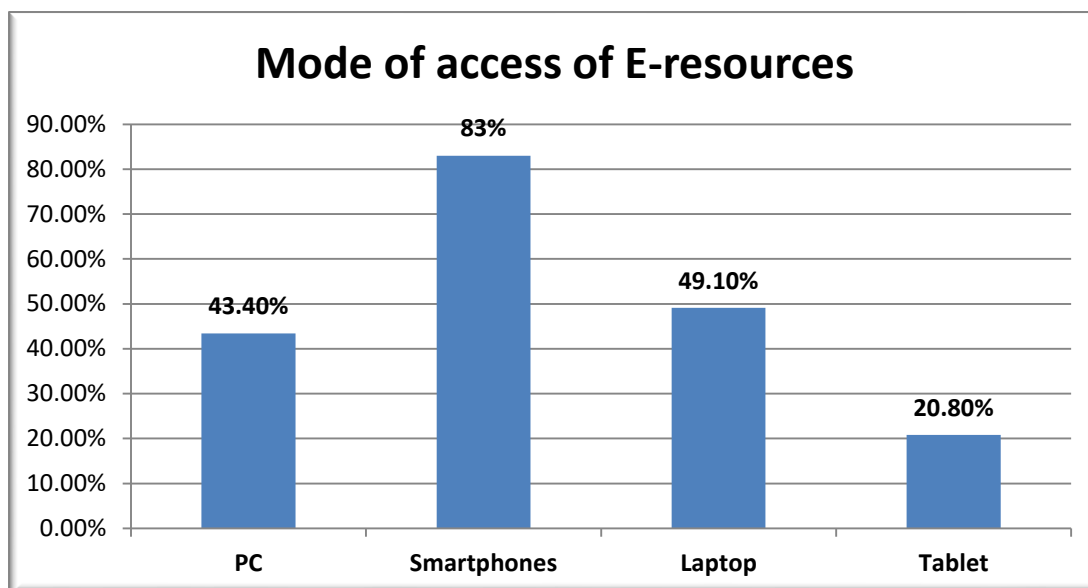


Figure 11 Mode of access of E-resources

When respondents were asked about their mode of access of E-resources, most of them that is 36(83%0 of respondents responded that they use smartphones to access E-resources. While 22(49.10%) of respondents said that laptop is the best for accessing any E-resources and 20(43.40%) of respondents said PC, least of the respondent use tablets to access E-resources.

5.2.2 In your opinion, which are the E-resources that are mostly used by students in your library?

Table 9 Which E-resources are mostly used

E-resources	Frequency	Percentage%
E-Books	43	81.10%
E-Journals (Databases)	24	45.30%
Open access Journals	14	26.40% %
E-Journals (NLIST)	10	18.90%
E-Databases	8	15.10%
Thesis	15	28.30%
Dissertations	14	26.40%

E-Newspaper	13	24.50%
E-Newsletter	3	5.70%
Question Papers	26	49.10%

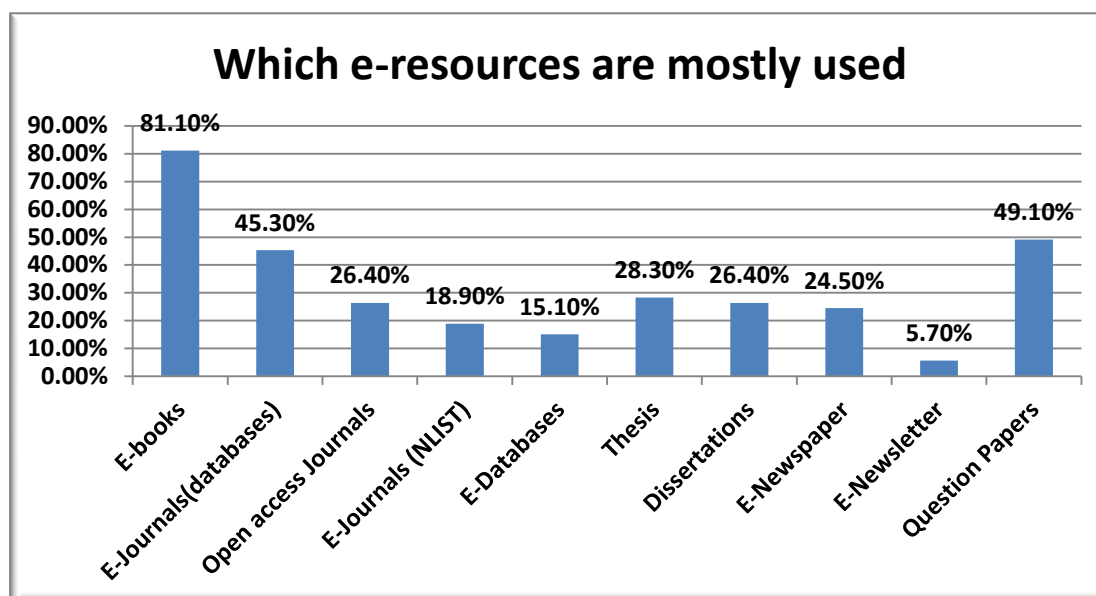


Figure 12 Which E-resources are mostly used by students in your library.

The question was asked to all students that in their opinion which are the e-resources that are mostly used by students in their library. Maximum 43(81.10%) of respondents responded that E-books are mostly used e-resources by students in their library. Followed by 26(49.10%) of respondent said that question papers are the e-resources that are mostly used by students in their library. Whereas 24(45.30%) of respondent responded that E-Journals (Databases) are the e-resources that are mostly used by students. While on the other hand 26(49.10%) of respondent replied that Thesis are E-resources that are mostly referred by students in their library. While 14(26.40%) of respondent said that open access journals are mostly visited journals by the students in their library, similar same number of respondent said that Dissertations are the e-resources that are mostly referred. While 10(18.90%) of respondents responded that E-journals (NLIST) e-resources are the ones that are mostly used by students in their library. Minority 8(15.10%) of respondent feels that e-databases are the e-resources that are mostly used by students. And only 3(5.70%) of respondent said that E-Newsletter is the e-resources that are mostly used by students in their library.

5.2.3 Does your library provide training/orientation/education to users for searching and using the information resources, databases, information technology facilities etc.?

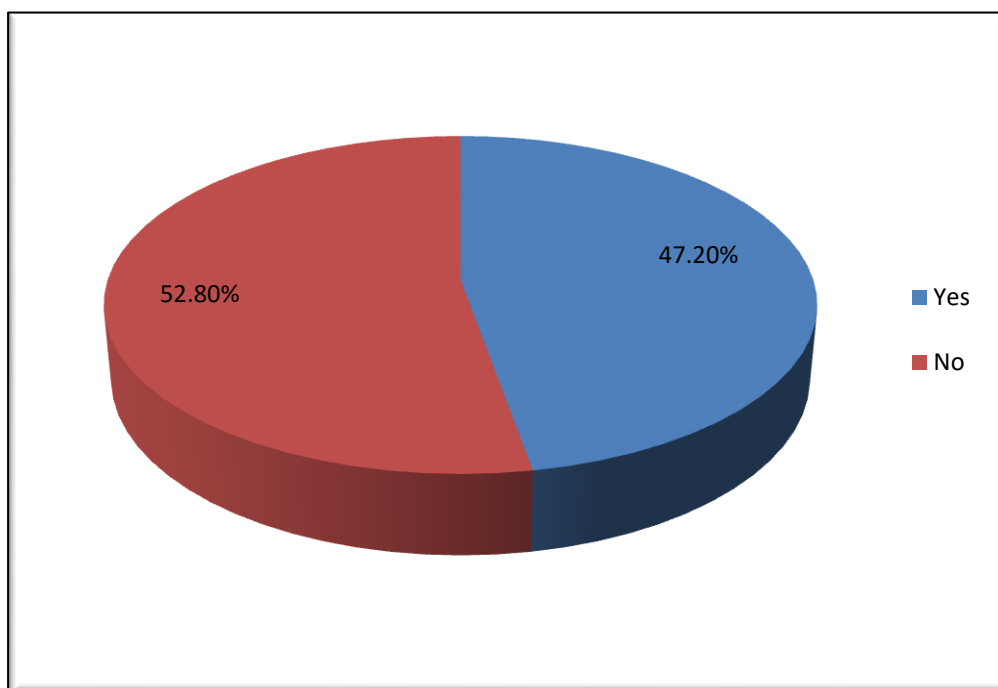


Figure 13 Provide any training/orientation programmes for searching and using information resources, databases, ICT facilities etc.

When the respondent were asked this important question that if their library provide training/orientation/education to users for searching and using the information resources, databases, information technology facilities etc. Majority of them that is 52.80% respondent said no their library don't provide any of such orientation or training for searching and using the databases, information resources, information technology facilities. While very close 47.20% of respondent responded yes their library do provide training and orientation programs for introducing them to new information technology facilities, information resources etc.

5.2.4 Which of the following modern network technologies are provided by your library?

Table 10 Modern Network Technologies

Modern Network Technology	Frequency	Percentage%
OPAC	26	48%
Ask-A-Librarian	22	41.50%
Real Time Service	14	26.40%
Translation Services	5	9.40%
Audio visual multimedia	5	9.40%
Current awareness service	5	9.40%
RFID	1	1.90%
Selective dissemination of information	4	7.5%
Photocopy service	22	41.5%

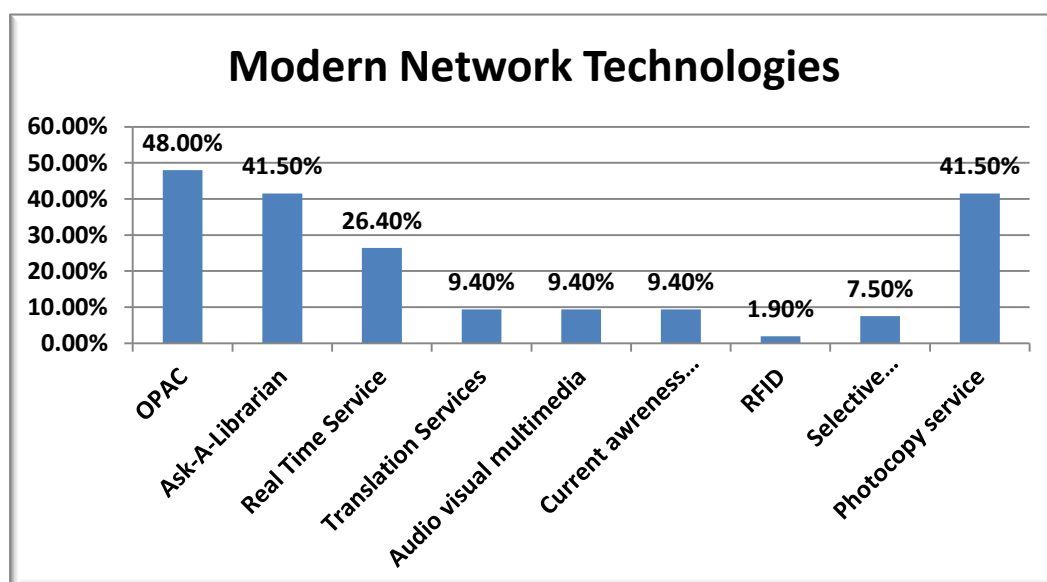


Figure 14 Modern Network Technologies

The above graph shows the different types of modern network technologies that are provide in their library. Majority 26(48%) of the respondent responded that OPAC the

modern network technology that is provided to them by their library. Followed by 22(41.50%) respondents said that Ask-A-Librarian is the modern network technology library service their library provides in their library, and same amount of respondents said that photocopy services is the most used modern network technology service in their library. Whereas 14(26.40%) of the respondents said that real time services are the modern network technology their library offers. While 5(9.40%) of respondents said that translation services is the modern technology provided to them by their library, similarly same numbers of respondents responded that Audio visual multimedia and CAS service is provided to them by their library. Minority 4(7.5%) of respondents replied that SDI service is provided to them as modern network technology. And only 1(1.90%) of respondents said that RFID technology is used and is provided to them by their library.

5.2.5 Please indicate the problems/ difficulties faced for accessing modern technology facilities in your library?

Table 11 Difficulties faced for accessing Modern Technology facilities

Difficulties faced	Frequency	Parentage%
Inadequate e-resources	24	45.30%
Unavailability of orientation programme	15	28.30%
Uncooperative library staff	6	11.30%
Insufficient computers	25	47.20%
Unsuitable library timings	12	21.17%
No internet connection	17	32.10%

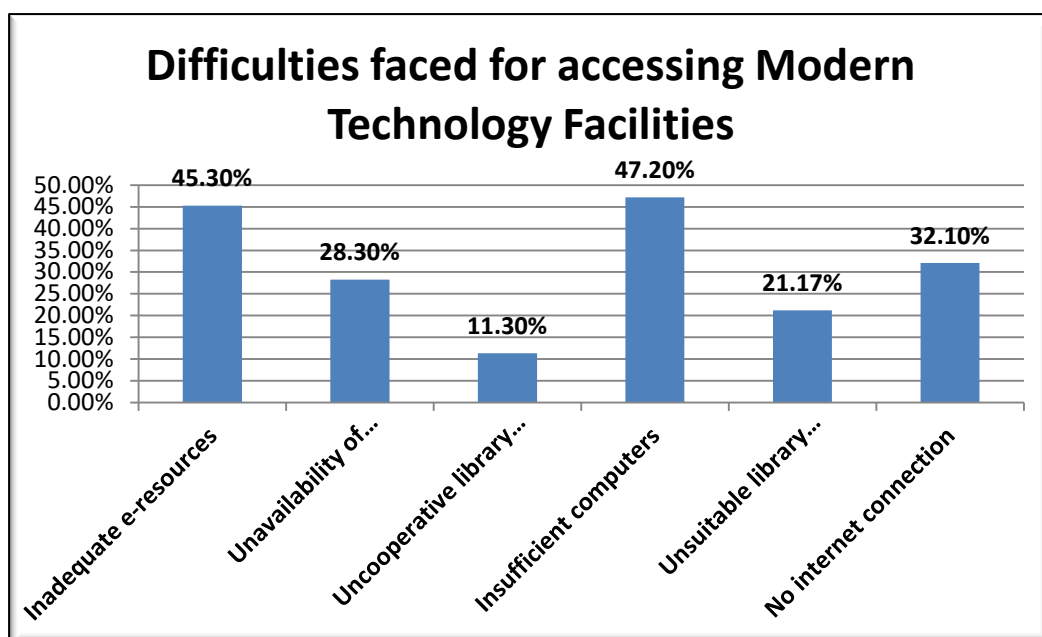


Figure 15 Difficulties faced for accessing modern technology facilities

The above figure of bar graph gives a clear analysis of problems which users face for accessing modern network technology. Majority of the respondents that is 25(47.20%) said that insufficient computers in their library are the biggest problem they faced for accessing modern network technology. Followed by 24(45.30%) respondents believes that Inadequate e-resources is the constrain for accessing modern technologies in their library. While on the other hand 17(32.10%) of respondent said that No internet connection or slow internet connection is the biggest problem they faced for accessing modern technologies. 15(28.30%) of respondents responded that unavailability of orientation programme is the difficulty they faced while 12(21.17%) respondents replied that unsuitable library timings is the problem they faced for accessing modern network technology. And only 6(11.30%) of respondents said that uncooperative library staff is the reason for not getting access to modern technologies as library service.

