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Aim & Scope

The *International Journal of Information Studies & Libraries* {IJISL}, is an International online peer reviewed and *indexed journal*. IJISL is initiated by the Publishing India Group, India. This will consider any original contribution that enhance or illuminates Library and Information Science or Practice, or that educates or entertains the journal's readers. IJISL is published twice a year (Bi-annual).

Aims and Scope:

- Knowledge organisation and Management
- Use of ICT in libraries: best practices
- Collection development: Guidelines and strategies
- Information literacy and media literacy
- Content management
- Managing change in libraries
- Information systems and services
- Scientometrics, Bibliometrics and Informatics
- Copyright issues in Digital Environment
- Digital Library Development and Management
- Information Retrieval
- Social Networking and Libraries
- RFID, semantic web, intelligent web, data mining
- Web 2.0, Web 3.0
- Digitization and Digital Preservation
- Library websites, subject portals, web portals
- Digital libraries, Institutional repositories
- Digitization, metadata, discovery tools
- Emerging technologies in LIS
- Library classification, information management, content management, content curation
- HRM, leadership, Job satisfaction
- E-journals, e-books, online databases

Editorial

Behaviors and Tools to Ensure Research Ethics

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As reported in the *European Code of conduct for research integrity* developed by ALLEA, ALL European Academies, revised 2017 edition[1], the principles of research integrity are: reliability in ensuring the quality of research (design, methodology, analysis and use of resources); honesty in developing, reviewing, and communicating research; respect for colleagues, society, cultural heritage, and the environment; responsibility for research from its origin to publication and dissemination of results.

Discoveries made through scientific research can be of great value to researchers in advancing knowledge, to governments in shaping public policy, and to industry in developing new products. Researchers should be aware of this potential value and the interest their laboratories and institutions have in it, know how to protect their interests, and know the rules governing the fair and proper use of ideas.

All the various stages of scientific creation and communication should be conducted following principles and best practices; the European Code refers to "Good research practices" in different contexts, such as Research environment; Training, supervision and mentoring; Research procedures; Safeguards; Data practices and management; Collaborative working; Publication and dissemination; Reviewing, evaluating and editing.

When scholars do not follow these good practices they fall into the violation of research integrityand this "damages research processes, degrades relationships among researchers, undermines trust in research and its credibility, wastes resources, and may expose research subjects, users, society, or the environment to unnecessary harm"[2].

The various types of misconduct in research can be classified into fabrication, falsification and plagiarism. Fabrication occurs when data or results are produced; manipulating research materials and processes, altering or omitting data leads to falsification[3].

Coming to plagiarism, its definition is very complex as the extensive literature on the subject demonstrates. Although the term plagiarism was first used in literature was around 80 AD. by the Roman poet Martial[4], it was with the first modern copyright law (The Statute of Anne) that the right of the author was recognized. For many centuries plagiarism was not considered a serious crime and, in any case, of economic rather than creative relevance.

There are many different categories of plagiarism, but it would be too long to deal with here.

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[1] ALLEA, ALL European Academies, *European Code of conduct for research integrity*, rev. ed., Berlin, ALLEA, 2017, <https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>. [Last accessed July 15, 2022].

[2] Ivi, p. 8.

[3] U.S. Department of Health & Human Services, Office of Research Integrity (ORI), *Avoiding plagiarism, self-plagiarism, and other questionable writing practices: aguide to ethical writing*, <https://ori.hhs.gov/avoiding-plagiarism-self-plagiarism-and-other-questionable-writing-practices-guide-ethical-writing>. [Last accessed July 15, 2022].

[4] J. Mira Seo, *Plagiarism and poetic identity in Martial*, "The American journal of philology", 130 (2009), n. 4, p. 567-593.

It is sufficient to remember how, for easily understandable reasons, the risk of plagiarism has increased in the age of the web with online sources.

If, "in general terms, responsible conduct in research is simply good citizenship applied to professional life", it is often complex to make students and young scholars understand the importance of research ethics. "Research is not an organized profession in the same way as law or medicine" and researchers have different behaviors from one to another and from one disciplinary field to another.

To support ethics in research it is essential to make it clear that, in the use of any bibliographic source, it is necessary to respect any third party rights, respect the uses permitted by copyright laws and any license to use provided by the publisher and fulfill the obligation of correct quotation.

Not infrequently, in fact, students fall into plagiarism "simply" because of ignorance or, sometimes, unconsciously.

To this end, the role of libraries is fundamental, especially the academic ones: libraries are the main institutions that must promote correct information literacy and courses for the creation of bibliographies through the knowledge of citational styles and the use of reference management software. In addition to this, a role of libraries, in collaboration with teachers, in the design of training modules on research ethics would be desirable.

With targeted student training it would be easier to have a generation of scholars more aware of the value of research.

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Embracing Blockchain Technology in Academic Libraries in Indian Scenario: A Conceptual Study

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Abstract

In this computerised world with expanding Web access, the blockchain innovation can be utilised to ratify and store online exchange records like Bitcoin. In this process, it is very tough to abrogate, repudiate, and fake the transactions. Once data or information is stored in blockchain, it is highly impossible to tamper, duplicate, or erase it. The blockchain is used to increase the security in transferring of things, such as money, property, contracts, and so on. Libraries are involved in many online transactions. Therefore, it is best to adapt blockchain technology in libraries, as they are always involved in gathering, preserving, and sharing authoritative information. Here, the authors have made an attempt to find ways to implement blockchain technology in the libraries in the Indian scenario. Initially, the authors studied the present status of blockchain technology in the libraries. Later, the authors identified places where blockchain technology could be implemented, and thus increase security. The authors have explained the concept of blockchain technology, how it works, how to install it, use it, and so on. Also, the advantages and disadvantages of blockchain technology are listed.

Keywords: Blockchain Technology, Academic Libraries

Introduction

Blockchain technology could be identified as a chain of blocks which contains information. It is highly impossible to backdate or tamper with the digital documents which are time-stamped using blockchain techniques. The chief benefit of blockchain technology is that without the presence of a central server, it is impossible to duplicate the records.

The librarians can accomplish their work by utilising blockchain innovation, particularly in the ground of scientific research production. Journal publications could be time-stamped and its versions verified using blockchain technology. Irving and Holden practically tested the utilisation of the Bitcoin blockchain "as a minimal expense, autonomously certain strategy that could be broadly and promptly used to review and affirm the dependability of logical investigations".

Another central benefit of blockchain innovation is that it very well may be utilised as a DRM (Digital Right Management) instrument in libraries, as electronic library assets are characteristically reproducible, which may make issues for libraries, just as distributers. As of now, the DRM (Digital Right Management) device is being utilised by the distributers to forestall duplicating of their distributions, which is not a hundred per cent dependable. By utilising blockchain innovation, any library can make a one-of-a-kind record, which can be gotten to by everything that can possibly be attached to electronic assets and utilised as a technique to designate "provable shortage" of that material. Blockchain would assist with improving exercises which are identified with libraries, like academic distributing, content spreading, and copyright implementation.

Literature Review

The present use and future implications of blockchain technology in academia have been discussed by Chen, Xu, Lu and Chen (2018), Turkanovic, Holbl, Kosic and Hericko (2018), Grech and Camilleri (2017), Sharples and Domingue (2016), Rooksby and Dimitrov (2017), Domingue and Bachler (2018), and Grather et al. (2018). All are exemplifying the present and future potential applications of blockchain technologies in academia, like issuing valid certificates, summative evaluation

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for learning outcomes, storing students' grades, getting people to register for online courses, making digital payments, and so on.

In 'Blockchain for Research', Rossum from Digital Science depicts advantages like information colocation, local area self-adjustment, disappointment investigation, and extortion anticipation (Rossum, June 2019). Blockchain is a phenomenal method to follow copyright. A few blockchains have as of now been produced for photographic artists, specialists, and artists. Models incorporate photograph chain, duplicate track, binded, and dotBC.

Blockchain could protect advanced first-deal rights, which are vital to libraries having the option to share such substances. "While DRM of any kind isn't attractive, if by utilizing blockchain-driven DRM we exchange for the capacity to have perceived computerized first deal rights, it could be a worthy bargain for libraries." To help such limitations, another utilisation for blockchain created by organisations, for example, LibChain, is open, unquestionable, and unknown access to the executives to library content.

Objectives of the Study

- To understand the concepts and ways of implementing the blockchain technology in academic libraries.
- To explore different sections in the library for adapting blockchain technology.
- To discover the possibilities of increasing the security of the library products and transactions by adapting blockchain technology.

What is Blockchain?

The concept of blockchain technology is indeed pretty modest; it is a type of store house of information. It is better to understand what a store house of information is first to understand about blockchain technology.

A store house of information is nothing but a database where we can store information in an electronic format in a computer. Data or information in databases is naturally structured in a table format to provide for easier searching and filtering for particular information.

- Blockchain could be the particular type of database.
- Data is being stored in blocks and chained together later in a blockchain mechanism, which is a different storage method from a natural database.
- The block is chained with a past block whenever it is loaded with new information, to make information affixed together in a sequential request.
- All kinds of information could be stored on a blockchain, which can be used as a ledger for transactions.
- Wherever it is required it can be used in a decentralised mode, where a single person or group does not have control, unless the rest of the users collectively permit modifications or changes.
- It is highly impossible to revert or delete the transactions once it is done, since a decentralised blockchain is immutable, which means that the information entered is permanently logged and available to anyone.

The blockchain is a set of rules, like a software protocol, and the Internet is required to use the blockchain. It will be treated as a meta-technology since it affects other technologies.

How Does Blockchain Work?

First, we have to understand what a blockchain is. Blockchain is made up of two words – 'BLOCK' and 'CHAIN'. When we enter data or information, it will go to a block; once a block is filled, it will be chained to a previous block, as shown in Fig. 1.
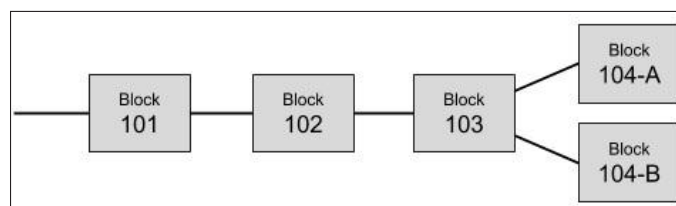

Fig. 1

In Fig. 1, we can see that there are two sub-blocks after Block 3. Both the sub-blocks are legitimate. So the following mined square might be added to any of the sub-blocks. Assume that the miner adds the recently mined block to Block 104-A. The sub-block containing Block

104-A will be longer than the sub-block containing Block 104-B, as demonstrated in Fig. 2.
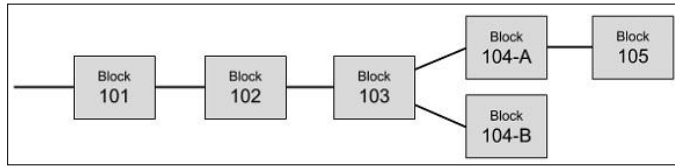

Fig. 2

In Fig. 2, we can see that Block 104-B must be cleansed, as the longest blocks consistently win, and the more limited ones are cleansed in the Bitcoin concept. All of the exchanges made in Block 104-B will be back in the exchange pool, so that they are mined and added to some future blocks prior to cleansing them. In this manner the struggles are settled and just one single chain of blocks is kept up by the framework.

Installation Process of Blockchain

The following commands will show you how to install the blockchain and start the Ethereum hub to perform fundamental exchanges.

There are mainly three tools, as mentioned below:

- Implementation of GEth (Go Ethereum).
- TestRPC, which we need to test-set Smart Contracts.
- Truffle Build system (framework).

First, it is required to install NODEJS, as most of the tools which will be used are dependent on JavaScript.

Start installation of NodeJS and NPM using the following commands.

Note: The text which is in italics is the command.

Step 1: Open the terminal or press Control+Alt+T

Step 2: Type "*sudo apt-get install nodejs*"

Step 3: Type "*node-v*" to check the nodejs version

Step 4: Type "*sudo apt-get install npm*"

Step 5: Type "*npm-v*" to check the NPM version

Now, we have to install the GEth (Go-Ethereum)

To install the GEth, please use the following commands.

Installation of GEth on UBUNTU Via PPAs

To enable our launchpad repository, run

Step 6: Type "*sudo add-apt-repository -y ppa:ethereum/ethereum*"

Now, the repositories will be updated by running the following command.

Step 7: Type "*sudo apt-get update*"

Now the stable version of Go-Ethereum has to be installed.

Step 8: Type "*sudo apt-get install ethereum*"

Installing Test RPC

This is the time to install Test RPC.

Test RPC is only an Ethereum node emulator which is executed in the NodeJS. The main objective of this Test RPC is to quickly begin an Ethereum node for test and advancement. We need to see that Test RPC is only an emulator which is running as an in-memory process.

For instance, in the event that we put together a Smart Contract, it will not proceed in the event that we restart the Test RPC.

To install the Test RPC, the following command is used.

Step 9: Type "*sudo npm install -g ethereumjs-testrpc*"

Installing Truffle

At this point, we need to introduce Truffle. Truffle is only a form of a build framework which deals with our Contract relics. It contains support for custom arrangements, library connecting, and complex Ethereum applications.

To install Truffle, use the following command.

Step 10: Type "*sudo npm install -g truffle*"

Now the installation is done.

Once installation is done, we have to set up a private Ethereum network, which we can then use.

Different Modules to Adapt Blockchain Technology in the Library

Acquisition Module

Acquisition is one of the essential modules of any library, as librarians are building a collection of books, journals, and magazines, and kindred resources, which is a major and important function of the acquisition module. It is accountable for all aspects of acquiring library resources for libraries. In this module, library materials are ordered by the librarians to the registered library vendor or publishers. In this process, smart contacts are being used by librarians and registered library vendors or publishers to cross-verify the terms and conditions of purchase and contract by using blockchain application. Scrambled keys might be accessed by both librarians and registered library vendors or publishers, which could twist the parts of a contract. The terms and conditions of an e-contract could only be renewed with the contract of both librarians and registered vendors of the library.

Digital Preservation and Tracking

In the 21st century, library users are becoming e-resource savvy. Day by day they are losing interest in print material and turning towards e-materials. At the same time, digital preservation is the biggest challenge due to copyright issues in this Internet era. By using blockchain technology, one can track downloads and modifications, and hard copies of publications could be restricted by the publishers via e-agreements or e-contracts. Getting printed or distribution of printed materials such as articles and book chapters would be limited by the publishers if printing was synchronised to the initial e-agreement. A blockchain-based technology could not allow anybody to alter or modify any kind of document which is uploaded, time-stamped, and verified by the publishers. At the same time, the readers who wish to access the original resources can confirm that the content is unchanged or modified from the original by using the blockchain technology.

Copyright and Royalty Defence

In this digital world, with increasing access to the Internet, people are more involved in research, and research content has grown, with the invention of new things. By using blockchain application, justice can be given to the inventors by significantly beefing up the security of e-content downloads and ensuring that the invention or creation is purchased and that the inventor or creator gets their fair royalty. The real-time and transparent royalty distribution facts would be informed to the inventors and content creators by employing the blockchain technology. By doing this, we can encourage the researcher and help them from being cheated or defrauded for their efforts. The research content can be secured from being edited, and the circulation of duplicated articles could be banned; the same will be applicable for all types of content, such as video and audio, and so on.

BLOCKCHAIN-Based Currencies for International Financial Transactions

Nowadays, libraries deal with international publishers for procuring resources such articles, books, and standards, and payment can be made using blockchain-based currencies to avoid fake transactions.

Fine Module

Where there is money, there is risk. And money is involved in this module. As libraries collect fines for late return of books, there is a chance of hacking the server and deleting the fine amount from the user's account, since some libraries store their data on a third-party server. One can avoid this kind of problem by implementing blockchain technology.

Inter-Library Loan and Token System

The blockchain technology can be implemented at different levels, such as institution level, university level, state level, country level, and worldwide. The best idea is we have to implement blockchain technology at the global level, where every library will enter its holdings.

This is one of the best ways where a library's collections and holdings of data could be easily analysed across any library or information centre in the world.

No single library or information centre can fulfil all the requirements of the library user. The role of ILL in the library field is unfathomable in many aspects. A worldwide execution of blockchain innovation will significantly affect interlibrary loan (ILL) where library items can be pointed out in a faster way, and the practice of issuing and borrowing library items in ILL can be computerized through smart contracts with imparting organization. Libraries can be computerised in verifying accomplices, monitoring net getting versus net loaning, and sending materials where the protection by-plan highlights of blockchain applications would work well.

Library Verification of Credentials (Information Literacy)

As libraries play an important role in digital and information literacy education, systems can be created by using blockchain application to verify the information.

Library Card

Libraries are interacting with library patrons or users by creating their accounts in the library software, which could be cross-verified using a given novel patron ID and a library card. This card will permit library clients to collaborate with the library framework and administration. Library patrons can validate by themselves in online and get the access to electronic resources such as Electronic books and journals or databases and the same can be borrowed by them in online. For many years the system is being followed, and it has been running smoothly. However, nowadays, since many libraries are storing their data on a third-party server there is chance of missing data or information hacking. These kinds of issues could be resolved by adopting blockchain technology.

Continuous Data Backup

Since backup is the backbone of a library, it has to maintain backup data every day. Generally, libraries take backup in two ways. One is manually, and the second is an automated backup system. In the latter scenario, at any time, data can be erased or stolen by the hackers. To escape from the hackers and resolve the infrastructure problems, we can use blockchain as a backup source for cloud data centres in automated systems or for any data, as it can be adopted with GPS receivers on its planes, which could resolve this concern.

In this way, we can use the blockchain to protect and secure user records, and acquired library materials data, and improve collections maintenance. Utilisation of extraordinary assortments will consider distinguishing proof and finding of special records. The academic record is another utilisation that fits blockchain by permitting specialists to record and time-stamp their thoughts and disperse information.

Blockchain innovation is having extremely tremendous extensions in libraries to make progress on the protection of library clients, expand joint effort, and change the manner in which they work with one another and their networks. By staying updated, libraries can survey blockchain application openings and utilise it.

Advantages of Blockchain Technology in the Library

- Accuracy can be achieved by removing a huge amount of human involvement.
- We can reduce the cost factor by eliminating third-party certification.
- It can be made harder by decentralising it.
- It makes transactions private, secure, and efficient.
- It is transparent and highly standard technology.
- It is the system to secure personal information of all patrons of libraries with unstable or underdeveloped libraries.

Disadvantages of Blockchain Technology

- It is highly technical.
- Qualified staff is required to implement it.
- It may take time to understand what it is exactly.
- Coding knowledge may be required to modify and use it.

Conclusion

Blockchain technology is one of the newest technological trends. Blockchain technology has enough potential applications in hi-tech academic libraries. This technology is being implemented in many academic libraries for performing varieties of operations, such as preservation and sharing information, prevention of copyright issues, digital sharing, and so on. Though this is much unexplored technology, it provides both challenges and opportunities to the current librarians, educators, and researchers. The researchers are already exploiting this technology to its maximum for the advantage of academic libraries. Therefore, this will be more visible in libraries in the future.

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Influence of Ownership of Institution on Job Satisfaction among Librarians in University Libraries in Southern Nigeria

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Abstract

Purpose: The study examined the influence of ownership of the institution and job satisfaction among librarians in university libraries in Southern Nigeria. *Design/Methodology/Approach:* The study adopted ex-post-facto research design. Three research questions were answered and one hypothesis tested in the study. The populace comprises 841 librarians in federal, state, and private universities in Southern Nigeria. A purposive sampling technique was espoused for the study because the entire populace was used as the sample. Data was collected through the use of a self-constructed questionnaire entitled 'Ownership of Institution and Job Satisfaction Scales (OIJS)'. Copies of the questionnaire were administered to 841 librarians in 84 university libraries in Southern Nigeria. The data retrieved was analysed using simple percentages, and descriptive and inferential statistics. *Findings:* The outcomes of the study discovered that ownership of an institution has a relationship with job satisfaction of librarians in the university libraries of Southern Nigeria. Librarians in the university libraries in Southern Nigeria are satisfied with their job irrespective of ownership of the institution. *Research Limitations/Implications:* This study was limited to the influence of ownership of the institution and job satisfaction of librarians in the university libraries in Southern Nigeria. The result of the study will enhance the job satisfaction of librarians in the universities, whereby ownership of institutions should improve welfare packages of staff by creating a good working environment, such as sponsoring short courses, workshops on current trends in librarianship, and career advancement both in Nigeria and abroad, which will improve their job satisfaction. *Practical Implications:* The results of the study have revealed the relevance of ownership of institution to job satisfaction of librarians in university libraries in Southern Nigeria. *Originality/Value:* There are few studies on ownership of the institution and job satisfaction of librarians in university libraries in Nigeria. Therefore, this paper will increase empirical literature on the topic.

Keywords: Ownership of Institution, Job Satisfaction, University Libraries, Southern Nigeria

Introduction

The term university is derived from the Latin word *universitas magistrorum et scholarium*, which means community of teachers and scholars. The university system is an institution of higher or tertiary education and research, which awards academic degrees in various academic disciplines. Universities typically provide undergraduate and postgraduate education. Nigerian universities have three forms of ownership: federal, state, and private. The federal and state are categorised as the public universities, while the private universities are degree-awarding institutions that are founded and financed by private individuals or corporate bodies such as religious organisations. Ownership of institution has a vital role to play on the job satisfaction of the staff. Kruse, Freeman, Blasi, Buchele, Scharf, Rogers and Mackin (2004) asserted that employee ownership causes an increase in motivation and therefore increases the productivity of the employees and job satisfaction.

Similarly, Yaya (2019) orated that job satisfaction of librarians has a significant place in the information

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society which affects the service delivery he/she renders. The success of a tertiary institution is dependent on the providers of knowledge (Bello, Ogundipe & Eze, 2017). Darbar (2015), in his study, submitted that the utmost asset of any nation or organisation is its human resources. Badawi (2006) posited that organisations, whether in the private or public sector, should be concerned with motivation, job satisfaction, and productivity among its staff. Ademodi and Akintomide (2015) suggested that unhappy workers will either quit their appointment from the organisation or constitute a problem to the organisation, and this will encourage ineptitude and low productivity or commitment. The topic of librarians' job satisfaction has been a crucial researched area in library and information studies (Leysen & Boydston, 2009; Karim, 2008). Hyder and Batool (2013) asserted that in any library, effective services can only be provided through level of job satisfaction, which definitely affects the excellence of the services delivered. It can also be established from statistics that librarians working in the public sector are more satisfied than private sector librarians, in terms of salaries (Hyder & Batool, 2013).

Amune (2014) explained that since librarians are professionals, encumbered with the care of the library and its contents in numerous formats, and whose professional duties comprise selecting the books, documents, and non-book materials that make up its stock, and providing information and loan services to meet the high demand of its patrons, they should be motivated and have the job satisfaction to be able to contribute positively to the growth and sustenance of the library, especially now that the library and its processes are continuously changing. It is, however, dismal to know that literature has revealed that many librarians are not satisfied with their job, as a result of their employers not motivating them. It is on the basis of this that this study seeks to examine the influence of ownership of institutions and job satisfaction among librarians in university libraries in Southern Nigeria.

Statement of the Problem

In any university library, librarians' job satisfaction plays a vital role in the overall functioning of the institution, to ensure effective service delivery to library users. Yaya (2019) asserted that job satisfaction is generally acknowledged as a necessary ingredient for an individual's fulfilment in carrying out one's duties. For libraries in

universities to strive well in this era, there must be a deliberate policy to integrate librarian job satisfaction owned by any establishment, to improve service delivery. It is, however, dismal to know that literature has revealed that many librarians are not satisfied with their job as a result of ownership of institution not meeting the librarians' expectations. The drive of this research is to examine the influence of ownership of institution on job satisfaction of librarians in the university libraries in Southern Nigeria.

Objective of the Study

The general objective is to study the influence of ownership of institutions on job satisfaction of librarians in the university libraries in Southern Nigeria. The specific objectives are to:

- Ascertain the extent to which librarians are satisfied with their jobs in university libraries in Southern Nigeria;
- Find out the relationship between ownership of institutions and job satisfaction of librarians in university libraries in Southern Nigeria.

Research Questions

The following research questions were answered in this study:

- To what extent are librarians satisfied with the ownership of institutions in university libraries in Southern Nigeria?
- What is the influence of ownership of the institution on job satisfaction among librarians in university libraries in Southern Nigeria?

Review of Related Literature

The term job satisfaction has been variously discussed, studied, analysed, and interpreted in the literature. Job satisfaction is defined as a pleasing or positive emotional state resulting from the appraisal of one's job or job experiences. Job satisfaction is closely related to human beings or human resources in the organisational context. Satisfaction or dissatisfaction can be perceived or noticed from the way a given task is performed by a person or group of persons. According to Robins (2005), job

satisfaction is the collection of feelings that an individual grasps in the direction of their jobs. Jex (2002) asserted that job satisfaction of librarians is connected to how their personal expectations of work are in congruence with the actual outcomes, and since job satisfaction is merely a staff attitude towards his or her job, job satisfaction of librarians can be seen as containing three components: affective, cognitive, and behavioural components.

The affective component refers to feelings about the job, the cognitive component represents a belief with regard to a job. Often these two aspects are related. The behavioural component is an indicator of behavioural intentions towards a job, such as getting to work on time, working hard, and so on. However, Ikonne and Onuoha (2015) discoursed that job satisfaction refers to the degree to which personal needs – material and physiological, intrinsic and extrinsic are realised by staff while performing the tasks involved in his/her job. Similarly, Olwolabi and Salaam (2010) asserted that job satisfaction can be seen as a positive attitude of a worker towards his/her job and a delightful emotional state resulting from the perception of one's job as fulfilling. Jafar, Kavousian, Beigy, Emami, and Hadavizadeh (2010) opined that job satisfaction is one of the most important factors that every job atmosphere brings a dynamic and successful ambience into every workplace across the globe. They further identified five major aspects of job satisfaction: satisfaction from job, satisfaction from supervisor, satisfaction from colleagues, the satisfaction from salary, and satisfaction from promotion.

