



Proceedings of International Virtual Conference on

**Library & Information Services
(IVCLIS 2021)**

on



**LIBRARY AND INFORMATION SERVICES:
PAST, PRESENT & FUTURE**

Organized By

Central Library, Brainware University & Central Library

Brainware Group of Institutions-Sabita Devi Education Trust

February 9-10, 2021



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Library & Information Services
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**LIBRARY AND INFORMATION SERVICES:
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Central Library



**BRAINWARE
UNIVERSITY**



BRAINWARE
GROUP OF INSTITUTIONS

SABITA DEVI EDUCATION TRUST

LIBRARY AND INFORMATION SERVICES: PAST, PRESENT & FUTURE

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Prologue

We are now passing through a deep crisis. Covid 19 has forced us to an extremely critical situation. The education sector has suffered the most. We are proud that even in this pandemic situation we could organize an International Conference, which has been appreciated by all concerned. I am grateful to our library staff members of Brainware University and Brainware Group of institutions-SDET, for organizing the aforesaid event.

Brainware University was established in the year 2016 with a Central Library. Now we have three more libraries - School of Law Library, Pharmaceutical Technology Library and Institute of Nursing Library.

The conference title was chosen as “**Library & Information Services: Past, Present & Future**”. This was to bring participants from different domains of Library Science on one platform.

The Libraries of Brainware University seek to promote the vision and mission of the University by providing timely access to quality information in various forms (Print, online, E resources, data bases etc.) to meet the teaching learning needs of the university users. Our goal is to create library services that are convenient and efficient for our users.

This International Conference provided an excellent platform to gain experience from different dimensions of Library and Information Science as well as for library development.

My sincere wishes to all those who have contributed to our success from home and abroad.

Once again we are grateful to all of you for your kind participation in this conference and this has given the International conference a grand success.

Bandana Basu

Convenor, IVCLIS 2021 &

Librarian, Brainware University

West Bengal, India

Acknowledgement

International Virtual Conference on Library and Information Services: Past, Present & Future (IVCLIS 2021) were organised, on February 09 & 10, 2021, jointly by Central Library of Brainware University and Central Library of Brainware Group of Institutions-Sabita Devi Education Trust, West Bengal, India.

We would like to thank our Honourable Chancellor Mr. Phalguni Mookhopadhyay, for encouraging us.

It was our great honour that our Vice Chancellor Prof. Dr. Sankar Gangopadhyay has always extended his hands of cooperation.

We would like to thank Registrar Madam and Asst. Registrars of Brainware University. We also would like to convey our thanks to Principal and Deputy Registrar of Brainware Group of Institutions-Sabita Devi Education Trust for their heartiest support.

It is our great privilege that Dr. Binod Behari Das, Former Chief Librarian, Jadavpur University, West Bengal, present in the conference as chief guest and Dr. Asitabha Das, University Librarian, Kalyani University, West Bengal, present in the conference as guest of honour.

We would like to take this opportunity to thank Mr. Demian Katz, Director of Library Technology, Falvey Memorial Library, Villanova, USA, for accepting our invitation and for delivering the valuable keynote address for our conference. We are very much grateful to him.

We would like to thank all the dignitaries who have presided over the technical sessions.

We would like to thank all of our International Advisory Committee Members Dr. Doris Chinyere Obiano, Librarian, Federal University of Technology Owerri, Nigeria., Dr. Md. Anwarul Islam, Librarian, Sher-e-Bangla Agricultural University, Bangladesh., Dr. Bhim Dhoj Shrestha, Former Head, Central Dept of Library and Information Science, Tribhuvan University, Nepal., Mr. A.K.M. Nurul Alam, Deputy Director, Bangladesh Bank Library and Country Coordinator, SLiMS Bangladesh, Bangladesh. And Dr. Jude Adindu Onuoha, Associate Professor, Federal University of Technology, Owerri, Nigeria.

We would like to thank all of our National Advisory Committee Members, Dr. Krishnapada Majumder, Ex-Professor, Jadavpur University & General Secretary, Bengal Library Association, West Bengal, India., Dr. Arun Kr. Chakraborty, Librarian, Bose Institute,

Kolkata, Former Director General, RRRLF & National Library, Ministry of Culture, Govt. of India, and Additional Mission Director, National Mission on Libraries, India., Mrs. Sujata Roy, Chief Operating Officer, National Digital Library of India, IIT Kharagpur, Govt. of India., Dr. Partha Sarathi Das, Asst. Library and Information Officer, National Library of India, Govt. of India., Mr. Sanjay Maiti, Asst. Library and Information Officer, National Library of India, Govt. of India., Dr. Pritam Gurey, Librarian, The Asiatic Society, West Bengal, India., Dr. Jaydeep Chanda, Librarian, Gurudas College & Treasurer, Bengal Library Association, West Bengal, India., Dr. Barnali Roychoudhury, Asst. Professor, Dept. of Library and Information Science, Netaji Subhas Open University, West Bengal, India., Dr. Ashis Biswas, Librarian, Victoria Institution (College), West Bengal, India., Dr. Abhijit Chakravarti, Librarian, Maharaja Srischandra College, West Bengal, India., Mr. Prodosh Kumar Bagchi, Librarian, Mujaffar Ahamed Pathagar (Library), West Bengal, India., and Mr. Prashant Kalloli, Librarian, Bhogawati Mahavidyalaya (College), Kolhapur, India.

We would also like to convey our heartfelt thanks to all the members of our Internal Advisory committee of the conference.

We also like to extend our gratitude to the reviewers of the original abstracts and the papers submitted for consideration in this conference for having so generously shared their time and expertise.

At the same time we would like to thank all of respected dignitaries and participants from all over the world.

We would like to thank to all of our co-convenor, organising committee members and technicians.

We would like to thank once again all of the participants in the conference, invited speakers, presenters and audience in home and abroad.

And finally it is our immense pleasure that the conference proceedings consisting of all selected and reviewed papers has been published with ISBN.

Bandana Basu

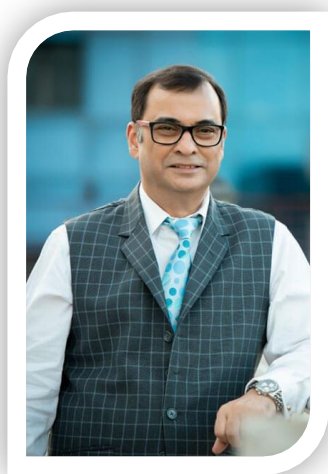
*Convenor, IVCLIS 2021 &
Librarian, Brainware University
West Bengal, India*

Foreword

International Virtual Conference on Library and Information Services: Past, Present & Future (IVCLIS 2021) were organised, on February 09 & 10, 2021, jointly by Central Library of Brainware University and Central Library of Brainware Group of Institutions-Sabita Devi Education Trust, West Bengal, India. This publication contains all the reviewed and accepted articles submitted and presented by the participants in the conference.

The authors will be sole responsible for the data, opinion and remarks expressed in the concerned articles.

Message from Honourable Chancellor, Brainware University



I am delighted that the proceedings of the International Virtual Conference on “**Library & Information Services: Past, Present, Future**”, organised by the Central Library of Brainware University in February this year, are being published as an e-book in July, 2021.

Comprising peer-reviewed papers presented in this commendable conference that witnessed a meeting of minds across the globe, this e-book will be a most valuable resource for students. Brainware University is proud of its well-stocked and efficiently-run library that is keeping pace with an increasingly digitised world.

I wish you the very best in your endeavours.

Phalguni Mookhopadhyay

Chancellor
Brainware University, West
Bengal, India

Message from Honourable Vice-Chancellor, Brainware University



Library and Information Services play a significant role in teaching, learning and research. The advancement of computer technology has brought about a massive change of library services to the users. The conference proceedings to be published in the form of an e-book by Brainware University in July, 2021, will comprise peer-reviewed papers presented in the international virtual conference on “**Library and Information Services: Past, Present and Future**” held on February 9-10, 2021. Thus the e-book will surface the transformation of library and information services from the past to the present and future as well. I extend my heartfelt thanks to the contributors and organizers. Wish success of this e-book in respect of its objective.

Dr. Sankar Gangopadhyay

Vice-Chancellor
Brainware University,
West Bengal, India

Message from Honourable Registrar, Brainware University



I feel myself deeply privileged to be entrusted to become Conference President of the International Virtual Conference on '**Library & Information Services: Past, Present, Future**', a maiden venture from the Department of Central Library of Brainware University and yet another feather to the multifaceted cap of the **BRAINWARE UNIVERSITY**, Kolkata.

Brainware University was established in the year 2016 with a mission of changing the scenario of professional education in West Bengal. Mr. Phalguni Mukhopadhyay, the founder Chancellor of Brainware University, is a well-known face in the academia of Bengal. Our aim has always been, and remains, to make quality education affordable for students coming from all strata of society while helping them ease into successful careers of their choice.

There is no wonder that a library is a storehouse of knowledge and learning and its importance in an educational institution is indispensable. To ensure that our students' academic needs are met as well as to enable them to step beyond the horizons of the curriculum, Brainware University has a modern, well-stocked Central Library within its premises at Barasat, West Bengal.

This event is nothing but an initiative on our part to bring together experts from Library disciplines so that we may all share idea and knowledge and go forward a next step for a better future. This international conference dares to simply achieve that through the interaction of the delegates, resource persons investing the costliest resource of all, the time; the dividend is rich--- for investment in knowledge pays the best.

All our challenging endeavours sprout through sparks of our Chief Patron, Phalguni Mukhopadhyay, the founder Chancellor of Brainware University, the guiding spirit behind our team. I fervently wish this conference to reach its accomplishment, which is the result of earnest heartfelt hard work of each member of team Brainware and humbly invite your considered feedback to tide over its limitations in future.

Wish you all a great time ahead and a brain-full of sparkling memories!