5.2.6 What are the social media tools used by your library for providing library services?

Table 12 Social Media Tools

Social media tools	Frequency	Percentage%
LinkedIn	10	18.9%
Blogs	7	13.20%
Twitter	5	9.40%
YouTube	14	26.40%
Whatsapp	16	30.20%
Facebook	10	18.90%
Instagram	5	9.40%
Flickr	1	1.9%
E-mail	37	69.8%
Nothing	1	1.9%

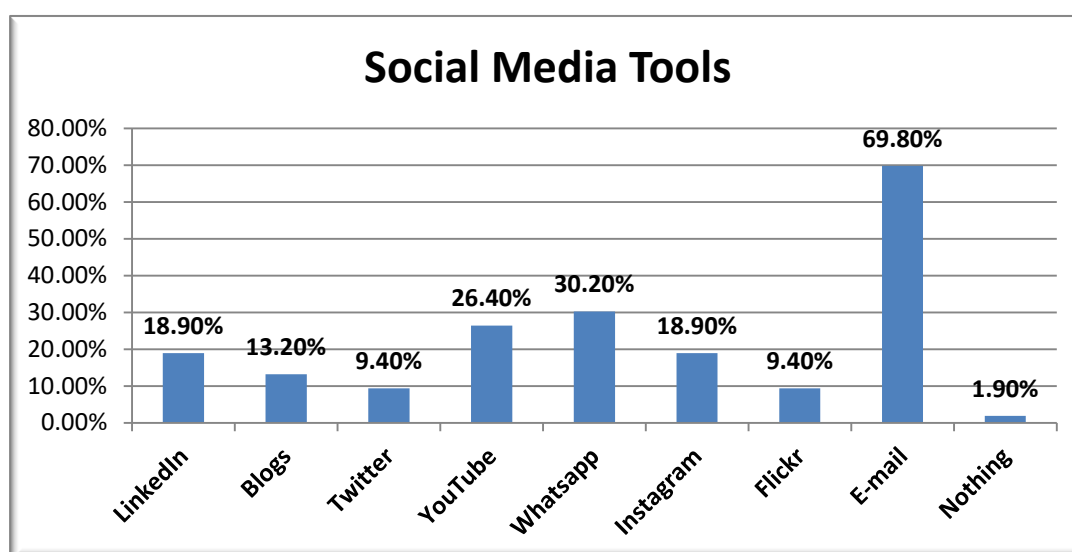


Figure 16 Social media tools

The above bar graph and table shows clear analyses of social media tools which can be used in providing library services in respondent point of view. Most of the respondent that is 37(69.8%) respondent said that social media tool E-mail is used by their library for communicating about all the import works, details and library

happenings. Secondly 16(30.20%) respondent responded that Whatsapp is used as a tool by their library for offering library services. Followed by 14(26.14%) of respondent said that YouTube as the key social media tool used by their library as library service for uploading videos and content of library. Whereas 10(18.90%) of respondent said that their library uses Instagram social media tool in providing their library services. Exactly same number of respondents responded that LinkedIn tool is used by their library. While 7(13.20% of respondents said that Blogs are the important social media tools their library uses in providing library services to the users. Minority respondents 5(9.40%) of respondents said that Twitter and same number of respondent responded Flickr is what social media tools their library uses. And the least 1(1.9%) respondent were in opinion that no social media tools are used by their library in providing library services to their users.

5.2.7 Is your library subscribing to any of the following databases?

Table 13 Databases

Databases	Frequency	Percentage%
Emerald	20	39%
Proquest	5	9.40%
Ebsco Databases	9	17%
AGRIS	9	17%
Other	5	9.40%
Don't know	12	22.50%

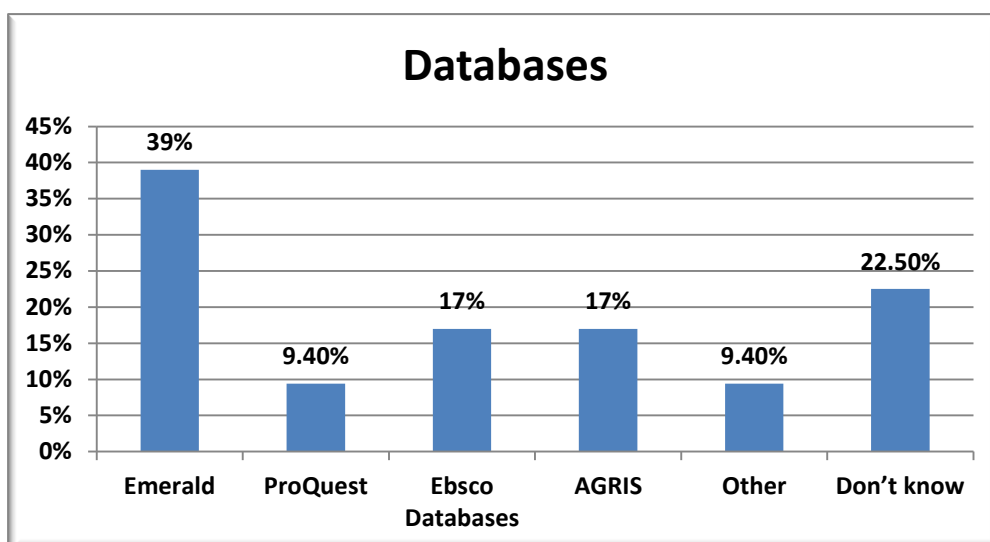


Figure 17 Databases

The above bar graph and the table show the different databases that the library subscribes. Majority 20(39%) of the respondents replied that their library subscribe to Emerald database. Followed by 12(22.50%) of respondents said that they don't know which database their library subscribes. Whereas 9(17%) of respondents said that their library subscribe to Ebsco database, similarly the same number of respondent replied that their library subscribes to AGRIS database. While 5(9.40%) respondent said that their library subscribes to proquest database, and exactly the same number of respondents said that their library subscribes to some other databases.

5.2.8 Please, rate the following technologies used as academic library services on 5 point scale.

Table 14 Technologies used as Academic Library Services

Modern Technologies	Used Everytime	Mostly Used	Rarely Used	Never Used
RFID	6	8	17	13
Current awareness service	3	14	20	7
Selective dissemination of information	5	14	17	8
E-mail services	12	15	15	2
Photocopy services	15	10	15	4
OPAC	9	13	16	6
Ask-A-Librarian	11	17	11	5
Document delivery service	5	8	19	12

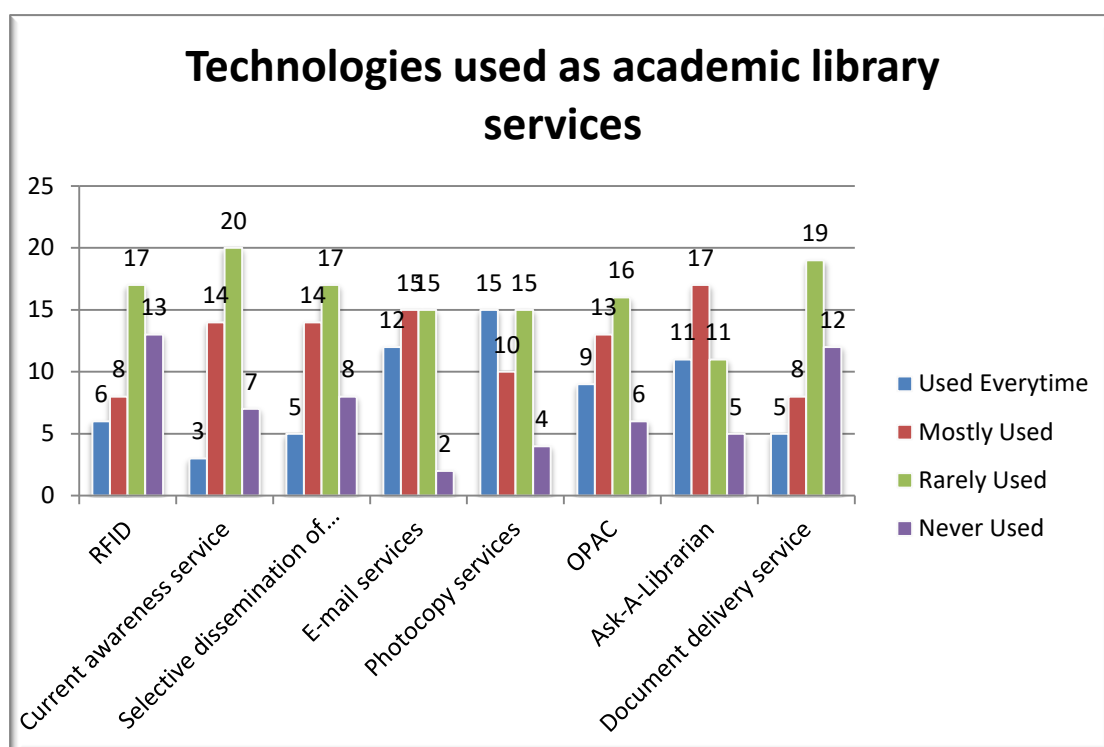


Figure 18 Technologies used as academic library services

The question was asked to all the respondents to rate technologies used as academic library services. So from the graph it is noted that 6 respondents responded that RFID system is used every time as academic library service. 9 respondents said that RFID is mostly used; maximum 20 respondents said that it is rarely used in academic library services, and 13 respondents were in an opinion that RFID is still to be implemented and it is never used as academic library service. Followed by 3 respondents replied that CAS (E-Current Awareness Service) technology is used everytime as academic library services to get current information about library, 14 respondents said that it is mostly used, maximum 23 respondents said that it is rarely used and lastly 7 respondents were in an opinion that CAS is never used as academic library service. Whereas in terms of SDI (E-Selective Dissemination of Information) technology minority 5 respondents responded that SDI technology is used everytime as academic library service to disseminate the selective needed information to users through different social media tools. 15 respondents said SDI technology is mostly used, maximum 21 respondents said SDI technology is rarely provided as academic library service, and 8 respondents replied SDI technology is never used. Whereas 12 respondents said that E-mail services are mostly used as academic library service to send emails to students about library materials, details, events, exhibitions etc., most

19 of the respondents said that E-mail services is mostly used, surprisingly 16 respondents said that E-mail services are rarely used, and 6 respondent said never used. Whereas for the common technology photocopy service 16 respondents responded that photocopy service technology is used everytime as academic library service to print notes, important chapters, 11 respondent responded that it is mostly used, 18 respondents replied that the photocopy service technology is rarely used, and 8 respondents said that it is never used. While 10 respondents responded that OPAC (Online public access catalogue) technology is used eveytime as academic library service, 13 respondents believe that OPAC technology is mostly used as academic library service. Majority 19 said that OPAC is rarely used, and 11 respondents said it is never used. While 13 respondents said that Ask-A-librarian technological reference services is used eveytime as an academic library service. Majority 18 respondents feel that Ask-A-Librarian is mostly used, 14 respondents said that it is rarely used, minority 8 respondents feels that it is never used as an academic library service. In terms of E-Document delivery service 5 respondents believe that it is used everytime as an academic library service the electronic delivery service in which non-returnable literature required by library users including book chapters, Journal articles are delivered to them, 9 respondents replied that it is mostly used as academic library service, majority 22 respondents responded that it is rarely used and 17 respondents feels that E-Document delivery service is never used as an academic library service.

5.2.9 In your opinion, what are the advantages of using Modern Network Technology as library services?

Table 15 Advantages of using Modern Network Technology

Advantages	Frequency	Percentage%
Information Retrieval	38	71%
Preservation and conservation	34	64.20%
Multiple access	34	64.20%
Networking	27	50.90%
Green method of saving trees	1	1.90%

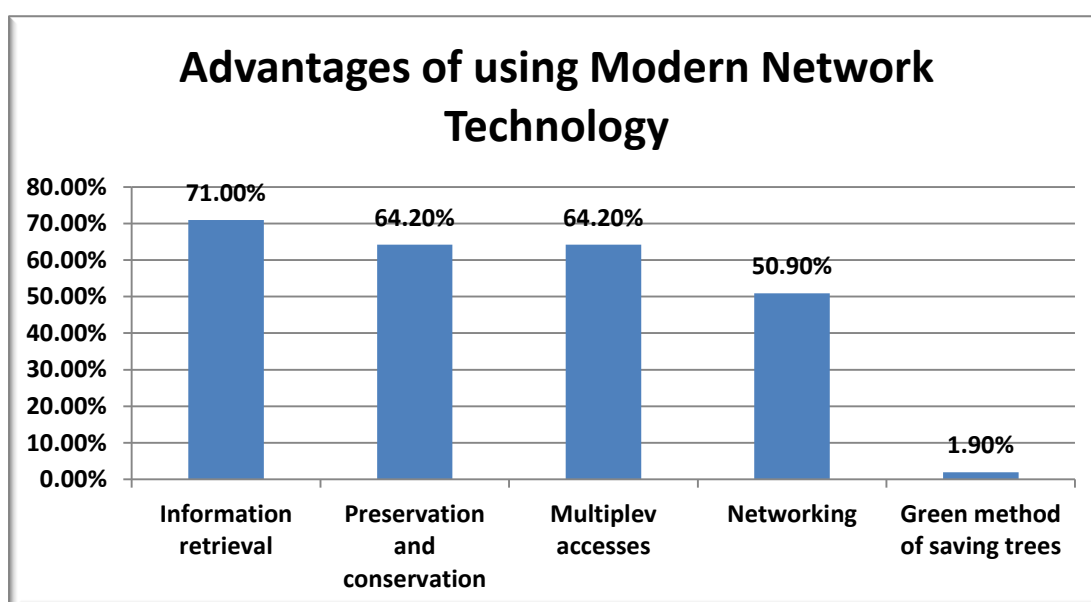


Figure 19 Advantages of using modern network technology

When the question was asked to students that in their opinion, what are the advantages of using modern network technology as library services. From the above graph and table it is observed that majority 38(71%) of respondents said that the most effective advantage of modern network technology is information retrieval. Followed by 34(64.2%) of respondents said that for preservation and conservation is the advantage of using modern network technology. Exactly the same number of respondents also feels that multiple accesses of E-resources is the very important advantage of using modern network technology as library service. While 27(50.90%) of respondent said that networking is advantage of using modern network technology. And the least 1(1.90%) of respondent responded that Green method of saving trees should be the advantage of using modern network technologies as library services.

DATA INTERPRETATION AND ANALYSIS

5.3 Introduction – Librarian responses

This chapter deals with analyses and interpretation of the details of sample used for the study of “Implementation of Modern Network Technology in providing library services in Academic studies”. The data collected has been presented in tabular and graphical form. The total responses come from 30 librarians of all over Goa.

5.3.1 Which of the following modern Network Technology is provided in your library?

Table 1 Modern Network Technology

Modern network technology	Frequency	Percentage%
RFID	2	6.7%
Ask-A-Librarian	23	76.7%
OPAC	27	90%
Translation Service	3	10%
Audio visual media	9	30%
Current awareness service	25	83.3%
Selective Dissemination of Information	13	43.3%
Virtual reality application	1	3.3%
RSS Feeds	4	13.30%
E-Book interface	1	3.3%

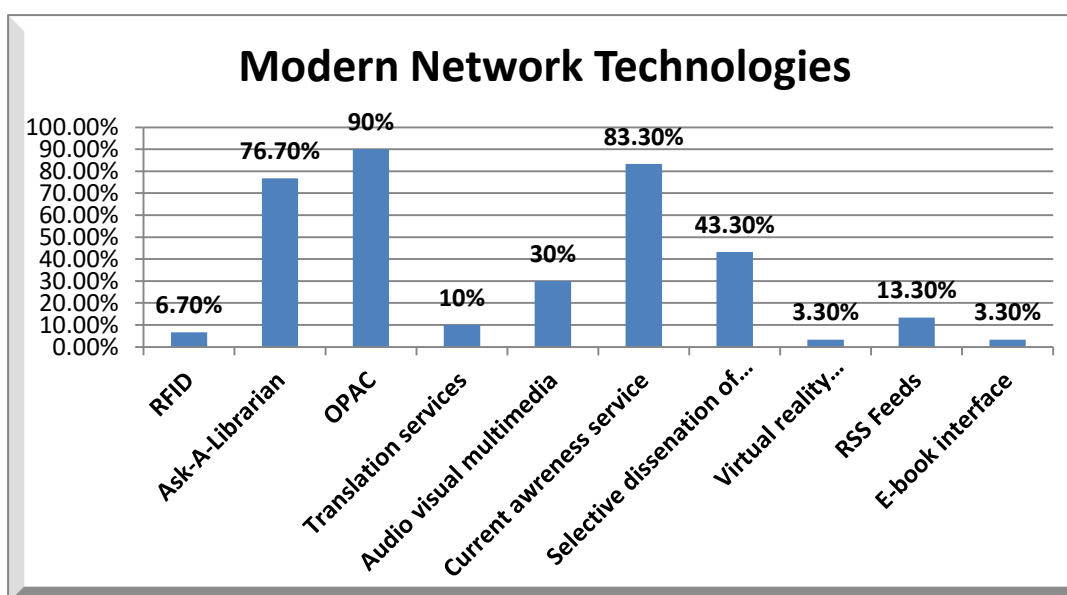


Figure 1 Modern Network Technologies

The above graph shows clear analyses of Modern network technologies which can be used to provide library services. So from the graph it can be noted most 27(90%) of the librarians responded that they use OPAC technology in their library in providing library services to the students. Followed by 25(83.3%) of librarians said that they provide current awareness service as modern network technology for their students in their library. So that students stay updated with the latest information and developments. Whereas 23(76.7%) of librarians said that they offer Ask-A-Librarian service to students in their library. While on the other hand 13(43.3%) of librarian said that they provide selective dissemination of information (SDI) services to their students so that users can get the specific information what they need according to their interest. While 9(30%) librarian responded that Audio visual media is the modern network technology they provide in their library. 4(13.30%) of librarian said they provide RSS Feeds in providing library services. 3(10%) of librarians provide Translation services in their library. Minority 2(6.70%) of librarians responded that they have RFID technology in their library. And the least only one 1(3.30%) of librarians provide virtual reality application technology and similarly 1(3.30%) of librarians offer E-book interface technology as library services in their library.