Baro, Fynman and Zoukemefa (2013) examined job satisfaction among cataloguing librarians in university libraries in Nigeria. Their findings discovered that cataloguers in university libraries in Nigeria are disgruntled with dimensions such as roles and responsibilities, workplace culture, rewards (salaries/benefits), and professional growth. Kaya (1995) surveyed job satisfaction of the librarians in the developing countries. Kaya finds revealed that librarians' social status is lower in developing countries and they are not satisfied with it. However, Burd's (2003) study on work values of academic librarians explored the relationships among values, job satisfaction, commitment, and intent to leave, and found that librarians in most organisations are less satisfied, less committed, and more likely to leave the organisation, perhaps even the profession. In summary,

job satisfaction among librarians can be seen as a function of the features of a job, the view of others, the employee's personality, and salary.

Ownership of institutions has a magnificent role to play in a librarian's job satisfaction; such a dimension includes roles and responsibilities, work culture, performance appraisal, rewards/salaries/reimbursement, professional growth, opportunities, and future concerns. Unhappy librarians in any institution may not execute his/her tasks optimally and this may translate into poor productivity, high rate of staff turnover, and threat to the organisation. Hyder and Batool (2013) explored job satisfaction among public and private university/degree awarding institution librarians of Lahore. Their findings revealed that librarians in the public sector are more satisfied than their counterparts in the private sector, with the physical facilities and ICT infrastructure, with mean 3.82 and salary with mean 3.80. On the contrary, Khan and Ahmad (2013) asserted that public sector university librarians are slightly satisfied (M = 3.86) with their pay or salaries.

However, Baro, Semiode and Godfrey (2014) examined a comparative study of job satisfaction between cataloguers in federal and private university libraries in Nigeria. Their findings discovered that cataloguers in federal universities were enthused with better pay and benefits than their private university counterparts in Nigeria. They further stated that private university owners are there to make money; they show little concern for staff welfare and that is why many librarians in private university libraries are hunting for jobs in public universities. This implies that librarians only work with private institutions as a last resource. More so, reflecting on rewards/pay/benefits, one cataloguer from a private university library stated, "what we are being paid is not motivating me, it is not enough to meet my needs" (Baro, Semiode & Godfrey, 2014). On the contrary, Akinyemi and Ifijeh (2013) asserted that librarians in private university libraries in South-West Nigeria were satisfied with their jobs. However, Adio and Popoola (2010) examined job satisfaction and career commitment of librarians in federal university libraries in Nigeria. Their findings revealed that librarians are dedicated to their careers and had job satisfaction. Hyder and Batool (2013) investigated job satisfaction among public and private university/degree awarding institute librarians in Lahore. Their findings revealed that public sector librarians are more satisfied with their salary

packages than private sector librarians. It was found that a majority of the respondents (n = 38, 54%) considered that working as a librarian in a government sector has superior social status than the private sector.

The influence of ownership of institution on job satisfaction of librarians cannot be overstated, because for librarians to be able to give excellent services, it is most important that they feel good about themselves and their jobs. Job satisfaction of librarians has to do with the collection of feeling and beliefs that librarians have about their current job irrespective of the institution to which they belong. Librarians' degrees of job satisfaction can be an assortment, from tremendous satisfaction to excessive dissatisfaction. Job satisfaction is exceptionally influenced when librarians have a sense of achievement and success on the job, which is generally perceived to be directly linked to productivity as well as to personal well-being with remuneration for individual effort (Sanusi, 2015).

This implies that job satisfaction is doing a job one enjoys because enthusiasm and happiness are the key ingredients that lead to recognition, promotion, and financial achievement, leading to a sense of fulfilment (Kaliski, 2007). Noticeably, it is believed that satisfaction of librarians in the library influences many aspects, such as efficiency, productivity, absenteeism, users' patronage, and general attitude to work. Institutions are guided by human values with good orientation towards treating librarians fairly and with respect, because the behaviour or conduct of librarians, depending on their level of job satisfaction, will influence the functioning and activities of the institution's daily library routine. Perceptibly, one can deduce that job satisfaction will result in positive behaviour and dissatisfaction with the work will result in negative behaviour of librarians (Hart, 2010).

Job satisfaction of librarians plays a great influence, because it serves as an indicator of institution device of evaluation at different levels of satisfaction. That is why, Togia, Koustelios, and Tsigilis (2004) concluded in their study on job satisfaction among Greek academic librarians that respondents were gratified with their jobs and disgruntled with the pay and promotion policies of librarians. Based on this, Tysick and Babb (2006) suggested that university authorities should provide librarians the same status as the teaching staff, to boost

performance and satisfaction of librarians in their place of work. Oyovwe Tinuoye, Omeluzor and Akpojotor (2016) studied factors influencing job satisfaction of academic librarians in university libraries; their study revealed that five factors capable of influencing job satisfaction of employees are work environment, remuneration, fairness, promotion, and training. They further buttressed that these variables significantly influence librarians' job satisfaction and also serve as a stimulus for employee's productivity and delivery of quality services to clientele.

A study of factors influencing job satisfaction of librarians in university libraries by Ikonne and Onuoha (2015) revealed that factors such as job security, satisfactory relationship with the supervisor, satisfactory interaction with colleagues, satisfactory interaction with information user/customer/clients, satisfactory job duties/job schedules, satisfaction with the challenges of the job, task variety and work autonomy, satisfactory communication climate in the workplace, and satisfactory job status/recognition at work are all significant conditions that elicit the achievement of job satisfaction among librarians in federal and state universities. They also pointed out that managerial styles in the workplace, salary, working conditions, and opportunity to conduct research are influenced by low satisfaction of librarians in university libraries. Moloantoa (2015) opined that there are two factors influencing job satisfaction of librarians (academic employees), which includes extrinsic and intrinsic factors. The extrinsic factors are made up of academic working conditions, job security, remuneration packages, and promotions, while the intrinsic factors influencing job satisfaction of librarians are relationship with colleagues, recognition, and advancement. He further alluded that these factors directly influence librarians/academic employees' job satisfaction and should management not address these factors, they can probably incline students to scantily use the university library, due to poor service delivery by displeased or unsatisfied librarians.

Research Methodology

This study adopted *ex-post-facto* research design. The populace of the study was 841 librarians from 84 university libraries in Southern Nigeria. The entire population of 841 librarians was used as the sample using purposive sampling technique. This is a result of

the manageable size of the population of librarians in the university libraries in Southern Nigeria. A questionnaire was the research instrument used to gather data for the study. The questionnaire was titled 'Ownership of Institutions and Job Satisfaction Scales (OIJS)'. A total of 841 questionnaires were administered; 679 were duly completed and found useable, giving a response rate of 76.2%. The data retrieved was analysed using simple percentages, and descriptive and inferential statistics. In addition, the demographic information of the respondents was analysed using simple percentages, and descriptive and inferential statistics were used to analyse questions 1-3 and the hypothesis.

Population of the Study

The populace of the study comprises 841 respondents from 84 university libraries in federal, state, and private universities in Southern Nigeria. Around 841 copies of the questionnaire were distributed and 679 completed copies were returned for the study. This gave a response rate of 76.2%, which is considered adequate for the study.

Findings and Discussion

Table 1:   Gender Distribution of the Respondents

Gender	Frequency	Percentage (%)
Male	314	46.2
Female	365	53.8
Total	679	100.0

Table 1 shows that there are more female (53.8%) than male (46.2%) librarians in the university libraries of Southern Nigeria**.**

Table 2:   Age Distribution of the Respondents

Age Range	Frequency	Percentage (%)
Young – below 30 years	67	9.8
Middle-age – 31-50 years	511	75.3
Older – above 51 years	101	14.9
Total	679	100.0

Table 2 discloses the frequency distribution of age of the librarians. The librarians in the middle-age group, which

ranges from 31-50 years, had the highest frequency, at 511 (75.3%), followed by those above 51 years, at 101 (14.9%), and those below 30 years, at 67 (9.8%), respectively. This means librarians in their middle age (31-50 years) dominate the profession in the university libraries of Southern Nigeria.

Table 3:   Work Experience of the Respondents

Work Experience	Frequency	Percentage (%)
0-4 years (less experienced)	144	21.2
Above 5 years (more experienced)	535	78.8
Total	679	100.0

Table 3 shows that the highest number of respondents (535, 78.8%) have been working for more than five years, followed by 144 (21.2%) librarians working for 0-4 years (less experienced). The greater proportion of the librarians in the university libraries of Southern Nigeria are more experienced, as indicated in Table 3.

Table 4:   Educational Qualifications of the Respondents

Educational Qualification	Frequency	Percentage (%)
B.Sc/B.L.S	87	12.8
M.Sc/M.L.S	413	60.8
M. Phil	10	1.5
Ph.D.	154	22.7
Others	15	2.2
Total	679	100.0

Presented in Table 4 are the educational qualifications of the librarians. The table shows that there are more librarians with M.Sc/M.L.S (413, 60.8%) than Ph.D. (154, 22.7%). Only 87 (12.8%) of the librarians have obtained B.Sc/B.L.S degrees and ten (1.5%) have obtained M.Phil. The results revealed that there are more respondents with M.Sc./M.L.S degrees in the university libraries of Southern Nigeria.

Research Question 1: To what extent are librarians satisfied with the ownership of institutions in the university libraries in Southern Nigeria?

The data in Table 5 answers this question.

Table 5: **Simple Correlation Analysis of Librarians' Job Satisfaction of Ownership of Institutions in the University Libraries in Southern Nigeria**

Variables	N	Mean	SD
Job Satisfaction	679	56.5361	6.68297

Table 5 reveals that the mean is 56.5361 and the standard deviation is 6.68297. This shows that librarians are satisfied with their job irrespective of ownership of the institution. This is in line with Oluchi and Ozioko (2014) that there is a commendable level of job satisfaction among librarians in their various institutions.

Research Question 2: What is the influence of ownership of the institution and job satisfaction among librarians in the university libraries in Southern Nigeria?

The data in Table 6 answers this question**.**

Table 6: **Simple Correlation Analysis of the Influence of Ownership of Institution and Job Satisfaction among Librarians in the University Libraries in Southern Nigeria**

Variables	N	Mean	SD	R	r^2	r^2 adjusted
Ownership of Institution	679	1.9308	.86197	.070	.005	.003
Job Satisfaction	679	56.5361	6.6829			

Mediating Variable: Ownership of Institution.

Dependent Variable: Job Satisfaction.

Table 6 shows that there exists a positive correlation between ownership of the institution and job satisfaction among librarians in the university libraries in Southern Nigeria. The computed simple correlation using Pearson Product Moment Correlation produced an output of r = .070. This provides an answer to research question 2. It reveals that there is a positive relationship between ownership of the institution and job satisfaction of librarians in university libraries in Southern Nigeria.

The r^2 adjusted value of .003 constitutes 0% amount of variance accounted for by ownership of the institution and job satisfaction among librarians involved in this study. This indicates that there is little or no change in the amount of variance accounted for by ownership of institution in job satisfaction among librarians in the university libraries in Southern Nigeria. This is in line with Baro, Seimode and Godfrey (2014) that private university owners are there to make money. They show little concern for staff welfare and that is why many librarians in private university libraries are hunting for jobs in public universities.

Summary

The aim of this study is to critically examine the influence of ownership of institutions on job satisfaction among librarians in university libraries in Southern Nigeria. The sample size for this study was drawn from 841 librarians from 84 university libraries in Southern Nigeria. The researchers employed the purposive sampling technique and questionnaire method of data collection to collect data from the respondents. The questionnaire was personally administered by the researchers and six research assistants to librarians in university libraries in Southern Nigeria.

Two research questions were formulated for the study. Based on the analysis, the following findings were revealed:

- Ownership of institution has a relationship with job satisfaction among librarians in the universities.
- Librarians are satisfied with their job irrespective of ownership of the institution.

Conclusion

The study concludes that ownership of institutions is a motivating factor for job satisfaction of librarians in university libraries. To enhance the job satisfaction of librarians in the universities, ownership of institutions should improve on welfare packages of librarians by creating a good working environment, such as sponsoring short-term courses, workshops, and conferences on current trends in librarianship, including career advancement programme both in Nigeria and abroad, to improve their job satisfaction.

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Awareness and Use of ICT-Based Library and Information Services among the Agricultural Science Students of Uttar Banga Krishi Viswavidyalaya, West Bengal: A Case Study

Bhanu Partap*, Priyanka Neogi**

Abstract

The aim of the present study is to explore the awareness and use of ICT-based library and information services among the agricultural science students of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar (West Bengal), India. An online questionnaire-based survey has been carried out to collect the data from the students of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar of the state of West Bengal, India. The online questionnaire was shared among 200 respondents, of whom 159 have responded, which gives a response rate of 79.50%. The findings show that all the respondents were aware of and using the Online Public Access Catalogue (OPAC)/Web-OPAC services. Around 91.82 per cent of the respondents were aware of the use of e-journals and 86.80 per cent were aware of the use of e-books for their academic and research purposes. About 76.73 per cent of the respondents were aware of the use of the Consortium for Electronic Resources in Agriculture (CeRA), Krishikosh repository, Agricat union catalogue, and so on, and the e-resources packages and related services. The findings also reveal some of the problems encountered by the respondents. On the basis of the feedback from the respondents, some valuable suggestions have also been given by the researchers.

Keywords: Users' Awareness, ICT-Based Services, Agricultural Universities, E-Resources, Library Services, Usage Analysis

Introduction

The convergence of computers and communication technologies has opened up a vast arena of the Internet and Intranet. One cannot ignore the silent revolution taking place in the communication systems, particularly in providing library resources and services. In the present era of knowledge revolution, capturing, preserving, and reusing of knowledge has become absolutely essential for any organisation to keep itself competitive and efficient. Information and Communication Technologies (ICT) has played a vital role in organising, storing, preserving, and reusing the resources and services of any library and information centre. Academic as well as agricultural libraries have played an important role in providing academic and research related materials to their member users. Due to the impact of ICT, the way of collection, organisation and services of academic as well as agricultural libraries has totally changed. "The introduction of ICT in the field of libraries and information centres has brought a sea change in the techniques of access, storage, retrieval and dissemination of information resources that a library acquired to serve its users. It has also changed the ways of providing services offered to user's community. The development and application of ICT in library and information centre has made library

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professionals easier to design and develop different services to make users aware and use the available library resources. Application of IT in library and information centres thus helping both library professionals and users to access and to locate library resources easily without wastage of time and energy" (Gohain et al., 2014).

The ICT actually is a broad term, which includes computers, network hardware and software, satellite systems, any communication device or application, and other associated devices and applications. The speedy development has changed the informational demands of users as well. Now, users want their desired information and resources quickly and in an easy format. Therefore, due to tremendous growth in ICT applications, libraries or knowledge resource centres have also been trying to acquire ICT-based resources and services to satisfy the varied information needs of their user community, as well as for their survival purpose.

Similarly, in this digital era, the libraries of agricultural universities and institutions are facing ICT-based challenges and have to force to transform their information resources, services, and infrastructure according to the changing needs of the agricultural science students, teachers, scientists, extension specialists, and progressive farmers' community. In view of the above discussed facts and the high influence of ICT in every walk of human life as well as agricultural stakeholders, a study was planned to know the awareness and use of ICT-based library and information services among the agricultural science students of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar (West Bengal), India.

Literature Review

To understand the concept and state of awareness and use of ICT-based services among the various categories of users, an extensive review of existing literature has been conducted, which is briefly provided below.

Jindal et al. (2020) conducted a comparative study to know the user awareness of ICT-enabled information services and revealed that more than 84 per cent of the users were aware of the ICT-enabled information services, while about 61 per cent of the users found ICT-enabled services useful to them in accessing the university library resources. In his study, Panda (2021)

described how libraries and information centres are increasingly using ICT and second-generation Web-based technologies (Web 2.0) such as social media and networking sites for activities such as providing online-based library services, open policy making, budget allocation, user study, demand-driven acquisition, and marketing of library services and information products. On the other hand, Arora and Sharma (2016) carried out a study on acceptance of ICT-based information resources among library users of MNIT Jaipur and observed that most users were aware of library resources and were also using it routinely; however, they suggested that the library needs to employ awareness programmes for effective and optimum use of existing resources and services. "A study was conducted to know the use of ICT-based library resources and services and its impact on users at the University of Allahabad and revealed that most of the users were aware of OPAC services, and were also satisfied with the services of the library professionals and with the availability of enough e-resources facility in the library, whereas, most of the respondents feels that the use of ICT played a significant role in their studies". "To explore the awareness and use of IT-based library and information services among the B.Tech. students of the School of Engineering of Tezpur University, Assam, Gohain et al. (2014) revealed that about 50 per cent of the respondents were not aware about the on line reference/ information service, and respondents were also not aware about the online renewals and online reservation of books service; however, respondents were very much satisfied with automated circulation service, OPAC/Web-OPAC service, InfoGranth, Infoj, e-News, reprographic services, library webpage service, etc.". Dhanavandan et al. (2012) conducted a study on access and awareness of ICT resources and services in medical college libraries in Puducherry and found that "a maximum number of respondents learned the use of electronic resources through external course and guidance from others as well, and the respondents were using Google to access the information in the Internet"; however, too much information retrieved from the Internet was the main barrier to accessing electronic resources. A study was conducted on "use of information communication technology based services by faculty members and students of one premier engineering college of Odisha". Satpathy et al. (2012) found that most of the faculty members and P.G. students of C.V. Raman College of Engineering, Bhubaneswar, possess excellent

knowledge on ICT-based services as per their own assessment, while most of the respondents were also using various ICT-based services on a daily basis, because they feel that ICT-based information resources are beneficial for teaching and learning process. Zabed Ahmed (2014) investigated "the use of IT-based information services in public university libraries of Bangladesh and found that there are insufficiency in library resources, automation practices, access to online resources and IT facilities in the universities, while the use of computer and network technologies in older universities was reasonably high as compared to newer universities, which are lagging far behind in the latest technology applications". A study on the use of ICT-based resources and services in special libraries in Kerala was conducted by Mohamed (2007) and the researcher revealed that the ICT-based resources used by the largest percentage of users was the e-mail, followed by the WWW, which was being used by nearly 60 per cent of the library users. However, a good number of the users were not satisfied with the application of ICT in their libraries and indicated 'inadequate ICT infrastructure' was the main reason for their dissatisfaction.

A good number of studies on awareness and use of ICT-based library services have been conducted in the past in various institutions in India and abroad; however, the researchers were not able to find any study which was conducted on agricultural research institutions particularly from the eastern part of India. The present study was therefore planned to fill this gap and tried to explore the interesting findings, which will be beneficial for the studied institution, as well as for those researchers who wanted to conduct similar types of studies in the future.

Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar (W.B.) – A Brief Sketch

"The State Government of West Bengal initially established an off campus of the Bidhan Chandra Krishi Viswavidyalaya at Pundibari in Cooch Behar district in 1979 to cater to the need of peoples of the northern part of West Bengal and imparting higher education in emerging areas of modern agricultural sciences and technology, which comprises eight districts. Later on, the Government

of West Bengal upgraded the North Bengal Campus into full-fledged Agricultural University by the name of Uttar Banga Krishi Viswavidyalaya in 2001 by the West Bengal Act XX of 2000" (UBKV, 2021).

Statement of the Problem

Information Communication Technology (ICT) has a wide impact on the agricultural information system; it has also changed the complete trend of seeking information and resources, and its usage. Accordingly, the agricultural science students, as well as the agricultural research fraternity now want computer-based digital information resources, which are available to them 24x7x365, as per their convenience, without any constraints. Therefore, the current study endeavours to explore the awareness of the use of ICT-based library and information services among the agricultural students of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar (West Bengal), which is an esteemed agricultural university in West Bengal, India.

Objectives of the Study

The main objective of the present study is to explore the awareness and use of ICT-based library and information services among the agricultural science students of Uttar Banga Krishi Viswavidyalaya, West Bengal. The specific objectives of the study include:

- To find out the awareness of ICT-based library and information services among the agricultural science students of UBKV.
- To explore the use of existing ICT-based library services.
- To discover the preferred electronic resources to access the desired information.
- To analyse the user's satisfaction with information resources and services.
- To identify the problems faced by the agricultural science students while accessing ICT-based library and information services.
- To provide suggestions for the improvement of awareness and use of ICT-based library and information services.

Scope and Limitation of the Study

The scope of the present study was limited to understanding the awareness and use of information and communication technology-based library and information services among the agricultural science students of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar (West Bengal). Only the undergraduate and postgraduate students in their final year were covered in this study.

Significance of the Study

This study is about discovering the awareness and use of information and communication technology-based library and information resources and services among the agricultural science students of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar (West Bengal). As we are all aware, this is the era of the Internet and digital information resources. Due to lack of time and the need of the day, everyone wants their desired information in a digital form, which can be accessed as and when they desire. The findings of the current study would be helpful in recognising the information use habits, as well as the problems faced by the respondents during the use of the library and its resources. The finding would also be helpful for the library authorities of the university, to upgrade the ICT infrastructure in the library, as well as improve the service delivery pattern, so that utmost users' satisfaction could be achieved. Apart from this, researchers from other parts of the West Bengal state, as well as India, may carry out similar types of studies to investigate the awareness and use of ICT-based library services, which can be helpful to improve the library service quality.

Research Methodology

The present study was carried out among the agricultural science students of the Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar, West Bengal (India) in April-May 2021. For the study, online survey design was used. In the Indian scenario, the students who particularly belong to rural areas and farmers' families mostly join the agricultural sciences courses. Furthermore, it is generally

believed that rural students are not much familiar with the use of ICT tools and applications; therefore, the population of 200 undergraduate and postgraduate students of agricultural science disciplines was selected randomly as the sample for the current study. An online structured questionnaire was used as an instrument for data collection. The questionnaire was prepared on Google Forms and 200 copies of the questionnaire were distributed online among the respondents through e-mail. Out of 200 questionnaires, 159 responses were received. Thus, 79.50% response rate was achieved in the study. The collected descriptive data are reported in the form of percentages.

Data Analysis and Interpretation

The collected data are analysed in the form of tables under the following headings:

Table 1: **Distribution of Respondents**

Academic Status of Respondents	No. of Respondents	Percentage
Post-graduate	68	42.76
Graduate	91	57.24
Total	**159**	**100**

Table 1 shows the distribution of the respondents based on their categories/degrees. As the data shows, 42.76 per cent post-graduate and 57.24 per cent undergraduate students participated in the study. The respondents were included from all the agricultural sciences departments, such as agriculture, horticulture, and forestry disciplines.

Table 2: **Gender-Wise Distribution of Respondents**

Gender	No. of Respondents	Percentage
Male	97	61.00
Female	62	39.00
Total	**159**	**100**

Table 2 highlights the gender-wise distribution of respondents who participated in the survey study. It is clear from the data given that out of 159 respondents, 61 per cent were male and 39 per cent were female.

Table 3: **Awareness about Electronic Resources**

Awareness about E-Resources	No. of Respondents	Percentage
Fully aware	65	40.88
Aware	82	51.58
Somewhat aware	12	07.54
Not aware	00	00
Total	**159**	**100**

The data given in Table 3 depicted the level of awareness about the e-resources among the agricultural science students of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar (West Bengal). It is revealed that 51.58 per cent of the respondents were aware of the use of electronic information resources, whereas 40.88 per cent were fully aware, and only 7.54 per cent were somewhat aware about the use of electronic information resources. The analysis shows that more than 90 per cent of the respondents were aware of the electronic information resources and were using them in their academic and research work.

Table 4: **Awareness and Use of ICT-Based Library and Information Resources**

Awareness of ICT-Based LIS Services*	No. of Respondents	Percentage
OPAC/Web-OPAC	159	100
E-books	138	86.80
E-journals	146	91.82
Automated circulation service	129	81.13
Online renewal of borrowed books service	42	26.42
Online reservation of books service	53	33.33
Access to e-contents through digital library portal	85	53.46
E-mail alert service for overdue books	66	41.50
Mobile-based library services	58	36.48
Reprographic service	118	74.21
CeRA, Krishikosh, Agricat, and so on, resources awareness	122	76.73

*Multiple answers were permitted.

Table 4 highlights the awareness and use of various Information and Communication Technology (ICT)-based library and information services offered by the library of Uttar Banga Krishi Viswavidyalaya (UBKV), Pundibari, Cooch Behar (West Bengal). It is clearly noticed from the data given in Table 4 that all respondents were aware of and using the Online Public Access Catalogue (OPAC)/ Web-OPAC service offered by the UBKV library, while 91.82 per cent of the respondents replied that they were aware of the use of e-journals and regularly accessing the contents for their academic as well as research work. On the other hand, 86.80 per cent were also aware of e-books and using them for academic and research purposes, whereas 81.13 per cent were aware of and gained the benefit of the automated circulation service. Similarly, 76.73 per cent were aware of the Consortium for Electronic Resources in Agriculture (CeRA), Krishikosh repository, Agricat union catalogue, and so on, and the e-resources packages, whereas 74.21 per cent were aware of the reprographic service and also using the same. Around 53.46 per cent were aware of how to access the electronic content through the digital library portal, while 41.50 per cent of the respondents were aware of the e-mail alert service for overdue books, followed by mobile-based library services (36.48 per cent), online reservation of books service (33.33 per cent), and online renewal of borrowed books service (26.42 per cent), respectively. This analysis shows that most of the respondents were aware of the ICT-based library and information services and were using them in their academic and research work.