Mahua Pal
Registrar
Brainware University
West Bengal, India

**Message from Honourable Deputy Registrar (Actg.),
Brainware Group of Institutions - Sabita Devi Education Trust**



Library is the heart of any educational institution. Library and resource centre plays a very important role in teaching, learning and research with the main aim to give enormous support to the academic and research activities of an institution. Libraries are also expanding and offering their services in the digital environment to their users. The internet has changed the way the libraries are used to provide services to the users.

I am happy to note that the proceedings of the International Virtual Conference on “**Library and Information Services: Past, Present & Future**” organised by the Central Libraries of Brainware University and Brainware Group of Institutions - Sabita Devi Education Trust, is going to be published in electronic form in July 2021.

I wish every success to the publication.

Pulak Patra

Deputy Registrar (Actg.)
Brainware Group of Institutions - Sabita Devi
Education Trust,
West Bengal, India

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Chapter - I

Library and Information Services: Past, Present and Future Keynote Address, February 9, 2021

Demian Katz

*Director of Library Technology
Falvey Memorial Library
Villanova University, USA*

Hello, I am Demian Katz, the Director of Library Technology at Falvey Memorial Library and also the lead developer of the VuFind open source discovery project. I'm here today to talk a little bit about Library and Information Services: Past, Present and Future. I think that this is an excellent theme for a conference at the present time, and I hope to share some useful reflections on lessons from the past and present and strategies that we can apply to the future. I would like to thank BrainWare University and the BrainWare Group of Institutions for the invitation to speak tonight and I would also like to apologize for being here by video recording rather than live, though I assure you that this is probably better than me trying to speak coherently so far past my bedtime.

First, I would like to start by talking about some lessons that we, as library professionals, could benefit from in the present and the future. And really, all of them boil down to a single theme, which is that technology changes but core values should not. The library profession has some key values that have served us well over time, but even as technology shifts, these remain highly important to our work. First of all, openness. While, certainly there are historical precedents of libraries that were only open to exclusive audiences, I think that in more recent years, a key feature of most libraries has been a desire to make information available as widely and to as many people as possible in order to advance society as a whole. In the new technological landscape, we are fortunate to have open access to a great deal of information, but some of this information is available not for idealistic reasons but because of more commercially motivated reasons, and as such, I think that we should be aware that the landscape is always capable of changing in the future. There are also many resources made available through libraries that are perhaps not as widely available as librarians might like, and we should think about that as well, and changing the shape of scholarly communication. But in any case, no matter how things change or what comes next, the core value of openness and sharing information should motivate us and drive us forward because it helps to define who we are and what we do.

Also very important to librarians is organization. By organizing information in an effective way, we make it possible to find and utilize it more effectively. In the past, this of course manifested in the shelving of books. We now have moved beyond books in many ways, but organization of information remains just as important as ever before and so as library professionals we need to think about things like metadata schemes and data hierarchies and how they apply to the current technological landscape.

Preservation is also vital. Not only have past librarians organized information to make it findable, they've also preserved it so that future generations could appreciate it. In the current digital landscape we face new and intimidating preservation challenges. There is so much data and very little of it is being collected in a thoughtful way that takes into account long-term preservation. Again, as librarians, we can't possibly preserve all of the information that is out there, and indeed, in the past, librarians have not been entirely successful in preserving everything either and have often had to work with others such as private collectors or other external organizations to continue to preserve culture that would otherwise be lost. But again, as we move into the future, we need to really think about future generations and long-term preservation and how we can retain the gains we have right now into the future.

Finally, service is a key part being a librarian. We could of course organize and preserve information to our hearts' content, but if we weren't doing that in order to assist a particular audience, it would be fairly pointless, and regardless of what particular information resources a library holds, its librarians and the services they can provide to users are one of its greatest assets. This again is something that differentiates the library from large technology companies that provide information but use a purely self-service model. It's a challenge because end users really like self service and sometimes they prefer not to talk to another human being if they don't have to. And so we really need to market ourselves and think of creative ways to make ourselves available to users in ways that they find comfortable. But, no matter how we do it, it remains important that librarians share the expertise and skills that they have with their users in order to allow them to make effective use of the open information that we organize and preserve.

And that of course brings us to the present. We've all had a challenging year or so with a global pandemic, among other things, but challenges also provide opportunities to learn, and I think there have been some noteworthy lessons from recent challenges. One is that we all have a great deal in common. I collaborate with other librarians and programmers all over the world, and of course we've always had shared goals and worked together well, but in the past, we all had very different life experiences: climate varies from region to region, we celebrate different holidays, but during the past year, we've had a global shared experience in a way that I don't think there's a precedent for. We've all been having the same unique challenges and we've had new things to talk about, which I think is a strong reminder about commonalities between us all and further motivation to pursue openness and sharing information on the largest scale possible to help the greatest number of people.

This situation has also taught us that we are adaptable. None of us expected that we would be dealing with lockdowns and quarantines and remote access really just a year ago and yet all of our libraries have had to adjust their service models and figure out ways to provide services to end users in changing and uncertain times. Tied to this is the fact that we are less tethered to physical locations than before. Librarians tend to love books -- I certainly love books -- but it has become even more apparent than ever before that a library is much more than a collection of books, and the services that we provide can have a greater reach than within the doors of our buildings. I certainly think that there is a future for physical collections, and indeed one of the challenges of the pandemic has been providing access to physical resources to benefit remote users. But, it also highlights just how much we can offer outside and beyond our buildings, and in collaboration with one another.

And of course, this has highlighted that we are still needed. Even with buildings closed and with limited access to physical collections, librarians have been in great demand. There's important research to be done, and everyone's daily information needs remain the same wherever they are located. I personally have been busier working remotely over the past year than I ever was at my physical location. There are access problems to troubleshoot, there are new technologies to evaluate,

and there are always new things to think about. Let us at least take from the difficulties we've recently experienced the lesson that we remain relevant and are helping others.

With all those lessons out of the way, let's talk about strategies, because the past and the present have told us a lot, but the future is always somewhat uncertain, and we have the opportunity to make choices that will lead to a more effective future.

First of all, never stop learning, and diversify your knowledge. A conference like this is a great opportunity for continuous learning. And when I speak about diversifying knowledge, I'm really addressing the fact that, as we've learned from our library classification systems, you can really subdivide knowledge to an infinite extent. There's always more that you can learn about any given topic. And so it's easy, especially in a technological field, to overspecialize and focus too much on a single thing. While it is certainly always good to be an expert in something, it's also important to be aware at a higher level of the many other things that are changing and growing and developing all the time. So staying connected and learning new things will always serve you well.

I also like to say that it's important to know what is possible, because if you don't know what you can do, you have much less chance of successfully doing it. And I say this as sort of a continuation of the last point. There is an overwhelming and intimidating amount of technology out there that we could spend time learning about, and it is completely impossible to learn all of it in depth. But, if you learn just enough to understand what particular technologies are for and what they can do, then they're available in your toolkit when you have a particular problem that you need to solve, and at that time, you can devote more time to learning more of the details. So, I would say, as long as you can remember *what* you can do, you can always find out *how* to do it when you actually need to.

Similarly, I recommend thinking like a troubleshooter. This is another strategy for focusing in on what you need to know without being overwhelmed by the sheer amount of information that you could potentially learn. What I mean is this: when you are troubleshooting a technology problem, or really any kind of problem, one of the things that you are doing is constantly asking yourself questions to try to narrow down the source of the problem. Have I tried turning it off and back on again? Or, more seriously, what has changed since the last time this thing worked? Usually, when solving a problem, if you're working to restore access to something that is broken, asking that question about what has changed is going to tell you where the problem lies, and lead you to a solution. But that kind of thinking doesn't have to be limited to solving broken systems; it can also be applied to solving brand new problems. If you need to offer a new service, you can ask yourself: what services do I currently offer that are similar to the service I want to add? Can I make some small changes to get closer to my goals? Or, do I know of a colleague at another institution who has solved this problem, and could they help me find a way to get closer to a solution? It's really helpful to narrow down and find connections, and this can make a large problem feel much smaller, and also lead you to a way to take a staged approach and reach a goal one step at a time.

I also spoke a lot before about library values, but I think it's worth repeating: as we go into the future, we should always try to distinguish ourselves through our shared library values. It would be dishonest to say that we don't have a great deal of competition from other types of services that fill a similar space to the library, but the key difference as I mentioned is that many of those services are commercially-oriented and are trying to make a profit and don't particularly care about user outcomes except to the extent that it allows them to make more money. We as librarians tend to be motivated by a more genuine desire to help our end users and to further knowledge as a whole, and this really does differentiate us, because it changes what we focus on and perhaps allows us to have a more long-sighted view of what we are doing than the next profit cycle. Always keep those library values in mind when you make your plans.

Also critically important is collaboration. Because there is so much to learn, and no one can be an expert in everything, we need to rely more than ever on collaboration with colleagues. I realize that not all of us have the same number of local colleagues. Some of us have large teams in our institutions who can work together to solve problems, whereas some of us are single librarians in very small institutions. Regardless of what situation you find yourself in, we all have colleagues, because, as librarians, we are colleagues in a broader sense, and there are many venues for communicating with one another. So certainly, if you are part of a team within an institution, I encourage you to have a conversation with your colleagues. Share areas of expertise, and if you plan to do some learning, ensure that different individuals learn different skills so that you can solve a broader set of problems. But, if you're by yourself, and you're feeling overwhelmed by the amount of work that you need to do, connect with people in similar situations at other institutions. They are out there, and there are ways to network. Things like the code4lib organization, for example, and I'm sure there are many others.

Unfortunately, with a virtual conference, there is less opportunity to meet colleagues in person, but the current situation will not last forever, and hopefully there will also be opportunities for in-person professional networking again before too long. And of course I include myself in this. I am your colleague as well. I will provide some contact information shortly. Please do feel free to reach out if any of my expertise could be of service to you. I'm always happy to share resources and information.