5.3.2 Which of the following Social media communication services are offered by your library?

Table 2 Social media Communication services

Social Media Communication services	Frequency	Percentage%
Whatspp	22	73.30%
Instagram	7	23.30%
YouTube	6	20.00%
Blogs	4	13.3%
E-mail	27	90%
Twitter	1	3.30%
Alert Service	10	33.30%
Facebook	7	23.30%
LinkedIn	3	10.00%
Website	1	3.30%

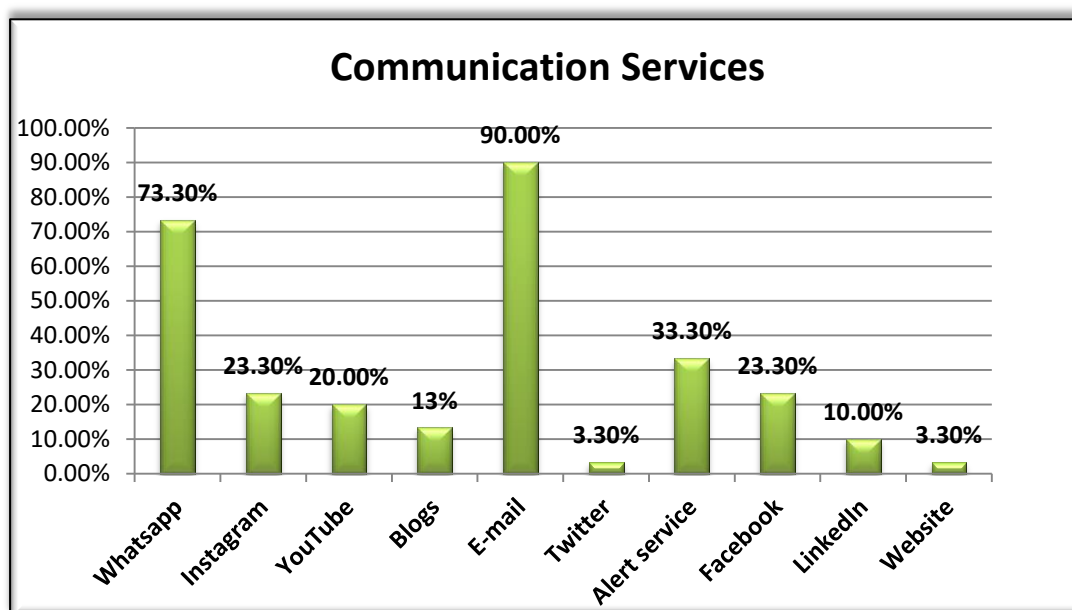


Figure 2 Communication services

According to the bar graph and the table above, majority 27(90%) of librarians responded that they use E-mail as the communication services in their library to communicate to the users regarding library details, events etc. Followed by 22 (73.30) of librarians responded saying that they use WhatsApp as the communication services to communicate to students. 10 (33.30) librarian says that they use alert services as communication services. 7 (23.30%) librarians responded that they use Instagram to communicate with students by posting posts about library and also Facebook for communicating about events. 6(20%) librarians agrees and responded that they use YouTube to post videos regarding library details. Minority 4 (13.3%) of librarians responded that they use blogs, least 3(10%) of librarians said that they use LinkedIn. And only 1(3.30%) librarians responded they use their library website and Twitter as the communication services.

5.3.3 Which of the following online reference services are available in your library?

Table 3 Online Reference service

Online Reference Services	Frequency	Percentage%
Ask-A-Librarian	18	60.00%
E-mail	26	87%
Web forms	10	33.30%
Instant messaging	14	46.70%
E-Current awareness service	12	40.00%
Voice over internet protocol	2	6.70%
E-Document delivery service	17	56.70%
ERP	1	3.30%
NA	1	3.30%

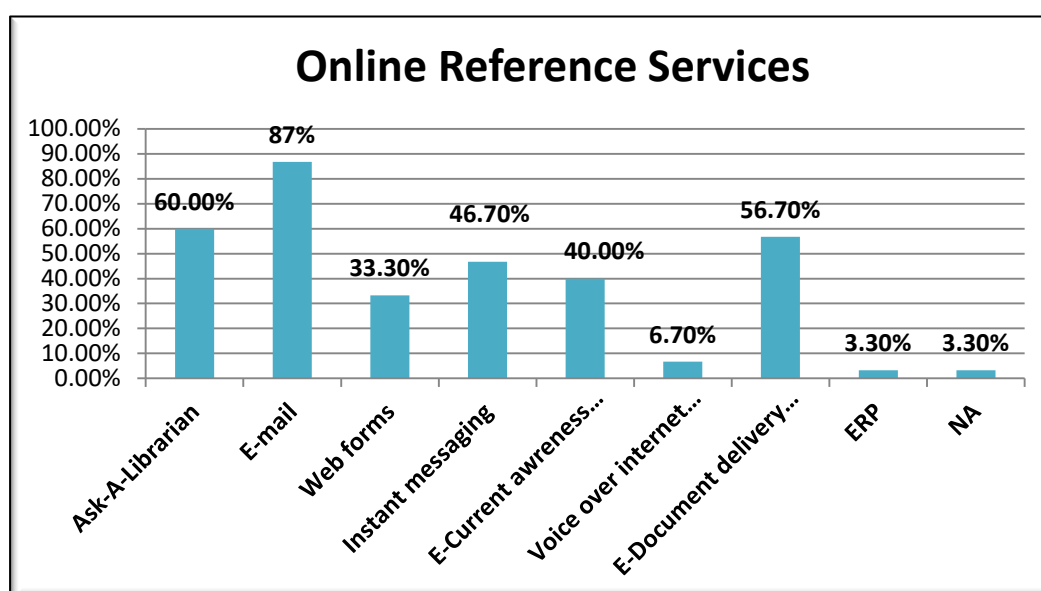


Figure 3 Online Reference Services

According to the bar graph and the table above, Majority 26 (87%) of librarians offer E-mail as the online reference service from their library to provide important information to their users. Followed by 18 (60%) of librarians responded that they use Ask-A-Librarian as online reference service. 17(56.70%) of librarians says that they use E-Document delivery service as the online reference service. Almost half 14(46.70%) of librarians responded that Instant messaging is the online reference service they use. 12(40%) of librarians responded saying that they use E-current awareness service as the online reference service for students. 10(33.30%) of librarians offers webforms as their online reference service from their library. Least 2(6.70%) of librarians responded that they use voice over internet protocol and only 1(3.30%) of librarians says that they use ERP as online reference service and same number of librarians not uses any online reference service for their library.

5.3.4 Which of the following best online Activities are provided by your library?

Table 4 Best online activity

Best online Activities	Frequency	Percentage%
Virtual Book reading	14	46.70%
Online Book exhibition	13	43.30% %
Online orientation programme	18	60.00%
Virtual library tour	5	17%
Online presentations	13	43.30%
Online plagiarism detection software	7	23.30%
Remote access	1	3.3%
NA	1	3.3%

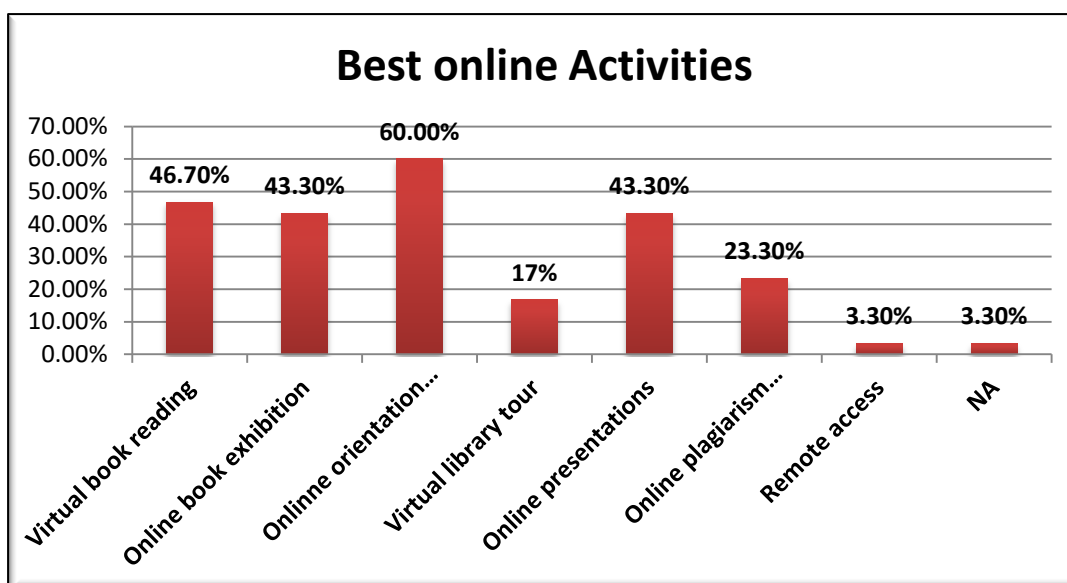


Figure 4 Best Online Activities

The question was asked to the librarians that what are the best online activities that are provided by their library. Majority 18(60%) of librarians responded that they conduct online orientation programmes for students so that students know all the library services and its sources. Whereas 14(46.70%) of librarian said that virtual Book reading is what they conduct for students as best online activity so that the students can know how to use e-book, how to search it etc. Followed by 13(43.30%) of librarian responded that they conduct Online book exhibition for students so that it can increase their reading habits. And similarly 13(43.30%) librarian said that conducting online presentation works great for students as the best online activity. While 7(23.30%) of librarian feels that conducting online plagiarism detection software is the most important and best online activity that they conduct for students. Minimum 5(17%) of librarian responded that virtual library tour as the best online activity. And only 1(3.30%) of librarians says remote access as the best online activity and same 1 (3.30%) librarian says No online activity is conducted in their library.

5.3.5 Difficulty faced while implementing modern network technology in your library?

Table 5 Difficulties Faced

Difficulties faced	Frequency	Percentage%
Network Data connectivity issues	20	66.70%
Incompetency in use of smartphones/gadgets	3	10.00%
Budget	19	63.30%
Lack of administrative support	7	23.30%
No issues	1	3.30%

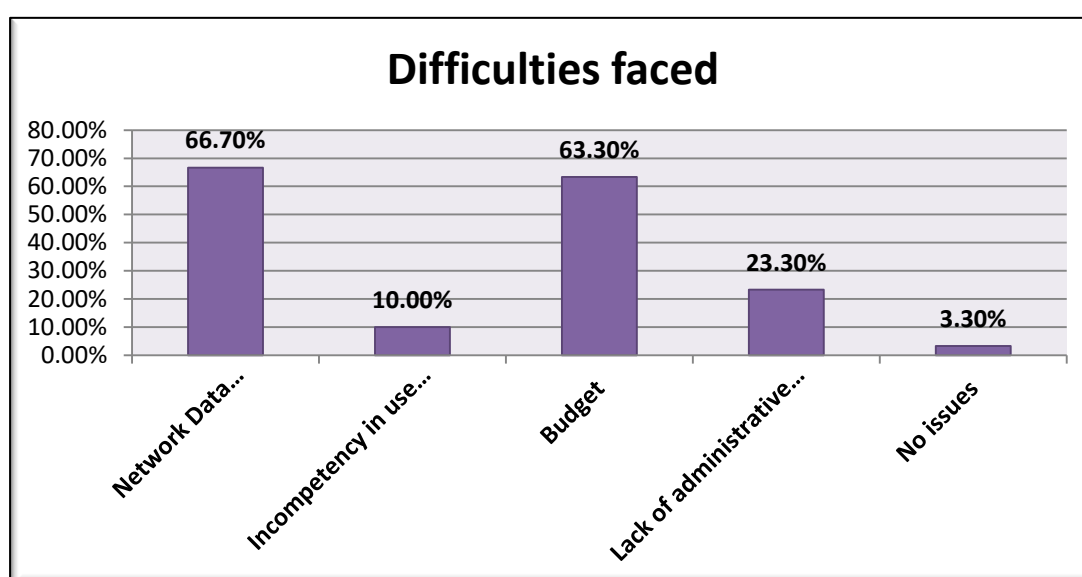


Figure 5 Difficulties faced

The most important question was asked to all the librarians that what are the difficulties they faced while implementing modern network technology in their library. So the responses noted were majority 20(66.70%) of librarians responded that network data connectivity issue is the most important and biggest issue in implementing modern network technology in their library. 19(63.30%) of librarian said that budget is the biggest constrain in implementing modern network technology

in library. Followed by 7(23.30%) of librarian said lack of administrative support was the biggest concern they faced while implementing modern network technologies in libraries. Minority 3(10%0 of librarians responded that incompetency in use of smartphones/gadgets was the difficulty they faced as staff members are not trained or ready to handle modern technologies in libraries and only 1(3.30%) of librarian said that they faced no issues in implementing modern network technology in their library.

5.3.6 Do you subscribe to Journals in E-format?

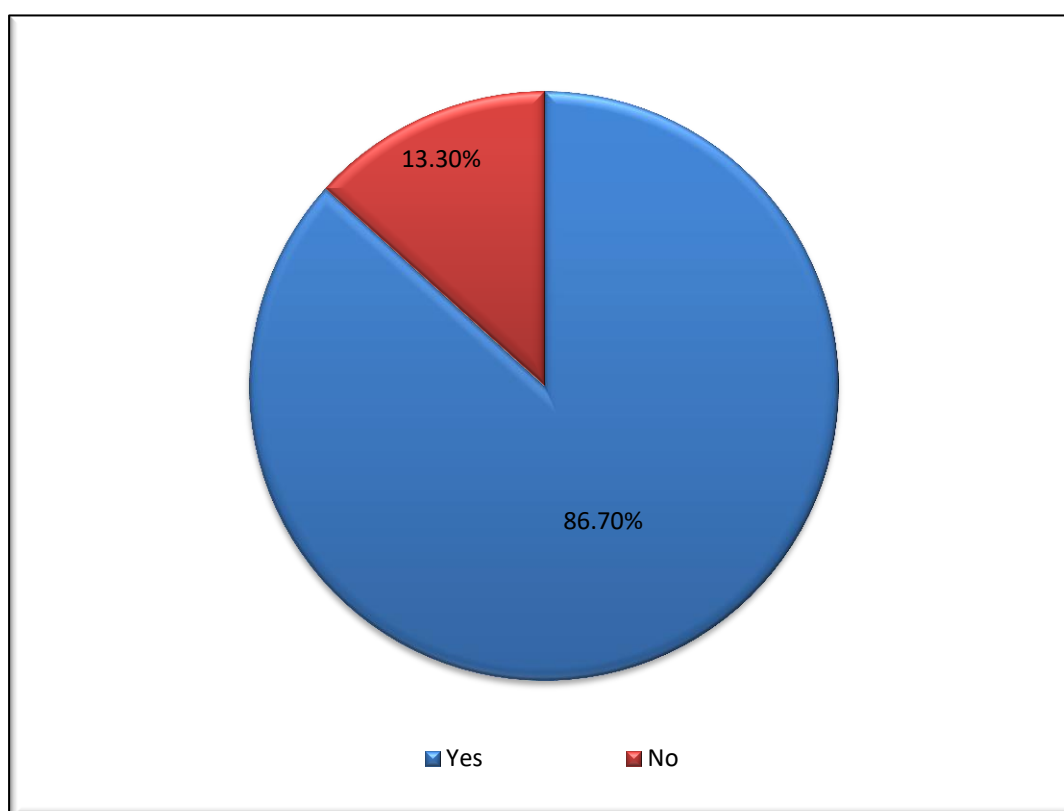


Figure 6 Do you subscribe to journals in E-format

According to the above pie chart, 26(86.7%) of librarians subscribe to Journals in E-format, whereas 4(13.3%) of librarians don't subscribe to Journals in E-format.