Table 5: **Preferred Electronic Resources to Access Desired Information**

Preferred Electronic Resources	No. of Respondents	Percentage
E-books	20	12.58
E-journals	52	32.70
E-databases	26	16.36
E-theses and dissertations	41	25.79
E-magazines and e-newspapers	13	08.17
E-reports and so on	07	04.40
Total	**159**	**100**

The presented data in Table 5 shows the preferred electronic information resources accessed by the

respondents for their desired academic and research work. It was noticed during the study that 32.70 per cent of the respondents preferred to use e-journals to access the desired information, whereas 25.79 per cent preferred to use electronic theses and dissertations, especially for their research work. On the other hand, 16.36 per cent preferred to access electronic databases for their desired academic and research related information, followed by e-books (12.58 per cent), e-magazines and e-newspapers (8.17 per cent), and e-reports and so on (4.40 per cent), respectively. The analysis shows that about 60 percent of the respondents preferred e-journals and e-theses and dissertations as the electronic information resource to get the desired information.

Table 6: Satisfaction Level about using ICT-Based Library Services

Satisfaction Level	No. of Respondents	Percentage
Highly satisfied	34	21.38
Satisfied	65	40.88
Somewhat satisfied	49	30.82
Not satisfied	11	06.92
Total	**159**	**100**

Table 6 depicted the satisfaction level among the respondents about using ICT-based library and information services. It is clearly noticed from Table 6 that 40.88 per cent of the respondents were satisfied with the ICT-based library and information services offered by the library of UBKV, whereas 30.82 per cent replied that they are somewhat satisfied. On the other hand, 21.38 per cent replied that they are highly satisfied and 6.92 per cent were not satisfied with the ICT-based library and information services. The analysis shows that more than 60 per cent of the respondents were satisfied with the ICT-based library and information services offered by the library of UBKV.

Table 7: Problems Faced while using ICT-Based Library Services and Suggestions Thereof

Problems Faced*	No. of Respondents	Percentage
Lack of proper knowledge about using ICT tools	51	32.07
Lack of awareness about the ICT-based library services	66	41.50
Lack of training pro-grammes on use of ICT-based library services	77	48.42
Poor Internet connectivity	38	23.90
Lack of ICT infrastructure in the library	70	44.02
Lack of infrastructural facilities	58	36.48
Dissatisfaction with library staff's knowledge and behaviour	27	16.98
Lack of time due to busy class and field schedules	43	27.04
Lack of desired e-resources	30	18.86

*Multiple answers were permitted.

The data given in Table 7 reported the various problems faced by the respondents while using ICT-based library and information services, and also listed the suggestions by the respondents against each noted problem faced. It was observed during the study that 48.42 per cent of the respondents reported the problem of lack of training programmes on the use of ICT-based library and information services, while 44.02 per cent reported the problem of lack of ICT infrastructure in the library. On the other hand, 41.50 per cent of the respondents reported that they are facing lack of awareness about the use of ICT-based library and information services, whereas 36.48 per cent reported the lack of proper basic infrastructural facilities in the library premises. Similarly, 32.07 per cent were facing the problem of lack of proper knowledge about using ICT tools, followed by lack of time due to busy class and field schedules (27.04 per cent), poor Internet connectivity (23.90 per cent), lack of desired e-resources (18.86 per cent), and the problem of dissatisfaction with the library staff's knowledge and behaviour (16.98 per cent), respectively.

Summary of Findings

Based on data analysis, some of the major finding may be summarised as follows:

- More than 90 per cent of the respondents were aware of the electronic information resources and were using them in their academic and research work.

- All the respondents were aware of and using the Online Public Access Catalogue (OPAC)/Web-OPAC services offered by the UBKV library.

- Around 91.82 per cent of the respondents were aware of the e-journals and 86.80 per cent of the respondents were also aware of the e-books, and using them for their academic and research purpose.

- Around 76.73 per cent of the respondents were aware of the Consortium for Electronic Resources in Agriculture (CeRA), Krishikosh repository, Agricat union catalogue, and so on, and the e-resources packages and related services offered by the UBKV library; they were using them for their academic and research related work.

- The e-journals, and e-theses and dissertations were the preferred electronic information resources to obtain the desired information for about 60 per cent of the respondents.

- Around 40.88 per cent of the respondents were satisfied with the ICT-based library and information services offered by the library of UBKV, whereas 21.38 per cent were highly satisfied.

- About 48.42 per cent of the respondents faced the problem of lack of training programmes on the use of ICT-based library and information services, while 44.02 per cent faced the problem of lack of ICT infrastructure in the library.

Suggestions and Recommendations

Based on the responses of the respondents received during the study, the following suggestions could be made:

- It has come out during the study that some of the respondents were facing the problem of lack of knowledge in using ICT tools, as well as ICT-based library and information services; hence, it is suggested that the central library of UBKV, Pundibari, Cooch Behar (W.B.) should organise training programmes on awareness and use of ICT tools and library and information resources on a regular basis.

- More than 40 per cent of the respondents reported the problem of lack of ICT and basic infrastructural facilities in the library. Therefore, it is suggested that these facilities should be enhanced to the user's satisfaction.

- It has also been noticed during the study that some of the respondents reported the lack of e-resources and poor Internet connectivity; hence, it can also been suggested that a sufficient number of e-resources must be enhanced and proper Internet connectivity, especially high-speed bandwidth, must be provided by the central library of UBKV, for the satisfaction of the users.

- It has also come out during the study that some of the respondents were not happy with the attitude and knowledge of the library staff when searching for their desired information and using other services offered by the library. Therefore, it is suggested that the skills and behaviour of the library staff of UBKV should be improved, so that they may positively help the users facing problems in searching for their desired information and wanting to use other basic services offered by the library of UBKV. The authorities must have made proper provisions for the library professional and non-professional staffs to involve themselves in personal and professional training programmes on various levels, so that they may enhance their skills and the users may feel satisfied about the behaviour and knowledge of the library staff.

Conclusion

Information services and the way of offering services have totally changed, due to the worldwide effect of Information and Communication Technology (ICT). Similarly, the informational needs of users have also changed. Due to the widespread effect of ICT, agricultural library and information services have also changed. Now, agricultural science students and the research fraternity want quick information services at their door-step. Agricultural library and information services have now totally changed due to the widespread effect of ICT; hence, it is the need of the era that every library should change its information delivery and services pattern. More and more electronic information resources have to be included in the library collection, and ICT infrastructural facilities must be enhanced, so that the library and information services offered could be up to the optimum level of satisfaction of the users. From the result of the study, it is found that most of the respondents are aware of the ICT-based library services; however, there is need for

some improvement in the various aspects of services in the library, such as basic ICT infrastructural facilities, ICT-based information resources and services, basic library infrastructural facilities, high-speed uninterrupted Internet connectivity with sufficient terminals, and so on. Apart from this, the authorities of Uttar Banga Krishi Viswavidyalaya, Pundibari, Cooch Behar (West Bengal) must motivate the library staff for better output, and must support the staff in frequently conducting and joining awareness and training programmes on various levels.

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Building Digital Repositories with the Open-Source Software Invenio: Use of SaaS Model Zenodo

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Abstract

Owing to the prevailing 'unfair' digital divide, libraries worldwide are unable to build and manage institutional repositories for preserving and sharing the research output of academia. This paper evaluates and demonstrates how libraries can practically harness the completely free SaaS service model based on public cloud deployment model infrastructure to fill this divide and achieve the larger goal of open science. The paper highlights the process and steps of using Zenodo, a FREE and OPEN platform, powered by Invenio (Free Open-Source Software) RDM infrastructure, to establish a trusted repository with the provision of self-archiving. To test the KPIs and functionalities, a live online community '*dlispu*' was built on the Zenodo platform and the archiving process was executed. The findings of the study reveal that libraries can easily adopt Green Open Access, thus strengthening the scholarly communication cycle without any upfront and subsequent cost. This immediately outweighs the limitations of the digital divide. The positive outcomes of the study pave the way for the libraries with resource insufficiencies in making research more findable, shareable, and reproducible, with confidence. The findings of the study also reveal that the Zenodo repository is a OAI-PMH-compliant repository supporting metadata harvesting and interoperability.

Keywords: Invenio, Zenodo, FOSS, Open Access, OAI-PMH, Self-Archiving, Curation, CC-Licenses, DOI, Community, FAIR, IR (Institutional Repository)

Study Background and Theoretical Framework

Open Science has been defined as "an inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible, and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation, and communication to societal actors beyond the traditional scientific community. It includes all scientific disciplines and aspects of scholarly practices, including basic and applied sciences, natural and social sciences, and the humanities, and it builds on the following key pillars: open scientific knowledge, open science infrastructures, science communication, open engagement of societal actors, and open dialogue with other knowledge systems" (https://en.unesco.org/news/draft-recommendation-open-science-its-way-final-adoption, 2021). One integrated concept with open science is open data. Open Data Handbook has defined open data as the "data that can be freely used, re-used and redistributed by anyone – subject only, at most, to the requirement to attribute and share alike" (What is Open Data?, 2021).

One other associated concept could be big data encompassing the ever-growing research output that

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has to be managed sustainably. Big data management (BDM) can be considered a broad term that includes data cleansing, integration, migration, preparation, enrichment, analytics, quality, management, reporting, governance, and planning (Mansouri, 2021). Cloud-based platforms, especially SaaS (software as a service), have emerged as an effective solution for BDM. SaaS provides users with remote access to specific software functions located in the cloud (SaaS – What Is It? Definition – Delante SEO/SEM Glossary, n.d.). Open-source software has the potential to facilitate a large-scale digital repository for research accessibility, visibility, and long-term preservation. A large-scale digital library can service a heterogeneous population and provide diverse digital content (Barifah & Landoni, 2019). A large-scale digital library functions as a portal, aggregating digital resources from disparate collections (Xie & Matusiak, 2016).

Open Access – Green OA

Open access is a broad international movement that seeks to grant free and open online access to academic information, such as publication and data. A publication is defined as 'open access', when there are no financial, legal, or technical barriers to accessing it, that is to say, when anyone can read, download, copy, distribute, print, search for, and search within the information, or use it in education or in any other way within the legal agreements. Open access is a publication model for scholarly communication that makes research information available to readers at no cost, as opposed to the traditional subscription model in which readers have access to scholarly information by paying a subscription, usually via libraries ("What is open access?", 2020). Green open access, also called self-archiving, means that a version of the article is deposited in an open repository, often in the institutional repository of a university or a subject repository (Danielsson, n.d.).

Why Invenio?

There are several open-source software available freely for building institutional repositories (IR). Among them, the two most popular software are DSpace (https://duraspace.org/dspace/) and Eprints (https://www.eprints.org/uk/).
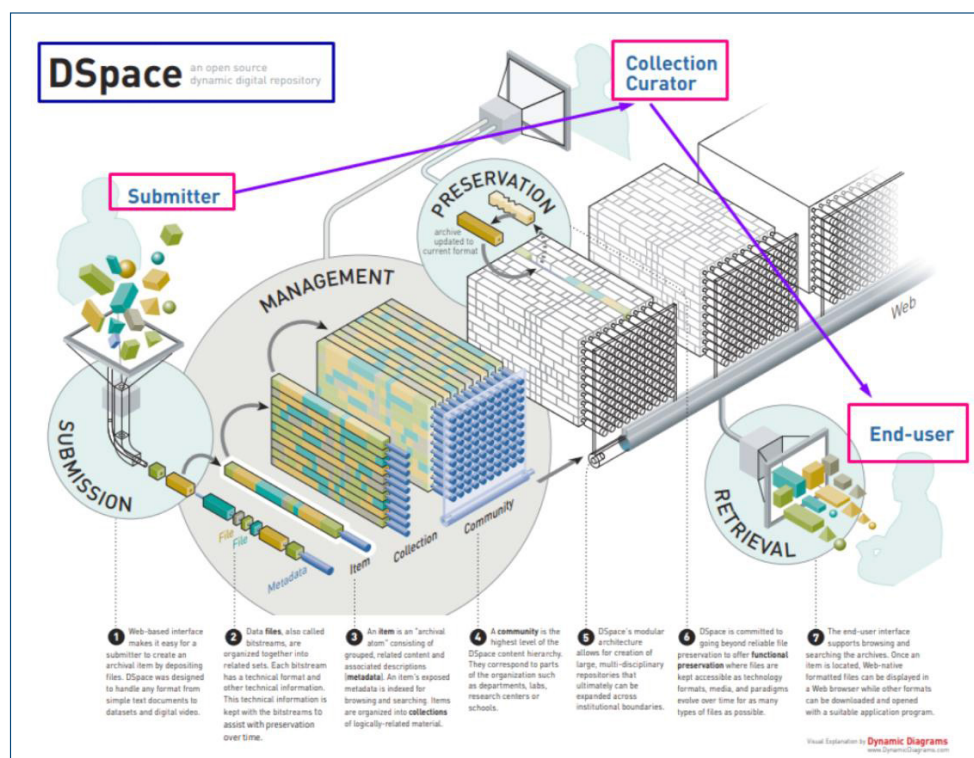
Source: https://duraspace.org/wp-content/uploads/dspace-files/DSpace_Diagram.pdf

Fig. 1

However, none of these FOSS provide 'FREE hosted' repository solutions for the libraries. While libraries can freely download the software, they need the server and other infrastructure to develop and sustain the IR. On account of limited resources, including the financial and complexities of server management, many libraries still do not have their own IR for their research community. This puts libraries, research communities, as well as the academic institution at a loss. They are devoid of all the benefits an IR can offer.

Invenio is a free open-source software licensed under the MIT license, supported by a committed community of multidisciplinary institutions. It has been developed by CERN. The European Organisation for Nuclear Research, known as CERN, is a European research organisation that operates the largest particle physics laboratory in the world. Invenio has been created with security and long-term preservation in mind. Invenio is fast and has been designed to manage 100+ million records and petabytes of files. All research data can be archived independently of the size (InvenioFramework — inveniosoftware.org, 2016). There are many cases wherein massive and large-scale digital repositories are running on Invenio. One such global research repository which has drawn the attention of the scholars worldwide is Zenodo.

Zenodo

The word Zenodo has been derived from "*Zenodotus, the first librarian of the Ancient Library of Alexandria and father of the first recorded use of metadata*", a landmark in library history. Zenodo is an interdisciplinary open dissemination research data repository for the preservation and making available of research, and educational and informational content. Zenodo is hosted by CERN, which has existed since 1954 and is an intergovernmental organisation funded by the European Commission via the openAIRE projects, CERN, Alfred P. Sloan foundation, and Acradia fund. Donations are via CERN and the society foundation, and currently has an experimental programme defined for the next 20+ years. Zenodo is powered by CERN Data Centre and the Invenio digital library framework and is fully run on open-source products all the way through. Physically, Zenodo's entire technical infrastructure is located on CERN's premises, and is subject to CERN's legal status. All files uploaded

to Zenodo are stored in CERN's EOS service in an 18 petabytes disk cluster. Each file copy has two replicas located on different disk servers. All data files are stored in CERN data centres, primarily in Geneva, with replicas in Budapest. Data files are kept in multiple replicas in a distributed file system, which is backed up to tape on a nightly basis. OpenAIRE Orphan Record Repository got a make-over and was re-branded as Zenodo. If we deposit an article in OpenAIRE Orphan Record Repository, it is also available in Zenodo. Zenodo is open to all research outputs from all fields of science, regardless of the funding source.
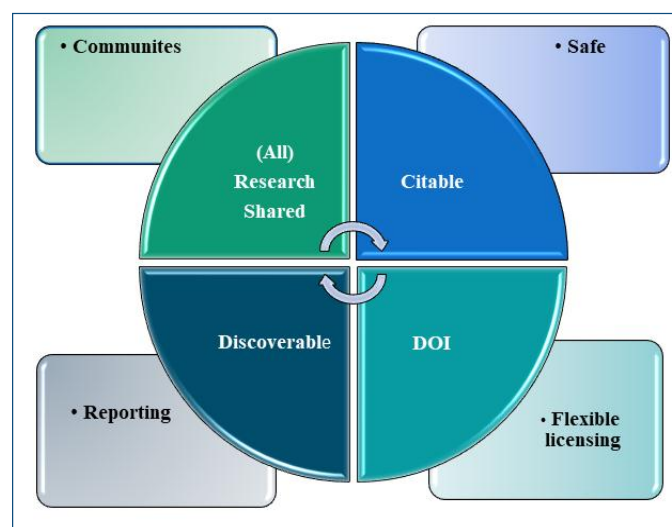

Fig. 2

"Researchers can upload files to Zenodo and there's minimal validation of what goes in there, but these community collections essentially allow everyone to create and curate the content and this solves the issue of us otherwise having to validate everything that's uploaded" (Lars Holm Nielsen, n.d). Zenodo has attracted a large number of communities in its few years of existence. Because Zenodo does not limit registered users from creating communities, their establishment and operation are solely dependent on the desire of individuals and communities who interact with the repository. This makes the repository an intriguing example of a data curation repository in which researcher behaviour is manifested both in the repository's growth and real use, as well as in community selection. Metadata are assigned a globally unique and persistent identifier, i.e., a DOI which is issued to every published record on Zenodo. It is a top-level and mandatory field in the metadata of each record. Data

are described with rich metadata. Zenodo metadata is compliant with data cite Metadata schema minimum and recommended terms, with few additional enrichments.

Zenodo and FAIR Principles

The FAIR Data Principles (Findable, Accessible, Interoperable, and Reusable), published on Scientific Data in 2016, is a set of guiding principles proposed by a consortium of scientists and organisations to support the reusability of digital assets (*What are the FAIR Data Principles? | Augustus C. Long Health Sciences Library*, n.d.).

Source: https://kidsfirstdrc.org/assets/images/f554d2c0-7ae0-11e8-8def- ddba9c8697d1.png
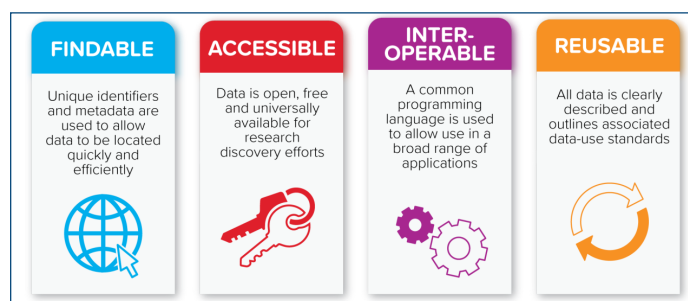
Fig. 3

Findable means data and metadata are online and openly searchable with a persistent link that is uniquely attached to each specific dataset. Accessible means data and metadata are retrievable in a machine-actionable form, with downloading options clearly described (including any needed authentication). Interoperable signifies that data and metadata are consistently structured and described, both syntactically and semantically, so that algorithms can parse and ensure that like data are accurately compared to like. Reusable indicates that data and metadata are sufficiently annotated so machine and human users can determine fit-for-purpose in the context of their analysis.

Machine actionable leads to structuring data and content to make it possible for computational systems to find, access, interoperate, and reuse data without significant human intervention. Data interoperability is the capacity to which data can be analysed and/or merged with similar data. Data interoperability relies on data standards, data documentation, and metadata to indicate to researchers which data sets or variables are comparable (NLM data thesaurus) (Preparing FAIR data for reuse and reproducibility | Research Data Management Service Group, 2020).

Related Studies

The study states that the Open-Source system Invenio helped the library remain active, and its unique collection managed to survive through effective transformation. It helped tackle the issues of lack of methodological and technical support, and problems in research management through digital repositories. Invenio helped a really small specialised library provide high standard services and grey literature open access with a limited budget and minimal staffing. It has low demand on technical, financial, and personal resources, and stable development was ensured. The main aim of the library is to fully satisfy both internal and external users, and to always provide accessible and transparent information about the library's collection, subscribed and freely available online resources, and other information materials that the library can offer all its users. The library is trying to achieve this goal by using the INVENIO library system, which represents a single interface enabling searches in all the library's information sources (Drozda et al., 2015). CERN (European Organization for Nuclear Research), as the world's largest physics laboratory, has always been facing the challenge of distributing and archiving grey material. Invenio is an integrated digital library system originally developed at CERN to run the CERN document server (CDS), and the Invenio software was born in a rich grey literature-producing environment. Its modular design enables it to serve a wide variety of requirements, from a multimedia digital object repository to a Web journal, to a fully functional digital library, with its flexible nature. Grey literature has historically played a key role for researchers in the field of high-energy physics (HEP). The paper highlights how the particular context of grey literature within the HEP community shaped the development of Invenio and focused on the process of grey material within the software, and analysed how it is used in a real production environment, the CERN document server (CDS) (Caffaro & Kaplun, 2010).

Research Problem

Digital divide is a well-accepted phenomenon. This 'unfair' divide may be attributed to several factors, including lack of ICT infrastructure, financial resource crunch, and lack of proficient and skilled professionals. Digital divide leads to so many other divides between the 'haves' and the 'have-nots'. Many libraries in the world are at the wrong end of this digital divide as they find themselves helpless in building an institutional repository (IR) for the benefit of the members they serve. Due to unavailability of funds and skilled human resources, they cannot afford on-prem (on-premise) or hosted solutions or any cloud computing deployment model. In the absence of any systematic and permanent solution, the research productivity of the campus researches possesses high risk of obsolescence behind the paywall. The limited visibility also adversely affects the likelihood of potential citations. Moreover, the unpreserved research is at a risk of future unavailability. This also deviates from the F.A.I.R. data principles. Research unshared is a loss to the humanity and social welfare. The root-cause analysis reveals that libraries are not unwilling to take the initiative, rather they lack the motivation in terms of availability of a FREE and OPEN platform, built on the robust Invenio RDM infrastructure having global exposure. This study highlights the potential of Zenodo as an enabler and empowering solution for libraries to build a reliable castle in the empire of open access. Researchers have been sharing their research via academic social networks (ASNs) or scientific collaborative networks (SCNs) for a long time. The basic problems with these platforms include lack of global visibility, one platform being more popular in certain parts of the world, well-defined long-term research preservation commitment, and explicit mention on their website. More often than not, they are not governed by not-for-profit organisations. Instead, they are partially commercialised.

Study Objectives

The main objective of the study is to evaluate and demonstrate the usability of Zenodo repository (powered by Invenio software) for research curation and sustainable long-term preservation through archiving (both self-archiving and mediated-archiving), as per the Green Open Access. The other objectives revolving around the main objectives are enumerated below.

- To critically evaluate the key performance indicators (KPIs) of the Zenodo platform as the trusted global research archiving platform.
- To showcase the utility/efficacy/suitability/appropriateness of a digital repository for libraries lacking ICT infrastructures like on-premise or SaaS-based cloud platforms.
- To examine and execute the steps of a building community as a repository administrator.
- To investigate the process and steps of archiving with Dublin Core metadata schema, open access status, and supported Creative Commons (CC) licenses.
- To observe the download pattern of archived papers.
- To recommend best practices based on the findings of the study.

Research Methodology

The authors used their ORCID to sign in to Zenodo. ORCID provides a persistent and unique digital identifier (an ORCID ID) that researchers own and control, and that distinguishes them from every other researcher (ORCID, 2021). To achieve the study objectives, a community '*dlispu*' was built by the authors. The community was built with the focus of maintaining it as a real and live repository in the discipline of library and information science. The collection URL and repository community details were communicated to several depositors for self-archiving. The depositors were instructed to carefully fill the Dublin Core metadata elements as per the requirement of the open repository, after uploading the content. Published research papers were given priority with the immediate availability of full-text PDFs.

Upon successful submission, the repository administrator curated the same by accepting the submissions. Post acceptance the papers were immediately visible on the Zenodo platform and were further examined for their accuracy and completeness. Any discrepancy noted was intimated to the submitters for corrective measures. Submissions with inaccurate and inadequate information were rejected at the curation stage. Duplicate submissions were also rejected by the community administrator.

After the successful appearance of the research papers in the global open repository platform Zenodo under the community dlispu (https://zenodo.org/communities/dlispu/), the download data was closely monitored for several weeks for any positive growth rate.

# Steps for Building IR using Zenodo SaaS

Sign-Up and Login

Researchers/librarians must register as a user of Zenodo. This will allow them to access as well as deposit content in all possible formats for which they possess the appropriate rights.

- Go to Zenodo.org.
- Create an account using an e-mail or sign up using a GitHub account or by using an ORCID account.
- After logging in, users can have authorised access to different Zenodo functions.

Building Community

- After logging in to Zenodo, click on Communities, shown in the red box.
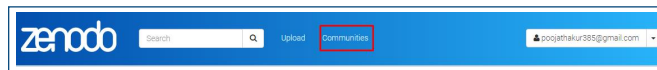
- After that, click on 'New' to create a community. To create a community, the user account must be verified at least an hour prior.
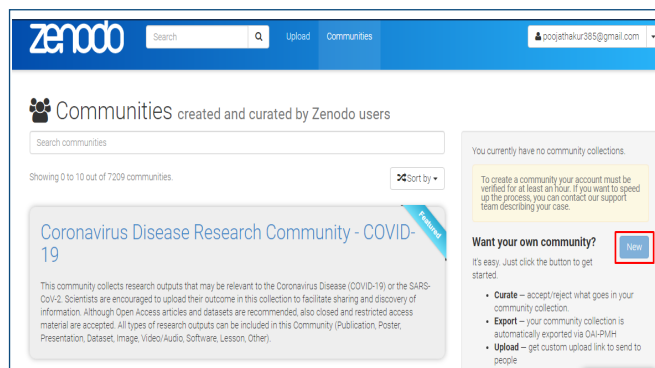
- Identifier: (Required)

Only letters, numbers, and dash are allowed. The identifier is used in the URL for the community collection, and cannot be modified later.

- Title: (Required)

Enter the title of the community in the provided text box.

- Description: (Optional)

A short description of the community collection can be entered in the text box provided, which will be displayed on the index page of the community.