Finally, prepare for change. As I said, we've learned recently just how much unexpected change can do. But even under more normal circumstances, change is the one thing that is inevitable, especially in technology. I've been working in the field for twenty years, and I have seen an unbelievable amount of change, which in some ways is only accelerating. And so again, this is the reason to stay flexible, stay aware of what's going around you, don't spend too much time learning specific things, because they may or may not be valuable next year... but be ready to dig in when you need to; keep the high level view in mind; and hopefully, by applying all of these strategies, we can continue to keep libraries useful to our audiences and relevant long into the future.

Thanks again for taking the time to listen, and as I said, if there's anything I can do, or if you have any questions or comments, feel free to reach out to me. Email is probably the best option; I'm demian.katz@villanova.edu, but you can also find me in the VuFind Slack community, or on Twitter, @demiankatz. Thanks again, and I hope you enjoy the rest of this conference.

[Invited Lecture]**Challenges of librarians in India****Dr. Binod Behari Das***Former Chief Librarian**Jadavpur University, West Bengal, India*

Respected Chancellor, Respected Vice- Chancellor, Registrar and other dignitaries of Brainware University and all participants of this conference / seminar. I am very much thankful to the Authority of Brainware University to invite me as Chief Guest, particularly to Ms Bandana Basu, Librarian. The topic of this conference is vast one which covers many themes and subthemes. Here, I am speaking humbly and briefly on the challenges of the librarians to combat with present situation in Library & Information services in India.

In the past, the librarians played the role of keepers of information resources with responsibility for providing conditional access to the collections for specific users. Today's librarians have a variety of roles –i) collection development and management including archiving and preservation, ii) organization and processing of information resources, iii) managing access to information resources, iv) providing information services of different kinds, v) providing user education and training services, and a variety of management activities. Given such a variety of tasks, the job of a librarian in today's world has become very complex and demanding. University education programs and in-service trainings train and equip library and information professionals in accomplishing their tasks effectively and efficiently, and moreover professionally to render services to all users. [1]

The nature of the job and role of librarians have changed over the centuries, and drastically so in recent years with the introduction of information and communication technologies in different areas of librarianship. The profession has been influenced by a variety of socio-political changes.

Shera argues that libraries are created to meet certain social necessities. He suggests that development of libraries is closely related not only to intellectual history but also the changes in the organizational structure and the value system of its supporting culture. Because of this cultural role, the libraries have existed from the very earlier period of human civilization. There is a historical evidence of libraries existed in ancient Egypt as early as 1250 BC. Pharaoh Rameses II is said to have founded a great library. Other great libraries which we know existed were the Royal library at Nineveh, around 600 BC in ancient Assyria, and the libraries of Taxila and Nalanda University, around 558-530 BC in ancient India. [1]

In India, Asiatic Society (1784), Khuda Baksh, Oriental Public Library and many libraries of the Institutes and Universities were age-old, and well established. Many manuscripts are available in these libraries.

However, the modern library began to appear with the creation of printing technology about 500 years ago, and developed further in the 19th century with the public library movement, led in Britain by

Edward Edwards. The scholarly library tradition which was dominant in 19th century Germany spread to American libraries including University libraries while in Britain at the same time Anthony Panizzi created the first National library at the British Museum in London.

Five laws, propounded by S.R. Ranganathan in 1931, form the basic foundation of librarianship even today, although the social & technological influences over the past eight or so decades have significantly changed the nature of libraries and the profession of librarianship.

The introduction of computers and communication technologies in different aspects of the profession has focused attention on its scientific nature, but there are arguments for its humanistic nature too; librarianship has also been defined as a social science since it deals with human beings and society at large.

Librarians and Librarianship Today:

The main ethos of the librarianship profession is service. The three facets of librarianship are: content, service and users. Shera comments that librarianship is primarily a service enterprise the aim of which is ‘to make the accumulated record of man’s intellectual activity as readily available as possible to the user’.

Gorman lists the major activities of librarians as follows:

- Selection : of physical objects as well as digital resources
- Acquisition : by purchase, subscription, gift or exchange
- Organization and access : cataloguing, classification, online information access
- Preservation and conservation : of both physical and digital resources
- User services and training : including reference services, loans, providing information skills training and user instruction
- Management: of personnel, services and library organization

These activities are expanded, and number of new roles and activities are added to the portfolio of librarians in the digital age. Recent developments in the web and digital libraries, and also with Web 2.0, have brought some new and significant changes to the library and information services. Librarians are no longer just the custodians or information intermediaries in the digital age; they can actively take part in the creation as well as dissemination of knowledge. [1]

In India, the library and information professionals of today need to be prepared for organizing both printed and digital information sources and rendering services in the digital library, more specifically in a hybrid library (a library providing both traditional and digital services)

The essence of librarianship remains the same as always: a service that brings content in a manner that is most suitable to the user. The service in the digital world is not limited by the boundary of one or more physical libraries, and while the content can be physical as well as digital, users can be physical and local and/or remote and virtual. However, library services are always based on a social and institutional framework, and are influenced, shaped and reshaped by social changes-political, economic, educational, legal and so on- as well as technological changes, such as computer hardware and networking facilities, software and related technologies, tools, standards and so on. [1& 2]

Future of Libraries and Librarianship:

One of the most difficult tasks to do is to predict the future. It is obvious looking back why and what happened and what the important developments were. Looking forward, though, is fraught with problems. We each have a unique viewpoint. We know that some things that we now think of as important will not be in the future, and vice versa. We can only guess, not predict.

To a large extent, computer networks have by-passed libraries and are delivering information directly to users. But does this spell the end for libraries? Libraries originated as places to store collections of materials. Now information no longer needs a space in which to be stored. This is both a boon and a curse. It is a boon for space saving, but not having a physical location for information specially one which advertises clearly the nature of its collection, offers a detailed record of what is in its collection and has people on hand to help – causes problems for users. Yes, they can find things but they need skill and persistence and a modicum of knowledge themselves about the topic on which they seek enlightenment. [1]

When people think about an information ‘place’ these days, they tend to think about the internet and one gateway to the internet in particular, the search engine Google.

Libraries are facing a challenge in the digital age. Google serves as a useful embodiment of that challenge. If libraries and librarians can do certain things better than search engines or do things that Google cannot, then they will survive. It cannot be denied the veracity of thoughts of great thinkers like Rabindranath Tagore, S.R. Ranganathan and Hutchins and others, and also many distinguished information scientists emphasizing personal aid to the users; and that human touch in the library services is essential even in the days of digital environment.

From my real life experience (working in different Institutes and Universities like ISI, RBU and JU) some questions arise in my mind. First, you, librarians ask yourself whether you are satisfied with your job? Are you getting pleasure in your mind to serve the users? These questions arise as the library, over the year’s remains the service organization -- in one side the beneficiaries and other stakeholders, the management and the Authority, in another side library staff members and librarians. Here lies the importance of the qualities of leadership in library. I am not going to discuss the theoretical aspects of definitions, characteristics and skills of leadership in different organizations. Here, in the library, leadership means skills competencies and processes are important in the sense that one can know one’s current level and can improve through practice.. Expertise is seen to be a combination of knowledge, experience, intelligence in cross functional areas and presence of mind to combat the situational problems. From Indian perspective, the leaders should have

- Idealized influence : a charismatic element
- Inspirational motivation
- Intellectual stimulation
- Individualized consideration

Across major known leadership styles, charismatic and team oriented leadership style is most widely acceptable. Slightly participative model of leadership is understood to be the most appropriate one for leaders in libraries in India. From competent leaders, the prominent expectation is that they would bring about changes in the library effectively, which means that the leaders need to act as change agents.

As a librarian one must have the above qualities of leaders and also some managerial skills. If we are going to develop the academic library, may be college or university, there are students, teachers and other users and Management and Authority in another side. The task of librarian is to cater the needs of the users with the support of the Authority by providing the users the desired information sources in whatever format they want. Another important point is that many libraries in India suffer from budgetary constraints. For developing a library system, librarian with the help of the library staff members work hard for the development at operational level and also with amiable behavior and proactive attitude to the users. First make/prepare yourself to be a librarian every day; in the changing environment you must have the quality of adaptation and adoption of changes in your library.

As library professional, we must have and acquire a good knowledge about the book trade, electronics and digital resources trade. Above all, we must have good knowledge what is available as open access (Shodhganga, Shodhgangitri, epg-pathsala, Swayam, NDLI etc.) and publicize about those free online materials; .and also about the N-List program and other consortium which are very much needed at the time procurement of new document.

Information about the resources available in your organization should be intimated to the users.

Slowly among the teachers, students and other readers you can acquire recognition that our librarian is very much informative about the resources and providing services with proactive attitude. Many of my colleagues are afraid that the librarianship and the librarianship profession is finished with the advent of electronic resources and various technologies. But I don't agree with them in this matter. In the soil of India in every type of library, the need for the librarian will be increased but in condition that the librarian himself with the professional colleagues have to come forward to learn the use of technologies. At present the knowledge of application of technology is a must for everyone. When we can use the mobile phone, why not the technologies related to the library services? We may not have the in-depth knowledge of the technology but we must learn the application side. During this pandemic situation, the online services are very much effective to the users.

Without going to delineate the basic characteristics/theories of leadership and management it may be stated that the librarian should know the ins and outs of the house keeping activities of libraries, so that he can guide and advise in cataloguing, classification and in other spheres, if needed. Librarians should be aware of the recent developments of this field. He should visit the websites of other libraries or visit personally and see the activities and services of the good libraries of the country, if possible, in the foreign countries. He should have good network or good relationship with other librarians for referral services for the beneficiaries of the library. Librarian must have service oriented mind and ready to accept any change, particularly the four changes happening recently –

- Changes in the reading habits of users.
- Changes in the production of information sources.
- Changes in the bibliographic tools and standards.
- Changes in the bibliographic format (BIBFRAME etc.)