5.3.7 If yes, please mark the reasons for acquiring Journals in E-format

Table 6 Reasons for acquiring journals in E-format

Reasons for acquiring Journals in E-format	Frequency	Percentage%
Saves physical space	17	65.40%
Fast retrieval	19	73.10%
Solves the problem of theft	10	38.50%
Easy maintenance	14	53.8%
Several users access simultaneously	24	92.3%

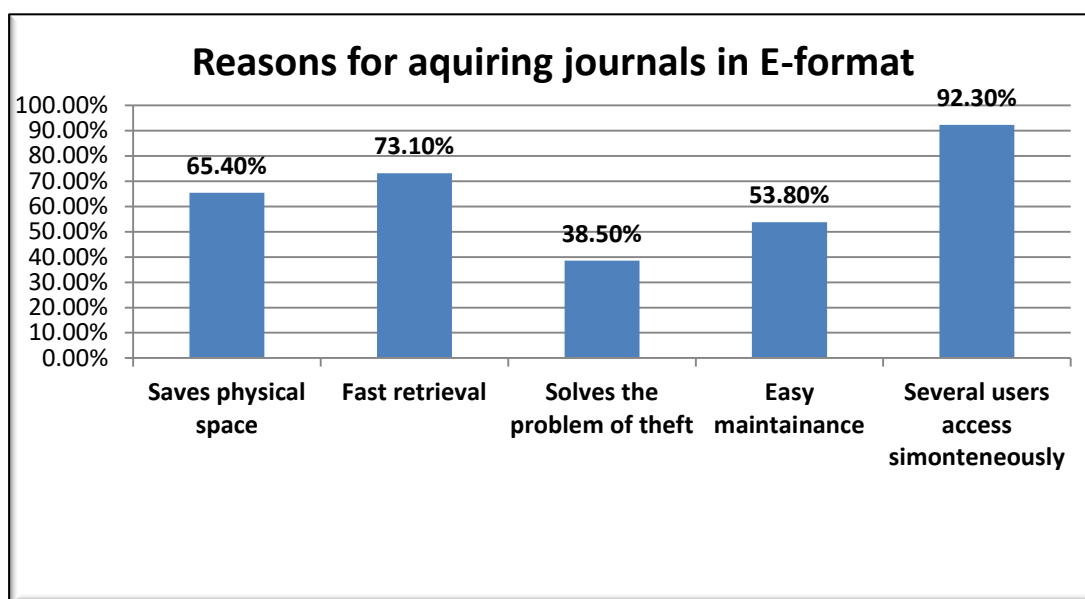


Figure 7 Reasons for acquiring journals in E-format

The Question was asked that if you subscribe to e-Journals what the reasons are. So the responses were Maximum 24(92.30%) librarian believes that the most important reason for acquiring e-journals is that several users can access it simultaneously. Followed by 19(73.10%) of librarian responded that fast retrieval is the biggest reason for acquiring journals in e- format for their library. Whereas 17(65.40%) librarian said that acquiring of e-journals saves a lot of space in their library. While 14(53.8%)

librarian says they acquire Journals in e- format because of easy maintenance of e-journals as compared to physical print journals. Minority 10(38.50%) of librarians responded that acquiring e-journals solves the problem of theft.

5.3.8 If you don't subscribe to Journals in E-format what are the reasons?

Table 7 Reasons for not subscribing

Reasons	Frequency	Percentage%
Reliance on equipment's	2	20.00%
Readers likes to use print resources over E-resources	7	70.00%
Higher cost	8	80.00%
Complexities for acquisition	2	20%
Less permanent	1	10%
Difficulty in reading computer screen	4	40.00%

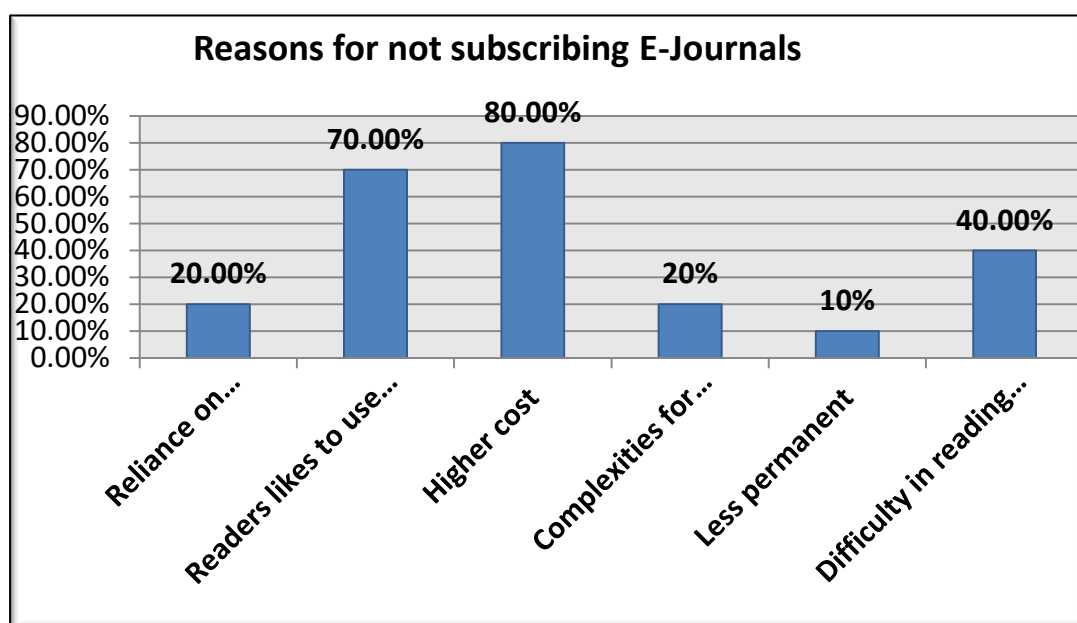


Figure 8 Reasons for not subscribing E-journals

The Question was asked to the librarians about reasons for not subscribing E-Journals. So from the above graph and the table it is noted that majority 8(80%) of librarians believes that higher cost is the main reason for their library to not subscribe the E-journals. Followed by 7(70%) of librarians says that they don't subscribe to E-journals because their students likes to use print resources over e-resources, they feel comfortable reading in print format. 4(40%) librarians responded that difficulty in reading is one of the key reasons for not subscribing to e-journals. Minority 2(20%) librarian says that reliance on equipment's is the reason and similar number of librarian says that complexities for acquisition are their reason for not subscribing Journals in e-format.

5.3.9 Which of the following E-resources are mostly used by students in your library?

Table 8 mostly used E-resources by students in your library

E-Resources	Frequency	Percentage%
E-books	21	70.00%
Open access Journals	20	66.70%
E-Journals(NLIST)	24	80.00%
E-Databases	19	63.30%
Thesis	7	23.30%
Dissertations	7	23.30%
E-Newspaper	19	63.30%
E-Newsletter	8	26.70%
Question Papers	21	70.00%
NA	1	3.3%

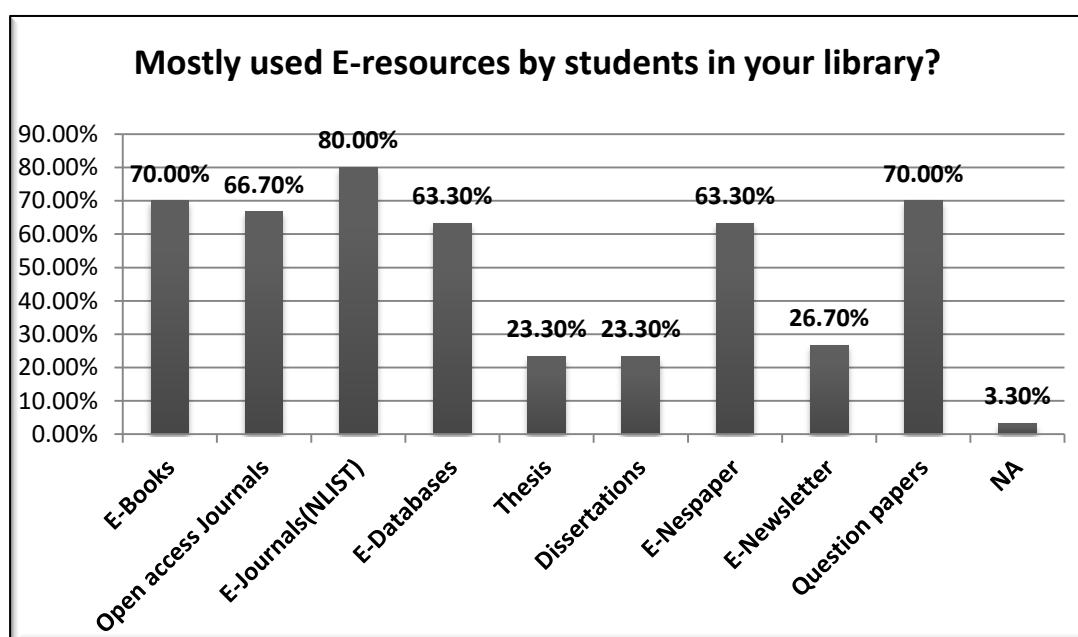


Figure 9 mostly used E-resources by students in your library

According to the bar graph and the table above Majority 24(80%) of librarians believes that E-journals (NLIST) are the mostly used E-resources by students in their library for research study, dissertations work. Followed by 21(70%) of librarians says

that E-books are the mostly used E-resources by students in their library and same number says that question papers are mostly used E-resources by students. Whereas 20(66.70%) of librarians responded that open access journals are the ones that are mostly used by students in their library. On the other hand 19(63.70%) of librarian believes that E- databases are the mostly used e-resources and same number of librarians says that E-Newspaper are mostly used e-resources as students use it to gain current news and information. While 8(26.70%) of librarians says that E-Newsletter are the mostly used e-resources by students in their library. 7(23.30%) of librarians responded that thesis are the mostly used e-resources and similarly 7(23.30%) of librarians responded that dissertations are the mostly used e-resources by students in their library and lastly the least only 1(3.30%) librarian said that no e-resources are used by students in their library.

5.4 Are you aware about establishment of library consortia in Library Network?

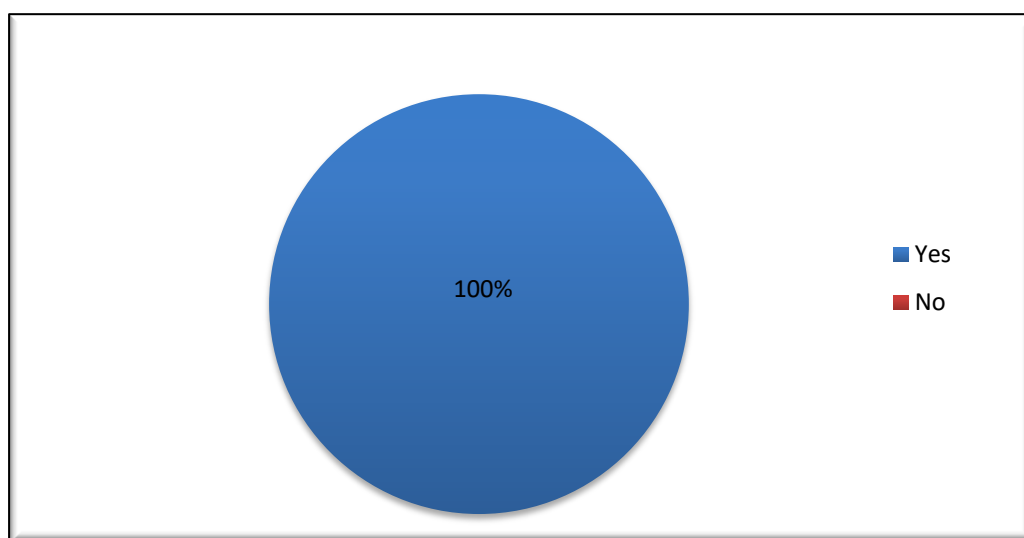


Figure 10 are you aware about establishment of library consortia in library network

The above pie chart shows that almost all the librarians are aware about the establishment of library consortia in library network.

5.4.1 If yes, do you know about the functioning of UGC infonet, INDEST etc.?

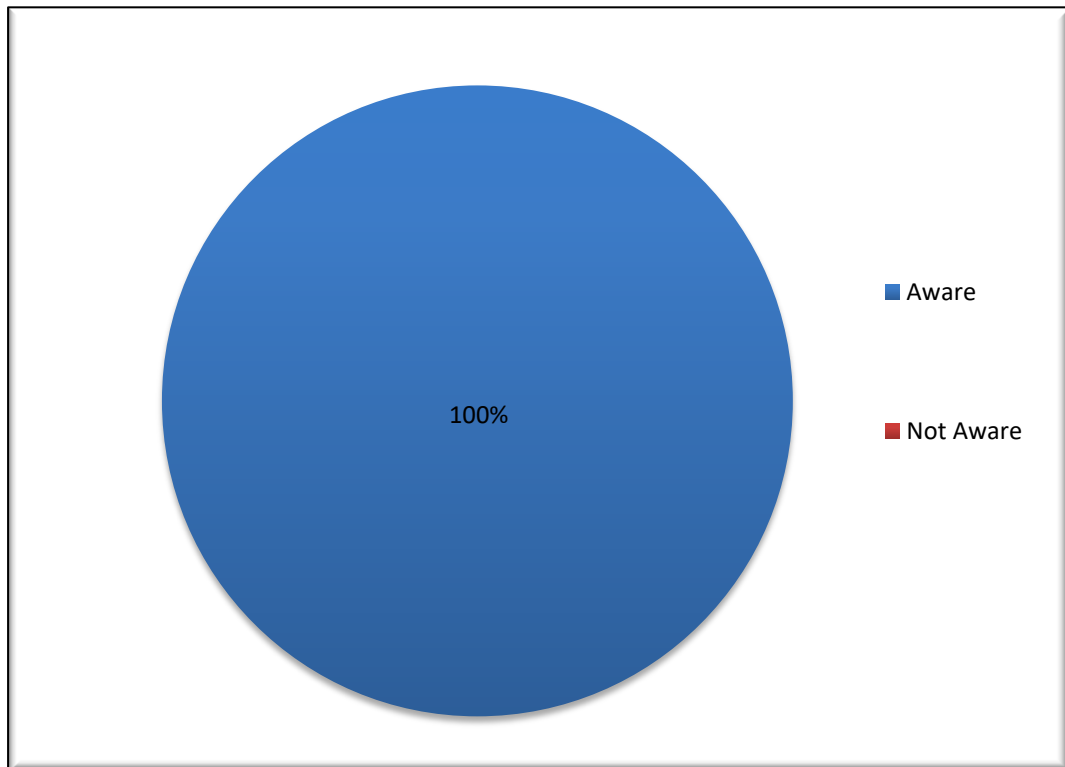


Figure 11 Know about the functioning of UGC infonet, INDEST?

Then, the librarians were asked if yes, then do they know about the functioning of UGC infonet, INDEST. So from the above pie chart it is noted that almost all the librarians know about the functioning of UGC infonet and INDEST.