- Curation Policy: (Optional)

The curator describes briefly and precisely the policy by which he/she accepted/rejected new uploads in this community.
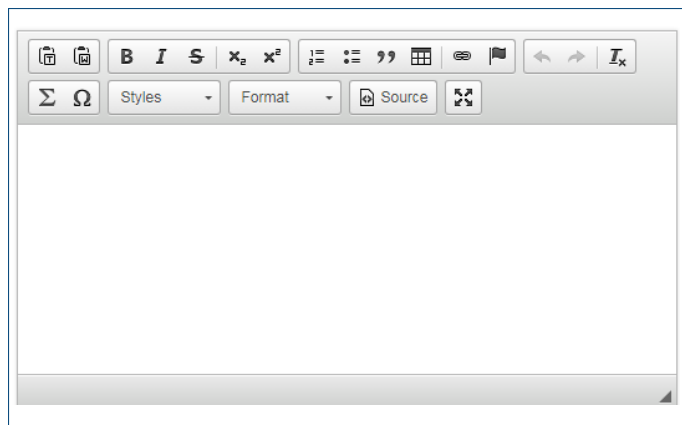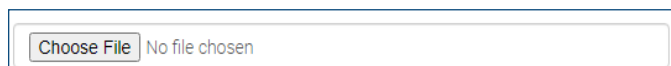
- Page: (Optional)

A long description of the community collection will be displayed on a separate page linked from the index page.

- Logo: (Optional)

This is the image file used to aid and promote instant public recognition. Supported formats are: PNG, JPG, and SVG. Max. file size: 1.5MB.


During the 'New community' creation, description, curation policy, and page are all optional. They provide the complete text formatting features, such as bold, italics, strikethrough, subscript, insert/remove, numbered list, insert/remove bulleted list, block quota, table, link, anchor, undo, redo, remove format, math, insert special character, formatting styles, paragraph format, source, maximise, and so on.

Content Deposit

- After creating a community, log in to your account and select the 'upload' tab at the top of the page. You will be brought to an upload landing page.
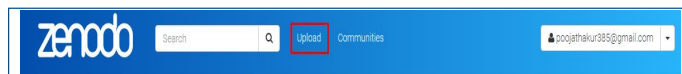
- Now click on the 'New Upload' green button on the top right.
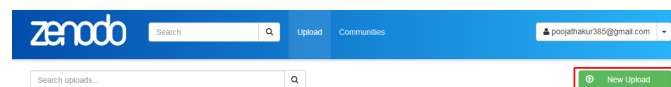
- To upload a new file, click on the 'choose files' button. Once the file appears, click on the 'Start upload' button.
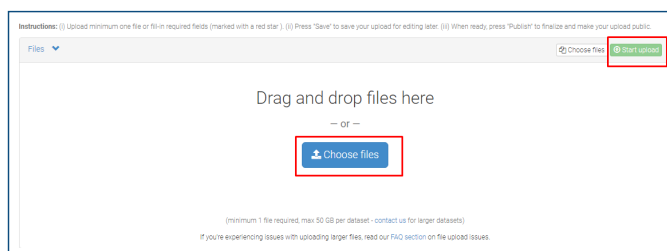
- The content scope includes all types of research content in all fields of research adhering to copyright and privacy policy originating from any stage of the research lifecycle. Users are encouraged to use preservation-friendly formats, with a total file size limit per record of 50GB. Higher quotas can be requested and granted on a case-by-case basis.
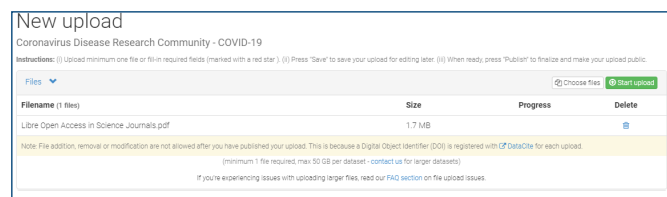
- There are several metadata fields that can be selected in Zenodo. Some of them are recommended and some of them are required. Among the recommended ones, there are communities. Select the community name, i.e. 'dlispu'.
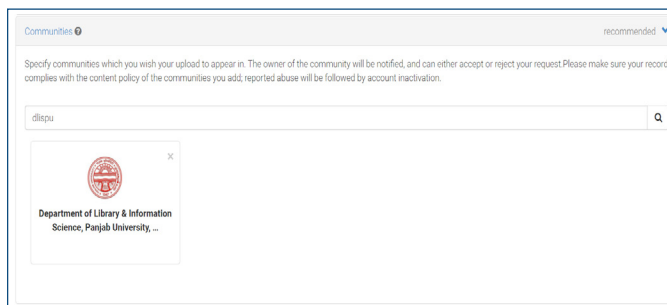
- Select the type of file that the user wants to upload. The user is free to upload any type of file, like publication, poster, presentation, dataset, image, video/audio, software, lesson, and others. Select the publication type, like a journal article.

- Click the button 'Reserve DOI' to generate a DOI for your work instantly, i.e. before you submit the work. This allows you to know the DOI prior to submission, though it will not be registered until the submission is complete.

- Enter the original publication date in the text box provided. Enter the title of the publication and then enter each of the authors of the publication, their affiliation, and ORCID ID where possible. To add multiple authors, click '+ add another author'.

- Add description of data type in the provided description box. Version is optional here and is mostly relevant for software and dataset uploads.

- Select the language of the article. Language codes are provided according to ISI 639 code in Zenodo. For textual items, English is preferred; however, all languages are accepted.

- Add keywords from the article in the text box. To add more than one keyword, click on '+ add another keyword'. One can also add additional notes; it is optional.

- Users must specify a license for all publicly available files. Files may be deposited under closed, open, or embargoed access. Access to metadata and data files is provided over standard protocols such as HTTP and OAI-PMH. Users may deposit content under an embargo status and provide an end date for the embargo. The repository will restrict access to the data until the end of the embargo period, at which time the content will become publically available automatically. Users may deposit restricted files with the ability to share access with others if certain requirements are met. These files will not be made publicly available and sharing will be made possible only with the approval of the depositor of the original file. If we choose open access, we must specify the license under which the publication is distributed. Usually, the default Creative Commons Attribution 4.0 license is appropriate. However, check with any existing publisher. Files deposited under closed access are protected against unauthorised access at all levels.

- Enter the grant number for the grant/project in the neighbouring text box.

- Enter related/alternate identifiers, such as DOI, handle, ARK, PURL, ISSN, ISBN, PubMed ID, PubMed Central ID, ADS Bibliographic Code, Life Science Identifiers (LSID), and resource type of the related identifier.

- Enter contributors, references, journal, conference, book/report/chapter, thesis, and subject in the text boxes. These are optional.

- Work in progress can be saved by clicking 'Save' at the top or bottom of the page. Then click 'Publish' to publish your work on Zenodo.

Items will be retained for the lifetime of the repository. Zenodo makes no promises of usability and understandability of deposited objects over time.

Content Curation (Post Submission)

- *Curation e-mail Alert/Intimation*
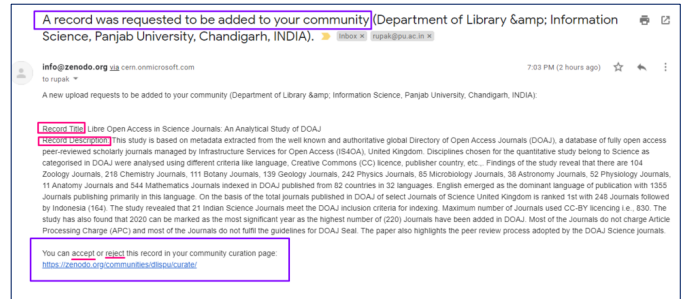
- *Repository Community Curation Service*

The pending submissions for curation can be viewed by the repository administrator (RA) after login, wherein the submission may either be accepted or rejected.
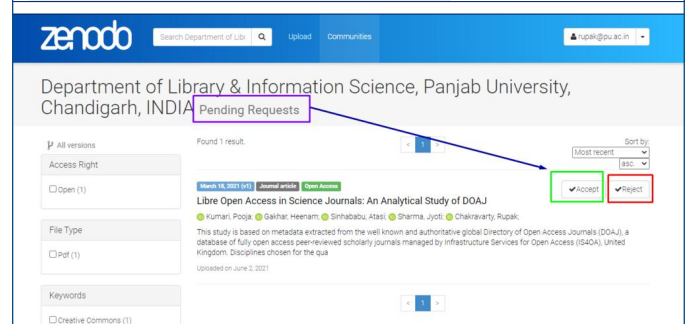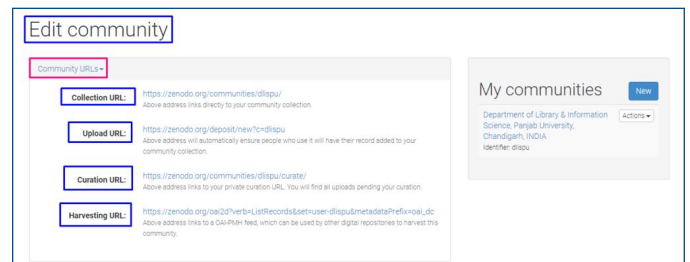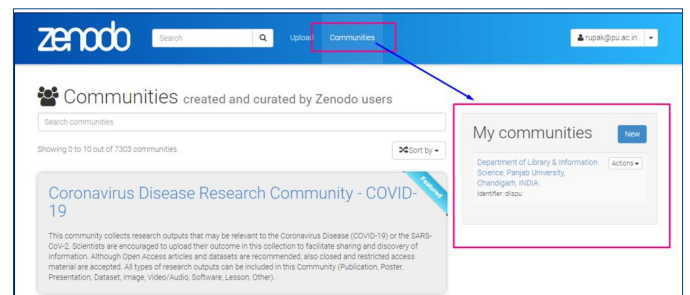
Until a submission is accepted or rejected by the curator, the documents are saved in drafts with an indication of a red arrow for the submitter.
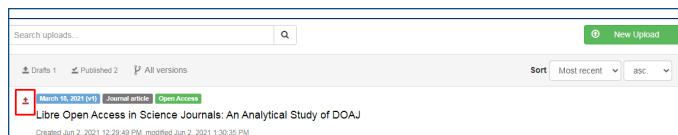
- *View Collection*
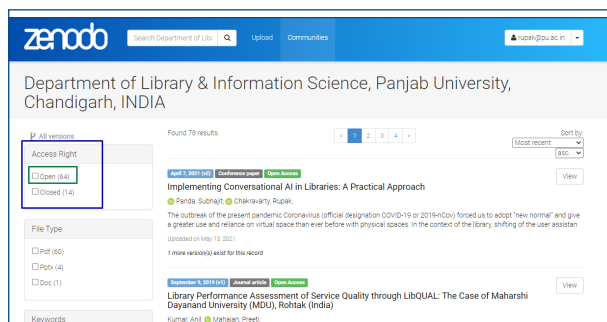
As soon as a submission is accepted or approved by the RA, the same becomes part of the repository and is readily available for viewing.

Zenodo Compliance with OAI-PMH

Zenodo allows IR administrators to harvest our entire repository via the Open Archives Initiative Protocol for Metadata Harvesting (OAI- PMH). OAI-PMH is a widely used protocol for harvesting metadata and the most popular repository software provides support for this protocol. OAI-PMH is developed by the Open Archives Initiative. It is a low-barrier mechanism for repository interoperability. Data providers are repositories that expose structured metadata via OAI-PMH. Service providers then make OAI-PMH service requests to harvest that metadata. The base_URLof Zenodo is https://zenodo. org/oai2d. The validation test was executed using the link https://www.openarchives.org/Register/ValidateSite. The interface of this validator and the results generated are reproduced below.
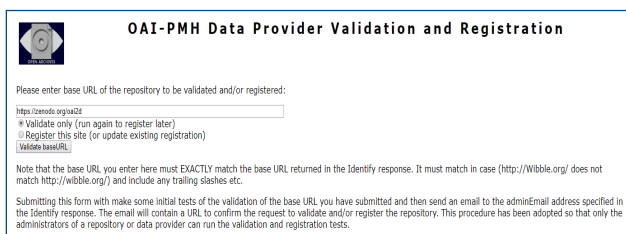
Fig. 4: **OAI-PMH Validation Test with Zenodo Base URL**
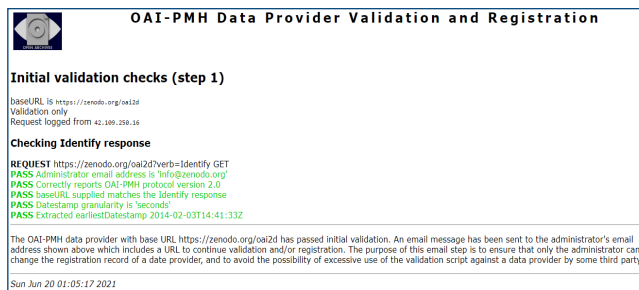
Fig. 5: **OAI-PMH Validation Test Result**

The result of the validation test indicates that the Zenodo archive successfully passed the validation test with full conformity.

Findings

- Zenodo is ORCID-enabled, providing convenient access with a futuristic vision.
- Records are indexed immediately in OpenAIRE (able to see the record within a few minutes in OpenAIRE).
- Building a repository (individual/community) in Zenodo is easy, fast, and quick, since it is a SaaS deployment model of cloud computing.
- Disciplinary/subject/topical repository can also be implemented quite easily.
- The platform (powered by FOSS Invenio) provides accessibility, visibility, and long-term preservation of research with vast storage and adequate security.
- Usage statistics are readily available for download-ing and viewing.
- It is for all researchers, scientific communities, and research institutions, and is open to all research out-puts regardless of the funding source.
- Zenodo provides free DOI (prefix: 10.5281) in case the publisher has not assigned any to the archived content.
- Zenodo allows small modifications to the record's file by providing the edit option.
- It adheres to the FAIR Data Principles, and thus en-courages the sharing of research openly for maxi-mum utilisation and re-use of research results (re-search re-use and reproducibility).

- Zenodo repository was found to adhere to OAI-PMH in terms of interoperability for metadata harvesting.

Recommendations and Suggestions

- As of now, Zenodo does not allow "sub-community" under a given community. It is highly recommended that provision of sub-communities must be offered.

- Social sharing links also need to be integrated for instant sharing of research articles.

- Libraries that still do not have their IR should create the same using the open Zenodo platform for research curation, preservation, and visibility.

- Metadata creation workshop and training programmes may be conducted for making independent self-archiving in Zenodo platform using Dublin-Core metadata schema.

- Depositors should be encouraged to deposit content under Attribution 4.0 International (CC BY 4.0) License wherever possible.

- The benefits of the IR in terms of download statistics and citations must be shared/communicated to the stakeholders for marketing and promotion of the service.

- Authors/researchers must be encouraged and motivated to deposit the full-text version (published or author-accepted VOR – Version-of-Record) of the content (wherever possible) as per the Sherpa Romeo (available at https://v2.sherpa.ac.uk/romeo/) analysis of publisher open access policies from around the world on a journal-by-journal basis.

- Libraries can focus on self-archiving by the authors as the first priority, with an additional provision of mediated archiving by a pre-identified team.

- Libraries might explore the possibility of establishing on-prem cloud IR using Invenio software on the SaaS model, for constituting Repository as a Service (RaaS)/Digital Repository Service (DRS).

- Curator should know the credentials of the depositor before accepting or rejecting the document.

- Provision of duplication checking of document should be available, before accepting or rejecting the document.

Conclusion

The successful implementation of a digital repository elucidates and validates the availability of Zenodo as a pragmatic and sustainable platform for research preservation and visibility. Zenodo facilitates metadata access, and reuse by it is licensed under CC0. All metadata is exported via OAI-PMH and can be harvested. It offers longevity to the archived content, with versioning of the data files. The uploaded data is archived as a Submission Information Package. To facilitate file preservation, the files and metadata are backed up nightly and replicated into multiple copies in the online system. Zenodo ensures fixity and authenticity of the content; at regular time intervals files are checked for their integrity. It has a well-planned succession plan. In case of closure of the repository, best efforts will be made to integrate all content into suitable alternative institutional and/or subject-based repositories.

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Perception towards Web Search Engines and Evaluation of Internet Search Results by Undergraduate Students

Auwalu Muhammad Giginyu*

Abstract

The Internet has become a major source of information today, and finding relevant information is a difficult task. The Web search engine is a software program that allows users to quickly retrieve specific information out of millions stored on the Internet. *Purpose:* The main aim of the paper was to ascertain the perception of students towards Web search engines and to determine the criteria adopted when evaluating Internet search results. *Methodology/Approach:* Quantitative research methodology using cross-sectional survey design was used for the study. The population of the study was 65,018 students, of which 462 were sampled. A total of 462 copies of the questionnaire were administered to the respondents, of which 394 were filled and returned. *Findings:* The paper confirmed that the respondents perceived Web search engines as useful and easy to use. In terms of evaluation of Internet results, it was found that the respondents lack knowledge on the criteria used to evaluate information resources. *Recommendations:* The paper recommended that there is need for teaching students the criteria for evaluation of information resources. There is need for librarians of these institutions to be proactive in guiding students on how to evaluate information resources. There is need for the students to discuss among themselves, in a forum, the knowledge they acquired on how to evaluate information resources. *Originality/Value:* The findings would be beneficial to the lecturers teaching information literacy and other related courses, since it explored the attitudes of students towards important retrieval tools and the criteria they adopt when evaluating the search results.

Keywords: Web Search Engines, Evaluation, Internet, Search Results, Students

Introduction

A search engine is a software that has the capability of searching through large volumes of text or other data for specified keywords, and then returning a list of files where the keywords are found. A search engine helps users track down online information on a wide variety of topics that are valuable. It is a software program that searches a database and gathers reports on information that contains or is related to specified terms (Louis, 2012). When using the Internet for research purposes, search engines serve a similar function to a library catalogue, because it informs users about the information stored so that he/she can decide whether to select it or not. The abundance of information currently available on the Internet is unmatched in human history. Given the considerable information options available today, finding reliable information is a complex and challenging task for any information seeker, but especially so for students of tertiary institutions (Hallaq, 2016).

In this era of widespread ICT, for every second, over 100,000 information searches are performed on Web search engines. People use the Web to find information on almost everything, from day-to-day information, such as text, audio, video, audio-visual, and images multimedia. Internet has become a part and parcel of our day-to-day life. However, many questions linger in the minds of many people. How accurate and reliable are

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the information they retrieve from a Web search engine? How does a person make a decision to use information from a particular search engine or Web site? Anyone can publish on the Internet and of course it is easier to find and access the published information on the Internet. This means that the quality of the information one finds on the Internet must be evaluated very carefully, unlike in the traditional media where, for example, a journal article to be published goes through peer review before it is accepted for publication. With a book one can judge the quality by the reputation of the publisher, author, series, and so on (Pérez, Potocki, Stadtler, Macedo-Rouet, Salmerón & Rouet, 2018). However, the flood of raw information on the Internet has not been filtered by peer review or the collaborative efforts of the traditional publishing industry. In addition, there is need for a software that helps users access the information stored on the Internet. It is also important for information seekers to possess skills for selection and evaluation of information on the Internet. Kovacs, Schloman and McDaniel (1994) stressed the need for evaluation of information on the Internet and advised people not to believe everything that is found, but to find its author's background and abilities. Similarly, Kanniainen, Kiili, Tolvanen, Aro and Leppänen (2019) emphasised that reading to learn from online information, often referred to as online research and comprehension (ORC), requires, in particular, skills and strategies for locating, evaluating, and synthesising online information, as well as for communicating one's learning to others. Kovacs (1999) used the terms good stuff and poor stuff. Good stuff described the quality of information on the Internet. Good stuff is any information that is relevant to the information needs of the client, and meets basic quality-of-information standards.

Fritch and Cromwell (2001) asserted that information on the Internet can be published by almost anyone, that there is virtually no filtering of information on the Internet and that filters of information typically present in a print environment (publishing houses, editors, reviewers, librarians/selectors) are often not present on the Internet. Anyone can publish almost anything on the Internet, often bypassing the quality assurance benefits offered by traditional publishing (Kaushik, 2012). Traditional publishing benefits include issuance by an authoritative source, editorial or peer review, and evaluation by experts. There is little or no editorial review of material and no official agency, specialist, or review process for Internet

subject matter (Schrock, 1996). Hahn (1997) stressed the need to teach students how to evaluate Internet resources. Bell and Frantz (2014) catalogued criteria to consider when evaluating information resources as authority, timeliness, relevancy, accuracy, and bias. According to Metzger, Flanagin, Markov, Grossman and Bulger (2015), contemporary students are a particularly intriguing group to consider with regard to information credibility issues. Although they have been described as "digital natives in a land of digital immigrants" (Rainie, 2006), they may lack the tools and abilities critical to evaluate information effectively, in part due to their relatively limited development and life experience. While new technology continues to develop and become increasingly affordable, and students have increased access to the Internet, the lack of Internet skills in higher education may be due to the communication gap between what Prensky (2012) refers to as digital natives and digital immigrants. Nearly all educators, especially those in higher education, fall into the category of digital immigrants and "speak" with an "accent" when it comes to digital technology, whereas most students are identified as digital natives, coming to higher education already "speaking" the language of digital technology fluently. He has later recognised digital technology as "'the right stuff' to be teaching our kids today to prepare them for the future" (Prensky, 2012).

Research Questions

This work attempts to provide answers to the following questions:

- What is the perception of students of Kano state tertiary institutions towards Web search engines?
- What are the criteria used by the students of Kano state tertiary institutions to evaluate Internet search results?

Methodology

Quantitative methodology using cross-sectional survey design was employed. A questionnaire was used to gather data from the respondents. The population of the study was confined to tertiary institutions in Kano state that have Internet connection in their libraries, and there were a total of 65,018 in these institutions. The sample size was 462, which was determined using Cochran's formula. The data collected for the study was analysed using frequency

and percentage using Statistical Package for the Social Sciences (SPSS).

Findings and Discussion

This section presents the findings of the study based on the research questions. A total of 462 copies of the questionnaire were administered to the respondents, of which 394 were filled and returned.

Table 1: **Perception of Students towards Web Search Engines**

Sr. No.	Statement	SA/A	%	SD/D	%
1	I believe it is important to use Web search engines	320	81.2	74	18.8
2	I believe Web search engines save time	278	70.6	116	29.4
3	I am satisfied with the results provided by the Web search engines	286	72.6	108	27.4
4	I find what I am looking for with the help of Web search engines	295	74.9	99	25.1
5	Web search engines are user friendly	205	52.0	189	48.0

Table 1 shows that a majority of the respondents (320, 81.2%) agreed that Web search engines are important. Similarly, 278 (70.6%) believed that Web search engines save time and 286 (72.6%) indicated that they were satisfied with the results provided by the Web search engines after giving it a command. Finally, a majority of the respondents (295, 74.9%) stated that they found what they were looking for and what they wanted to find with the help of search engines. In addition, 205 (52.0%) respondents indicated that the interface of search engines was user friendly. These findings are encouraging; these results show that the respondents perceived Web search engines as useful and user friendly. There is a tendency by the students to access information from the convenience of their locations. They can also have access to resources published in any period, because most of them are available on Internet platforms. They can also visit reputable institutions of learning anywhere in the world and access their information materials. The results further indicated that students can supplement their lecture notes via tutorials and other information materials available on the Internet. The results depicted that the respondents accepted this vital technology and there is a likelihood of accepting any technology that helps in boosting their academic performances. Therefore, the implication of these findings is that there is a tendency of utilising Web search engines for information retrieval by the respondents, which eventually would have great impact on their academic performance.

Table 2: **Criteria Used to Evaluate Internet Search Results by the Students**

Sr. No.	Criteria	Yes	%	No	%
1	Affiliation of the author (place of work)	72	18.3	322	81.7
2	Citation and references	85	21.6	309	78.4
3	Date of publication	65	16.5	329	83.5
4	Design and the layout	209	53.0	185	47.0
5	Objectivity of the author	65	16.5	329	83.5
6	Qualification of the author	123	31.2	271	68.8
7	Relevance	254	64.5	140	35.5
8	Scope covered	209	53.0	184	47.0
9	Sponsor of the website	95	24.1	299	75.9
10	Writing style and language used	198	50.3	196	49.7

Please state which of the following you consider as a criteria for evaluation of Internet search results.

Table 2 shows the results of the study on the criteria used by the students for evaluation of Internet search results. The table indicates that a majority of the respondents (322, 81.7%) do not consider affiliation of the author as a criteria for evaluation. It also shows that most of the respondents (309, 78.4%) ignore citation and references provided as a way of evaluation. A majority of the respondents (329, 83.5%) do not look at the date of publication when evaluating Internet search results. Further, it indicates that more than half of the respondents (329, 83.5%) do not bother about the objectivity of the author and 271 (68.8%) respondents do not consider the qualification of the author as a criteria for evaluation. Ninety-five (24.1%) respondents do not consider the sponsor of the website as a criteria for evaluation of Internet results. It was also found that a majority of the respondents (209, 53.0%) prepare the design and the layout when evaluating information. It shows that a majority of the respondents (198, 50.3%) consider writing style and language used in the document as a criteria for evaluation of Internet search results. In addition, a majority of the respondents (254, 64.5%) indicate that they consider relevance of the document to their information needs and most of the respondents (209, 53.0%) regard scope covered by the document as a criteria for evaluation.