Conclusion

No man can be stagnant, as everyone faces the challenges to solve the problems, hither-to unknown, in his life. This is happening every moment in our life, in our professional life enriching the national life as well; we are constantly changing – taking a circular ring on our path. We the librarians should

be proud to be professionals that each of us contributes to the academic/research enrichment of our country may be, behind the screen. All the good library professionals are marching towards becoming more competent and confident by constantly scrutinizing the deeds/jobs they perform. Ultimately we have to understand our lacunae and leave them behind, go ahead for a better tomorrow. In India, both non digital (traditional) and digital information sources would be useful and effective as per the user's desires, definitely with the personalized aid of the library professionals.

As a student of library science, I am very fortunate that I had been taught by a galaxy of learned and beloved teachers in library science. As a professional I am blessed by superiors that as a librarian side by side as a teacher in library science for a long period and I am still continuing to learn everyday from my work and also from my affectionate students and colleagues. I am fully satisfied with my job, though sometimes I have to face and cross the hurdles. I am getting pleasure to develop the newer library with newer services. I try to be elevated myself everyday and also think that if I can elevate one reader or any one in a day or in a month – there lies the success and pleasure of my work as a professional. So I do firmly believe that through the profession of librarianship, anyone will be recognized and appreciated by the academic community and as a whole in the society through his academic performance and above all, pro-active attitude to the users for rendering services which must be the motto of every library professional.

At the end, the opinion of Michael Gorman may be stated that “..that libraries are an essential component of education, learning and literacy; and, that society needs learning and educated citizens in order to develop, thrive and survive.”... “Libraries can and will use technology intelligently to carry on our historic mission and, in doing so, to foster cooperation, community, progress, and peace.” [3]

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[Invited article]

দ্বিশতবর্ষে রাজা রাজেন্দ্রলাল মিত্র (১৮২২-২০২১)

ডঃ অসিতাভ দাশ

গ্রন্থাগারিক, কল্যাণী বিশ্ববিদ্যালয়, পশ্চিমবঙ্গ, ভারত

ঊনবিংশ শতাব্দীর অন্যতম মনস্বী পন্ডিত, কৃতবিদ্যা লেখক, 'বিবিধার্থ সংগ্রহ' পত্রিকার সম্পাদক ও বহুভাষাবিদ রাজেন্দ্রলাল মিত্র ১৮২২ সালের ১৬ ফেব্রুয়ারি জন্মগ্রহণ করেন। ১৮৪৬ সালে মাত্র ২৩ বৎসর বয়সে এশিয়াটিক সোসাইটিতে মাসিক একশত টাকা বেতনে লাইব্রেরিয়ান ও অ্যাসিস্ট্যান্ট সেক্রেটারি পদে নিযুক্ত হন। ১৮৪৬ সালের নভেম্বর থেকে ১৮৫৬ সালের ফেব্রুয়ারী পর্যন্ত প্রায় দশ বৎসর তিনি এই পদে অধিষ্ঠিত ছিলেন। ১৮৫৪ সালে সোসাইটির লাইব্রেরির একটি গ্রন্থতালিকা সংকলন করেন এবং ১৮৫৬ সালে একটি পুস্তক ও মানচিত্রের তালিকা প্রস্তুত করেন। সোসাইটির পত্রিকার প্রথম থেকে চতুর্বিংশ খন্ডের একটি নির্ঘন্ট পত্রও প্রকাশ করেন।

রাজেন্দ্রলাল মিত্র দশটি ভাষায় সুপন্ডিত ছিলেন - বাংলা, ইংরেজি, সংস্কৃত, পারস্য, উর্দু, হিন্দি, গ্রিক, লাতিন, ফরাসি ও জার্মান। তিনি ১৮৪৬ সালে এশিয়াটিক সোসাইটিতে প্রবেশ করার পর ১৮৪৭ সাল থেকে সোসাইটির পত্রিকায় লেখকরূপে আত্মপ্রকাশ করেন। তিনি ছিলেন ঊনবিংশ শতাব্দীর অন্যতম শ্রেষ্ঠ প্রাচ্যবিদ।

১৮৪৭ সাল থেকে এশিয়াটিক সোসাইটি গভর্নমেন্ট প্রদত্ত অর্থে 'বিবলিওথিকা ইন্ডিকা' পর্যায়ভুক্ত করে প্রাচীন গ্রন্থাদির প্রকাশের সংকল্প করেন। রাজেন্দ্রলাল এই 'বিবলিওথিকা ইন্ডিকা' পর্যায়ভুক্ত অনেকগুলি গ্রন্থ সম্পাদনা করেন।

১৮১৭ সালে কয়েকজন কৃতবিদ্য ইউরোপীয় ও বাঙালি ভদ্রলোক কলকাতা স্কুল বুক সোসাইটি নামে একটি সভা স্থাপন করেন। উদ্দেশ্য ছিল বিদ্যালয়গুলির জন্য উপযুক্ত ইংরেজি ও প্রাচ্যভাষায় লিখিত গ্রন্থ প্রণয়ন প্রকাশ এবং বিনামূল্যে বা স্বল্পমূল্যে বিতরণ, স্কুল বুক সোসাইটি বাংলা, ইংরেজি, ফরাসি প্রভৃতি সকল ভাষাতেই পুস্তক প্রকাশ করত, কিন্তু বাংলা দেশে বাংলা পুস্তকেরই প্রয়োজন বেশি ছিল।

সুতরাং কেবল বাংলা পুস্তকাদি প্রকাশের জন্য একটি প্রতিষ্ঠান স্থাপনের প্রয়োজনীয়তা অনুভূত হয়েছিল। ফলে ১৮৫০ সালের ডিসেম্বর মাসে বঙ্গভাষাঅনুবাদক (Vernacular Literature Society) নামে একটি সভা প্রতিষ্ঠিত হয়। মহাত্মা ডেভিড হেয়ার ছিলেন 'বঙ্গভাষাঅনুবাদক সমাজের' প্রতিষ্ঠাতা।

১৮৫১ সালের অক্টোবর মাসে (১৭৭৩ সালের কার্তিক মাস) রাজেন্দ্রলাল মিত্রের সম্পাদনায় 'বঙ্গভাষাঅনুবাদক সমাজের' অর্থানুকূল্যে প্রকাশিত হয় 'বিবিধার্থ সংগ্রহ' অর্থাৎ পুরাবৃত্তোতিহাস - প্রাণিবিদ্যা - শিল্প - সাহিত্যাদি দ্যোতক মাসিক পত্র। ঝরঝরে সুন্দর দুটি ব্লকে ছাপা হতো এই পত্রিকা।

উল্লেখযোগ্য 'বিবিধার্থ সংগ্রহ' পত্রিকা (১৮৯১) প্রকাশের পূর্বে অক্ষয়কুমার দত্ত ও দেবেন্দ্রনাথ ঠাকুর সম্পাদিত 'তত্ত্ববোধিনী' পত্রিকা পাঠকদের কাছে অত্যন্ত প্রিয় ছিল। কিন্তু 'বিবিধার্থ সংগ্রহ' পত্রিকা প্রকাশ হলে সুদৃশ্য বড় বড় হরফে ছাপা, অনেক ছবি, প্রবন্ধের বিষয় বৈচিত্র্য সর্বজনের কাছে পত্রিকাটি অনেক বেশি আদরণীয় হয়ে ওঠে।

তিনি 'বিবিধার্থ সংগ্রহ' পত্রিকা নিয়ে তিনি নানা ধরনের পরীক্ষা - নিরীক্ষা করেছিলেন। বিষয় থেকে শুরু করে লেখক - গোষ্ঠী নির্বাচন, শোভনীয়তা, রুচিশীলতা, মুদ্রণ প্রকাশনা, ভাষা ব্যবহার, সমালোচনা, রসরচনা, নীতিজ্ঞান প্রসার, সাহিত্য প্রকাশ সব বিষয়ে নিদর্শন রেখে গেছেন। প্রসঙ্গত উল্লেখযোগ্য যে লাইব্রেরি বিষয়ক

বাংলা ভাষায় লেখা প্রথম প্রবন্ধ 'গ্রাম্য গ্রন্থালয়' পত্রিকার প্রথম খন্ডের প্রথম সংখ্যায় ছাপা হয়। এই লেখক ছিলেন স্বয়ং রাজেন্দ্রলাল মিত্র। রবীন্দ্রনাথ ঠাকুরের শৈশবের বাল্যস্মৃতিতে 'বিবিধার্থ সংগ্রহ' পত্রিকা ছিল স্মরণীয় ও আদরনীয়।

সে যুগে রাজেন্দ্রলাল ছাড়া অন্যান্য প্রধান গদ্যলেখকেরাও 'বিবিধার্থ সংগ্রহ' পত্রিকার মাধ্যমে স্মরণীয় হয়ে আছে। বাংলা সাহিত্যজগতে মধুসূদনকে পরিচিত করার জন্য 'বিবিধার্থ সংগ্রহ' উদ্যোগ গ্রহণ করেছিল। ছয় বৎসর যোগ্যতা সহকারে 'বিবিধার্থ সংগ্রহ' সম্পাদনের পর ১৮৬০ সালে রাজেন্দ্রলাল সম্পাদনা ভার পরিত্যাগ করেন।

আমরা সকলে জানি রবীন্দ্রনাথ ঠাকুরের 'গ্রন্থাগার' প্রবন্ধটি (১২৯২ বঙ্গাব্দের পৌষ সংখ্যায় 'বালক' পত্রিকায় প্রকাশিত) আজও লোকের কাছে আদরনীয় ও সমাদৃত। প্রবন্ধটি যদি গভীরভাবে বিশ্লেষণ করা যায় তাহলে দেখা যাবে রবীন্দ্রনাথ ঠাকুরের লেখা 'গ্রন্থাগার' প্রবন্ধটি রাজেন্দ্রলাল মিত্রের লেখা 'গ্রাম্য গ্রন্থালয়' প্রবন্ধটি দ্বারা অনেকখানি প্রভাবিত।