5.4.2 Are you availing the services of DELNET in your library or any other Library Network?

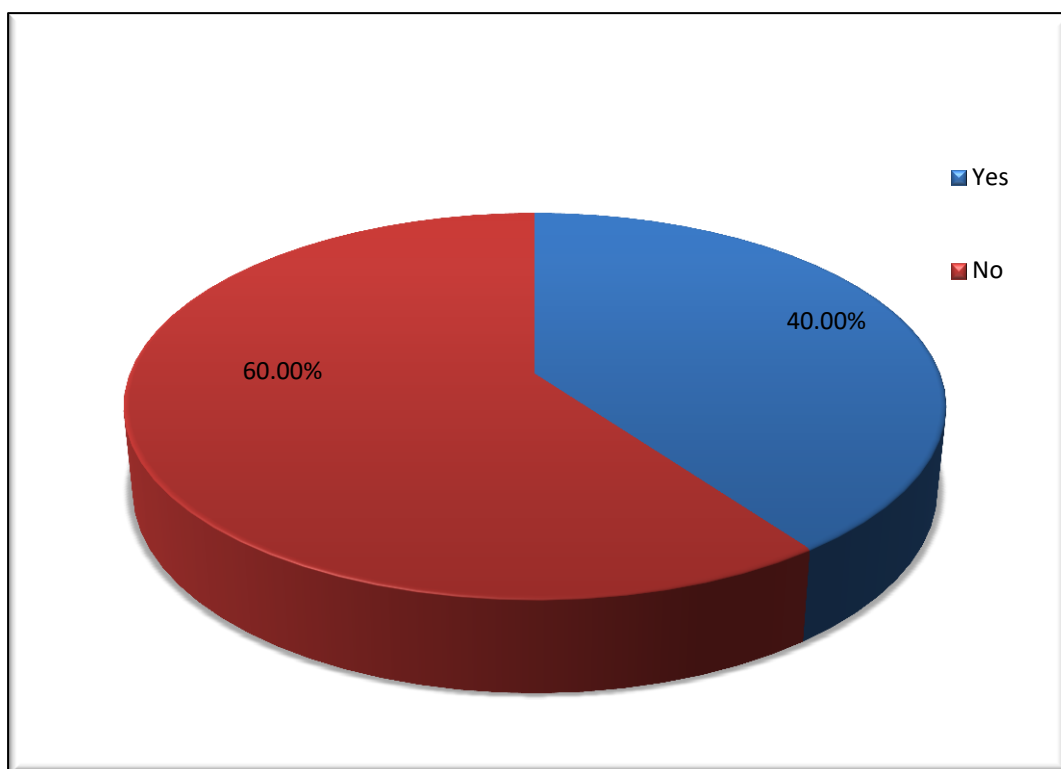


Figure 12 Are you availing the services of DELNET or any other library network in your library

The above pie chart shows that 18(60%) of librarians do not avail the services of DELNET or any other library network in their library. Whereas 12(40%) of librarians avail the services of DELNET or any other library network in their library.

5.4.3 If yes, please name the network

Table 9 Network

Networks	Frequency	Percentage%
DELNET	3	49%
GBBN	1	16.7%
NLIST by INFLIBNET	2	33.3%

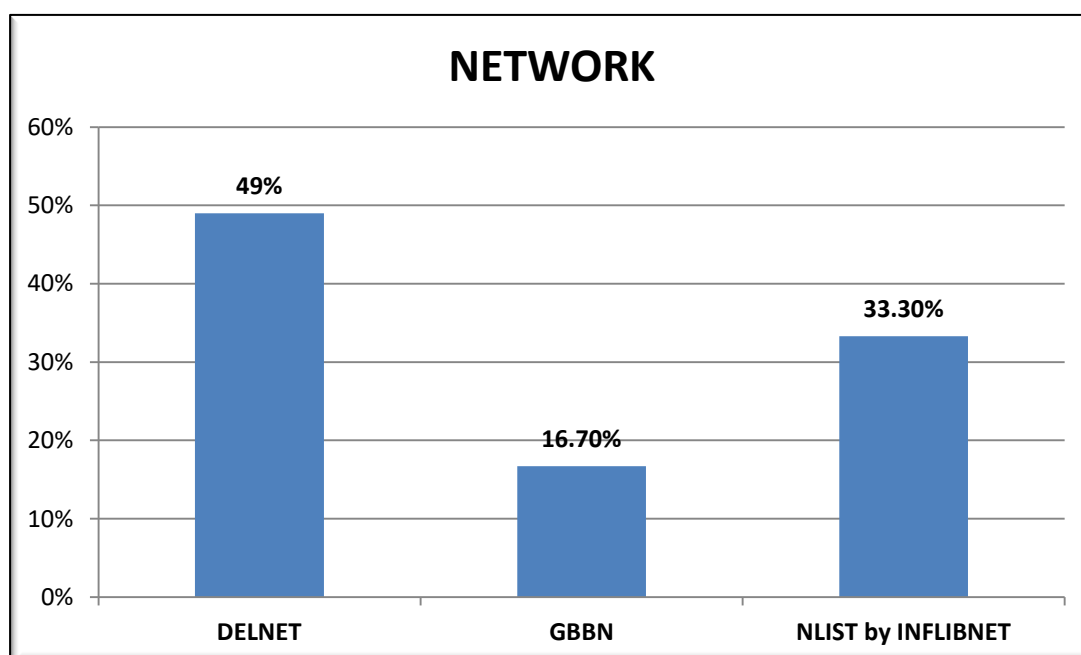


Figure 13 Network

According to the bar graph above majority 3(49%) librarian responded that they are availing DELNET services in their library. Followed by 2(33.30%) librarians responded that they are availing NLIST by INFLIBNET service in their library. And last 1(16.7%) of librarians said that they avail GBBN services in their library.

5.4.4 Is your library automated?

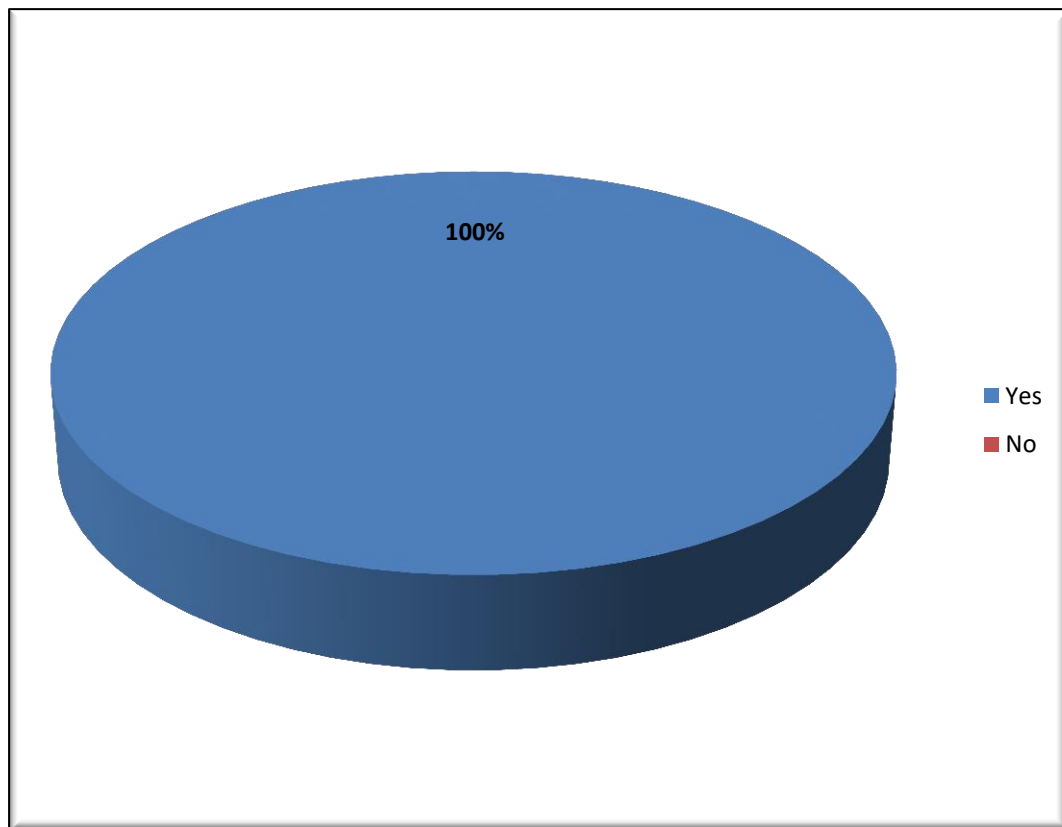


Figure 14 Library Automation

The above pie chart shows that almost all the librarians responded that yes their library is automated.

5.4.5 If yes, the Software used in it?

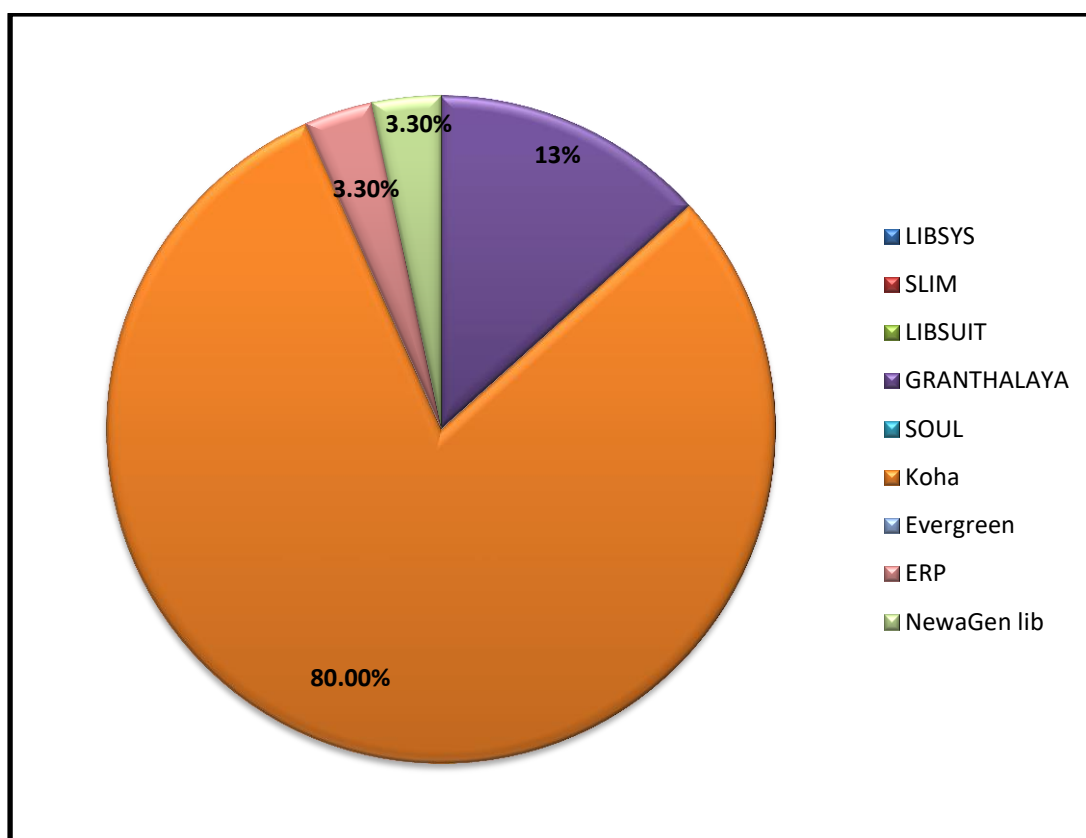


Figure 15 Software Used

From the above pie chart it is depicted that majority 24(80%) of librarians responded that they use Koha software in their automated library. Whereas 4(13.3%) of librarians said that they use Granthalaya software in their automated library. And 1(3.30%) librarians responded that they use LIBSUIT software and the rest 1(3.30%) librarians said that they use ERP software in their automated library.

5.4.6 Do you use Barcode/RFID Technology?

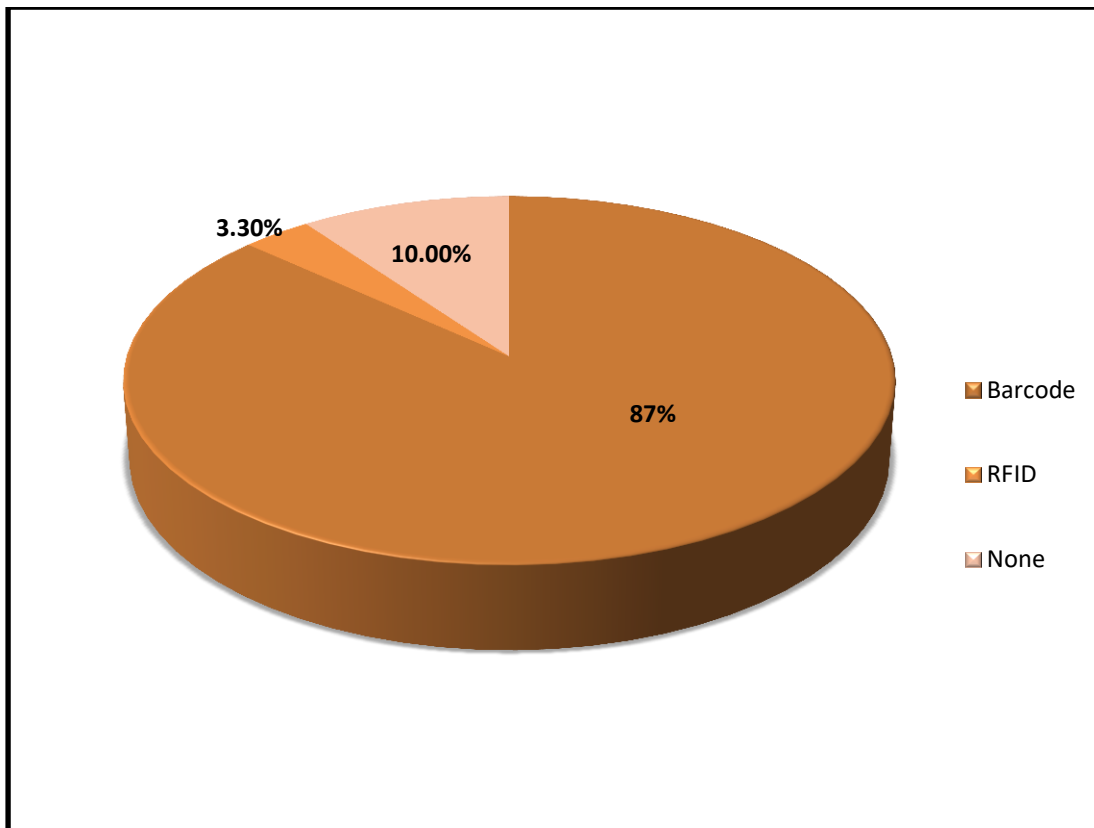


Figure 16 Barcode/RFID technologies

Above pie chart shows that responses of librarians when they are asked about which technology do you use Barcode or RFID. Majority 26(86.7%) of librarian responded that they use barcode technology in their library to scan and identify the books. 3(10%) of librarians said that none of the technologies between RFID and barcode is used in their library. And Minority 1(3.3%) of librarians said that they prefer RFID technology in their library.

5.4.7 Does your library provide Web OPAC services?

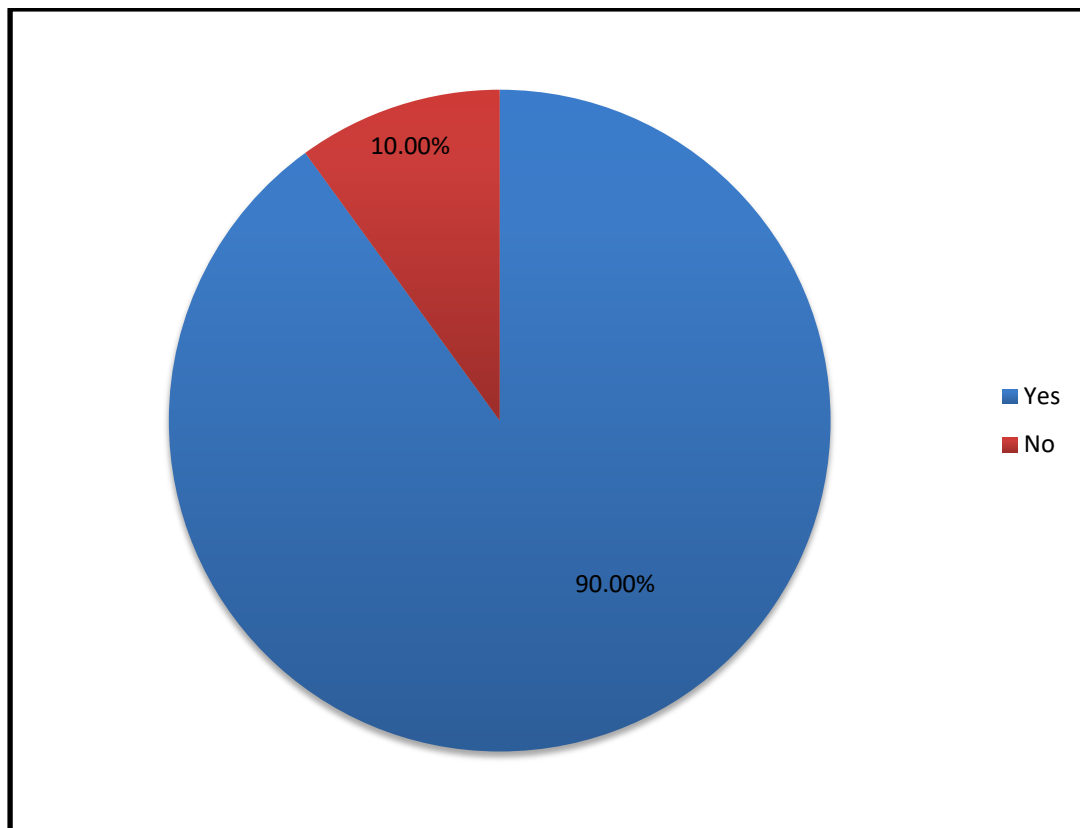


Figure 17 Web OPAC services

The above pie chart it shows that from the total Librarians Majority 27(90%) of librarians responded that their library provides web OPAC services and few 3(10%) of librarians don't use web OPAC services in their library.