These results indicate the lack of knowledge on the criteria for evaluation among students of Kano state tertiary institutions. The findings of this study raised a sceptical alarm regarding students' ability to locate and discern high-quality information online. Consequently, this study sought to understand the various criteria used by the students to evaluate the credibility of information found on the Internet appropriately and accurately. The implication of these findings is that students would find it difficult to select relevant information resources that would satisfy their information needs. There is also a tendency to spend a lot of time in searching and selecting information from the Internet. In some instances, users can ignore valuable information material and go for irrelevant ones. These findings were similar to those of Metzger, Flanagin, Markov, Grossman and Bulger (2015) who observed students' critical evaluation of online information; most find the students to be largely uncritical or reliant on inappropriate criteria when seeking information online. Thus, the authors concluded that most of the students were not fully or properly evaluating the information they find online, and some may not even be aware of the need

to do so. However, students are still required to build and understand the logical ways of finding information and acquire skills that help them *locate relevant information* to solve their problems. Locating information requires the ability to form adequate search queries for search engines and to analyse search engine results. Without these skills, students are unable to use the Internet efficiently for their learning, because a considerable amount of information on the Internet appears to be questionable or commercially biased. An ability to *critically evaluate online information* is essential. To make informed judgements of the quality of online information, readers need to evaluate the author's expertise and the trustworthiness of online resources (Britt, Rouet & Durik, 2018).

Conclusion and Recommendations

Based on the results collected, it can be inferred that students of Kano state tertiary institutions perceived Web search engines positively; they consider them as tools for searching and retrieving relevant information for their day-to-day endeavours. They are also satisfied with the information provided by the Web search engines; its interface is user friendly. On the other hand, students of Kano state tertiary institutions lack knowledge on the criteria used to evaluate information resources. The major criteria that are used to evaluate Internet search results were not adopted by the students. Therefore, the researcher suggested the following:

- There is need for teaching students the criteria for evaluation of information resources.

- There is need for librarians of these institutions to be proactive in guiding students on how to evaluate information resources.

- There is need for the students to discuss among themselves, in a forum, the knowledge they acquired on how to evaluate information resources.

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Enabling and Empowering the Print-Disabled and Visually Impaired: Role of Law, Treaty, Guidelines, and Technology

Subhajit Panda*, Rupak Chakravarty**

Abstract

Article 19 of The Universal Declaration of Human Rights (UDHR), proclaimed by the United Nations General Assembly in Paris on 10 December 1948 (General Assembly resolution 217 A) as a common standard of achievements for all peoples and all nations, reads "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers." The International Federation of Library Associations and Institutions (IFLA) has taken the initiative, IFLA/FAIFE (Freedom of Access to Information and Freedom of Expression), to defend and promote the basic human rights defined in Article 19 of the UN's UDHR. While such movements and initiatives are focused towards the citizens of the world, WIPO's Marrakesh VIP Treaty (MVT) and the Web Content Accessibility Guidelines (WCAG) cater to the requirements and rights of the persons with vision aberrations and other such bodily deficiencies, which deprives them from accessing information and knowledge, building a steeper and deeper knowledge divide. The present paper examines the relevant articles as mentioned in the MVT, encompassing the 'Accessible Format Copies' (AFC) for the visually disadvantaged. The paper also investigates the provision in the Indian Copyright Act. Various tools as technological interventions have also been discussed, including the Web browser screen readers. A brief discussion on the current status and its implications of WCAG have been also given for greater understanding in context with the theme of the paper.

Keywords: Marrakesh VIP Treaty (MVT), Indian Copyright Law, Screen Reader, Web Content Accessibility Guidelines (WCAG), Accessible Format Copy (AFC), Alternate Format Material (AFM), Accessible Books Consortium (ABC), Book Famine

Introduction

Library & Information Science (LIS) is a profession where there are ethical responsibilities on the part of the LIS professionals towards the users and the institution he/she serves. Library service is a noble profession and a librarian is a person who carries this service within some imaginary ethical line of control. It is the responsibility of a library professional to provide access to required information to each user, without any discrimination based on caste, gender, colour, and financial or physical aspect. That means it is the responsibility of a library professional to look after every single user, understand their information needs, and try to fulfil them to their best. Now, users with special disabilities demand more attention than others, so that they can be influenced and motivated to become dependent on himself/herself and get the energy to overcome his/her disability barrier and can fulfil his/her information needs satisfactorily.

However, when it comes to copyright and copyright protected material, accessibility to information is somehow unbalanced for the visually impaired/print disabled persons. The Marrakesh Treaty completely balances human rights and intellectual property rights (IPR) in line with the basic principles of non-discrimination, equal opportunities, equality, full individual growth, and efficient and equitable participation in society (Nayak, 2013). It is an international treaty that makes it easier for visually impaired people to read books, ratified unanimously by the member state of the World Intellectual Property Organization (WIPO) of the United Nations.

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This paper mainly focuses on the information access barrier of copyright laws for visually impaired/print disabled persons, the Marrakesh Treaty and exceptions to copyright, and its Indian context.

Objectives of the Study

- To study the significance and role of the Marrakesh VIP Treaty (MVT).
- To examine the current status of MVT globally.
- To critically examine the role and contribution of WIPO, the Accessible Books Consortium (ABC), and IFLA in strengthening and supporting the MVT movement.
- To examine the current status of MVT in context with Indian Copyright Law.
- To assess the role of libraries in strengthening and supporting the MVT movement.
- To identify Free and Commercial Software Programs (Screen Readers) and other Web Tools for the implementation of MVT in libraries.

Copyright Law and Fair Use

Copyright law, which grants exclusive rights to the creator of an original work to protect literary, dramatic, musical, artistic, and related works, mandates that permission from its owner or author be obtained to reproduce or use (e.g. copy, reprint, translate, or distribute) a copyrighted work (Selvam & Selvam, 2016). Later, some amendments were taken as a fair use principle that permits limited use of copyrighted material without having to first acquire permission from the copyright holder. There are four factors by which it is considered whether the use of the copyright-protected material has come under fair use or not.

However, it is always to be remembered that there is no hard and fast rule to decide the fair use policy; neither do the factors allow accessibility of copyrighted item as a whole and there is no special exceptions for visually impaired/print disabled persons.

Disability Exceptions in Copyright

There are many cases where copyright can limit access and use of protected work by people with disabilities. For example, a visually impaired user may need to translate a book's text into a format that is compatible with screen reading software, a process that requires a complete copy of the original work (Diver & Schafer, 2017). Further, there is a clear conflict between these two sections of law. On the one hand, people with disabilities have a constitutional right to access material, but on the other hand, the author of a copyrighted work has the right to control the copying of their work. So, there should be a necessary provision in making such copyrighted work accessible to people with a particular disability. Therefore, an exception to copyright, particularly for the visually impaired/print disabled segment of the user should be the way to solve this conflict, with certain limitations. This exception in copyright law helps in deciding the nature and degree of content that can be reproduced in an accessible format (Rishika, 2015). There are some criteria which should be considered as a mandatory part of the copyright exception law for making Braille, audio, or large-print copies of books, newspapers, or magazines for visually-impaired persons. Content reproduction is permissible in case there is shortage of commercially available copies. It is mandatory for the organisations to provide details of copyrighted material being used for creating accessible format copies to the copyright owner of the original work.

The Marrakesh VIP Treaty (MVT)
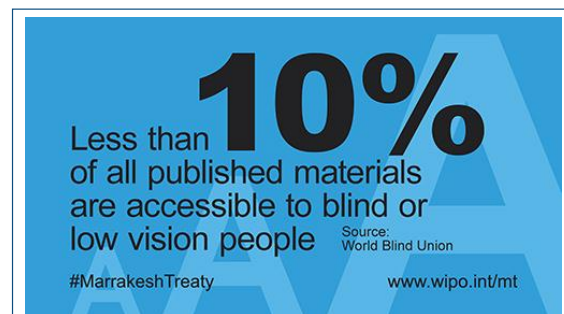
When we talk about the Copyright exception for the visually impaired/print disabled persons, the Marrakesh VIP Treaty (MVT) is the most useful and internationally accepted one. The foundation to the Marrakesh Treaty was laid down in 1981, when a joint working group was created between the WIPO (World Intellectual Property Organization) and the UNESCO. The treaty was signed on 27.06.2013, and after its ratification by 20 countries, it was enacted on 30 September 2016. MVT ensures access to published copyrighted written works, for people who are blind, visually impaired, or otherwise disabled.

The Treaty imposes two main restrictions/limitations on copyright:

Table 1: MVT – Permissions & Solutions

Sr. No.	Access & Exchange	Permissions	Exceptions/Solutions
1.	Accessible Copies of Copyrighted Works	• Print-disabled persons can make themselves OR • Done by the Authorised Entities (AEs)	• Copyright holders'/publishers' permission not required • No need to pay royalties
2.	Cross-Border Exchange of 'Accessible Format Copies'(AFC) OR Alternate Format Materials (AFM)	Allows AEs to facilitate cross-border exchange of AFC/AFM	Deal with global 'Book Famine' to empower people with print disabilities, especially in developing countries, having access only to a small percentage (< 10%) of all books on the market

Benefits of MVT (WIPO, 2016)

- MVT enhances the access to books, magazines, and other printed materials for the visually impaired/ print disabled persons.

- MVT creates a positive influence among them and is accepted globally, including both developing and least developed countries (LDCs).

- MVT improves awareness of the challenges faced by the print-disabled community and persons with disabilities, awareness of policy making, the implementation of additional provisions in context with other laws, and greater access to education.

- MVT empowers VIPs through Accessible Format Copies (AFC)/Alternate Format Material (AFM) to contribute in cultural development, both as consumers and creators.

- MVT increases the availability of AFCs, which will enable educational institutions to serve the disadvantaged, that is visually impaired persons, so that they can enjoy equal access to education.

- MVT facilitates enhanced social inclusion, enables one to become an integral part of the cultural and social life of the print-disabled communities.

- MVT intervenes with poverty alleviation and increased contributions to the national economy through professional development.

- MVT makes the VIPs economically self-sufficient by providing access to learning materials in accessible formats, which generates opportunities for professional growth, allowing beneficiaries to contribute to their local economies.

- The MVT strengthens local publishing industries and increases investment in copyright industries, which are key drivers for economic growth and development.

MVT Articles

The Marrakesh VIP Treaty contains a total of 22 articles, which thoroughly discuss the provisions to facilitate access to published copyrighted works to visually impaired persons and persons with print disabilities.

Among the 22 Articles, there are some specific ones which are directly linked to the accessibility criteria and exceptions that should be made under the copyright law, its extent, and limitations. These are briefly discussed in Table 2.

Table 2: Detailed Description of Some Relevant MVT Articles

Article	Specification	Description
Article 2(a)	Works Covered	• Nature: Literary and artistic works (as per the Berne Convention) • Forms: Text, notation and/or related illustrations • Status: Published or otherwise made publicly available in any media

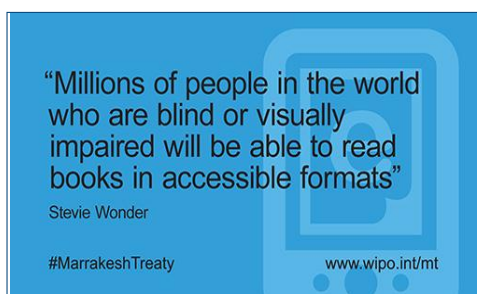| Article	Specification	Description
Article 2(b)	Accessible Format Copy (AFC) or Alternate Format Materials (AFM)	• Ease of Use: Format which beneficiary or recipient with visual impairment or other print disabilities can access and read conveniently • Quality: No deviation in the context, semantics, and integrity of the original work
Article 2(c)	Authorised Entity	• Authorisation: Govt. approved/licensed • Scope: Provides non-profit access to education, instructional training, adaptive reading, or knowledge to recipients • Inclusions: Someone acting on beneficiary's behalf, govt. institution, or non-profit body with similar scope as one of its prime obligations
Article 3	Beneficiary Persons	• Scope: Persons having hindrances with successful reading that interferes with holding a book efficiently, turning pages, or concentrating on the page • Beneficiaries: Blind, visually impaired, dyslexia (deficient in reading) or physical impairment
Article 4	National Law Limitations and Exceptions Regarding Accessible Format Copies	• Obligations: Contracting Parties (CPs)/Signatory Countries • Copyright Law: Facilitates availability of AFC/AFM • Permissions: No permission to be sought from the rights-holder for the creation/production of AFC/AFM by the Authorised Entities (AEs)
Article 5	Cross-Border Exchange of Accessible Format Copies	• Provision: Cross-border exchange of AFCs • Scope: From $AE_{countryA}$ to $AE_{countryB}$ • Directly from AE to beneficiaries in other countries
Article 6	Importation of Accessible Format Copies (AFC)	• Import: In addition to creation, the National law of a Contracting Party (CP) shall also permit the import of an AFC/AFM • Permission: No authorisation of the rights-holder required
Article 7	Obligations Concerning Technological Measures	• Actions: Legal protection of the copyrighted works using technological techniques (implemented by publishers) shall not restrict the rights of the patrons/beneficiaries • Obligations: AEs to ensure that compliance of such legal provisions block the legitimate access to the content created • Circumvention: Legal remedies to be nullified
Article 8	Respect for Privacy	• Non-Discriminatory Protection: While applying the permissions and exceptions, the privacy or secrecy of beneficiary persons shall be protected by the Contracting Parties (CPs) as applicable for the general public/citizens
Article 9	Cooperation to Facilitate Cross-Border Exchange	• Identifying Global AEs: WIPO's Information Access Point facilitates identification and coordination among geographically distributed AEs for the effective cross-border exchange of AFC by sharing information on voluntary basis • Obligation: Contracting Parties

Source: WIPO-Administered Treaties.

Almost 80 countries have signed the Treaty since its initiation. There are many other countries who accessed and enforced MVT later. The latest countries to access this treaty is New Zealand, Trinidad, and Tobago, on 02-October-2019, and the expected enforcement date is 04-January-2020.
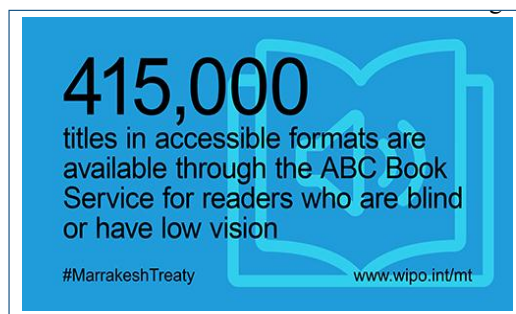
Accessible Publishing

Accessible publishing is an approach to publishing and book design, whereby books and other texts are made available in alternative formats designed to aid or replace the reading process. Alternative formats that have been developed to aid different people to read include varieties of larger fonts, specialised fonts for certain kinds of reading disabilities, Braille, e-books, and automated Audiobooks and DAISY digital talking books. EPUB3 is considered as the gold standard in the publishing industry for the production of accessible digital books. 'Ace by DAISY' is a free open-source software for testing and evaluation of e-books with respect to conformance of the accessibility of the EPUB Accessibility Specification (ABC, n.d.). EPUB3 generates an electronic file for producing accessible digital books, only upon conformance to the "EPUB Accessibility Specification". Ace by DAISY, the Accessibility Checking Tool can be downloaded freely from the URL:

https://inclusivepublishing.org/toolbox/accessibility-checker/. The Windows version is available as Ace by DAISY App.

"Millions of people in the world who are blind or visually impaired will be able to read books in accessible formats"

Stevie Wonder

#MarrakeshTreaty   www.wipo.int/mt

Accessible Books Consortium (ABC)

415,000
titles in accessible formats are available through the ABC Book Service for readers who are blind or have low vision

#MarrakeshTreaty   www.wipo.int/mt

The Marrakesh VIP Treaty (MVT) only provided the theoretical framework for the exchange of books and publications in accessible formats, but it did not actually transfer them. This needed an action vehicle. Accessible Books Consortium (ABC) was initiated at a global level on June 30, 2014, to realise the principle and philosophy of open access at an operational level through its Global Book Service of searchable online catalogue of books in accessible formats. Authorised Entities (AEs) can order and exchange accessible books across borders through this portal.

On the Fifty-First (24th Ordinary) Session of WIPO (Geneva, Sept. 30 to Oct. 9, 2019), the Director General, WIPO, highlighted ABC's three main areas of activity (WIPO, 2019).

- First, the Global Book Service had a catalogue of 540,000 works available in 76 languages, of which 425,000 works were available for free cross-border exchange under the Marrakesh Treaty, i.e. could be exchanged without formalities, and the remaining 100,000 or so works were still subject to formalities for exchange because the relevant countries were not yet party to the Marrakesh Treaty; there were 61 authorised entities in the Global Book Service from around the world who facilitated the exchange of books, with 22 from developing countries.

- Second, Accessible Publishing, which is the promotion among the publishers of born-accessible publications. There are 100 signatories to the ABC Publishers Charter, with the recent signing by a major publisher around the world, Hachette Livre.

- Third, Capacity Building, which involves building capacity in a country to be able to take advantage of the services offered by the ABC and also to take advantage of the provisions of the Marrakesh Treaty. The Director General highlighted various ongoing projects in 13 countries. ABC also focused on capacity building activities to support publication in accessible formats of educational books in local languages. Some 9,300 accessible educational materials had been made available to students at all levels since the launch of the ABC five years before.

The cross-border exchange of accessible books becomes easy for the AEs belonging to countries who have already ratified the MVT and is In Force, as no authorisation is needed from the copyright holder. In case the AEs (one or both) are from the non-signatory countries, the ABC Secretariat needs to obtain the necessary authorisation from the rights-holder for cross-border exchange of

accessible books.

table shows its growth in numbers.

ABC has achieved some important milestones during the five years since its initiation. The following statistical

Table 3: ABC Statistics (2018-2019)

ABC Global Book Service Indicators	January 2014	September 2018 (all Numbers are Cumulative)	September 2019 (All Numbers are Cumulative)	Increase in Percentage (%)	
				Since Jan. 2014	Since Sept. 2018
No. of signatory authorised entities (AEs) participating in the ABC Global Book Service	11	43	61	455%	42%
No. of titles in the ABC Global Book Service catalogue	224,500	365,600	540,000	141%	48%
No. of titles available for cross-border exchange under the MVT (No authorisation needed from the copyright owner)	N/A	35,800	425,000	N/A	1087%
No. of downloaded titles by participating AEs	200	13,000	22,000	10900%	72%
No. of titles where rights were obtained from the copyright owner for cross-border exchange	1,270	26,100	28,500	2144%	9%
No. of loans of ABC titles to print disabled individuals through participating AEs	16,000 (Dec. 2014)	233,000 (Aug. 31, 2018)	293,000 (Aug. 31, 2019)	1731%	26%
No. of educational titles that were produced in national languages in accessible formats through training and technical assistance provided by ABC	N/A	5000	9300	N/A	86%
Inclusive Publishing Indicators	January 2014	September 2018 (All Numbers are Cumulative)	September 2019 (All Numbers are Cumulative)	Increase in Percentage (%)	
				Since Jan. 2014	Since Sept. 2018
No. of signatories – ABC Charter for Accessible Publishing	N/A	16	100	N/A	525%

Source: Fifth Annual Report on ABC/WIPO, Fifty-First (24th Ordinary) Session/Geneva, Sept. 30 to Oct. 9, 2019.

IFLA Movement in Marrakesh VIP Treaty (MVT)

Eighty countries have joined Marrakesh since its establishment in Morocco on 28 June 2013, including the European Union as an individual bloc. Its success would allow a growing number of exchanges of accessible format books between countries, allowing significant progress towards the goals of the Treaty. However, if no steps are taken to amend domestic legislation, ratification may be meaningless. IFLA has a firm belief that the right

to access and use the knowledge artifacts should come to the print-disabled or libraries supporting them. For this reason, to enforce and spread the treaty more strongly around the world, the International Federation of Library Associations and Institutions (IFLA) takes certain steps for the benefit of the visually impaired people. Some of its notable movements (Coates, Felsmann & Hackett, 2018) are discussed below:

- IFLA, along with partner organisations, continues to articulate or argue for effective national implementation.
- IFLA generates regular Marrakesh Monitoring Reports to investigate the status of compliance with the MVT (making and sharing of accessible format

works) by the respective governments, as articulated in their national legislation fully enables making and sharing of accessible format works.

- IFLA, along with the partner organisations, including EIFL (Electronic Information for Libraries), the World Blind Union (WBU), the University of Toronto, and the Canadian Research Library Association (CRLA), has published a guide, 'Getting Started', for librarians willing to adopt the Treaty (EIFL, 2015).

- EIFL has published a highly insightful library guide to Marrakesh.

- WBU actively advocates MVT for its global adoption.

- IFLA has developed a short toolkit for libraries to address the perceived challenges for enabling information access to the deprived.

- More recently, IFLA has also begun to issue monitoring reports on how the Member States of the United Nations are incorporating the Marrakesh

Treaty into their national legislation, rendering the Treaty a fact.

On the Fifty-First (24th Ordinary) Session of WIPO (Geneva, Sept. 30 to Oct. 9, 2019), the representative of the IFLA commended all countries that had ratified or acceded to the Treaty, that not only underlined the appetite for that particular WIPO instrument, which helped to deliver public goods and overcome market failure, but also made clear WIPO's unique power through its normative work to provide the legal clarity and impetus necessary for change and to enable cross-border exchanges. IFLA observed that a crushing majority of those countries that were passing legislation were not taking advantage of certain provisions in Articles 4.4 and 4.5 of the Treaty that were against its spirit, and were extending its benefits to people with other disabilities as much as possible. IFLA thus commended the work of the ABC and its Global Book Service, which was setting the pace for broader efforts to promote the sharing of books for the benefit of people with print disabilities across borders (WIPO, 2018).

Table 4: **Marrakesh Treaty Implementation (IFLA Monitoring Report) (August, 2019 Update)**

| Increase in Percentage (%) | Status | Can Libraries Use MVT Rights Without | | | | | Can Libraries Use Exceptions to Serve People with Dyslexia? | Are People with Other Disabilities Included? |
		Paying Remuneration for Books?	*Paying Remuneration for Audio Books?*	*Needing to Check on Commercial Availability?*	*A Registration Obligation?*	*Additional Record Keeping Requirements?*		
Australia	Ratified, national law amended	Yes	Yes	Yes*	Yes	Yes	Yes	Yes
France	EU ratified, national law adopted	Yes	Yes	Yes	No	No	Yes	Yes
India	Ratified, no national reform	No	No	Unclear	No**	Unclear	Yes	Yes
Russia	Ratified, national law amended	Yes***	Yes***	Unclear (Yes)	No	Unclear	Unclear (No)	No
United Kingdom	EU ratified, national law adopted	Yes	Yes	Yes	Yes	Yes	Yes	Yes
United States	Ratified, national law amended	Yes	Yes	Yes	Yes	Yes	Yes	No

*Yes, but with incentives provided to do so.

**The beneficiary or authorised entity must apply to the copyright board for the right to do this.

***Yes, but lending only, not distribution.

Marrakesh VIP Treaty (MVT) in India

"Every country should have the widest possible copyright exception permitting the conversion of books and other cultural material into accessible formats for persons with disabilities" (Nirmita Narasimhan, Centre for Internet and Society, India).

Every year, just 1-7 per cent of the millions of books released worldwide are made available to the world's 285 million blind and visually impaired people, 90 per cent of whom live in low-income environments in developing countries. According to the World Health Organization (WHO), India has more than 63 million visually impaired people, some eight million of whom are blind.

Table 5: India & MVT

	Signature	Instrument	Effective
India	30-April-2014	Ratification: June 24, 2014	30-September-2016

Source: WIPO-Administered Treaties/MVT/Contracting Parties.

The ratification of at least 20 states was required for the treaty to enter into effect, which was achieved on 30 June 2016 with the 20th ratification. Thus, MVT came into force on 30 September 2016. The first country to ratify the Marrakesh Treaty was India (PIB, 2014) when it signed the Treaty on 30 June 2014, and handed over the Instrument of Ratification to the then Director-General of WIPO at a ceremony held at WIPO Headquarters during the 28th Session of the SCCR (Standing Committee on Copyright and Related Rights). The ratification will enable Indian Authorised Entities (IAEs) to import AFCs without any legal barrier. More benefit can be relinquished as imported copies can be translated into an accessible format and the same can be exported in Indian languages. The IAEs include organisations working for the benefit of VIPs and the blind, like educational institutions and libraries. Till 1st January 2020, 80 WIPO member states have signed the MVT and 88 countries have ratified it.

Marrakesh Treaty in Harmony with Indian Copyright Act

On May 17, 2012, the Indian Parliament introduced a rather liberal disability-friendly copyright exception. In the Indian Copyright (Amendment) Act, 2012, there are two sections, namely §52(1)(zb) and §31(B), which enabled the MVT enforcement in India. More specifically, §52(1)(zb) was introduced to permit the conversion of a copyrighted work to any accessible format, so long as the converter operated on a non-profit basis and ensured that the converted formats were only accessed by persons with disabilities. In case the conversion and distribution were done for profit, the concerned entity would have to apply for a compulsory license under §31(B) (Zero Project, MHRD, n.d.).

The relevant exception envisaging provision is reproduced as under (Indian Copyright Amendment Act, 2012):

Fair Use Rights for the Disabled/Exempts from Infringement [§52(1)(zb)]

"The adaptation, reproduction, issue of copies or communication to the public of any work in any accessible format, by

- any person to facilitate persons with disability access to works including sharing with any person with disability of such accessible format for private or personal use, educational purpose or research; or

- any organisation working for the benefit of the persons with disabilities in case the normal format prevents the enjoyment of such works by such persons:

"Provided that the copies of the works in such accessible format are made available to the persons with disabilities on a non-profit basis but to recover only the cost of production: Provided further that the organisation shall ensure that the copies of works in such accessible format are used by persons with disabilities and takes reasonable steps to prevent its entry into ordinary channels of business."

Compulsory Licence for the Benefit of Disabled [§31(B)]

- Any person working for the benefit of persons with disability on a profit basis or for business may apply to the Copyright Board, in such form and manner and accompanied by such fee as may be prescribed, for a compulsory licence to publish any work in which copyright subsists for the benefit of such persons, in a case to which clause (zb) of sub-section (i) of section 52 does not apply and the Copyright

Board shall dispose of such application as expeditiously as possible and endeavour shall be made to dispose of such application within a period of two months from the date of receipt of the application.