রাজেন্দ্রলালের আর একটি বড় কীর্তি বাংলা পরিভাষা নিয়ে ভাবনাচিন্তা। বাংলা ভাষায় বিভিন্ন বিষয়ের গ্রন্থাদি রচনা করতে হলে সর্বপ্রথম লেখক ও সম্পাদককে যে সমস্যার সম্মুখীন হতে হয় তা হলো পরিভাষার সমস্যা। রাজেন্দ্রলাল এই সমস্যা সমাধানে ব্যক্তিগতভাবে উদ্যোগ নিয়েছিলেন। ১৮৭৭ সালে রাজেন্দ্রলাল মিত্র বাংলা ভাষা তথা ভারতীয় ভাষার কিভাবে পারিভাষিক শব্দ রচনা করতে পারা যায় সে সম্বন্ধে যে মূল্যবান প্রবন্ধটি লেখেন তার নাম 'A Scheme for the rendering of European terms into the vernaculars of India.' রাজেন্দ্রলাল মিত্রের এই প্রবন্ধটি পরিভাষা সম্পর্কে লেখা প্রথম তাত্ত্বিক প্রবন্ধ।

রাজেন্দ্রলাল মিত্র বাঙলা পরিভাষা নিয়ে দীর্ঘদিন চিন্তাভাবনা করতেন তার প্রমাণ রাজেন্দ্রলাল মিত্রের লেখা প্রাকৃত ভূগোল অর্থাৎ ভূগোল অর্থাৎ ভূমন্ডলের নৈসর্গিকাবস্থা বর্ণনা বিষয়ক গ্রন্থ (১৮৫৪)। বাঙালির লেখা প্রথম ভূগোল। ভৌগোলিক পরিভাষার ব্যাপক ব্যবহারও তাঁর গ্রন্থেই প্রথম পরিলক্ষিত হয়। বইয়ের শেষে ভৌগোলিক পরিভাষার একটি তালিকাও তিনি সংযোজিত করেছিলেন।

১৮৭৬ সালে কলকাতা বিশ্ববিদ্যালয়ের প্রথম সম্মানসূচক ডিগ্রি দানের প্রথা প্রবর্তন করেন। ৩ জানুয়ারি একটি বিশেষ সমাবর্তন অনুষ্ঠানে প্রিন্স অফ ওয়েলসকে 'ডক্টর অফ ল' উপাধি প্রদান করা হয়। তার কয়েক সপ্তাহ পরেই সিন্ডিকেট চ্যান্সেলরের অনুমতিসহ মনিয়ার উইলিয়ামস, কৃষ্ণমোহন বন্দ্যোপাধ্যায় এবং রাজেন্দ্রলাল মিত্রকে 'ডক্টর অফ ল' উপাধি দানের সিদ্ধান্ত গ্রহণ করেন। ১৮৭৬ সালের ১১ মার্চ বার্ষিক সমাবর্তন অনুষ্ঠানে আর্থার হব হাউস এই তিনজন মনীষিকে উপাধি দান করেন এবং তাঁদের পালিত্য সম্বন্ধে উচ্ছ্বসিত প্রশংসা করেন।

১৮৭৮ সালের ৮ জানুয়ারি ভারত সরকার রাজেন্দ্রলাল মিত্রকে C.I.E এবং ১৮৮৮ সালে 'রাজা' উপাধিতে ভূষিত করেন। ১৮৮৫ সালে এশিয়াটিক সোসাইটির প্রথম ভারতীয় সভাপতি হিসেবে নির্বাচিত হন। এর আগে ১৮৮২ সালে সারস্বত সমাজের সভাপতি হিসেবে নির্বাচিত হয়েছিলেন।

১১ শ্রাবণ, ১২৯৮ (২৬ জুলাই, ১৮৯১) রবিবার রাত্রি ৯টার সময় কলকাতার ৮ নং মানিকতলার বাড়িতে রাজেন্দ্রলাল শেষ নিঃশ্বাস ত্যাগ করেন। রাজেন্দ্রলালের মৃত্যুর পর তাঁর স্মৃতিরক্ষার্থে অনুষ্ঠিত অজস্র সভা সমিতির বিবরণ সমসাময়িক সংবাদপত্রে পাওয়া যায়।

জ্ঞানবিজ্ঞানের চর্চায় রাজেন্দ্রলালের জীবনের অধিকাংশ সময় ব্যয়িত হয়েছে এবং তাঁর গবেষণার ফলই তাঁকে বিদ্বজ্জনমণ্ডলীতে ও গ্রন্থাগার জগতে চিরস্মরণীয় করে রাখবে।

[Invited article]

The Impact of the Covid-19 Pandemic on Library Users

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Abstract

Library services had always been rendered to users with ease and satisfaction before the emergence of corona virus in the year 2019. At the dawn of the year 2019, the world witnessed a paradigm shift in Her History. One of its kind in more than a century. That is what many scholars within the main stream could term the COVID-19 Era. This pandemic incepted unique challenges to the academia, leaving all the stakeholders of education system at a cross road, hence the question of to be or not to be? In a dramatic turn, the abrupt and unexpected outbreak of the pandemic forced the library professionals, to ascertain ways of working in a rapid time frame. Hence, in other to solve this bedeviling challenge to the advantage of the Library users, there was a shift to digital platform. Given the extrinsic challenges in providing services during a public health emergency, the purpose of this paper is to decipher the effects this era has caused in the academic activities of the Users of the Library and to profer solutions. However, one must not fail to acknowledge the positive impact of technology during this era and how technology became the academic saviour during the perod of lockdown. In the midst of the challenges brought by the Covid-19 pandemic, one could also witness a blessing in disguise, following the enthronement of technology in academic activities and other spheres of life. Hence, as much as the era is quite challenging, it has brought a revolution in the academia and moreso in the use of Library.

Keywords: COVID-19, Pandemic, Library, Library User

Introduction

The Covid-19 Pandemic has changed the face of the earth especially in the area of library services to the users.. It really changed the way people thought and acted over time. Moreso, it affected scholarships and the academia, teachers, students and schools are not left out in this struggle for healing as the entire academic sector was being left moribund for several months. The closing of schools and the emergence of online studies have left students and academic staff from developing countries like Nigeria reflecting on the effects of the COVID-19 on them (Davies,2019). Once this pandemic is over, another over thought would be how to survive during this period of post-pandemic lockdown without allowing the academic activities to dwindle, since it is becoming so glaring that the world is learning to live with the pandemic. The regrettable effects of this turbulent period to library Users and library activities is widely discussed today. It is quite obvious that Libraries around the world especially those of them in Africa, Gulf of Guinea are facing hard choices around which services to offer and how, ranging from minimal restrictions to full closure. One is not oblivious of the fact that governments themselves are taking different approaches, sometimes ordering the closure of all institutions, others indicating that life should continue as usual, and others simply leaving decisions up to library directors. But the fact remains that library activities must go on with or

without covid-19 pandemic, whether virtual or physical services one has to be covid-19 compliant to avoid further spread of the virus.

In any pandemic there are three dimensions to a librarian's role:

- a) To enhance the promotion of public health awareness through the creation and dissemination of information relating to preventive measures;
- b) To make sure that research team is supported through the provision of information regarding the latest developments, research and literature;
- c) To meet the core needs of regular library user

Library and COVID-19 Sensitization

It is certain that the COVID-19 pandemic is rapidly spreading to countries around the globe (Lipsitch, et. al, 2020). In this regard hence, Libraries, are responsible agents for ensuring public health awareness and the provision of up to date information to clinicians and managers. However, in the age of multiple information as ours, sources and diverse communication channels users do not always access the most valid information. It is estimated that there are about 11 different types of information sources ranging from valid information to untrusted or doubtful information (Ashrafi-Rizi, H., & Kazempour, 2019). Experts in the field of infectious diseases suggest that during a pandemic virtual communication provides a good way to inform patients who are in isolation wards (Hollander & Carr, 2020). Google Trends have become a useful tool for monitoring awareness about public health at both national and international levels. It shows a relationship between topics related to COVID-19 and search volumes (Hu & et, al, 2020). This is to highlight the role of the Library users not only within the academic sector but in the Health Sector. Hence, Librarians are saddled with the responsibility of being at Home with up to date data about novel researches around the Globe, to help Health agents confront the critical challenges of the moment.

The Effects of Lockdowns and Closing of Libraries

Different guidelines were set during the pandemic outbreak and to help curtail the further spread of COVID-19 in so many communities, many libraries canceled programs and other events and closed entirely for a period. The recent and in many cases abrupt changes to programs and hours may not be immediately detected and reflected in search engines. This gap in information lead to confusion and inconvenience for those who make use of online libraries. This leads one to talk about the Societal role of the frontline librarians during this period.

Frontline Librarians

This interesting theme emerges when talking about the societal role of librarians during crisis times. Here one asks how information professionals can play their role as a citizens within their extended role as librarians during hard times. One of the ways would be promoting reading habits and good reading material to help users in isolation. Another way may be to conduct information literacy sessions to prepare the nation against "infodemic" (spread of fake or misinformation). Another important roles of information professionals these days is to provide and promote soul satisfying

books for individual's well being. People are depressed and disappointed, this is a high time to heal their hearts and souls. All respondents had a consensus that the role of librarians becomes more crucial and demanding during emergency crisis with . Across the world people are taking extraordinary precautions to combat the dreadful situations created by COVID-19. (Heymann & Shindo, 2020). Now the countries are reopening lockdown gradually by implementing standard operating procedures issued by the governments because people need to learn how to live in this condition.

Barriers in physical to digital shift

Before the pandemic libraries were starting to move from physical to digital collections and services if not entirely then partially. Other organizations quickly responded to the digital shift. We can see that the present pandemic emergency not only changed our lifestyles but also learning patterns and practices. Like other sectors, libraries are also undergoing a paradigm shift from physical to digital. However, this shift is complex for developing countries.(Alavi-Moghaddam, 2020). Underdeveloped countries are facing numerous problems including finance, infrastructure, technology and restricted electronic collections. However their remains a strong barrier that emerged in the bid to draw a line between Physical presence in the use of Library to Digital emancipation, this leads to a development in the Digital Collects. (Atayero A, 2020).