5.4.8 Please provide your perception about use of following technological library services by users.

Table 10 Perception about use of following technological library services

Technological Library Services	Used Everytime	Mostly Used	Rarely Used	Never Used
RFID	2	3	8	17
OPAC	13	14	3	0
E-Current Awareness Service	5	16	9	0
E-Selective Dissemination of Information	2	14	12	2
Ask-A-Librarian	9	14	5	2
E-mail Services	13	15	2	0
RSS Feeds	2	5	11	12
E-Document Delivery Service	6	17	5	2
Printing Service	14	10	6	0

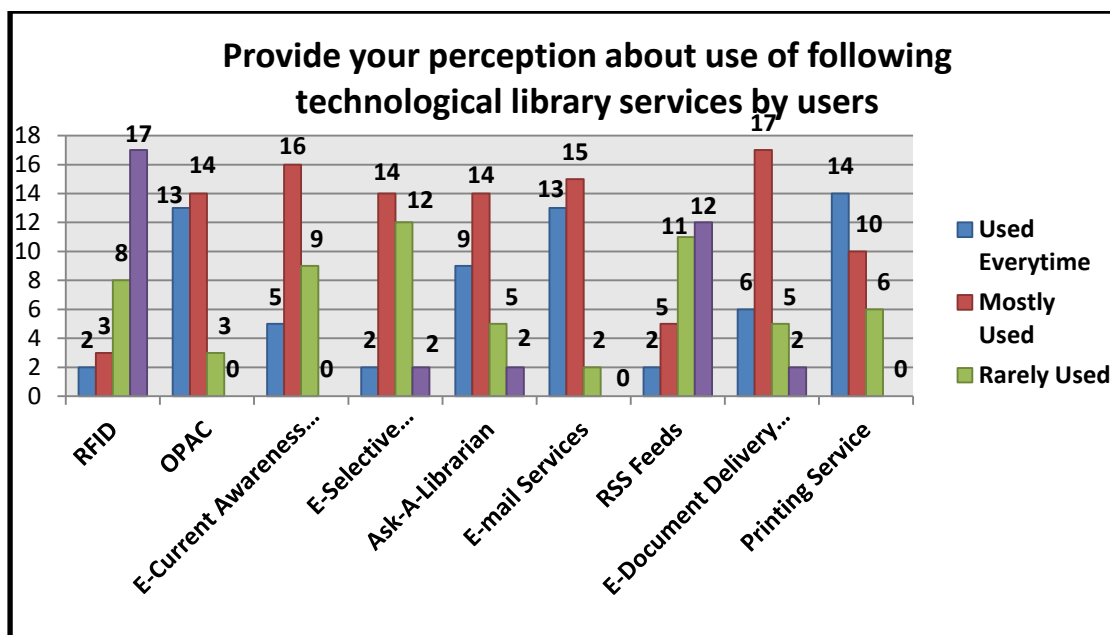


Figure 18 provide your perception about use of following technological library services by users.

The question was asked to all the librarians about their perception on use of technological library services by users. So from the bar graph and the table it is noted that only 2 librarians responded that RFID system is used everytime in their library, 3 librarians feels that RFID system is mostly used in their library, 8 librarian believes that RFID system somewhat rarely used in their library, and 17 most number of librarian feels that RFID system is not used or RFID technology is not provided in their library. Followed by OPAC 13 librarian said that OPAC as library service is used everytime by users in their library, Majority 14 librarian says that OPAC is mostly used by all the users and minority 3 librarians said that OPAC library service is rarely used by any student. Whereas in terms of E-current awareness service 5 librarian believes that CAS library service is used everytime by users, maximum 16 librarians said that CAS as a library service is mostly used by all the users, and half 9 of librarian responded that CAS library service is rarely used by any user in their library. While on the other hand for E-selective dissemination of information only 2 librarians feels that SDI library service is used everytime, majority 14 librarian believes that SDI library service is mostly used by their library users, 12 librarian responded that SDI service is a rarely used library service in their library. And minority 2 librarian feels that SDI library services never used by their users.

5.4.9 Which type of Network technology do you use in your library (LAN/WAN)

Table 12 Type of Network Technology (LAN/WAN)

LAN/WAN	Frequency	Percentage%
Wireless	7	23.30%
Wired	10	33.30%
Mixed	19	63.30%

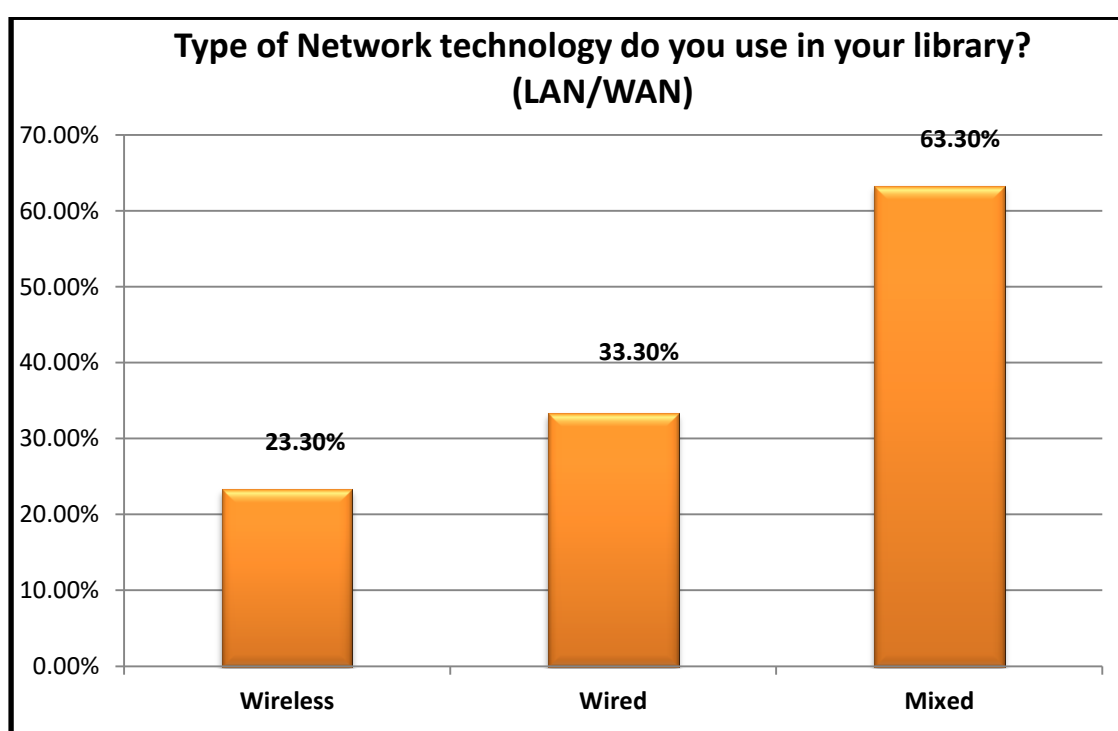


Figure 19 Type of Network Technology (LAN/WAN)

According to the bar graph and table above we can note that maximum 19(63.30%) of librarians told that they use mixed both wired and wireless network technology in their library. Followed by 10(33.30%) of librarians use wired network technology in their library and the small minority 7(23.30%) librarians said that they use wireless network technology in their library.

5.5 What are the full texts Web Databases available on your library website?

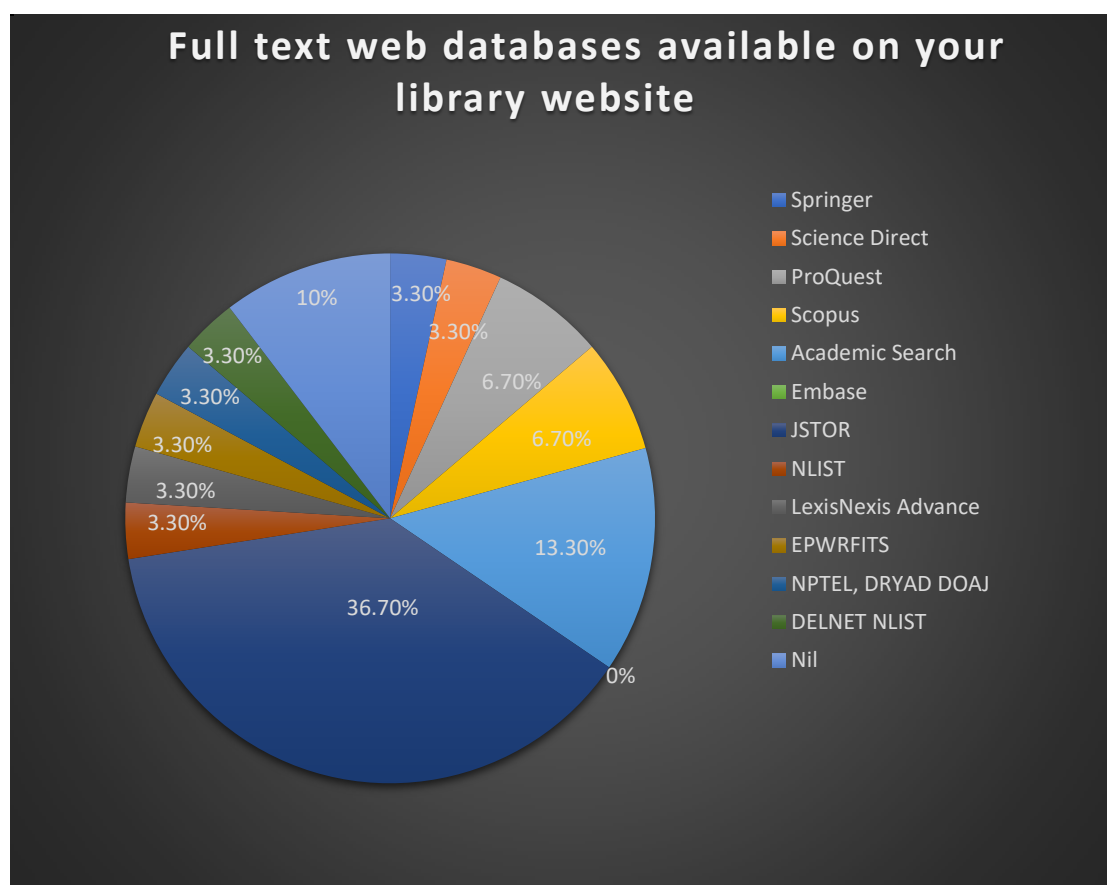


Figure 20 Full text web databases

The question was asked to all the librarians that what are the full texts web databases available on their library website. Majority 11(36.7%) of librarian responded that JSTOR is the full text database available on their library website. Followed by 4(13.3%) of librarians responded that academic search is the full text databases they offer from their library website. While 3(10%) of librarians responded that no full text web database is offered by them through their library website. 2(6.7%) of librarian said that they provide Scopus database and similar number of librarian responded that they offer ProQuest full text web database on their library website. Minority 1(3.30%) of librarian said they provide Science direct database on their library website. Then many similar numbers of librarians said that they offer Springer database, DELNET NLIST database, NPTEL-DRYAD DOAJ databases, Lexis Nexis Advance database, EPWRFITS database, and NLIST database

Chapter 6 – Findings, Suggestions and Conclusion

6.1 FINDINGS

The survey was conducted and the questionnaires were sent to all Goa college students to note their view on implementation of modern network technologies or ICT as library services in their library. After studying and observing the data analysis as an outcome of the study we found out the findings below.

FINDINGS OF THE STUDY INCLUDES AS FOLLOWS:

Purpose of visiting the library

The findings reveal that 73.6% of users go to the library for the purpose to seek information out their assignment work, gaining knowledge. 71.7% of users visit the library for the purpose reading books.

The study revealed that only 11.3% of users go to the library the purpose to use online/offline databases, and only 7.5% of users go to the library for the purpose to find out about events and exhibitions.

How frequently do you visit the library?

The question was asked to all the students about how frequently do they visit the library. So we found that 32.10% of users visit the library occasionally when they need, same number of users visit the library once in a week. 13.20% users visit the library once in a month. And only 11.30% of users visit the library once in a month and everyday basis.

Library automation

On this question 77.40% users said yes their library is automated and rest 22.60% of users said No their library is still not automated.

Yes? Please tick the activities provide by your library

Then the students were asked that if yes their library is automated then tick the activities provided by their library. 75.5% of students said that their library provides issue and return of books. Secondly 44.90% students said their library offers self-check in and self-check out activity.

The study revealed that only 8.2% of library provides online ordering of books activities.

Computers in your library

The study revealed that 40.9% of users says that their library has 5-10 computers. Followed by 38.6% of users says that their library has 0-5 computers. 13.6% users responded that their library has 10-15 computers and 6.8% of users revealed that their library has 15-20 computers.

Web based library services

When asked about web based library services provided for users. The findings say that majority 73.60% of respondent says “Yes” that their libraries do provide web based library services for users. And 22.7% of users said “No” their library doesn’t provide web based library services for their users.

If no, what are the reasons?

If your library doesn’t offer web based library services to their users/students what are the reasons, from the findings it is revealed that maximum respondents strongly agrees that lack of infrastructure, lack of technical knowledge of library staff and lack of internet connectivity are the biggest reasons for libraries for not providing web based library services to their students.

The study also revealed that maximum number of users disagreed on reasons such as lack of awareness about web based tools among library staff and lack of technical knowledge of library staff is not the reasons for which their library doesn’t provide them the web based library services.

Library website

The question was asked to the students whether their library has a website by which they can search catalogue or seek information. The findings revealed that 73.60% of users said yes their library has a website by which can search catalogue and seek information. And 26.4% users said no their library doesn't have a website.

Library services provide through library website

If your library has a website then what are the services they offer through that website. We found out that 81% of respondents said E-books services are important services that their library website provides. E-journal library services are the second most library service that is provided through their website.

The findings also reveal that bulletin board and podcasting are the least provided library services through library website.

E-resources over Printed resources

The most important question was asked to students that what are the factors that made them choose e-resources over printed resources. The study revealed that 79.2% of students chose e-resources over printed resources because they are easily accessible. 60.4% of students found easy to carry everywhere is the biggest factor, and similar respondents chose e-resources because they can read it anytime. And 58.5% of students chose e-resources for less time consuming factor.

Mode of using E-resources

When respondents were asked how they access e-resources, most of them that is 83% of respondent said that they access e-resources on smartphones, while 49.10% of respondents access it on laptop, and 43.40% on PC, least of the respondent's access e-resources on tablets that is 20.80% respondent.

Mostly used E-resources

The question was asked to students that in their opinion, which are the e-resources that are mostly used by students in their library. We found out that in majority 81.10% of students uses E-books. Question papers become the second most used e-resources by students.

The study also revealed that hardly any students use e-databases or e-newsletter as e-resources.

Orientation/training/education to users

The findings revealed that majority 52.80% of users said that the training/orientation program is not provided to them in their library for effective information about information technology facilities, databases. While 47.20% of users said that their library is providing them all the training facilities in knowing the concepts of ICT and Information resources.

Modern Network Technologies

The question was asked to the students about Modern network technologies provided to them in their library. The study revealed that OPAC Technology is maximum used and provided in their library. Ask-A-Librarian and Photocopy technologies are the second most technologies that are provided maximum as library services in libraries. The findings reveal that Selective Dissemination of Information and RFID are the least provided modern network technologies by libraries.

Problems difficulties faced

The study revealed that 47.20% of respondents felt that insufficient computers is the biggest problem they faced for accessing modern technology facilities, 45.30% of respondents are saying inadequate e-resources is the difficulty they faced. 32.10% of respondents are saying no internet connectivity is the key reason.

Minority of respondents responded that uncooperative library staff is one of the reasons which they faced while accessing modern network technologies.

Social media tools

Taking in consideration different types of social media tools like Whatsapp, Twitter, Instagram, Facebook etc. It was found out that E-mail is used by maximum libraries in providing library services to users. Whatsapp is the second most used social media tool that is 30.20%. Followed by YouTube that is 26.40% respondents, Instagram 18.90% and twitter 9.40%.