- The Copyright Board may, on receipt of an application under sub-section (i), inquire, or direct such inquiry as it considers necessary to establish the credentials of the applicant and satisfy itself that the application has been made in good faith.

- If the Copyright Board is satisfied, after giving to the owners of rights in the work a reasonable opportunity of being heard and after holding such inquiry as it may deem necessary, that a compulsory licence needs to be issued to make the work available to the disabled, it may direct the Registrar of Copyrights to grant to the applicant such a licence to publish the work.

- Every compulsory licence issued under this section shall specify the means and format of publication, the period during which the compulsory licence may be exercised and, in the case of issue of copies, the number of copies that may be issued including the rate or royalty:

"Provided that where the Copyright Board has issued such a compulsory licence it may, on a further application and after giving reasonable opportunity to the owners of rights, extend the period of such compulsory licence and allow the issue of more copies as it may deem fit."

In short, the amendment envisaged three broad kinds of activities:

- Conversions by the disabled person for his/her own use and for sharing with others in the community;

- Conversions by third parties (individuals or organisations) working on behalf of the print-disabled on a non-profit basis;

- Conversions by 'for profit' organisations under a certain and compulsory license issued by the Government or Registrar of Copyrights of the country.

DAISY Forum of India

DAISY Forum of India (DFI) is a consortium of Indian non-profit organisations engaged in producing books and reading materials in accessible formats for people who are unable to read the standard print. India's DAISY platform envisages a world in which print-disabled people have fair access to information and expertise in their own language without delay or additional expense (DAISY India, (n.d.)). Indian DAISY Forum member organisations create and manage Electronic Talking Books, Braille, or e-text libraries. Books created in any of the preferred formats and in any part of the country, e.g. DAISY Audio, eBook, Braille, and Large Print are available to the common people. The DAISY Forum of India also integrated with 'Bookshare', the world's largest online library for the print disabled, where one user can get access to the collection of both Indian and International publications.

Sugamya Pustakalaya is a collaborative effort of the Daisy Forum of India, TCS (Tata Consultancy Service), the NIEPVD (National Institute for Empowerment of Persons with Visual Disabilities), and the Government of India to end the book famine faced by people with print disabilities. The online page of Sugamya Pustakalaya is created and supported by Access Infinity, a platform of Tata Consultancy Services, which gives it an easy-to-navigate search interface.

Table 6:   **Collection Statistics of Sugamya Pustakalaya**

Total number of books available for download	345295
Total books in all libraries in Daisy India Library	16395
Total formats in all libraries in Daisy India Library	7
Total languages in all libraries in Daisy India Library	16

Source: DFI/Library/Sugamya Pustakalaya.

The National Mission on Libraries (NML), which has been set up by the Ministry of Culture, Government of India, on 4th May, 2012, in pursuance of the National Knowledge Commission (NKC), recommends sustained attention for the development of the Libraries and Information Science Sector; it also recommends screen reader access to its website in compliance with the World Wide Web Consortium (W3C) Web Content Accessibility Guidelines (WCAG) 2.0 level AA for the visually impaired or print

disabled persons. Further, it makes people aware of the various types of screen readers, both commercial (like JAWS) and free ones (like NVDA), with their respective external links (NML, 2014).

Libraries and the Marrakesh VIP Treaty

The World Blind Union (WBU) was the first organisation at the global level that submitted the draft of the MVT treaty to WIPO. IFLA and library-centric organisations played a significant role in the adoption of the Treaty (Sutori, n.d.). The member states of the WIPO obtained feedback and suggestions regarding the provisions of the Treaty from the stakeholders, including associations

working for the social benefits of the visually-impaired, as well as library associations. Library professionals are expected to contribute significantly towards the realisation of MVT by ensuring ways to maximise the benefits of the Treaty. In this context, it can be said that libraries can play a vital role in addressing the issues and challenges of the global Book Famine for empowering people with print disabilities.

The Marrakesh Treaty supports library services in a number of ways. Once a country implements the MVT into their national copyright law, it transforms library services for people with print disabilities. The following are some notable implications where the MVT treaty

helped the libraries serve people with print disabilities.

Table 7: **Implications of MVT Treaty in Libraries**

Sr. No.	Areas	Scope & Status	Applicable On	Impact
1.	Libraries as Authorised Entities (AEs)	Not-for-profit or govt.-recognised, for-profit entity, serving the print-disabled	Entitled to enjoy the privileges and rights as per the provisions in the MVT without permission from the copyright-holders & publishers	Enable them to serve patrons with a print disability successfully
2.	Legal Restriction	None	Creation and Dissemination of AFCs with rights to: produce supply import and export (cross-border) store catalogue the work	Enhanced availability, by direct supply, of the reading material for print-disabled readers or to someone acting on their behalf, such as a caregiver; immediate realisation
3.	Resource Sharing	Local, regional, and national, as well as international level	Better coordination in the production of works. Supply/Receive AFCs from: – another library – or institution in the country or – in another country signatory to the MVT (Article 6)	Aims to reduce duplication of time, effort, and valuable resources in conversion of content multiple times by different CEs
4.	Obligations	None	To provide AFCs	Right to implement the MVT provisions as mentioned in 2 (above), but not bound
5.	Published as well as Unpublished Works	Digital repositories and pre-print servers	Both Gold & Green Open Access (OA)	Expanding the benefits of scholarly publications, often otherwise paid, through OA to the print-disabled engaged in higher education and research

Sr. No.	Areas	Scope & Status	Applicable On	Impact
6.	Audio-visual Works	Audio-visual (a/v) works such as films are NOT covered		
		Textual works embedded in a/v works, such as an educational multimedia DVD, are COVERED		
7.	Recommendations	A library can produce an accessible format copy of a work (AFCs)		
		Library guidelines should include best practices for determining beneficiaries' eligibility		
		Proper care procedures for producing and distributing AFCs		
		Prevent unauthorised use		

Web Content Accessibility Guidelines (WCAG)

The Web Content Accessibility Guidelines (WCAG) is an internationally recognised standard developed by the World Wide Web Consortium (W3C). The WCAG standard establishes guidelines for making the Web content more accessible to individuals with impairments. Visual, auditory, physical, oral, cognitive, language, learning, and neurological disorders all fall under the umbrella of accessibility. Even though these standards cover a wide range of topics, they are unable to meet the needs of persons with a wide range of disabilities, degrees, and combinations of disabilities. These standards also make Web material more useable for older people with changing abilities as a result of ageing, and they frequently increase usability for all users.

The WCAG standard specifies how mainstream websites (Internet and Intranet) and other digital content, such as electronic documents, mobile interfaces, and related Web technologies, should behave to make them accessible to individuals with disabilities. It accomplishes this by establishing requirements that make interfaces and their content perceivable, operable, understandable, and robust. Web and digital content designers, developers, and testers are the major target audience for this standard. Having the requirements defined allows a secondary target audience, public procurement policymakers, to reference these standards in their activities. Using these guidelines as a guide gives service providers and users a common vocabulary and understanding of what is considered "accessible".

On May 5, 1999, the World Wide Web Consortium (W3C) released WCAG 1.0. There were 14 criteria in total, ranging from the requirement for equivalent content to Web-based clarification and simplicity. There were one to ten checkpoints for each guideline. WCAG 2.0 was released on December 11, 2008, and WCAG 2.1 was released on June 5, 2018. Content that complies with WCAG 2.1 is likewise compliant with WCAG 2.0. A website that complies with WCAG 2.1 should also comply with policies that reference WCAG 2.0. Existing standards include WCAG 2.0 and WCAG 2.1. WCAG 2.1 is not a replacement WCAG 2.0. The usage of the most recent version of WCAG is encouraged by the W3C.

Universal Acceptance of WCAG

WCAG offers an actionable platform for open websites and apps to be developed or remediated. It is not abstract, but concrete and technical, and is accompanied by documentation that defines methods and techniques that are considered to pass or fail the checkpoint's minimum accessibility standards. WCAG is divided into four guiding principles that include perceivable, operable, understandable, and robust Web content.

Developed for content creators, developers of content authoring tools, accessibility testers, and developers of test tools, and anyone who wants to understand how digital experiences can be accessed, WCAG is used worldwide.

Tools to Implement MVT Effectively: Software Solutions

To make published works accessible to the visually impaired/print disabled person is not the final step to implementing MVT properly; making them accessible in a format that is supportable for those people (visually impaired/print disabled) is the main challenge here. To do so, the best available solution is the Screen Reader Software Programs. Article 7 of MVT gives the provision for using screen-reading text-to-speech software and

ensures that the publishers provide some exceptions on the use of a digital padlock on a digital book and other electronic media, which inadvertently block legitimate access to the print disabled people.

"A screen reader is a technology that helps people who have difficulties seeing to access and interact with digital content, like websites or applications via audio or touch. The main users of screen readers are people who are blind or have very limited vision" (AbilityNet, Feb., 2019). Screen readers are useful software programs that also assist people who are visually impaired or blind in operating applications, drafting papers, sending emails, surfing the Web, and doing much more with a computer. There are many screen reader software available nowadays. Some of these are freely available and others require paid subscription. The functionaries of these software are more or less the same. Some of their general functions are discussed here:

- Read or spell a word.
- Read a line or full screen of text.
- Find a string of text on the screen.
- Announce the location of the computer's cursor or focused item.
- Locate text displayed in a certain colour.

- Read pre-designated parts of the screen on demand
- Read highlighted text
- Identify the active choice in a menu
- Allow users to utilise the spell checker in a word processor or read the cells of a spreadsheet with a screen reader

There are different types of screen readers available now; based on the specific requirements and available infrastructure, one can choose the right one. The best choice for the user depends on:

- The type of device (computer and or mobile phone) he/she possess.
- The kind of browser he/she prefers. Many browser and screen reader combinations work better than others.
- The software he/she uses; while all screen reader users work with popular office apps, email and the Internet, if he/she needs a screen reader to deal with specific applications, he/she may be limited to one that can be programmed to fit well with it.

Some of the best screen readers (Everyday Sight, 2019), their functionality, supportive system, price, availability, and other details are provided in Table 8.

Table 8:   List of Best Screen Reader Software Programs (Free & Commercial)

Name	Creator	Initiation	Supported Platform	Nature	Price
Job Access with Speech (JAWS)	Freedom Scientific	1995	Windows & DOS	Commercial	$1000/one time (Home License) $1200/one time (Professional License)
Dolphin Screen Reader	Dolphin Computer Access Ltd.	1986	Windows	Commercial	$795/one time
Cobra		2006	Windows	Commercial	$749 to $849/one time
System Access	Serotek	2001	Windows	Commercial	$895/full package $39.95/month
ZoomText	Ai Squared	1991	Windows	Commercial	$875/one time
VoiceOver	Apple Inc.	2005	Mac OS X, iPhone, iPad, iPods, and Apple TV	Free, Commercial	Free with an Apple product
NaturalReader	NaturalSoft Ltd.		Windows, Mac OS, Linux	Free, Commercial	Premium features available on, $99.50, $129.50, & $199.50/one time

Name	Creator	Initiation	Supported Platform	Nature	Price
NonVisual Desktop Access (NVDA)	NonVisual Desktop Access Project	2006	Windows	Free & open source	N/A
TalkBack	Google	2009	Android	Free & open source	N/A
WebAnywhere	University of Washington	2008	Web	Free & open source	N/A
Ocra	The GNOME Project	2005	Linux, Unix	Free & open source	N/A
BRLTTY	The BRLTTY Team	1995	Linux/Unix, Windows console, DOS, Android	Free & open source	N/A
Text to Speech (TTS)	SpeakComputers.com	2006	Windows	Freeware	N/A

NonVisual Desktop Access (NVDA) & NV Access

Concerned by the high cost of commercial screen readers, Michael began developing a free screen reader for use with computers running on Windows called NVDA (NonVisual Desktop Access) in April 2006. Later, James Teh, his school friend, also joined to help with this project. The main reason for briefly discussing about this screen reader in this paper is because the not-for-profit organisation, NV Access, is founded by two fully blind men, to support the development of the NVDA screen reader. The main purpose of NV Access is to abolish the social and economic barriers of visually impaired/print disabled persons by developing free open-source assistive technologies for them, enabling and ensuring access to information. It aims to remove the cost barrier and raises awareness and promotes the importance of accessibility for the blind or vision impaired. It is also engaged in fundraising to support the various existing and future projects encompassed by the organisation.

Table 9:   NonVisual Desktop Access (NVDA): Specifications

Creator	Michael Curran	
Initial Release	2006	
Programming Language	Python, C++	
System Requirements (for NV Access)	Operating System	Windows 7, Windows 8, Windows 8.1, Windows 10 (all 32-bit and 64-bit editions), and all Server Operating Systems starting from Windows Server 2008 R2
	Memory	256MB or more of RAM
	Processor speed	1.0ghz or above
License	GNU General Public License (Version 2)	
Type	Free & Open Source Software	
Availability (language)	55	
International acceptability	Used by people in more than 175 countries	
Website	www.nvaccess.org/	
Repository	github.com/nvaccess/nvda	

Features

The following are some features (NV Access, 2018) which placed NVDA in a better position than other available screen readers:

- Support for popular apps like Web browsers, including Mozilla Firefox and Google Chrome, email, Internet chat applications, music players, and office programs, including Microsoft Word and Excel.

- Built-in speech synthesiser that supports more than

50 languages, plus support for many other third-party voices.

- Text formatting reports where available, such as font name and size, style, and spelling errors.

- Automatic text notification under the mouse and optional audible mouse location indication.

- Support for many refreshable braille displays, including Braille through braille displays with a braille keyboard.

- Ability to run completely without the need for installation from a USB flash drive or other portable media.

- Easy to use speaker installer.

- Translated into more than 50 languages.

- Support for modern Windows operating systems, both 32-bit and 64-bit editions (e.g. Windows 7, Windows 8, Windows 8.1, & Windows 10).

- Ability to run on Windows logon and other secure screens.

- Announcing controls and text when engaging with touch-screen motions.

NVDA also provides certification tests (NV Access, 2019) for the expert to test his knowledge using the NVDA screen reader in Microsoft Word. It is a great opportunity for the librarians and library professionals to gain expertise in NVDA, and help the blind and vision impaired user in the best possible way.

Conclusion

The Utopian idea of building a knowledge society has to be all-inclusive, without any discrimination of individuals on account of their right to access, read, understand, and comprehend published knowledge tangibly without any struggle through the established modes of publishing. The realisation of the very idea of facilitating 'Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled' has been successfully accomplished through the Marrakesh VIP Treaty, a.k.a. the MVT, administered by WIPO (2013). MVT is a living example of a noble, humanistic, and societal upliftment of those who are marginalised in terms of their right to read and gain knowledge, as

they are incapacitated due to vision abnormalities, preventing them from holding and manipulating a book, which interferes with the effective reading of printed material. MVT mandates the Authorised Entities (AEs) ("recognised" by the government) located in Contracting Parties (CEs) to facilitate reproduction, dissemination, and availability of published works in accessible formats by means of a collection of restrictions and exceptions in their national copyright laws. At present, the ABC catalogue contains only bibliographical details. To make the retrieval more fruitful, it is now being automated with the facility to upload the actual digital files, minimising the role of human intervention for uploading the title requested by the patron, thus saving a significant amount of AEs' time per transaction. This will reduce the delivery time of the requisite document to the beneficiary, bringing satisfaction and ease of use. ABC is planning to procure the necessary technical infrastructure for the automation process. Additionally, WIPO is looking forward to providing the beneficiaries a single-window federated search and discovery platform for wider access to the widest possible range of languages. ABC encourages the production of "born accessible" works by publishers, i.e. books that can be used from the start by both the sighted and the print disabled. A major focus remains on the EPUB3 standard for the production of digital publications, with the required accessibility features. Currently, there are 100 signatories to the *ABC Charter for Accessible Publishing* comprising of eight high-level principles pertaining to digital publications in accessible formats. ABC also organises the *ABC International Excellence Award for Accessible Publishing*.

ABC provides training and technical assistance in EPUB3, DAISY, and Braille (both electronic and paper-printed) formats in developing countries and LDCs. ABC has drafted syllabi for capacity-building regarding accessible publishing. WIPO has established an ABC fellowship programme seeking support for the library services as well as in other ABC activities. One of the targets of ABC, along with the IPA (International Publishers Association), is to increase the number of signatories (member nations) to the "*ABC Charter for Accessible Publishing*" (WIPO, 2018). The work of the ABC is consistent with the spirit of the Sustainable Development Goals (SDGs), and promotes several of them, supporting the work of the MVT in an admirable way.

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Impact of COVID-19 in Academic Libraries of Sikkim: A Study

Dina Subba*, R. K. Choudhary**

Abstract

The major outbreak of the novel coronavirus (COVID-19) at the end of 2019 caused a huge impact globally in almost all the sectors. Even academic libraries experienced a major impact of this virus. Hence, this article aims to study how this virus affected people globally and its impact on four major areas of academic libraries, like library working hours, library services, preventive measures taken, and also the enhanced services provided by the academic libraries of Sikkim. The study also tries to identify the loophole that originated and further plans to cope with it in the future by the academic libraries of Sikkim. The data was collected through a structured questionnaire, followed by an interview, and distributed to the librarians of all the government degree colleges affiliated with Sikkim University, Sikkim. Purposive sampling has been executed during the study. The paper finds the major problem of library services during this pandemic is the unavailability of e-resources in any of the college libraries in Sikkim, thereby where they provided very few services to its users. The study also finds that the plan to have e-resources in the library has been taken up by a few of the libraries. Several recommendations have been made to help libraries provide services in the upcoming days, to tackle this kind of pandemic and other disasters in the library.

Keywords: COVID-19, Pandemic, Academic Libraries, Resources, Library Services, Sikkim

Introduction

The world witnessed a dangerous health disaster at the end of 2019 in Wuhan, China, and it was called a novel coronavirus or COVID-19 (Coronavirus, 2020); it was so tiny and microscopic. This virus was rumored to be a kind of biological weapon prepared for other countries as well. The whole world had not experienced anything like this before; there was a worldwide lockdown due to the transmission of this tiny virus. Since its origination in Wuhan, China, this virus started affecting almost all the countries of the world within no time. Hence, this COVID-19 pandemic was announced as a global pandemic on March 11th, 2020, by the World Health Organization (WHO). This virus started affecting mankind and millions of people lost their lives. COVID-19 posed a global threat, and hence, governments started imposing a lockdown in their respective countries. To cut the spread of the virus through droplets, the government guidelines was to keep a distance of 1 metre in public places and wearing face masks became mandatory (CDC, 2020). It has not left even a single corner unaffected. Educational institutes were closed almost for two years or less, depending on the pace of transmission of this pandemic. There was a need for an hour to shift from traditional or manual (OFFLINE) working, teaching, and so on, to the ONLINE mode. The work-from-office formula was shifted to work-from-home, with some exceptions like hospitals, banking, and public transportation. This pandemic left no stone unturned and affected libraries as well, whether it was a public, academic, special, or national library. The library, which is regarded as the storehouse of knowledge or information centre, became a service, especially in those places where only traditional or manual operations take place, and where online sources are not available. The library was not prepared with any policy to cope with such a situation.

COVID-19 highlighted that the use of electronic resources was the only alternative to cope with the situation in the libraries. The Internet played an

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important role in the dissemination of information during the pandemic, and life started relying on it. However, there is another side to the story, where students who are economically downtrodden and are from the geographically remote areas were unable to avail these facilities. Hence, it is right to say that Internet service does not benefit the students uniformly, and increases the disparity among them. Okike (2020) said that social media can be used as an instrument for marketing and delivering information resources to the people. During this pandemic, most libraries engaged users through social media, and to reduce direct communication between the user and staff, many libraries started circulation services as a drive-thru. Lara (2020), in her paper, advised quarantining the returned books for four days so that there will not be any transmission of the virus from the books. Rogers (2020) also said that the returned books should be stored separately for at least for 72 hours. Some libraries started services like zero library loans during this pandemic (ITS, 2020). The library became service-less as users could not come to the library to access any information (Mac Gregor, 2020). Hence, library services had a high impact in disseminating information. Digital divide, lack of digital literacy skills, and poor Internet connection were found to be the most common challenges when it came to transferring the services from offline to online mode. Hence, this article tries to find to what extent academic libraries of Sikkim have been affected by the COVID-19 pandemic.

Statement of the Problem

Sikkim, which lies in the North-Eastern part of India, is very small in area and is a geographically mountainous region. Sikkim University is only the Central University under which all the government degree colleges are affiliated, and is located in all the four districts of Sikkim. As we talk about the status of college libraries, the libraries do not have a good collection of resources, and e-resources were not at all available before the pandemic. However, the pandemic brought some good impact to some libraries, as they started subscribing to e-resources and accessing information through remote access from Sikkim University. Hence, it is necessary to study how the traditional library services work during a pandemic to disseminate information and what measures are taken to cope with the situation. Further, this article is the first

to be studied on this topic in Sikkim. Therefore, a study on the 'Impact of COVID-19 in academic libraries of Sikkim: A study' is undertaken.

Literature Review

Before the outbreak of COVID-19, not much literature was available about libraries handling such a pandemic; however, after the outbreak of this virus, the research on coping with the situation during the pandemic is exponentially growing.

The following are the related works done on the study:

Asif and Singh (2020) conducted a study on 'Trends, opportunities and scope of libraries during COVID-19 pandemic'. The study was conducted to find new ways to reach the users, to find the opportunities to overcome this situation, and ways to be prepared for a new normal life. The paper has suggested many ways to combat the situation during the pandemic, like keeping the returned books separate for at least 48 hours, limiting the number of users in the reading room, maintaining social distance, using masks, promoting paperless work culture in the library, and so on.

Chakraborty and Jana (2021) carried out a study on 'Challenges and opportunities of academic libraries in India because of COVID-19'. The study aims to see the impact of COVID-19 on various aspects of the library, like space, collection development, service, and overall library management, to identify the challenges faced by the libraries, and to examine the opportunities to enhance the library services due to COVID-19. The study discusses the first challenge of academic libraries, as a space where guidelines dictate the following of a safe distance, and where the library was forced to reduce the number of seats in the reading hall. Another challenge discussed was Information and Communication Technology facility. The study also finds that there is a decrease in the use of printed resources, but an increase in the use of electronic resources, during the pandemic. Several recommendations were made, like remote access service, training on information literacy, lending of digital access tools, constraints on budget, open online educational resources, open access to research, and so on.

Chisita et al. (2022) in their study 'Remaking academic library service in Zimbabwe in the wake of COVID-19

pandemic', explored how the librarians in Zimbabwe responded to the outbreak of COVID-19, how the library provided services during the pandemic, the perception and challenges faced by academic librarians during a pandemic, and the sort of opportunities presented by COVID-19. The study finds that during the lockdown users were redirected to use online resources, and electronic resources were permitted to be accessed by remote logging. The reference service has become completely online. Social media applications like WhatsApp are found to be the most powerful and exciting tools to deliver service. The paper also finds that open access resources and resource sharing gained popularity during the pandemic. Suggestions included disaster preparedness and management plans by the academic libraries, which should be ensured to minimise risk; there should be awareness on how to respond during a pandemic.

Connell (2021), in her paper, 'The impact of COVID-19 on the use of academic library resources', examined the impact of COVID-19 on higher education. She compares the use of library resources, which includes interlibrary loan, website, and discovery tool page views, database use, patron interaction, and so on, in three universities. The paper finds that all the three libraries' websites and the use of major databases decreased during the time. However, there was virtual interaction among the students, librarians, and the library staff. The paper also finds that students started using open-access Web tools like Google Scholar for their information needs. Some recommendations were made: the university should practice shifting from acquisition of printing resources to electronic resources.

Fraser-Arnott (2020) carried out a study on 'Academic library COVID-19 subject guides'. The study was focused on university library subject guidelines during the pandemic. The main aim of the paper is to identify patterns in the types of resources identified and to give recommendations to libraries for information sharing with the institution of their partner library during the pandemic. The paper finds that library subject guides and university COVID resources suggest certain opportunities, like collaboration with other university units and the creation of information literacy resources, as well as offering an opportunity to provide links to library resources and opportunity to provide instructions on data management

and evaluation.

Kang et al. (2022), in their study, 'COVID-19 impact on the Chinese top academic libraries: Libraries response to space, collection and services', seek to find libraries' responses to space design, collection development, and services, and the effect of COVID-19 on all of these. The paper also examines the two-year process of developing a library service and analysing the data during the pandemic. The paper finds that before the pandemic, academic libraries were engaged in a wide variety of activities, like collaborative social learning, engaging in workshops and group activities, using print materials, and so on; however, all libraries under study were closed to a full extent and 98% of the printed materials were acquired and used by the library. However, after the pandemic, purchase of books was done online and the libraries provided enhanced online access to printed books to all users and developed inter-library loan; remote access, document delivery service, and online information literacy were emphasised.

Nawaz, Gomes and Saldeen (2020) carried out a study on 'Artificial Intelligence (AI) applications for library services and resources in COVID-19 pandemic'. The study investigates the way to search and provide a satisfactory administration, particularly in advanced education libraries, to fulfil the user needs by considering databases like Pubmed, Baidu, Scopus, and Google Scholar. The study also aimed at providing artificial intelligence applications to library services and resources during the pandemic. The paper suggested that libraries need to develop their infrastructure facilities to give quick and fast services. Use of AI, like identification of a user with AI support, AI-based monitoring, AI Chatbots, AI alarms, and AI-based online tutorials were recommended to overcome the coronavirus outbreak.

Neog (2020), in the paper titled 'Library services through social media during lockdown due to COVID-19 with special reference to university libraries of Assam', sought to examine the status of the library services provided by the university library through different social media tools. The paper also aims to study the effectiveness of social media on library services, as well as to identify the challenges faced by the library. The paper finds that WhatsApp is the most popular social media tool used by library users and the study also reveals that the library

has not taken any initiatives to make the users aware of COVID-19. Few challenges have been discussed, like lack of policy guidelines, lack of positive attitude, and lack of high-speed Internet connection, which are the common challenges.