Development of Digital Collections

In response to a question about how professionals responded to the digital shift, many libraries were in the process of developing digital collections and repositories when COVID-19 crisis. However, libraries were not completely prepared to take a digital shift, they were planning, in process or started thinking of Virtual Access. In addition, library users also lack digital literacy skills and are mostly living in less developed areas with poor internet connections.

Online Presence

The online classes were started in majority of universities and tertiary institutions as per government policy to engage youth in learning at this difficult time. The university libraries were impelled to present online their library resources to meet the information needs of the students and faculty who were engaged in online classes as well as the researchers. (Ashrafi-Rizi, H., & Kazempour, 2019). Also, this was the time to positively position the library by providing resources instead of closures.

Available resources and pandemic

Online provision of reference services is not a new concept, however, before the pandemic this was a less used service as people can visit physically. COVID-19 closure created more awareness about library online collection and services.

Available resources and services

In order to support online classes due to COVID-19 pandemic, academic libraries strove to fulfill the needs of its users through digital collections. In academic scenarios, a number of vendors and publishers also play their societal role by providing open access to some of their resources during the pandemic.

Library accessibility

The role of academic libraries becomes more challenging due to the closure of the education sector in this pandemic. Around the world libraries are facing hard choices in the provision of services or restrictions to partial or full closures.

The Emancipation of Digital Libraries

Digital libraries are services that have been developed and enhanced for years, but the recent Covid-19 pandemic has made many users aware of the service for the first time. Especially because of the closure of libraries, during the pandemic, additional efforts have been made to promote Digital Libraries and their services, as clearly visible and active libraries. Moreover, traditional libraries or those without many digital services are having the challenge of keeping their services active for their users virtually during this emergency, and librarians have been engaging in new work practices in order to achieve such objectives from their home offices.

Revitalizing the Role of Libraries in the Pandemic Era

Developing measures to revitalize the libraries in this era is of paramount importance to scholarship. Hence, all hands must be on Deck to re-institute the relevance of Libraries. It is a huge development that digital libraries have grown to great height in this moment, however, the role of the Manual Libraries must be relegated. Hence the following are steps that may enhance the revitalization of Libraries digital and Manual, that have been relegated over time, no thanks to the COVID era. (Davies,2019)

1. Transformation of Digital Societies

The federal governments in the developing countries like Nigeria, need to increase the investment and prioritize the digital transformation in their societies. The governments should take initiatives to improve the internet penetration particularly mobile internet penetration and bridge the digital divide among the villages, towns, and cities.

2. Rewriting of Library Policies

Libraries need to rewrite library policies and realign their practices for the new circumstances to serve the patrons and abide by social-distancing standards because COVID-19 has left us all in a state of shock. Libraries must develop operating procedures for staff and library users to abide by social distancing standards during and after the COVID-19 pandemic.

3. Re-prioritization of Library Budget

It also seems important to increase or re-prioritize library budgets to increase the e-resources and e-services. Libraries need to invest in getting new technologies, infrastructure, systems, and staff development to be able to serve their users in emerging online environments.

4. Rethinking the Role of University Libraries

University libraries also need to rethink their role particularly in context of online classes being offered by their universities. Libraries need to prepare their resources, services, systems, and staff to effectively help the online students. They need to offer off-campus access to all their e-resources as majority of university students in Nigeria live off-campus.

5. Renegotiate their Subscription Licenses

As regards the above, there is an urgent need to renegotiate their subscription licenses with the suppliers of online contents as well as increase the subscription particularly textbook material.

6. The need for Digitization initiatives

University libraries also need to initiate digitization initiatives and provide online access to contents in digital formats. It is particularly important for the information users of social sciences and humanities disciplines. Institutional research repositories may be a good start. Collaborative approach by cultivating the partnerships may ensure the long-term sustainability of such initiatives. It is also necessary that such initiatives should be formalized by the approval of competent authorities of the institution(s).

7. Review of web Presence

Libraries also need to review their web presence. It seems important to gauge the use of library portals and redesign/revamp the libraries webpages. Libraries also need to work to provide 'one-spot' access to all library resources and should try to buy or build new systems for such purposes.

8. Improving the information and digital literacy skills

Library leaders recognize their individual and collective roles in the society and communities. Libraries may play a role in improving the information and digital literacy skills of the users as well as countering fake news dilemma. Libraries may coordinate with faculty, academic units, or societal organizations to design and provide access to webpages, videos, tutorials, etc. in this regard. It is particularly important in the context of developing countries like Nigeria where information scarcity is a problem on one hand and dissemination of fake and unauthentic information on other.

Evaluation

The outbreak of the COVID-19 pandemic has necessitated sudden and radical changes in delivery of library services, as strict social distancing and lockdown measures were imposed in the early phases of the pandemic. The Internet and web technologies have created a new and unparallel environment and enabling the libraries to enhance and strengthen the research, teaching and learning even in this difficult and uncertain time. The concept and practice of providing remote access of e-resources by libraries is not new, but the user friendly way adopted by many libraries and the number of resources made available by them during the pandemic is exemplary. Considerable planning by the library

professionals will be required even after the open of educational campuses. It will be imperative to re-assess every existing service and re-design it in view of the government protocols to deal with the situation. Following strict social distancing measures visit to library could be restricted when institutes.

Conclusions

Libraries are passing through difficult times as the COVID-19 pandemic is forcing us to change our lifestyle and reshape our daily routines. The COVID-19 crisis has highlighted the importance of electronic resources and internet access as a key to education. However, the students who belong to low-income and geographically remote areas in Nigeria may lack or have limited access to the internet. Thus, online services will not benefit the students uniformly and shall widen the disparity. It is high time for the government to understand how to effectively harness the power of the internet and provide uninterrupted internet facility to entire country. (Keshavarz H. 2019)

The majority of the university libraries were physically closed in this pandemic but very much engaged with the users. However, few university libraries were offering print material lending, mainly to the faculty living at the university campus. Libraries revamped their web pages, reassigned resources, and adopted some ad-hoc strategies and robust online offerings. (Perappadan,2020). Mostly, they were communicating with users through phone, WhatsApp, and email. The university portal and other social media tools were the least used communication tools during pandemic. Library staff was working from home and there was a sense of over burden because of 24/7 connectivity and without any formal work policy addressing the new expectations and responsibilities. Staff was using Google Meet, WhatsApp and Zoom to communicate with each other.

Libraries face certain challenges and barriers in their transformation from physical to digital. The pandemic established the importance of e-resources and services, hence making a good case for libraries to get support from the university administration and to acquire more digital contents particularly related to text books.

Libraries also need to build infrastructure and systems to meet the needs of online classes and scale up the remote delivery of library resources and services. (Lipsitch, et. al, 2020). However, the high speed internet connectivity on user end will also be required to enhance to maximize the benefits of online contents and services.

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Chapter - II

University of Calcutta Library System – its glorious past and present

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Abstract

This paper highlights briefly the activities of University of Calcutta Library before 2000 and after 2000. The main focus is on how the digitization of resources is carried out in the digital library of the University of Calcutta. It gives innovative thoughts into which technological transformation has been implemented in the University Library for digitizing the documents. E-resources are the most useful sources for different types of library users. The University Library has built up digital libraries in all the campuses so that the students can mostly use the digitized resources from any campus. Theses have been digitized and full text is available. Through the implementing of the Digital Library system in the University Library it would enhance the University's education and research value. Both rare and valuable printed as well as digitized resources are available and highly used physically and also virtually.

Keywords: Digitisation, E-resources, Digital Library, Digitised Resources, University of Calcutta Library.

1 Introduction

Although the University of Calcutta was formally launched in 1857, University Library had no permanent building of its own in the early years. When the university have got a permanent home of its own in 1872 then the attempts were initiated for the setting up of a library. A new Assistant was appointed for the Library in 1886 and was given the designation of Assistant Librarian but Registrar continued to be responsible for the administration of the Library. In 1912, the Government of India gave financial assistance of one lakh of rupees for the building up of the library stock and agreed to place the University Library on its distribution list for the free supply of all Government publications. In 1913, Sir Asutosh Mookerjee, the then Vice-Chancellor of the Calcutta University, acknowledging the assistance made by the Government of India remarked “the improvements in the Library have been rendered practicable by means of the funds placed at the disposal of the University by the Government of India.”

The composition of the University of Calcutta Library has undergone periodic changes. At present the University of Calcutta Library system covers the Central Library, five campus libraries, forty

departmental libraries and libraries of the centres for advanced studies. The libraries are functioned over eight major campuses.

2. Objectives of the Paper

The present study aims to highlight the history of glorious past of the University of Calcutta Library and analyses the process of digitisation of the library documents at present. This paper portrays a study of the process of Digitisation conducted in the University Library, University of Calcutta. It provides innovative ideas how technology transfer has been implemented in the University Library.

3. Scenario of the University of Calcutta Library:

3.1 University Library Before 2000 –

In 1869 the nucleus was formed out of a small donation (Rs.5000) by Joykrishna Mukherje who expressed the hope to set up a University Library. In 1874-75 the Syndicate mentioned that a commencement should be made for organising a library stock. At that time Calcutta University Library collections functioned as supplementary to other existing libraries in Calcutta especially the newly founded Indian Museum Library. Law and Medicine as technical libraries in Calcutta already existed and English literature, Mental Philosophy and many other subjects were represented in several collections of books available to all or most of those who were likely to have recourse to a University Library. The authority recommended that the library fund, sum of Rs 9000 might be allotted among different subject heads in the following way:-

Physical subjects (including Botany and Zoology)Rs.3000
Oriental works (Sanskrit – 1500, Persian-500, Arabic-1000)Rs.3000
European ClassicsRs.3000

Total = Rs.9000	

The Calcutta University Act of 1904 provided a special clause which empowered the University to maintain libraries, Museums and Art Galleries. The entire library of Prof, R. Pischel of Berlin was purchased by the University Library in 1909. This was the first notable acquisition of the university library. His collection contained practically everything that had been published within the preceding thirty or forty years in Europe and North America in the field of Sanskrit, Prakrit, Pali, Philosophy and many other works of interest. As the University activities were expanding in all directions, in 1912 the Central Hall with its side compartments in the first storey as well as the large hall and its side rooms in the second floor were set apart to accommodate the rapidly expanding library collections. So 3 (Three) whole-time Assistants were appointed for the library by this time.