Subscribing any of the following Databases

The question was asked to all students that is your library subscribing to any of the following databases. We found out from the analysis that majority of the students said that their library subscribes to Emerald database. Whereas 22.50% of users don't know which database their library subscribes. 17% of the users said that their library subscribes to Ebsco database and similar number to AGRIS database.

The findings revealed that proQuest database is subscribed by least libraries.

Technologies used as Academic library services

The question was asked to all the students about to rate which technologies are mostly used as academic library services. From the data analysis we found out that photocopy, E-mail, Ask-A-Librarian and OPAC is the mostly used technologies as academic library services provided to the students.

The study also revealed that E-Document delivery service, E-Selective Dissemination of Information, E-current Awareness Service is the mostly never used technologies as academic library services.

Advantages of using Modern Network Technology

The students were asked about their opinion on what are the advantages of using modern network technologies as library services. From the study it is revealed that maximum number of respondents is in a opinion that the modern network technologies in library services helps in fast information retrieval. 64.20 says that modern network technologies helps a lot in preservation and conservation of books and same number of respondents says that multiple access of information as the biggest advantage of using modern technologies. 50.90% of respondents said networking and least respondents says it helps in green method of saving trees.

6.2 Suggestions:

- No Internet connection, no proper network in the library is the biggest problem students face while accessing the Modern Network Technologies as library services. So firstly the internet connection should be provided to every library and academic institutions with all the proper infrastructure facilities

and network so that there is no issue in accessing various modern technologies as library services through internet.

- Technology should be there in the library so that we can access the needed information faster without wasting any time.
- The library staff should be better with students. They lack to communicate with students and ask their needs. So there should be an communication section between the library staff and the users in physical or online basis. so that the library staff can understand the needs of users and the users can freely talk what type of information they want, what type of technology they want to use as library services, and so that users can find the information faster without wasting much time.
- Some respondents suggested that the library staffs at higher level should try to launch some library app specially for all library facilities and information for students so that they can access information easily or provide messages to them telling asking them what are the updates or new arrival of books present in the library. So that they can stay updated with their library.
- The E-Question papers should be uploaded on college websites so that student can refer it anywhere, anytime easily taking the advantages of modern technologies, and understand and get idea of how questions are framed in exams.
- Library is good in the modern world since we can access it anywhere, anytime easily. Many suggested that there should be all kinds of e-books and e-journals uploaded on their library website which are important to every student in their research work, projects, assignments and various kinds of academic studies.
- Many respondents suggested that it is required to increase the efficiency and effectiveness of their day to day library work, provide training to all library staffs in this modern times so that they can handle all the students modern technological needs, and don't lack behind from other libraries in this

technological era. And also orientation programmes should be conducted for students in colleges about ICT facilities, modern network technologies in providing library services and all.

6.3 FINDINGS 2

The survey was conducted and the questionnaires were sent to all Goa Academic college, Institute librarians to know their college libraries modern technological services. After studying and observing the data analysis as an outcome of the study we found out the findings below.

FINDINGS OF THE STUDY INCLUDES AS FOLLOWS:

Modern Network technologies provided in your library

The findings reveal that 90% of respondents use modern technology OPAC, 83% of respondents are aware of CAS, 76.6% respondents responded that Ask-A-Librarian technology is mostly used by students to ask query to librarians.

The study reveals that hardly any respondent's uses virtual reality application and e-book interface.

Social Media communication services

The study revealed that majority 90% of librarians uses e-mail for communication of library related mails to students. Whereas 63.30% librarian uses Whatsapp for communication. Twitter, blogs, YouTube is not much used by respondents.

Online reference services

Majority E-mail 87% of librarians again request for online reference services. Ask-A-Librarian is the second most used online reference service. Followed by third most used E-Document delivery service and Instant messaging service. This is a positive trend for using modern technologies as online reference services.

ERP, Voice over internet protocol, webforms is the least used online reference services.

Best online activity

The findings reveal that 60% of librarians felt that online orientation programs is beneficial activity. 46.70% of librarians are favouring towards virtual book reading as the best online activity. And 43.40% are happy with online presentations and online book exhibitions.

The study also revealed that Virtual library tour and remote access are the least used best online activities.

Difficulties Problems faced

The study endorsed that 67% of librarians face network data connectivity as the biggest problem in implementing modern network technology. Budget is the second biggest issue that the librarians faced. Also 23.30% of librarians found lack of administrative support as the problem.

The findings also disclosed that incompetency in use of smartphones as the least difficulty faced issue in accessing modern network technologies in their library.

The questions were asked to all librarians that whether they subscribe to journals in e-format or not. 86.70% of librarians said that they subscribe to journals in E-format. While 13.30% of librarians said that they don't subscribe to journals in e-format.

If yes, what are the reasons?

Then based on the earlier question the question was asked to all librarians that if they acquire journals in e-format then what the reasons are for that. Maximum number of librarians said that they subscribe to e-journals because several users can access it simultaneously. 73.10% of librarians said that fast retrieval is the reason for which they acquire journals in e-format. 65.40% of librarians said that it saves a lot of physical space. 53.80% of librarian responded that easy maintenance is the key reason for acquiring E-journals. And only 38.50% of librarian said that it solves the problem of theft.

If no, what are the reasons?

Now the study revealed the 3rd part of earlier question that if you don't subscribe to journals in e-format then what are the reasons. Majority 80% of librarians don't subscribe to journals in E-format because of higher cost. 70% of librarians don't acquire E-journals because their readers like to use print resources over E-resources. The study also revealed that hardly only 10% of librarians were in a opinion that they don't acquire journals in e-format because they are less permanent.

Mostly used E-resources by students

The findings reveal that 80% of librarian responded that e-journals (NLIST) is the mostly used e-resources by students in their library. On 70% librarian said E-books and similarly question papers are mostly used by students. 66.70% for open access journals.

The study also revealed that hardly any student uses E-newsletter, thesis, and dissertations.

Establishment of library consortia in library network

By looking at the pie chart the findings we received notes that 90% of librarians are aware about establishment of library consortia in library network. And 10% of librarians are not aware.

Functioning of UGC infonet, INDEST

Based on the earlier question the librarian was asked if they know about the functioning of UGC infonet, INDEST. Majority that is 90% said that they are aware and 10% said that they are not aware.

Avail the services of DELNET

Then the question was asked if they avail services of delnet in their library or any other network. 60% of librarian said no and 40% librarian said yes.

Is your library automated?

The findings reveal that all the librarians said that their library is automated.

Which software they use

Further the librarian were asked that if their library is automated then which software they use. The study revealed that majority of librarians use Koha software for their library. 13% of librarians use e-Granthalaya and the least only 3.30% of librarians uses libsuit and uses ERP software in their automated library.

Barcode or RFID technology

The study indicates that majority 87% of librarian responded that they use barcode technology in their library. While 10% of librarians said they use none of these technologies in their library. And the rest 3.30% of librarian said that they use RFID system in their library.

Web OPAC services

The study found that majority of librarians provide web OPAC services and only 10% of librarians said they don't use web OPAC services.

Which is most used technological library services

All the librarians were asked to provide their perception about use of following technological library services by students. So from the findings it can be understood that Printing, OPAC, E-mail technology library services are used maximum, used everytime by students.

And the study also revealed that RSS Feeds and RFID technology is almost never used as library services by any students.

Network technology (LAN/WAN)

Majority 63% of librarians responded that they use mixed type of network technology in their library. Secondly 33.30% of librarian said that they use wired network technology. And 23.30% of librarians said they use wireless technology

Full text web databases

The question was asked to librarians about the full test web databases available in their library. From the findings we can note that majority 36.70% JSTOR full text

web database ids available on every library website. Followed by 13.30% of librarian said that academic search full text web database is available on their library website. Scopus and ProQuest are the full text web database that is present at 6.70% of librarians view.

The study also revealed that science direct, springer, EPRWRFITS, Nexis lexis advance, NLIST, embase are the full text web databases that are least available on any library website.

6.4 CONCLUSION:

The purpose of data analysis and findings is to examine the modern technologies/Information communication technologies available as library services in different libraries of Goa. The findings revealed that application of technology in libraries helps the users, researchers to know and study the different modern technology library services implemented in academic libraries. The analysis helps the researchers to know the data related to types of E-resources available, difficulties barriers faced by both Librarians and users. The kinds of issues librarians and library staff faced while implementing modern technology as library services in their library, their challenging role in this era, how they make it useful to their students. Also the barriers faced by students in accessing modern technological library services, what they know and their views in this modern era of technologies in libraries. Users have now recognised the value of technology and hence accordingly their expectations and demands are growing. The analysis of findings showcases that with growing technologies, the challenges for librarians and library staff also grows equally. Therefore it is necessary for librarians to go in sync with fast growing technologies.

In this study, the students suggested many suggestions on how technologies can be improved. The most important barrier for improved modern technology library services is internet data connectivity issues in different libraries and different academic institutions, which needs to be solved as all modern web based library services depends completely on internet connectivity and its network. The study further suggests that the library staff should be trained in terms of how to handle the queries of students related to modern technologies. And also orientation programmes should be conducted for students to completely know all the concepts of library

services, its materials, ICT tools and its technological library services, facilities and how they can use them. Many students suggested that one library app should be created for students to get all information, notifications, and latest updates about collections of their library. The studies based on all this different technologies should be performed which prove to be the most useful one for different libraries.

7. BIBLIOGRAPHY

Advantages and Disadvantages of Digital Libraries. (2022). Retrieved from lisdunetwork.com: <http://www.lisdunetwork.com>

Adhinu .J. O., and Chinyere, D. O. (2017). The Impact of Information Technology on Modern Librarianship: A Reflective Study. *Information and Knowledge management*.

Adhinu, I. A., Nancy, A. E., Chibuke, U. E. (2018). Application of Information Communication Technologies (ICT) for effective user education programme in federal university libraries in south east Nigeria. *International Journal of Library and Information Science*.

Afolabi, A. F., Abidoye, J. A. (2011). Integration of Information and Communication Technology in Library Operations Towards Effective Library Services. *Journal of Educational and Social Research* .

Ajagekar, R. H.,. (n.d.). *Virtual Reference Service in Academic Libraries*.

Arif, M., and Mahmood, K. (2010). The changing role of librarians in the digital world: Adoption of Web 2.0 technologies by Pakistani Librarians. *The Electronic Library*, 30(4), 469-479.

Ayo-Olafare, F. R. (2020). GLOBAL TRENDS AND EMERGING TECHNOLOGIES IN LIBRARIES AND INFORMATION SCIENCE. *Library Philosophy and Practice (e-journal)*, 1-12.

Balaji and Kumar. (2011). Use of web technology in providing information services by south Indian technology universities as displayed on library website. *Library Hi Tech*.

Bharti, K. L., and Verma, Shilpi.,. (2021). Use of Emerging Technologies in the University Libraries: A Study of Review of Literature. *Library Philosophy and Practice (e-journal)*.

Bhhagat, M. P. and Khaparde, V.,. (n.d.). *Emerging technologies in Library and Information Science*. Retrieved from escienceworld.in: <https://escienceworld.in>

Bhoj, H. S. (2020). Mobile based library services. *IP Indian Journal of Library Science and Information Technology*, 61-64.

Bosque, D. C. D., Leif, S. A., and Skarl, S. (2012). Libraries A aries Atwitter: T twitter: Trends in Academic Libr ends in Academic Library Tweeting. *Reference Services Review*.

Canuel, R., and Crichton, C. (n.d.). *Canadian academic libraries and the mobile web*. Retrieved from University of toronto: https://tspace.library.utoronto.ca/bitstream/1807/33920/1/Mobile_Web.pdf

Chaloeyprach, W., and Ketmuni, M. (2020). The Acceptance of Using Library Mobile

Application of the Students at Faculty of Liberal Arts, Rajmangala University.
Psychology and Education Journal, 58(1), 1471-1477.

Chisenga, J. (2006). *INFORMATION AND COMMUNICATION TECHNOLOGIES: OPPORTUNITIES AND CHALLENGES FOR NATIONAL AND UNIVERSITY LIBRARIES IN EASTERN CENTRAL AND SOTHERN AFRICA*. Retrieved from CORE:
<https://core.ac.uk/reader/290476270>

Chukweuke, C., and Onuoha, j. (2019). *EMERGENT TRENDS IN LIBRARY SERVICES DELIVERY: THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN ACADEMIC LIBRARIES*. Retrieved from researchgate.net.

Cummings, J., Merrill, A., and Borrelli, S. (2009). EMERGENT TRENDS IN LIBRARY SERVICES DELIVERY: THE APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN ACADEMIC LIBRARIES. *Library Philosophy and Practice (e-journal)*.

Das, K. (2019). *Implementation of RFID System in Modern Libraries: A Study on University*. Retrieved from RFID System Assam:
<https://ir.inflibnet.ac.in/bitstream/1944/2345/1/16.pdf>

Davidova, I., Marina, O., Slianyk, A., and Syrov, Y. (n.d.). *Social Networks in Developing the Internet Strategy for Libraries in Ukrain*. Retrieved from CEUR-WS:
<https://ceur-ws.org/Vol-2392/paper10.pdf>

Dessai, K. D.,. (n.d.). *ICT Based Tools and its Benefits in Libraries*.

Dhande, S. (2017). Web based Library Services in University Libraries in Marathawada Region of Maharastra. *International Journal of Library and Information Studies*, 7(4), 136-141.

Ekoja, I. I. (2011). Modern ICT Tools: Online Electronic Resources Sharing Using Web 2.0 and Its Implications For Library and Inform,ation Practice in Nigeria. *Samaru Journal of Information Studies*.

Faisal, S. L . (2009). Blogs and Online Social Networks as User Centric Service Tools in Academic Libraries: An Indian Library Experience. *ACADEMIA*.

Gavit, B. K. (2019). Web Based Library Services. *Library Philosophy and Practice (e journal)*, 1-6.

George, N. T. (2020). Assessment of Cloud Computing Technologies for Library Service Delivery in Ignatius Ajuru University of Education, Port Harcourt, Nigeria. *International Journal of Applied Technologies in Library and Information Management*.

Gross, J., and Leslie, L. (2008). Twenty-three steps to learning Web 2.0 technologies in an academic library.

Hamad, F., Al-Fadel, M., and Fakhouri, H. (2022). The effect of librarians' digital skills

on technology acceptance in academic libraries in Jordan. *Journal of Librarianship and Information Science*.

Hamad, F., Fakhuri, H., and Jabbar, S. A. (2020). Big Data Opportunities and Challenges for Analytics Strategies in Jordanian Academic Libraries. *New Review of Academic Librarianship*.

Hovoruka, V. B., Semenova, Larysa. A., and Semenova Liudmyla. A. (2019). NETWORKING INFORMATION TECHNOLOGIES AS A METHOD INNOVATIVE CHANGES IN ACADEMIC LIBRARIES.

Islam, M. M., and Habiba, U. (2015). Use of Social Media in Marketing of Library and Information Services in Bangladesh. *DESIDOC Journal of Library & Information Technology*.

Jones, F. P., and ESQ, M. U. (2022). THE ROLE OF ICT IN THE PROVISION OF LIBRARY SERVICES: A PANACEA FOR SUSTAINABLE DEVELOPMENT. *INTERCONTINENTAL ACADEMIC JOURNAL OF LIBRARY AND INFORMATION SCIENCE*.

Kale, D. P., and Jadhav, Y. G. (2022). LIBRARY SYSTEM AND SERVICES IN ENGINEERING COLLEGES WITH SPECIAL REFERENCE TO GOA STATE. *International Journal of Advance and Applied Research*, 10(1), 681-690.

Krishnan, V. (2021). Role of Web Technology in Modern Library Services: An outlook. *IJIRT*.

Kumar, A. (2014). Students opinion about the success of mobile technology in libraries: A case study of Jawaharlal Nehru University (JNU), New Delhi. *New Library World*, 471-477.

Kumbar, B. S., and Mulla, K. R. (2021). TRACE THE INNOVATIVE WEB TOOLS USED IN LIBRARY SERVICES AND SERVICES PROVIDED USING THEM: A LITERATURE REVIEW. *International Journal of Humanities and Social Sciences*.

Lad, A. T.,. (n.d.). *Modern Trends and Technologies for Managing Library and Information Centres: Barcode RFID and Electromagnetic Systems*.