Rafiq et al. (2021) conducted an exploratory investigation on 'University libraries' response to COVID-19 pandemic: A developing country's perspective'. The study tries to find the type of practices and services followed by the university during the pandemic, when offline classes were suspended and online classes started. The paper finds that libraries revamped their Web pages, reassigned resources, and planned robust online offerings. Social media tools were used as communication tools during the pandemic. The paper finds challenges, like the digital divide, lack of digital literacy skills, slow Internet connection, and so on. The paper suggests that there is a need for individual and collective roles of societal and educational dimensions in this kind of pandemic situation.

Tammaro (2020), in her paper 'COVID-19 and libraries in Italy', carried out a study to investigate how the COVID-19 had a great impact on libraries, which led to the closure of the entire library. The main objective of the study was: which information was given priority for the communities; what library services were provided during the pandemic; any new services started to provide the information needed; and how the service was assessed. The paper finds that library loan is delivered at home and the loan period is also extended. Access to digital resources was increased. Library networks play an important role in the dissemination of information during an emergency. Some challenges were also discussed in the study, like scarcity of library funds, lack of professionally trained staff, lack of library legislation and policies, lack of vision, and so on. Another challenge of digital transformation is the digital divide. The suggestion was made for a digital strategy that should aim at the transformation of libraries with an innovative vision of service.

Objectives of the Study

The main aim of this article is to study the impact of COVID-19 on academic libraries of Sikkim. However, more specific objectives are as follows:

- To understand the impact of COVID-19 on academic libraries.

- To know the impact of COVID-19 on library working hours and library services.
- To find the preventive measures taken by libraries.
- To identify the enhanced services provided.
- To investigate the problems and further plans to tackle them during a pandemic.

Methodology

In this study, data was collected through a questionnaire method. The questionnaire comprises both open- and close-ended questions related to library services, working hours, measures for prevention, any enhanced services provided, and so on. Only the librarians of the Government General Degree Colleges affiliated with Sikkim University comprise the study population. The data were carefully analysed and presented through a diagram, for easy understanding.

The scope of the study undertaken is as follows:
- Nar Bahadur Bhandari Government College, Tadong (East Sikkim)
- Namchi Government College (South Sikkim)
- Sikkim Government College, Burtuk (East Sikkim)
- Government College, Rhenock (East Sikkim)
- Sikkim Government College, Gyalshing (West Sikkim)
- Government Arts College, Mangshila (North Sikkim)

Analysis of Data and Interpretation

Table 1: Status of the Govt. Degree Colleges

| Sr. No.	Status	No. of Libraries
1.	Open	6
2.	Closed	0
	Total	6

Table 1 shows the status of the govt. degree colleges under study, which were all closed during the COVID-19 pandemic. These college libraries were also closed due to the lockdown. However, after the second phase of the lockdown, the library started functioning partially for the students, with 50% library staff on a roster basis.

Table 2

Sr. No.	Impact on Library Working Hours	Percentage
1.	The regular working hours of the library are reduced.	100%
2.	The library is open for the circulation process.	60%
3.	The library is open during the usual hours.	0%
4.	The library did not have any users.	30%
5.	The library was closed.	70%

Fig. 1 represents the impact of the library working hours, where it shows that the regular working hours of the library was reduced to 100%, and 70% of the libraries, where there were fewer collections, along with fewer students and library staff, were closed. The data also shows that 60% of the libraries were open for circulation, as the electronic resources were not available in any of the libraries before the pandemic. So, circulation of books in

the offline mode was kept open, especially for the students of those colleges located in the city where transportation was easily available during the pandemic. The library did not open during the usual hours, as the data shows 0%, and the reason behind this was that only a few students visited the library and the communication for visiting the library was over the phone.
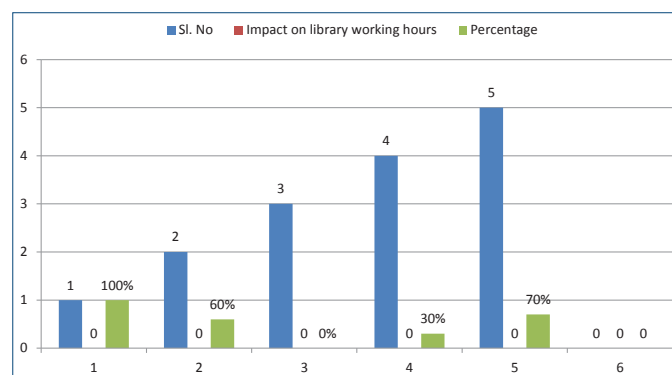
Fig. 1

Table 3

Sr. No.		Impact on the Library Services				
		Agree	Strongly Agree	Disagree	Strongly Disagree	Neutral
1	Decreased book lending	20%	70%	10%	0%	0%
2	Decreased usage of library resources	30%	60%	0%	10%	0%
3	Decreased number of library visitors	30%	70%	0%	0%	0%
4	Increased usage of e-resources	0%	0%	20%	80%	0%
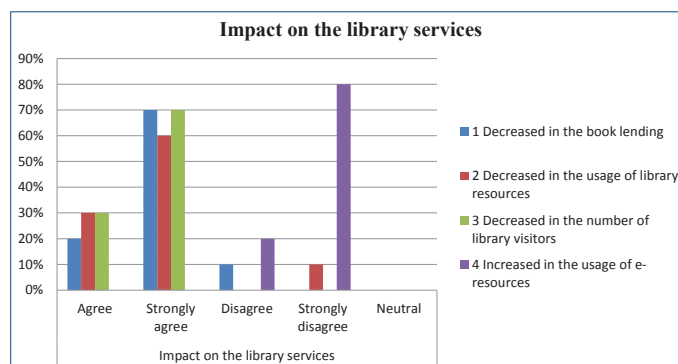
Fig. 2

The bar diagram in Fig. 2 shows the impact of COVID-19 on library services. It is found that the pandemic had

the most impact on book lending, as well as the number of visitors to the library (70%). The data shows that 60% of the libraries faced a decrease in the usage of library resources, because the lockdown minimised the availability of transportation, which hindered the students from using the library resources. The data shows that 80% strongly disagreed that there was an increase in the usage of electronic resources; the reason behind this is lack of digital literacy, lack of digital divide, poor Internet connection in Sikkim, lack of knowledge on open access materials, and above all, none of the college libraries under study had the library e-resources to provide to the students in this pandemic.

Table 4

Sr. No.	Measures Adopted	Percentage
1	Limited the number of users	100%
2	Hand sanitisers installed	80%
3	Sanitisation in the library	80%
4	Face mask made mandatory	100%
5	Social distancing followed	100%
6	Temperature monitoring at the entrance	20%
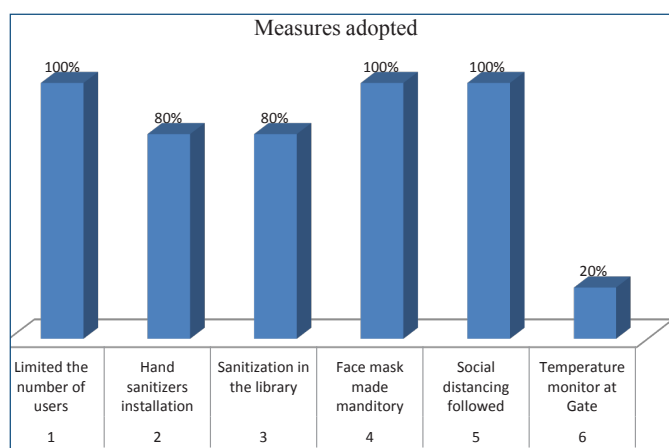
Fig. 3

In Fig. 3, the data shows the different measures adopted by the library to combat the problem of COVID-19. All the libraries (100%) limited the number of users, the use of face masks in the library was made mandatory, and the guidelines of social distancing were strictly followed. Around 80% of the libraries installed hand sanitisers and sanitised the library. The study finds that only 20% of the libraries adopted measures like monitoring the temperature at the entrance.

Table 5

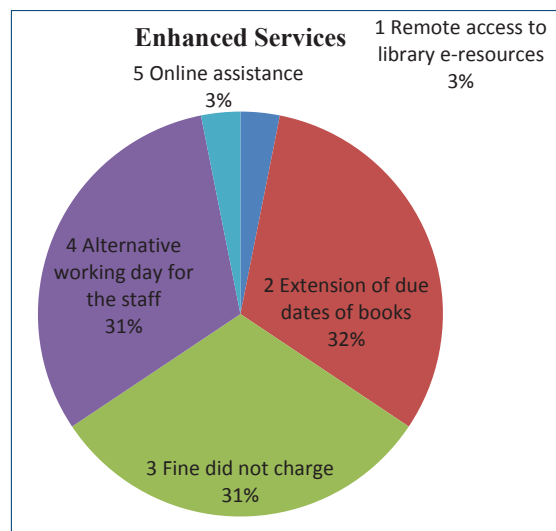| Sr. No.	Enhanced Services	Percentage
1	Remote access to library e-resources	10%
2	Extension of due dates of books	100%
3	Did not charge a fine	100%
4	Alternative working days for the staff	100%
5	Online assistance	10%

Fig. 4

Fig. 4 presents the data related to enhanced services provided by the libraries, where it shows that the entire library (100%) did not charge any fine, extended the due dates of books, and the staff were made to work on alternative days. The data shows that the biggest challenge faced during the pandemic was providing e-resources, and hence, remote access as well. Online assistance was also limited.

Findings

The following are the major findings of the study:

- After the second phase of the lockdown, libraries started functioning partially, with 50% capacity, while following the COVID-19 protocols.

- The entire library working hours were reduced and 70% of the libraries were closed for half-a-day due to fewer collections, students, and staff. Circulation was 60% open, with the entire library functioning manually.

- The study showed that 70% of the libraries had the most impact on book lending and 80% strongly disagreed that there was an increase in the use of e-resources, because of lack of digital literacy and digital divide, poor Internet connection, and lack of knowledge of open access sources.

- The libraries limited the number of users and followed the COVID protocols and adopted the mea-

sures. Only 20% of the libraries took measures like monitoring the temperature of the customers at the entrance.

- The libraries did not charge any fine and the due date had been extended.
- The biggest challenge faced by the library was unavailability of e-resources in the college library.

Suggestions

After investigating and analysing the data, the following recommendations are made:

- Academic libraries in Sikkim should increase their collection so that most of the students would benefit from its resources.
- Libraries must plan to have electronic resources so that students can be provided with remote access to library resources.
- Libraries should conduct an awareness programme on how to respond to pandemics and other disasters, along with education on digital literacy and the use of open-access resources.
- The library should encourage the students to use an online platform or social media to share knowledge or information, especially during a pandemic.
- The recommendation is given by the librarians to use the various applications on mobile phones, to enhance library services.
- The academic library should plan for a digital strategy to overcome and manage the pandemic, to minimise the risk.
- To overcome the poor Internet connection, the academic library should arrange a high-speed Internet connection for smooth service.

Conclusion

Around the world, the outbreak of COVID-19 has had a great impact on all aspects of our life. It posed a threat, caused frustration and depression, which led to poverty, unemployment, and so on. It also had a great impact on the education sector, as there was almost two years of lockdown, which caused the education sector to move from OFFLINE to ONLINE classes. Academic libraries

around the world have faced the biggest challenges in transforming offline resources into online resources. Most of the libraries around the world, which were operating manually, were affected a lot as they could not serve their users efficiently. The information did not reach the user in their time of need. Hence, this paper conducted a study to explore the impact of COVID-19 on academic libraries. COVID-19 has offered both challenges and opportunities to learn technological advancements, to maximise the usage of library resources and services during such a pandemic. So, there is a need to re-plan and re-organise services according to the situation.

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Preserving the Heritage for the Future: A Case Study on the Light of the State Archives, West Bengal

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Abstract

An archive is the primary source of historical importance. It reflects the glorious past. It is also historical evidence. However, there is a problem of deterioration. Deterioration is a characteristic of all hard documents, with the records deteriorating over time. This is why our ancestors had tried to preserve all the manuscripts and ancient documents by using or applying various traditional and modern methods and techniques. In this paper, we discuss how to protect our heritage for the future. In India, the West Bengal State Archive takes an excellent initiative for protecting the historical evidence. This paper also discusses their efforts to preserve the manuscripts.

Keywords: Preservation, Conservation, Historical Collections, State Archive, West Bengal

Introduction

Thousands of official records are being published every day. Eventually, most find their way into the garbage, under litter boxes, into bird cages, or hopefully, into recycling containers. The perception persists that old records are of no value at all. For archivists, however, that perception presents a terrific challenge. The main obstacle to the archivists is the increasing volume of records, and the simultaneous decrease in space. Easy retrieval is also a big concern. The archivist has to have strategies for easy access, before worrying about preservation. The environment is another issue, especially since our subcontinent is not constructive for preservation. The purpose of preservation is to ensure the protection of information of enduring value for access by present and future generations. The art of preservation is as old as human civilisation itself. Preservation is a set of activities aimed at prolonging the life of a record while making as few changes as possible (Mathew, 2014).

An archive is a collection of historical records or the physical location where they are kept. It consists of primary source records, collected over the course of a person's or organisation's lifetime, and are kept to showcase that person's or organisation's function. Experienced archivists and historians often consider archives as records that have been inevitably and necessarily produced as a result of regular legal, social, administrative, or other processes. They have been symbolically described as "organism secretions", and excerpts from documents that are prepared purposefully or formed to express a specific message for posterity (Archive, 2011).

Objectives

- To show different preservation and conservation techniques used in the State Archives, Kolkata.

- To show the need for preserving ancient documents for the future.

Literature Review

Sawant (2014) explained the causes and nature of deterioration of print materials occurring in academic libraries. She also explained preservation and conservation techniques of the printed materials of the particular libraries, and found the dedication of the library

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staff to the preservation and conservation programmes in her article 'A study on preservation practices in academic libraries in Mumbai'.

Mazumdar (2009) explained how to save manuscripts through digital preservation techniques in KKH Library in his article 'Digital preservation of rare manuscripts in Assam'.

Kemoni (1996) found the factors that contribute to ineffective conservation of archive materials in Kenya. He also discussed the lack of planning, absence of a preservation policy, and absence of trained staff in his article 'Preservation and conservation of archive materials: The case of Kenya'.

Mezbah-Ul-Islam (2008) in his study 'Preservation of archives: A case study of Bangladesh National Archives' discusses the current PAC (Preservation and Conservation) status of archives in the Bangladesh National Archive, and the hurdles that prevent the implementation of a full-fledged PAC programme in the archive. This study depends on primary and secondary information. It also gives some remedial measures, such as recruitment of qualified trained staff and developing proper infrastructure. Further, the Bangladesh National Archive should coordinate with other national libraries to safeguard the cultural heritage.

Narang (2014) in her article 'Preservation and conservation of manuscripts and rare documents in National Archives of India and National Mission for Manuscripts' highlights the role of the national archives of India and the national manuscripts' mission for preserving the precious and invaluable manuscripts. This paper also deals with the factors for deterioration of manuscripts and rare documents available in the national archives of India and the 13 national manuscript resource centres in the National Manuscript Mission. This paper further deals with the process and techniques to keep these endangered documents in good health.

Methodology

We surveyed the West Bengal State Archive, Kolkata, with questionnaires consisting of two sections: i) general information, including some general questions which give us information about the archive and ii) subjective information, which focuses on the preservation and

conservation systems of the archival materials. We used the interview method as well. Not only that, we have done some literature review. Then we arranged the collected data and analysis to show a clear picture of the preservation and conservation techniques.

Scope and Coverage

The scope of this study is to show the preservation and conservation techniques in the West Bengal State Archive.

Limitation

This study is only limited to the State Archive in West Bengal.

State Archive, Kolkata

The State Archives, which is the official guardian of all historical records of the government, is a dedicated and specified wing of the West Bengal Government's Higher Education Department. It is the world's oldest repository of ancient documents, and its collection continues to increase in both quantity and quality over time. The State Archives' collections are spread over three buildings. The Historical Section, located in Bhawani Dutta Lane, Kolkata, is responsible for documents ranging from 1758 to 1900. The Division, which deals with documents post 1900, is housed at the Writers' Buildings, Kolkata. Lastly, information about the Intelligence Branch, the Public Works Department, and the Chancellor Secretariat documents are kept at the New Functional Building at Shakespeare Sarani, Kolkata. The State Archives hold a unique collection of records, containing roughly a 1,000 ancient maps and 42,000 glass and film negatives and photographic prints, comprising intercepted letters, articles, and portraits of freedom fighters (*Welcome to official website of the Directorate of State Archives, Kolkata, West Bengal* 2019).

Different Sections

Records Management

Records management is the supervision, maintenance, and administration of digital and paper records. One of

the requirements of excellent record management is to make sure that files are neither deleted prematurely nor kept for a prolonged period. Along with the staff members of the record creation organisations, archivists play a very important role in the evaluation of the whole process. All government records, when they turn 25 years old, are bound to be appraised.

Consequently, two sets of records emerge – Keep (K) and Destroy (D). Hence, only the 'K' records are transferred to the archives.

Conservation Unit

It is of public concern and responsibility to protect the valuable archival materials. The State Archives Conservation Programme consists of: (i) precautionary measures as well as preservation where all issues which are harmful to the records are eliminated; (ii) restorative measures through fumigation and deacidification; (iii) curative measures to restore the documents to their previous condition, before acquiring tissue repair, lamination, full-pasting, binding, and so on; and (iv) replication through microfilming, photocopying, and digitisation of old and fragile records.

Research Room

As a primary source of information, historical documents reflect the origin of a government and explanation of all its activities. The information contained in the records is primarily required by the administrators to take appropriate decisions. These records are also very useful for research workers, history analysts, and archivists, to present an analysis of ancient details. Because of its unique nature, access to the archives is restricted.

Library

The State Archives Library is basically a reference library which furnishes the needs of the researchers, interns of the particular archive, and the professionals connected with their official work. The total number of holdings of this library is approximately 9,000. With a searchable catalogue, it offers access to government papers, rare publications, old periodicals, geographical records, and

recent social sciences articles. To prepare a theme-based catalogue and to try to provide a better service, a tailor-made software has been installed in the computer in the aforementioned library situated in the Bhawani Dutta Lane.
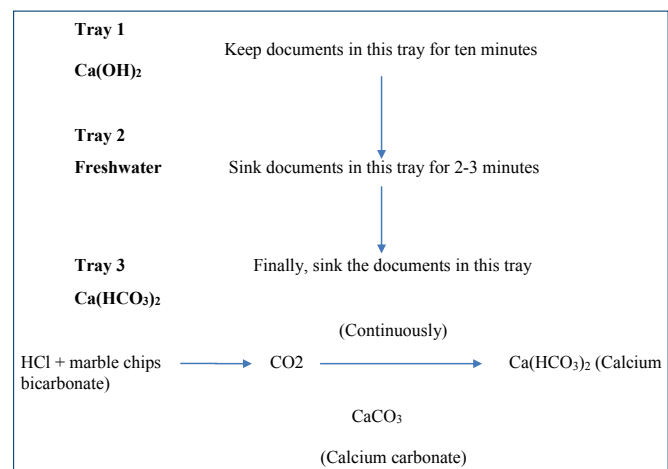
Preservation and Conservation Techniques

When a file or book comes into the State Archive for repair, they are first paginated according to the page numbers. The stitching of the book or file is then opened; finally, it is washed for deacidification.

Deacidification Process

Aqueous Method/Barros Method

In this process, the documents which are less acidic, printed, and soluble in water are deacidified.

Tray 1 $Ca(OH)_2$	Keep documents in this tray for ten minutes
Tray 2 Freshwater	Sink documents in this tray for 2-3 minutes
Tray 3 $Ca(HCO_3)_2$	Finally, sink the documents in this tray

(Continuously)

HCl + marble chips (Calcium bicarbonate) → CO_2 → $Ca(HCO_3)_2$ (Calcium

$CaCO_3$

(Calcium carbonate)

Firstly, all the documents are placed in a calcium hydroxide solution for ten minutes. After that, the documents are placed in the freshwater tray for two to three minutes. Next, the documents are placed in a calcium bicarbonate solution for treatment. These treated documents are then placed in the drying rack; later, the flattening of the documents is done. Finally, the documents are sent for binding.

Non-Aqueous Method

In this process, documents which are acidic, brittle, and insoluble in water are deacidified; the following technique is used: 100ml methanol (CH_3OH) + 2 gr Barium Hydroxide $Ba(OH)_2$. This solution is then brushed over

the brittle documents. After some time, the methanol evaporates.

Gaseous Method

NH4 is sprayed over the affected files, books, and documents.

Dry Method

A spray gun is used for the dry method.

Finely powdered calcium carbonate is used in the spray gun. Then, the powder is sprayed over the brittle materials, thus neutralising the acidic content of extremely fragile documents. Next, the documents are set aside for drying. After that, the flattening of the documents is done. Later, the documents are sent for binding.

After deacidification, tissue repairing and full pasting is done. Wax paper is used for it.

Tissue Pasting and Full Pasting

CMC glue or refined flour glue is used for this technique.

Full pasting is used since 1897.

Stitching

It is mainly of three types:
- Four sewing (stitching by creating holes)
- Sewing with handmade paper and tape
- Leipeta stitching

Process

At first the documents are arranged with maintaining signatures. Then the documents are pasted and pressed in a pressing machine. After that, small holes are created and sewn with tape. Then, Sirish glue is applied. Now the papers are attached one with the other. After sometime the documents are placed in a rounding and backing machine. Then, a cardboard is attached with the binding cloth. Finally, a page, called the Pustin, is attached.

Solvent Lamination

This lamination is used for extremely brittle documents.

First, a tissue paper is taken, and then an acetate foil is attached to the tissue. Then, the main document is placed. Next, they attach an acetate foil and finally attach the tissue paper. Now the capsule is ready for solvent lamination.

A cotton swab is drowned in acetone and then pulled from the centre sideways.

Archival document mending should be reversible. Archival documents can be categorised into three types:
- Current – Those records which are recently created.
- Semi current – All the departmental records fall in this category.
- Non-current – These records have historical and administrative value. These documents will be in the archive after 30 years.

Archive

They classify archival materials department-wise, chronologically, and Company period (till 1858).

Then, the record is divided into A, B, and C.

Class A: To be permanently preserved; two copies are there – one is in the British Library and the other is in the State Archive, West Bengal.

Class B: No copy found.

Class C: To be destroyed.

Need to Preserve Archival Materials

This explains why we need preservation of archival materials.
- *Compendium of Information:* It reflects social, economic, and political situations of a particular time.
- *The Backdrop to History:* From the archive, we get raw materials which form the backdrop to history.
- *Capturing Genetic Evolution:* It is important to know the past for developing the future.

Suggestion

- Regular dusting should be done.

- Air conditioning system should be there to control humidity and temperature.

- Trained staff needed.

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An Evaluation of the Role, Responsibility, and Significance of Library Professional Associations in India

N. K. Pachauri*

Abstract

The role of professional associations cannot be under-estimated. In any field, professional associations have been found to do remarkable jobs with great achievements. The present study endeavours to find out the role of professional associations in the development of the library profession and professionals. Any professional association forms the backbone of professional development, and library associations are powerful platforms to raise issues related to the profession at the national level. This paper presents a brief outline of the issues and problems of LIS professionals in the country, and the existing scenario of the Library Associations of India. The role of state and regional library associations is more visible in some parts of the country, and in recent years, the associations at the national level are striving hard to make their presence felt, and convincing the professionals that they have some role to play in the library development programmes. In this paper, some of the vital issues are proposed for consideration and discussion. As per the study, it is observed that in the present scenario all the library associations in India are not playing a proper significant role.

Keywords: LIS Professionals, LIS Associations, Professional Societies, Unemployment, Career Advancement, Promotional Avenues, Re-Designation

Introduction

The community of LIS professionals should pay homage to Padmashri Dr. S. R. Ranganathan, the father of library movement in India, for his valuable and important contributions towards Library Science, and in providing status, pay scales, and other benefits as per the teachers in the society. Dr. S. R. Ranganathan did a lot for library and librarianship.

Being a member of the UGC Committee, Dr. Ranganathan did a splendid job for librarians. One may imagine his vision, as due to his herculean efforts, the posts of 'Reference Librarian', 'Information Scientist', and 'Cataloguer' may be created in higher education. He strongly raised the voice of library professionals through library associations at various national platforms. Today, we need another Dr. Ranganathan, who may be a torch bearer, to fight the challenging issues of librarianship and put forth all the facts at the national level.

Library associations are not recent developments. The American Library Association, the first of its kind, was formed in 1876, and the next year, the library association of Great Britain was established. Since then several library associations at the international, national, state, district, and city levels have been formed, each of them with definite aims and objectives. Nowadays, associations of special library and information centres are also formed.

Library associations are learned societies. They promote the development of the library movement in a country. They strive for better provision of library and information services. In this process, library associations also strive for the advancement of the profession and the professionals. Associations and professional societies are powerful forces representing the voice of the professional community, to solve the problems related to welfare, status, working conditions, physical facilities, education, and training, including research and development activities. Although the central purpose of

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the associations has always been to serve the needs and to protect the interests of the community, they strive to broaden the purpose and serve the overall needs of the nation. So, library associations are powerful platforms to raise the issues of any profession at the national level. At present, more than 20 state and local level library associations and two or three national level associations exist in India; however, none of them are working or playing their roles properly.