The University Library had originally given the services for the Resident Fellows only. Later on, the rules governing the usage of the Library were changed and incorporated Resident Registered Graduates and University teachers and scholars as well. When postgraduate departments were opened in 1917, the establishment of a circulation section for the use of the students was considered essential

and the first disbursement on account of books and periodicals was made as follows: Rs.18048 (Arts) and Rs.8393 (Science).

Postgraduate Lending Library (Arts) was situated in the ground floor of Darbhanga Building and then in Asutosh Building till 1935 when it was shifted to the top floor of the Asutosh building along with the collections of the University Library known as Maharaja Rameshwar Prosad Singh Library. The Library functioned in the old premises till Sunday, the 5th March 1967, i.e., at the top floor of the Asutosh Building. From 6th March 1967, it started functioning in the newly constructed ten-storey building, named the Centenary Building.

3.2 University Library after 2000 -

At present, the Calcutta University Library has a vast collection of more than ten lakh printed books. Besides books, the University library expanding over eight campuses, together possesses more than two lakh documents, including bound journals, Ph.D. theses, proceedings of conferences, reports, maps, standards, patents, manuscripts, CDROMs. The central, campus and departmental libraries serve the entire University community.

Computerization and networking of the University of Calcutta Library has been undertaken with the assistance of the INFLIBNET programme of the UGC. The University Library has started automation programme of the library activities using SOUL, versatile and user-friendly software from INFLIBNET Centre since 2003.

The Calcutta University Library has its own local Network connected with a server with terminals inside the library. Online Public Access Catalogue (OPAC) of the library has databases of books, journals, theses, dissertations, etc. In addition to the above, the University Library provides the services through more than 7,000 electronic journals and over 2 lakh electronic books for all its users in all the campuses under the UGC-INFONET programme. Recently the proposal for public library has been taken.

University library users can download the e-contents from all the campuses through the University Library website:-<https://www.caluniv.ac.in/libraries/library.html> . Now the digitised collections of full text materials have been accessible for free reading room from any part of the world.

3.3 List of Digitised Documents –

- Annual Reports (1951 - 2005)
- Bengali Journals
- Books published by the university of Calcutta [selective] (1907-2008)
- Convocation Address (1861 – 2018)
- CU Commission Reports (1917 - 1919)
- Departmental Journals [selective] (1911-2014)
- Doctoral Theses / Full-text PhD Theses (1960-2018)
- Financial Reports (1925 - 2006)
- Hundred years of University of Calcutta
- Journal of the Asiatic Society of Bengal (1835 - 1934)
- Lecture Archives (1815 - 2003)
- Medical Dissertations (1956-2005)
- Minutes of Senate, Syndicate and Council (1857 - 2014)

- Minutes of the Syndicate (1920 - 1943)
- Miscellaneous Reports (1918 - 2001)
- Old and rare books (1561 - 1870)
- Old Syllabus (1955 - 1977)
- PRS Dissertation (1951-2016)
- Rare/Famous paintings (1795 - 1921)
- Tagore Law Lectures (1870 - 1986)
- The Calcutta Review (1845 - 2007)
- The Modern Review (1907 - 1987)
- University Publications (1907 - 2008)
- University Acts (1942 - 1979)
- University Calendar (1858 - 1965)
- University Old Question Papers (1891 - 1980)
- University Regulations (1912 – 1966)

The University Library has posted an online catalogue in the University Website consisting of records of books, Ph.D. theses, medical dissertations, BNCC Collection, Peace Studies Collection and others. Now users from all over the world can get information on the collection of the University Library.

The immense popularity of the University Library is verified by its steady growth in the number of users. At present on an average daily one thousand users use the Central Library facilities. In order to promote awareness about the Library among its various stakeholders, the University Library organises exhibitions on various subjects on a regular basis.

The Central Library of this University has a large collection of rare books published from the 16th century onwards. The University has preserved this collection of old documents. Steps have been taken to digitise the rare books.

4. Requirements and methods for Digitisation of resources for the Digital Library system of the University:

4.1 Techniques and tools used:

High-resolution Scanner and Optical Character Recognition (OCR) are used for digitisation of documents. The scanners are customized and used as per requirement of the size of the documents. The resolution of the scanned documents is 300 dpi.

Optical character recognition (OCR) software works with the scanner to convert printed characters into digital text, allowing one to search for or edit the document in a word processing program.

There are different types of scanners like Document scanners or Book scanners which are specifically used in Libraries. Other types of scanners are Art scanners, Automatic scanners, Object/herbarium scanners, X-ray/MRI film scanners, wide format scanners, large flatbed scanners, Film/photo/TP scanners.

Scanners usually come with software, such as Adobe's Photoshop product, that lets you resize and otherwise modify a captured image. Scanners usually attach to your personal computer with a Small

Computer System Interface (SCSI). An application such as Photoshop uses the TWAIN program to read in the image.

The following figure-1 shows the workflow of the Digitisation process –

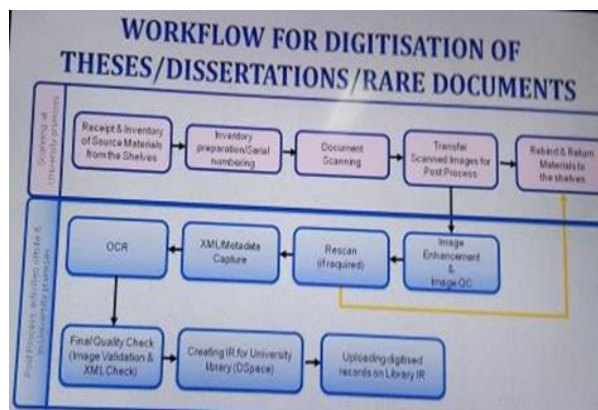


Figure 1 - Workflow of Digitization process

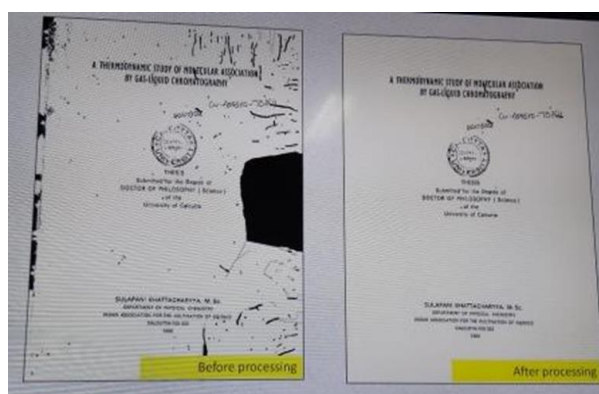


Figure 2 'Before and After Scanned' images

The figures- 2 shows how image of the document looks like 'Before processing' and 'After Processing' with the Scanner.

International Standard Image enhancement techniques were adopted to process scanned images, such as image clean up, border removal, cropping, orientation, de-skewing, de-speckling, white levelling and image QC (Quality Control) etc.

4.2 Software used:

Abbyy is used for OCR and Adobe Acrobat Reader for PDFs. ABBYY FineReader OCR technology allows to replicate natural or human-like character recognition of printed texts.

OCR is a technology that enables the Abbyy software to convert different types of documents, such as scanned paper documents, PDF files or images captured by a digital camera into editable and searchable data.

FineReader OCR program recognises the text. First, the program analyses the structure of document image. It divides the page into elements such as blocks of texts, tables, images. The lines are divided into words and then - into characters. Once the characters have been singled out, the program

compares them with a set of pattern images. The programme forms numerous hypotheses about what this character is. Based on these hypotheses the program analyses different variants of breakage of lines into words and words into characters. After processing a huge number of such hypotheses, the program finally makes decision, presenting the user with recognised text.

- The operating system used for ERM is Linux.
- Theses– Almost 11,533 theses have been digitised and full text is available.
- The Shodhganga@INFLIBNET Centre supplies a platform for research students to deposit their Ph.D. theses and make them available to the entire scholarly community through open access. The repository can capture, index, store, disseminate and preserve ETDs (Electronic Theses and Dissertations) submitted by the researchers.
- University of Calcutta has also contributed digitised theses to Shodhganga.

4.3 Manpower used for Digitisation:

Digitisation is done by IT professionals. Outsourcing is done from Proquest and Informetics. The University Library personnels also take part in this process.

Managers supervise the project and bring in specialist knowledge and expertise.

Training for the library personnel and equipment like High-resolution Scanner and Optical Character Recognition (OCR) are also provided.

The following figures are showing the Document and Book scanners used in the Library of Calcutta University –



Fig.3 Book Scanner with a book in Flat Mode



Fig. 4 Book Scanner with a Book in V or Folder mode

5. Process of Scanning:

The document or book to be scanned is placed in the scanner in flat or folder mode as required and then the resolution (dpi) is selected from Menu button of the scanner and then Scan mode button is pressed.

The yellowish old colour of the book or document can be removed totally so that it can be clearly read. After pressing the scan mode button a laser beam scans the page displayed and sends the image to the monitor screen. After that, colour enhancement is applied and a clear final image is obtained.

After scanning, the image is processed through OCR to obtain the final text.

In the process of digitisation at first conservation of the document is to be done, then preservation and finally digitisation of that document.