Lwoga, E. T. (2011). Making learning and web 2.0 technologies work for higher Learning Institute in Africa. *emeraldinsight*.

Mandalia, H., and Parmar, D. (2017). Use and Impact of the Modern ICT in Central Library of C.U. Shah Medical College and Hospita, Gujrat, Indial. *The International Journal of Indian Psychology*, 4(3), 138.

Mbage, f. and Iroeze, P. C. (2021). *Academic libraries- Modern Services and Challenges*. Retrieved from Research gate:
https://www.researchgate.net/publication/352957667_Academic_Libraries_Moder-Day_Services_and_Challenges

Mittal, A. (2017). Indian Journal of Science and Technology. *Emerging Technologies*

and their Impact on the libraries.

Mukhopadhyay, P., and Das, S. K. (2008). *Towards Library 2.0: Designing and Implementing the Modern Library Service*. Retrieved from ResearchGate: <https://www.researchgate.net>

Muneja, P. S., and Abungu, A. K. (2013). Application of Web 2.0 tools in Delivering Library Services: A Case of Selected Libraries in Tanzania.

Network Based Information Services. (n.d.). Retrieved from egyankosh: <https://egyankosh.ac.in/bitstream/123456789/25581/1/Unit-9.pdf>

Parabhoi, L., Bhattachariya, N., and Dhar, R. (2017). *Use of QR Code in Library*.

Peripydi, A.,. (2017). The impact of digital technologies on academic libraries: challenges and Opportunities. pp. 2(2), 46-50.

Priolkar, S. A., and Thorat, S. V. (2022). IMPLEMENTATION OF ONLINE RESOURCES AND SERVICES DURING COVID19 PANDEMIC: A STUDY OF INSTITUTE OF NURSING EDUCATION, BAMBOLIM GOA. *International Journal of Advance and Applied Research*.

Punchihewa, C. N. D. (2018). How do Sri Lankan University Libraries Employ Web 2.0 Tools in Providing Web Based Library Services? : A Comparative Study. *Journal of the University Librarians Association of Sri Lanka*, 21(1), 18-34.

Rao, K., Rao., and Bhat, K. (2018). Perception of Semi-Professionals in using ICT in Manipal Academy of Higher Education Libraries. *DESIDOC Journal of Library & Information Technology*, 38(5), 369-374.

Saxena, A., and Yadav, R. D. (2013). IMPACT OF MOBILE TECHNOLOGIES ON LIBRARIES: A DESCRIPTIVE STUDY. *International Journal of Digital Library Services*.

Shinde, M. G.,. (n.d.). *Role of Information Services rendered by College Library Education in Modern Era*.

Shivakumar, G. T. (2017). IMPACT OF DIGITAL ERA ON ACADEMIC LIBRARIES. *International Journal of Library and Information Science (IJLIS)*, 6(4), 1-7.

Shukla, A. (2018). Delivering Library Services through Modern ICT Tools & Techniques.

Smith, M. O.,. (2005). IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY CHANGE ON THE MANAGEMENT AND OPERATIONS OF ACADEMIC LIBRARIES.

Thankachan, S. ((2015-2016)). *Modern Library and Information Services*.

Toraskar, S. S. (2022). NAAC RECOGNIZED BEST PRACTICES IN ACADEMIC. *International Journal of Advance and Applied Research*, 10(1), 571-578.

Waghmare, D. (2022). EVOLVING DEVELOPMENTS IN WILLINGDON COLLEGE

LIBRARY, SANGLI IN DIGITAL ENVIRONMENT. *International Journal of Advance and Applied Research*, 10(1), 196-200.

Wenborn, C. (2018). *How Technology is Changing the Future of Libraries*. Retrieved from Wiley.

Xie, I., and Stevenson, J. (2013). Social media application in digital libraries.

8. ANNEXURES – USER’S FORM

Implementation of Modern Network Technologies in Providing Library Services in Academic Studies

Dear Friends

I am Kewal Naik, a student at Goa University pursuing a degree in Masters of Library and Information Science.

As a part of my studies, I have undertaken minor research for my dissertations entitled 'Implementation of Modern Network Technologies in Providing Library Services in Academic Studies' under the guidance of Dr. Carlos M. Fernandes Assistant Professor, , Library and Information Science Programme.

Please provide your valuable response to support my research study.

I assure you that your response will be treated with secrecy and be used for academic purposes only.

Thank you for your valuable time and efforts.

Regards

Mr. Kewal Naik

Name

Name of the Institution

Year of establishment

Questionnaire

1) For, what purpose do you visit Library? (You may choose more than one option)

To read books	<input type="checkbox"/>
To seek Information	<input type="checkbox"/>
To use internet	<input type="checkbox"/>
To read Newspaper and magazines	<input type="checkbox"/>
For research work	<input type="checkbox"/>
To find out about exhibitions and events	<input type="checkbox"/>
To use offline/online databases	<input type="checkbox"/>
As a quiet study are	<input type="checkbox"/>

2) How frequently do you visit the library?

Everyday	<input type="radio"/>
Once in a week	<input type="radio"/>
Once in a month	<input type="radio"/>
Occasionally	<input type="radio"/>
More than twice in a month	<input type="radio"/>

3) Is your Library Automated?

Yes	<input type="radio"/>
No	<input type="radio"/>

4) If yes, please tick the activities provided by library?

Issue and Return	<input type="checkbox"/>
Self-check-in and check-out	<input type="checkbox"/>
OPAC	<input type="checkbox"/>
Article Indexing	<input type="checkbox"/>
Reservations	<input type="checkbox"/>
Online ordering	<input type="checkbox"/>

5) Availability of Computers in your Library?

0-5	<input type="radio"/>
5-10	<input type="radio"/>
10-15	<input type="radio"/>
15-2	<input type="radio"/>

6) Does your library provide web based library services for the users?

Yes	<input type="radio"/>
No	<input type="radio"/>

- 7) **If No, please rate the following reasons on a 5 point scale**
 (SA- Strongly agree, A- Agree, N- Neutral, D- Disagree, SD- Strongly disagree)

	SA	A	N	D	SD
Lack of infrastructure facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of awareness About Web Based Tools among Library staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of technical Knowledge for library staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insufficient technical Staff in the Library	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of Internet connectivity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8) Whether your Library has a website by which you can search catalogue and Seek information?

Yes

☐

No

☐

9) If yes, what are the library services provided by your library through the website? (You may choose more than one option)

EBooks

☐

Audiobooks

☐

Journals

☐

OPAC

☐

Ask Librarian

☐

Current awareness service

☐

Podcasting

☐

Bulletin Board

☐

Other:

☐

10) What are the factors that made you choose E-resources technology over printed resources? (You may choose more than one option)

Easily accessible

☐

Less time consuming

☐

Easy to carry everywhere

☐

Read anytime

☐

11) Mode of access of e-resources (you may choose more than one option)

Smartphone	<input type="checkbox"/>
PC	<input type="checkbox"/>
Laptop	<input type="checkbox"/>
Tablet	<input type="checkbox"/>

12) In your opinion, which are the E-Resources that are mostly used by students your Library? (You may choose more than one option)

E-Books	<input type="checkbox"/>
E-Journals (Database)	<input type="checkbox"/>
Open Access Journals	<input type="checkbox"/>
E-Journals (NLIST)	<input type="checkbox"/>
E-Databases	<input type="checkbox"/>
Thesis	<input type="checkbox"/>
Dissertations	<input type="checkbox"/>
E-Newspaper	<input type="checkbox"/>
E-Newsletter	<input type="checkbox"/>
Question Papers	<input type="checkbox"/>

13) Does your Library provide training/orientation/education to the users for * searching and using the information resources, databases, and information technology facilities'.etc.

Yes	<input type="radio"/>
No	<input type="radio"/>

14) Which of the following Modern network technologies are provided in your library? (You may choose more than one option)

OPAC	<input type="checkbox"/>
Ask-A-Librarian	<input type="checkbox"/>
Real Time Service	<input type="checkbox"/>
Translation Service	<input type="checkbox"/>
Audio Visual Multimedia facilities	<input type="checkbox"/>
Current awareness service	<input type="checkbox"/>
RFID	<input type="checkbox"/>
Selective dissemination of information	<input type="checkbox"/>
Photocopy Services	<input type="checkbox"/>
Other:	<input type="checkbox"/>

15) Please indicate the problems/ difficulties faced for accessing modern technology facilities in your library? (You may choose more than one option)

Inadequate e-resources	<input type="checkbox"/>
Unviability of orientation programme	<input type="checkbox"/>
Uncooperative library staff	<input type="checkbox"/>
Insufficient Computers	<input type="checkbox"/>
Unsuitable Library Timings	<input type="checkbox"/>
No Internet connectivity	<input type="checkbox"/>
Other:	<input type="checkbox"/>

16) What are the Social Media tools used by your library for providing library services? (You may choose more than one option)

LinkedIn	<input type="checkbox"/>
Blogs	<input type="checkbox"/>
Twitter	<input type="checkbox"/>
YouTube	<input type="checkbox"/>
WhatsApp	<input type="checkbox"/>
Facebook	<input type="checkbox"/>
Instagram	<input type="checkbox"/>
Flickr	<input type="checkbox"/>
E-mail	<input type="checkbox"/>
Other	<input type="checkbox"/>

17) Is your Library Subscribing to any of the following databases? *

Emerald	<input type="checkbox"/>
ProQuest	<input type="checkbox"/>
Ebsco Database	<input type="checkbox"/>
AGRIS	<input type="checkbox"/>
Other:	<input type="checkbox"/>

18) Please, rate the following technologies used as academic library services on 5 point scale

(UE- Used Everytime, MU- Mostly Used, RU- Rarely Used, NU- Never Used)

	UE	MU	RU	NU
RFID	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Current Awareness Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selective Dissemination of Information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E-mail Services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Photocopy Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
OPAC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask-A-Librarian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Document Delivery Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19) In your opinion, what are the advantages of using Modern Network Technology as Library services? (You may choose more than one option)

Information Retrieval	<input type="checkbox"/>
Preservation and Conservation	<input type="checkbox"/>
Multiple accesses	<input type="checkbox"/>
Networking	<input type="checkbox"/>
Other:	<input type="checkbox"/>

20) Any Suggestions you would like to make for improvement of technology-related Modern library services?

9. ANNEXURES - Librarian form

Implementation of Modern Network Technology in providing Library Services in Academic Studies

Respected Sir/Madam

I am Kewal Naik, a student at Goa University pursuing a degree in Masters of Library and Information Science.

As a part of my studies, I have undertaken minor research for my dissertation entitled

'Implementation of Modern Network Technologies in Providing Library Services in Academic Studies' under the guidance of Dr. Carlos M. Fernandes Assistant Professor, Library and Information Science Programme.

Please provide your valuable response to support my research study.

I assure you that your response will be treated with secrecy and be used for academic purposes only.

Thank you for your valuable time and efforts.

Regards

Mr. Kewal Naik

1. Email *

2. Name *

3. Name of the Institution *

Questionnaire for Librarians

1) Which of the following Modern Network Technologies are provided in your library? (You may choose more than one option)

RFID	<input type="checkbox"/>
Ask-A-Librarian	<input type="checkbox"/>
OPAC	<input type="checkbox"/>
Translation Service	<input type="checkbox"/>
Audio Visual Multimedia facilities	<input type="checkbox"/>
Current Awareness Service	<input type="checkbox"/>
Selective Dissemination of Information	<input type="checkbox"/>
Virtual reality application	<input type="checkbox"/>
RSS Feeds	<input type="checkbox"/>
Other:	<input type="checkbox"/>

2) Which of the following Social Media Communication Services are offered by your library? (You may choose more than one option)

Whatsapp	<input type="checkbox"/>
Instagram	<input type="checkbox"/>
YouTube	<input type="checkbox"/>
Blogs	<input type="checkbox"/>
E-mail	<input type="checkbox"/>
Twitter	<input type="checkbox"/>
Alert Service	<input type="checkbox"/>
Facebook	<input type="checkbox"/>
LinkedIn	<input type="checkbox"/>
Other:	<input type="checkbox"/>

3) Which of the following online Reference Services are available in your library? (You may choose more than one option) *

Ask-A-Librarian	<input type="checkbox"/>
E-mail	<input type="checkbox"/>
Web Forms	<input type="checkbox"/>
Instant Messaging	<input type="checkbox"/>
E-Current Awareness Service	<input type="checkbox"/>
Voice over internet protocol E-	<input type="checkbox"/>
Document Delivery Services	<input type="checkbox"/>
Other:	<input type="checkbox"/>

4) Which of the following best online Activities are provided by your Library?
(You may choose more than one option)

Virtual Book Reading	<input type="checkbox"/>
Online Book Exhibition	<input type="checkbox"/>
Online Orientation programme	<input type="checkbox"/>
Virtual Library Tour	<input type="checkbox"/>
Online Presentations	<input type="checkbox"/>
Online Plagiarism detection	<input type="checkbox"/>
workshop	<input type="checkbox"/>
Other:	<input type="checkbox"/>

5) Difficulties faced while implementing Modern Network Technology in you Library (you may choose more than one option)

- | | |
|--|--------------------------|
| Network Data connectivity Issues | <input type="checkbox"/> |
| Incompetency in use of smartphones or latest gadgets | <input type="checkbox"/> |
| Budget | <input type="checkbox"/> |
| Lack of Administrative support | <input type="checkbox"/> |
| Other: | <input type="checkbox"/> |
-

6) Do you subscribe to Journals in E-format?

- Yes ☐
- No ☐

7) If yes, please mark the reasons for acquiring Journals in E-format (you may choose more than one option)

- | | |
|-----------------------------|--------------------------|
| Saves physical space | <input type="checkbox"/> |
| Fast Retrieval | <input type="checkbox"/> |
| Solves the problem of theft | <input type="checkbox"/> |
| Easy Maintenance | <input type="checkbox"/> |
| Several users' access | <input type="checkbox"/> |
| simultaneously | <input type="checkbox"/> |
| Other: | |
-

8) If you don't subscribe to Journals in E-format what are the reasons? (You may choose more than one option)

Reliance on equipment

☐

Readers like to use print resources over electronic format

☐

Higher cost

☐

Complexities for acquisition

☐

Less permanent

☐

Difficulty in reading computer screens

☐

Other:

9) Which of the following E-Resources are mostly used by students in your Library? (You may choose more than one option)

E-Books

☐

Open access Journals

☐

E-Journals (NLIST)

☐

E-Databases

☐

Thesis

☐

Dissertations

☐

E-Newspaper-Newsletter

☐

Question Papers

☐

Other:

☐

10) Are you aware about establishment of Library Consortia in Library Network?

Yes ☐

☐

No

11) If yes, do you know about the functioning of UGC infonet, INDEST etc.?

Aware ☐

Not Aware ☐

12) Are you availing the services of DELNET in your Library or any other Library?

Yes ☐

No ☐

13) If yes, Please name the network

14) Is Your Library Automated?

☐ Yes

☐ No

15) If yes, the Software used in it?

LIBSYS ☐

SLIM ☐

LIBSUIT ☐

GRANTHALAYA	<input type="checkbox"/>
SOUL	<input type="checkbox"/>
Koha	<input type="checkbox"/>
Evergreen	<input type="checkbox"/>
Other:	<input type="checkbox"/>

16) Do you use Barcode/RFID Technology?

Barcode	<input type="checkbox"/>
RFID	<input type="checkbox"/>
None	<input type="checkbox"/>

17) Does your library provide Web OPAC services?

Yes ☐

No ☐

18) Please provide your perception about the use of following technological Library Services by the users.

(UE- Used Everytime, MU- Mostly Used, RU- Rarely Used, NU- Never Used)

	U E	M U	R U	N U
RFID	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
OPAC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-Current Awareness Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-Selective Dissemination Of Information Information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ask-A- Librarian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-mail services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RSS Feeds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-Document Delivery Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printing Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19) Which type of network technology do you use in your library

(LAN/WAN) (You may choose more than one option)

Wireless	<input type="checkbox"/>
Wired	<input type="checkbox"/>
Mixed	<input type="checkbox"/>

20) What are the full texts Web Databases available on your Library website? *

Springer	<input type="checkbox"/>
Science Direct	<input type="checkbox"/>
ProQuest	<input type="checkbox"/>
Scopus	<input type="checkbox"/>
Academic Search	<input type="checkbox"/>
Embase	<input type="checkbox"/>
JSTOR	<input type="checkbox"/>
Other:	<input type="checkbox"/>