Review of Related Literature

As per the investigation of Srivastava (2010), "Library associations have been bringing to the notice of the concerned authorities from time to time problems connected with the improvement of service conditions of libraries. The annual general body meetings, conferences and seminars usually provide an opportunity to the members to discuss the matters concerning service conditions, employment, pay scales and cadre. Resolutions and recommendations passed at these meetings, the associations have been in a position to place before the Government the collective opinion of its members in the problems relating to service conditions."

Pan and Hovde (2010) opined that "the conferences and meetings sponsored by professional associations provide a forum not only for learning, but also for professional exchange. Presentations, posters, panel sessions, exhibition etc., all bring people in the profession together, keeping them abreast of current trends, problems, and solutions. Associations also sponsor single-subject sessions and courses."

As per the investigation by Kumar and Kumari (2019), "Libraries hold a special position in the development of a society. The objective for training of Library and Information Science (LIS) professionals is to promote library, to educate, to articulate and provide for the need of the clientele to increase productivity and economy of the society. The process of developing competent library and information science professionals is directly related to the quality of LIS education imparted to these professionals."

Pradhan (2018) stated, "The basic assignment of a library Association is to improve, expand and the professional knowledge in the library and information institutions and research centres, to provide leadership quality among the

library professions, promote and improvement of library services, to promote educational programs and other innovative programs and publications."

As per Dowling and Fiels (2009), "Library associations are crucial to the development of libraries and the profession locally, nationally, and internationally. They represent libraries, the profession, and the needs of users to those outside the library community, advocating for and promoting positions on issues that impact everyone. It is important for those entering the profession to understand the value of library associations and the need to join and participate. Library associations need new members to provide energy and ideas, and future leadership to continue to succeed."

Prins and Gier (1995) concluded, on the basis of an international survey, that "the library profession has been facing image problems for a quite long time. Further they stated that there is no easy and fast solution to change the image of the library professionals. Librarians should find out new ways to sort out this very serious issue."

Franklin (2010) said, "As we are aware that 'Unity is strength', hence associations are formed to unite the professionals of a particular field of common interest areas. Professional associations are playing an important role in the development of a particular subject field. It is true for the library and information science profession as well. Library associations at different levels have been playing a significant role in the development and promotion of library systems. They are providing a platform to discuss various issues and problems regarding the libraries. Library Associations help in various ways. First of all, they unite the professionals and provide a common platform to raise their voice. Seminars, conferences, workshops, training programs, orientation courses, short-term training courses, ICT literacy awareness events are arranged from time to time by the library associations for keeping their members abreast of new developments in the field of library and information science/service."

The study conducted by Pachauri (2020) reveals that "the image of a profession is created in form of the judgment or perception of others by analysing the nature of work, type of work, customer satisfaction, quality and quantity of the performance etc. Study covers the image of library

professionals in cinema, commercial advertisement, comic books, and print media and in the society".

Chikkamanju (2015) states, "Different forms of unemployment occur, few are not that harmful but few are very risky for the society as a whole. People waiting for their first job come under frictional unemployment. The study reveals that the Library Science trained professionals having the highest unemployment rates and facing low wages issues in India. The drop out rates of High school students are better than the unemployment growth of LIS professionals. So right about now you are thinking to yourself, 'Why in the world would I want to become a librarian?'"

Rai (2017) stated in his research, "After 75 years of independence librarianship in India is not as strong as it must be, somehow or other these library associations are also responsible for the present poor condition of librarianship in India. These associations just give their comment on problems, but not take proper action to solve the problem, this is the reason that after 75 years of independence of India, public libraries could not be administered and managed with the clear mandate of law in many states of India. They also never raised the voice against unemployment, exploitation in private sector, designation, promotion, status, pay scales etc."

Issues Regarding the Profession

The following factors call for a total re-look at and remedial measures in the field of Library and Information Science:

- Conventionally accepted importance of libraries and librarians.
- Changing scenario of our education system, with a major shift from teaching to teaching-learning process, and the consequential importance of modern library and information systems.
- Technological advancement and its high impact in the information handling processes in libraries, including the new gen resource development and user services.
- Enhanced knowledge, skill, and competence of library professionals, warranting better service conditions, including adequate career advancement.

- Unemployment, exploitation, better salaries, and assured job prospects to attract the best talents to the profession.

Objectives of the Study

The objectives of the study are as follows:

- To discuss the role and responsibility of various library associations in India and to find the impact of library associations in the betterment of librarianship in India.
- To depict the status, functions, and significance of library associations in India.
- To know how much they are active and significant in playing their roles in LIS professional developments.
- To know about their activities, like organising seminars, conferences, workshops, training programmes, support to young professionals, publications, and so on.
- Representation on various issues at the national and regional platforms and the discussion of the issues with higher authorities and government officials, including public representative MPs and MLAs.

Methodology

Online survey method is the primary data collection instrument in this investigation. Google Forms was created and circulated among the students, teachers, research scholars, librarians, professors, and other library professionals via WhatsApp groups, email, and social media groups. Data was tabulated and analysed in the form of charts and tables. Various problems and issues were also discussed with the respondents. An online questionnaire was framed and a mix of close- and open-ended questions were included for the respondents. In the last question, suggestions, feedback, and opinions were also invited from the respondents.

Data Analysis

Data analysed is presented in the form of tables and charts. From the Google Forms, data is exported to the MS Word format and tabulated in a meaningful order. Library and Information Science professionals are facing a number

of issues and problems related to the status, profession, working conditions, basic infrastructure, unemployment, and exploitation. Let us understand every aspect, one by one.

Sample Size

As per the data collected from the respondents, a total of 150 respondents share their views and responses on the questionnaire. We may clearly observe in Fig. 1 that a majority of the respondents (39.3%) are school librarians, followed by college and university librarians (30%), students (9.3%), LIS professionals (9.3%), LIS teachers (5.3%), research scholars (5.3%), and other respondents (1.3%).
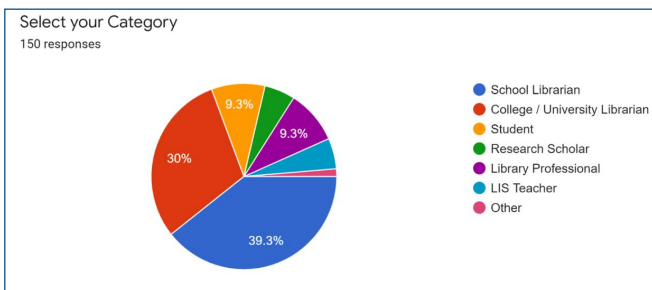

Select your Category
150 responses

- School Librarian
- College / University Librarian
- Student
- Research Scholar
- Library Professional
- LIS Teacher
- Other

Fig. 1

- A Google Form was created for collecting the responses and a total of 150 responses were recorded. The first question was related to membership in any association or society.

Are you a member of any library association or society?

Table 1

Total Response = 150	Yes	No
	99	51
Percentage	66.00	34.00

It is clearly observed that out of 150 respondents, only 99 (66%) LIS professionals are members of any library association/society in India. It is shocking to observe that approx. one-third (34%) of the LIS professionals are not members of any national or regional association or society. How can we think about professional development when more than 34% (51) LIS professionals are not members of any association or society?

- *Membership in an Association/Society:* In response to this, we observe that 47.3% (71) of the respondents are members of the Indian Library Association

(ILA); 16 (10.70%) respondents are members of the Uttar Pradesh Library Association; 14 (9.30%) are members of the IASLIC; and 10 (6.70%) are members of the United Progressive Library Association. A majority of the LIS professionals are not members of any association or society.
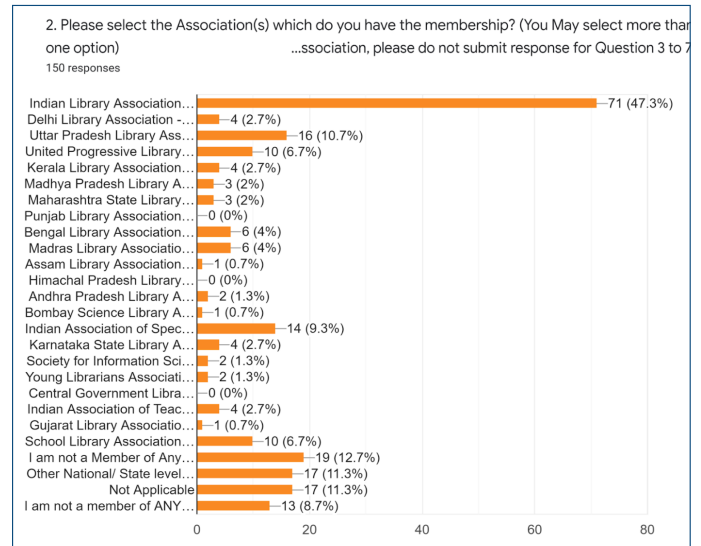

2. Please select the Association(s) which do you have the membership? (You May select more than one option)   ...ssociation, please do not submit response for Question 3 to 7
150 responses

Indian Library Association…	71 (47.3%)
Delhi Library Association -…	4 (2.7%)
Uttar Pradesh Library Ass…	16 (10.7%)
United Progressive Library…	10 (6.7%)
Kerala Library Association…	4 (2.7%)
Madhya Pradesh Library A…	3 (2%)
Maharashtra State Library…	3 (2%)
Punjab Library Association…	0 (0%)
Bengal Library Association…	6 (4%)
Madras Library Associatio…	6 (4%)
Assam Library Association…	1 (0.7%)
Himachal Pradesh Library…	0 (0%)
Andhra Pradesh Library A…	2 (1.3%)
Bombay Science Library A…	1 (0.7%)
Indian Association of Spec…	14 (9.3%)
Karnataka State Library A…	4 (2.7%)
Society for Information Sci…	2 (1.3%)
Young Librarians Associati…	2 (1.3%)
Central Government Libra…	0 (0%)
Indian Association of Teac…	4 (2.7%)
Gujarat Library Associatio…	1 (0.7%)
School Library Association…	10 (6.7%)
I am not a Member of Any…	19 (12.7%)
Other National/ State level…	17 (11.3%)
Not Applicable	17 (11.3%)
I am not a member of ANY…	13 (8.7%)

Fig. 2

- *Democratic Environment in Professional Associations:* The third question was related to the democratic procedures followed by the professional associations. It was asked whether the respondents think that their professional association/society conducts regular elections for electing people as presidents, secretary, and to other important posts.

Only 64 (42.70%) LIS professionals think that their associations regularly conduct elections for presidents, secretary, and other important posts. Around 86 (57.30%) do not have information about and awareness of the election procedures of their association.
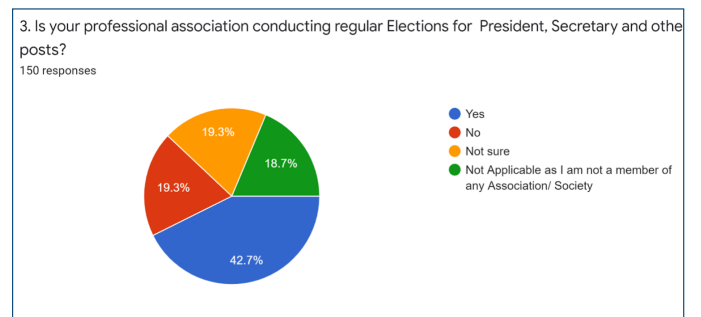

3. Is your professional association conducting regular Elections for President, Secretary and othe posts?
150 responses

- Yes
- No
- Not sure
- Not Applicable as I am not a member of any Association/ Society

Fig. 3

- *Training and Workshop for Professional Development:* To organise short-term training and workshop programmes must be a feature of any professional association or society, for the professional growth and development of their fraternity. When we analysed the responses showed in Fig. 4 regarding the short-term workshops and training programmes, we clearly observed that only 64 (42.70%) respondents agree that their professional association regularly conducts workshops and training programmes for the LIS professionals; however, a majority (86, 57.30%) of the respondents denied this.
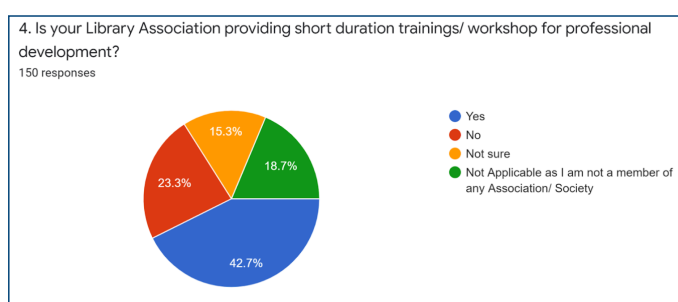
Fig. 4

- *Seminars and Conferences:* It is a regular feature of any professional association/society to organise conferences, seminars, symposiums, and annual meetings for professional communication and to discuss various important professional issues. Fig. 5 indicates that 88 (58.70%) respondents agree that their professional association organises conferences and seminars at regular intervals; 33 (22%) do not agree with the statement; and 29 (19.30%) LIS professionals could not the answer the question because they are not members of any library association or society.
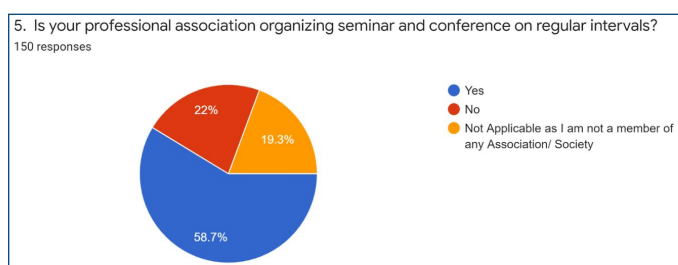

Fig. 5

- *Publication of Newsletter and Journals:* Publication is an intellectual and scholarly communication activity in which the professional associations publish their newsletters and journals, to keep their members updated, so that they may be aware of the recent trends and developments in the subjects. A newsletter is the most predominant resource to inform the professionals about welfare activities, like union activity, protests, agitations, professional issues, professional representations, and correspondence with government officials. We analyse (Fig. 6) that only 72 (48%) professionals think that their professional association/society regularly publishes journals and newsletters, and the remaining 78 (52%) respondents are not aware and do not think that their professional bodies regularly communicate with the members and publish journals and newsletters regularly.
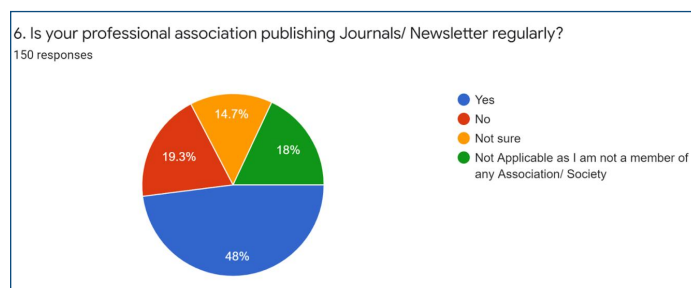

Fig. 6

- *Apprenticeship for BLISc and MLISc Students:* Apprenticeships are an excellent way to encourage young people and allow them to learn a wide range of skills in many different environments pertaining to their interests and career choices. So it is a technique which offers a solution to help young people into any profession, by equipping them with the technical and core skills needed to take on new jobs, both today and in the future. When we asked if the respondents thought that their professional association/society was working towards providing apprenticeships to the MLISc and BLISc students, the data was shocking (Fig. 7). Only 13 (8.7%) respondents agreed that their professional association provides apprenticeship programmes for the young professionals; 73 (48.70%) denied the statement; 36 (24%) were not sure; and 28 (18.70%) respondents could not give their opinion.
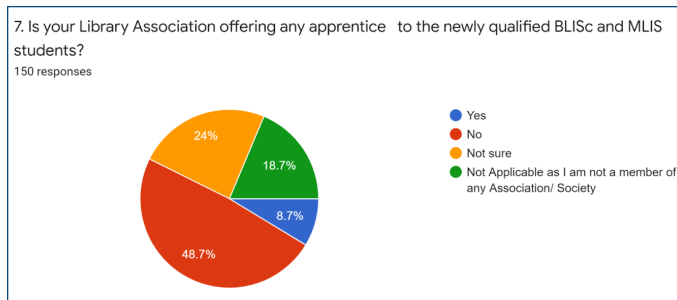
7. Is your Library Association offering any apprentice to the newly qualified BLISc and MLIS students?
150 responses

Fig. 7

- *Issues of LIS Professionals:* There are various burning issues faced by LIS professionals in the present era. Career advancement, exploitation of youth in the private sector, impact of ICT on the profession, chaos in scholarly communication, promotional avenues, unemployment, support for young professionals, and issues related to pay scales, cadre, re-designation, and so on, are some important issues faced by LIS professionals.

  After analysis (Fig. 8), we observe that 68% of the respondents agree that unemployment is a big issue for them; 62.7% think that career advancement is also a burning issue; while 50% believe that exploitation in the private sector is a challenging issue for LIS professionals.

  Re-designation, promotional issues, and pay scales and cadre are serious issues of the profession as well, and 58%, 46.70%, and 40.70% of the respondents agreed, respectively. The impact of ICT is an influencing factor and 32% of the LIS professionals accepted that it is a major issue for them. Some other issues like chaos in scholarly communication, support to young professionals, role of professional bodies, and so on are some big issues faced by the LIS professionals.
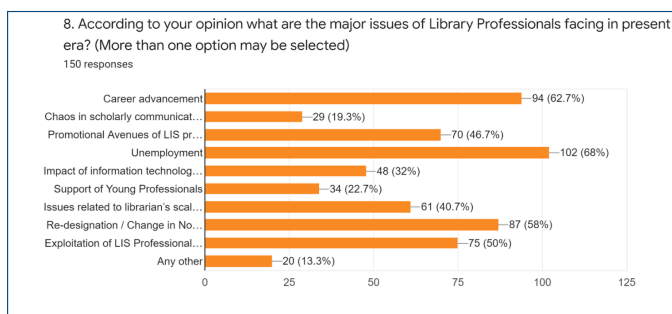
8. According to your opinion what are the major issues of Library Professionals facing in present era? (More than one option may be selected)
150 responses

Fig. 8

- *Are the Professional Issues Being Addressed by the LIS Associations at Various National/Regional Platforms?*

  We have already discussed various contemporary issues and challenges in point number 8, and those are very influencing factors for the professional growth of the LIS professionals. When we analysed the data (Fig. 9), it was found that 96 (64%) respondents were not satisfied with the role of LIS professional associations or societies. The unions and associations are not representing their issues, on the national platforms, to the government authorities, ministries, Honourable Members of Parliament (MPs), and Assemblies (MLAs). They are also not raising the issues in front of regulatory bodies like the AICTE, CBSE, UGC, education boards, MCI, NCTE, and so on. The LIS professionals are facing various problems like unemployment, promotional avenues, scale, cadre, re-designation, exploitation, career advancement, and some other issues.
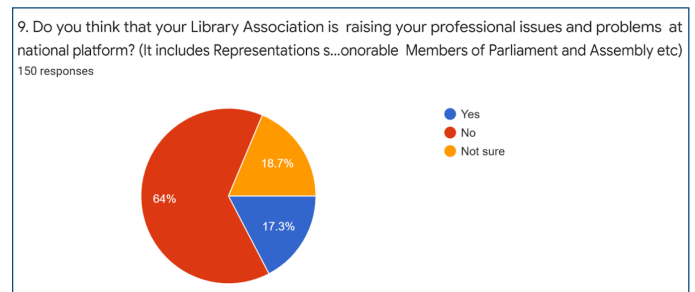
9. Do you think that your Library Association is raising your professional issues and problems at national platform? (It includes Representations s...onorable Members of Parliament and Assembly etc)
150 responses

Fig. 9

- *Role and Responsibility of Professional Library Associations:*

  In this section, the question was raised about the role, responsibility, significance, and moral duty of LIS professional associations and societies.

The following suggestions and views were received from the respondents:

- *Support to Young Professionals:* Librarianship is an ever-changing field. Therefore, the things that we learn in the time span of two years of the Master's degree becomes obsolete very fast. At times, it even happens that what we learn as students is totally different from what we experience as library professionals. So, it can be rightly said that the actual learning process begins when an LIS student starts

working as a library professional. Therefore, senior professionals must help and support the youth.

- *Regular Elections of LIS Professional Bodies:* It is important to have elections at regular intervals for any association or union to ensure the proper functioning of the executive body. Elections provide an opportunity to the members of the associations to assert their voice and opinion, and choose the person whose priorities and ideas match with them the most. The election process must be on time, so that a democratic environment may be setup.

- *Unemployment:* Trained library and information science professionals are not getting jobs. The government is not planning for the development of the libraries, so the job opportunities are reducing day by day. Our professional unions should raise their voice at the national and state-level platforms, and should make dialogue and communication with the government representatives, by fixing meetings, and sending demands and reminders.

- *Exploitation in the Private Sector:* Every school, college, and institution is given an affiliation by various regulatory bodies like the CBSE, UGC, AICTE, NCTE, DEC, MCI, and so on. All the regulatory bodies formulate certain rules and regulations for the smooth and effective functioning of the institution. In the present scenario, a number of institutions are running under self-financing schemes. In such types of institutes, the management of the school, college, or university is the supreme authority for recruitment, salary, pay structure, and working and service conditions of the employees. All of these regulatory bodies emphasise only on the recruitment, qualification, salary, and the working conditions of the teachers of the institutions, and give approval to the teaching faculties only. So, the management of the institution provides a proper salary and healthy working atmosphere for the teachers and not for the librarians. These regulatory bodies do not bother about the librarians, so the management offers only 2,500 to 5,000 rupees to the librarians as there is no strict policy from the concerned regulatory bodies of the organisation. The respondents think that the only solution to the problem is that these bodies should also look at the recruitment, pay and salary, and service and working conditions of the LIS pro-

fessionals, and approval must be given for the same.

- It is the duty of the library associations to take feedback and put pressure on all the above-mentioned regulatory bodies for the effective implementation of recruitment, pay, salary, working conditions, and approvals of LIS professionals in their affiliated institutes and organisations.

- *Organise Seminars and Workshops:* Professional associations can be said to be those associations which are formed by a specific group of professionals to achieve some common goals, like an association of teachers, doctors, lawyers, and so on. Similarly, in the field of library science, many library associations and societies are formed. These associations are important because they indulge in many activities which can develop the skills of the professionals to bring them at par with the growing demand of time. These associations conduct seminars, conferences, refresher courses, short-term courses, and training programmes, to make the professionals aware of the current trends in their field.

- *Cadre and Promotional Avenues:* The UGC categorised the librarian as a non-vocational teaching staff or academic staff; however, the librarian is not given the teaching cadre. They are not entitled to avail the winter and summer vacations. They also do not have promotion opportunities, although all the recruitment conditions, minimum eligibility, qualifications, and cadre are the same as assistant professors. So, why are library professionals not eligible for promotion as a principal in degree colleges? In polytechnic colleges, librarians face a lot of problems to get scales and cadre. Similarly, there is also an urgent need to review the promotional avenues, cadre, and pay scales of the librarian in school libraries. All the state- and national-level professional associations should discuss the above-mentioned issues with higher government authorities, regulatory bodies, and policy makers as soon as possible.

- *Re-Designation:* For attracting efficient and hardworking people towards this profession, it is necessary that sufficient changes in the promotion opportunities and progress are made. A highly qualified librarian retires at the same designation at which they were initially recruited, after putting in about 30 years' service. So, an enlightened promotion

policy must be evolved by the administrators. It is high time for the authorities to follow suit, and even go one step further by re-designating the post of the librarian as TGT/PGT (Library & Information Services: LIS) in the school libraries and Assistant Professor (Library & Information Science) at the degree colleges and universities. Once they are re-designated as teachers, the channel of promotion opens automatically for them, the same way that it does for the other teachers. Moreover, membership of a larger community creates a sense of security and satisfaction among the librarians, and the feelings of mutual brotherhood and fraternity are strengthened.

- Overall, it is observed that the designation of a Librarian is not appropriate in the present-changing ICT era, as the roles and responsibilities of librarians have completely changed since the last two decades. Change of designation will improve and boost the responsibility, image, status, and cadre of the librarians.

- *Representation at National Platforms:* Associations should write regularly to put pressure on the central and state governments to make a common policy for the implementation of library legislation in the country. At present, only 19 Indian states have passed the library legislation in their states; however, the conditions of the public libraries are still as before. These bills are similar to other bills – once passed, they are forgotten in red-tape of the country. The chain of libraries (state, district, taluka, and village) could not be developed till now. The central government should have the provision of levy for the libraries, so that the working conditions, infrastructure, and literacy could be strengthened for the benefit of the public of the country.

- *Joint Federation of LIS Associations:* Library associations of various states and other library teachers associations must jointly form a new federation, i.e. the Federation of India Library Associations, to fight for the rights of the library professionals. This federation may communicate at least twice a year to discuss various issues, challenges, and problems faced by the LIS professionals. The responsibility to form the Federation of LIS Associations of India must be taken by ILA, because ILA is the pioneer and leading library association in India.

- *Publication of Literature:* Journals and newsletters are important sources of information for academic study, research, and development activities. The article published or information published in these sources often provide more up-to-date or detailed information about the concerned subject and professional development. All the LIS associations and societies must publish their newsletters and journals periodically, to provide up-to-date information and news to their fellow professionals.

Conclusion

One voice is easily lost, but an organisation representing hundreds or thousands provides a unified voice representing all – a voice that can be heard. It is the prime role and responsibility of library associations to raise the voice about unemployment, promotion, re-designation, pay scales, cadre, and status of library professionals. Library associations should write to the higher authorities regarding the above serious issues of the profession. There are a number of learned professors, librarians, and information scientists who are a member of various high-level commissions and committees, and they should come forward and put forth these serious issues at a national level. ILA is the biggest and pioneer national association; therefore, ILA should come out in a leading role and the debates must be open at the regional and national levels for the same. It is high time for submitting strong representations, recommendations, and follows-ups by the library association to regulatory bodies like the UGC, AICTE, NCTE, CBSE, MCI, NCERT, universities and government representatives, and the policy makers.

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