Approximately 500 to 1000 scans is the actual output and 1000 images can be obtained in 10 hours.

The various types of digitisation software available in the market are – Silverfast Ai Studio 8, Book Capturing Software, News Clip Software, Csoft Raster to Vector, EDMS-Archiflow and Indian Language OCR.

6. Objectives:

The main objective of the digital library is digitisation of old journals, rare books, and theses.

Digitisations of the back issues of journals are in process.

The main focus is on how electronic resource management is functioned through the digitisation of resources in the digital library of University of Calcutta.

The purpose of digitisation is to serve the students and research scholars in their field of study and help them to retrieve information faster and easier from the e-resources repository.

The digitised documents can be accessed within the University Campuses only. Presently these documents are available from outside campus.

7. Benefits of Digitisation:

The Digitisation of the Library is providing some benefits to the users while accessing e-resources, which are as follows–

- It allows remote access of E-Resources round the clock.
- It can be used by multiple users simultaneously anywhere.
- Provide timely and quick access to the documents.
- It allows interaction between authors/publishers and users.
- Supports different searching options.
- It can support multi-media applications.
- Requires less storage space.
- Eco-friendly
- Saves the cost of printing and postage
- It can be easily merged with alerting service given by publishers
- It provides full-text searching.
- Problems of missing issues can be solved easily.
- Login / Password or IP based access can prevent illegal access.
- Easy to get translated into many languages
- Do not require physical processing for access.

It is available as soon as the print version is uploaded on the Internet. The Electronic version is relatively cheaper and user-friendly than the print version. Journal articles can be searched through search methods by titles, author, subject keywords, free-text search, Boolean search etc. It does not require physical processing and handling. Economical maintenance of archival files can be done in the form of CD-ROM and hard disk drive. Library users are allowed to give online feedback on the articles to the author through e-mail. Those articles which are not freely available can be obtained from the author directly by sending an e-mail. E-Contents have copyright protection and authenticity of the content is preserved. Taking into view the 5th Law of Library Science as stated by Dr S.R. Ranganathan, E-resources save the library space and allow more accommodation of digital as well as print resources.

8. Target Audience:

The digital library is used by students, research scholars, teachers, LIS professionals, and visitors from other institutes or organisations.

An average of 100 to 150 users come to the library for accessing e-resources daily in the central library. At present on an average more or less one thousand users use the Digital Library facilities through the internet. Now users from across the globe can avail the information on the collection of the University Library.

9. Conclusion:

The Digital Library system of the University will improve the quality of University's education and research value, and it will motivate the students in their educational training period. There has been

substantial growth in e-resources. More e-resources are being added to the Institutional Repository. The Digital Library is used as a platform to motivate students to learn new paradigms.

The University recruits and employs a suitably qualified IT professional, - who then works with new technical skills, specialised expertise and knowledge of digitisation to transfer the document resources into electronic form.

Major challenges are faced by the photocopy section of the library. Here, 'disruptive innovation', a term of art coined by Clayton Christensen, refers to the introduction of a product (e-resources) or service into an established industry (the library) that performs better and generally, at a lower cost than existing offerings, thereby displacing the market leaders in that particular market space of photocopy section and transforming the library. The library users prefer reading digitised documents over photocopying the documents.

From the user point of view, there are vast collections for the scholars of different fields of study in print form as well as digital form. Most of the Departmental Libraries have rare and valuable books and printed journals which are frequently used by the scholars. So the University library provides immense facilities through printed materials side by side digitised documents to its members as well as outsiders within the country and abroad also both physically and virtually.

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Library Services of Science and Technology Universities in Bangladesh – A case study

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Abstract

This paper studies the present state of Science and Technology (S&T) university library services of Bangladesh. The objectives of the present study are: (A) exploring the library services, (B) identifying the types of library services, (C) comparing the library services among different universities, and (D) evaluate the value added services. This is a pilot study that covered 23 S&T university libraries of Bangladesh which include - 15 public S&T universities and 8 private S&T universities which are now functioning in Bangladesh. The library services are divided into three categories namely conventional services, modern ICT application to library services, and value added services. The result of the analysis of services revealed the following facts: All the public S&T university libraries and 38% of the private S&T university libraries are providing conventional services. The private S&T university libraries are found to be striving to match up the services of public S&T university libraries. The results of the study identifies prominent leadership of public S&T university libraries in service design and introduction of modern ICT based services.

Keywords: Library services, E-resources, UDL, LiCoB, Library Consortia

1.0 Introduction

University library services should be dynamic to support learning, teaching and research processes altogether. These services can be provided more efficiently and effectively using Information Communication Technology (ICT). The services provided by a university library reflects the objectives and priorities of that university. Now a days, university libraries extends quality services to its users through ICT applications.

The blessings of modern technology have touched library activities across the world and libraries of Bangladesh could not be devoid of such cutting edge facilities. The present study attempts to explore the services extended by the Science and Technology (S&T) universities of Bangladesh so as to identify the opportunities to design and develop better library services.

2.0 Objectives

This study has the following objectives:

1. Explore library services rendered in the S&T university libraries in Bangladesh.
2. Identify the types of services provided by the S&T university libraries in Bangladesh.
3. Compare library services to ascertain the priority areas of S&T universities in Bangladesh;
4. Evaluate the value added services offered by the S&T university libraries in Bangladesh.

3.0 Scope

The present study aims to explore the library services of S&T universities of Bangladesh which is a Pilot Study of a larger project of S&T university library infrastructure study of Bangladesh. The present study covers library services provided by the following 23 S&T university libraries in Bangladesh:

3.1 Public Universities:

1. Patuakhali Science And Technology University (PSTU),
2. Hajee Mohammad Danesh Science & Technology University (HSTU),
3. Bangladesh University of Engineering & Technology (BUET),
4. Khulna University of Engineering and Technology (KUET),
5. Rajshahi University of Engineering & Technology (RUET),
6. Chittagong University of Engineering & Technology (CUET),
7. Dhaka University of Engineering & Technology (DUET),
8. Pabna University of Science and Technology (PUST),
9. Jessore University of Science & Technology (JUST),
10. Bangabandhu Sheikh Mujibur Rahman Science & Technology University (BSMRSTU),
11. Noakhali Science & Technology University (NSTU),
12. Mawlana Bhashani Science & Technology University (MBSTU),
13. Rangamati Science and Technology University (RMSTU),
14. Shahjalal University of Science & Technology (SUST),
15. Bangladesh Uuniversity of Textile (BUTEX)

3.2 Private Universities:

16. Ahsanullah University of Science and Technology (AUST),
17. Atish Dipankar University of Science & Technology (ADUST),
18. University of Science & Technology Chittagong (USTC),

19. Shanto-Mariam University of Creative Technology (SMUCT),
20. Bangladesh University of Business and Technology (BUBT) ,
21. Pundra University of Science and Technology(PUST), Bogra,
22. Rajshahi Science & Technology University (RSTU), Natore,
23. Z.H Sikder University of Science & Technology (ZHSUST).

4.0 Methodology

4.1 Selection of Libraries

This pilot study of exploring library services of S&T university libraries of Bangladesh was originally taken up during the year 2015. A total of 23 S&T universities including 15 public S&T universities and eight S&T private universities were found to be operational in the year 2015. Therefore, data has been collected from all the 23 S&T universities of Bangladesh which were operational during the year 2015.

4.2 Collection of Data

The data has been collected from the selected libraries listed above. An open ended questionnaire has been designed to collect data directly from the libraries for the present study. The librarians of the concerned libraries were requested to fill the open ended questionnaire of the present study.

4.3 Analysis of Data

The data collected through the open ended questionnaire is stored in a database designed for the present study for statistical analysis.

5.0 Analysis of Data and Representation of Results

5.1 Conventional Services of S&T University Libraries

The Table 1 identifies a totality of 11 conventional services which are provided by the S&T university libraries of Bangladesh:

Sl. No.	Conventional Services
1	Circulation
2	Cataloguing
3	Classification
4	Reading Room
5	Newspaper services
6	Access to periodical
7	Journal services
8	Reference services
9	Archival facility
10	Documentation service
11	Reprographic service

Table 1: Totality of Conventional Services

5.2 Comparative Analysis of Conventional Services

The comparative analysis of the conventional services provided by the S&T university libraries of Bangladesh has been presented in Table 2:

Sl. No.	Conventional Services	No. of public S&T university	Remark	No. of Private S&T university	Remark
1	Circulation	15	100%	8	100%
2	Cataloguing	15	100%	5	63%
3	Classification	15	100%	5	63%
4	Reading Room	15	100%	8	100%
5	Newspaper services	15	100%	8	100%
6	Access to periodical	11	73%	5	63%
7	Journal services	12	80%	3	38%
8	Reference services	12	80%	3	38%
9	Archival facility	7	47%	0	0%
10	Documentation service	10	67%	2	25%
11	Reprographic service	13	87%	3	38%

Table 2: Conventional Services of S & T University Libraries

This is evident from the Table 2 that all of the 15 numbers of public S&T university libraries are providing all of the five conventional services namely – Circulation Service, Cataloguing Service, Classification Service, Reading Room Service and Newspaper Service. In contrary it is observed that three of the conventional services namely - Circulation Service, Reading Room Service and Newspaper Service are provided by all of the private S&T university libraries.

This is interesting to mention about private S&T university libraries that not even a single library has archival facility and not even half of these libraries are providing reprography services.

5.3 Modern ICT based Services of S&T University Libraries

The analysis revealed that about 65% of the libraries having access to e-books and e-journals are of public S&T universities.

About 13% of the public S&T university libraries have taken the Institutional Repository (IR) initiatives viz. BUET, KUET and SUST) in contrary this service is completely absent in any of the private S&T university libraries.

It is found that 22% automated circulation services were provided in public S&T universities using LMS and 17% barcode based circulation and 30% of the public S&T university libraries communicate with e-mailing but these services are not practiced in private university libraries of S&T yet.

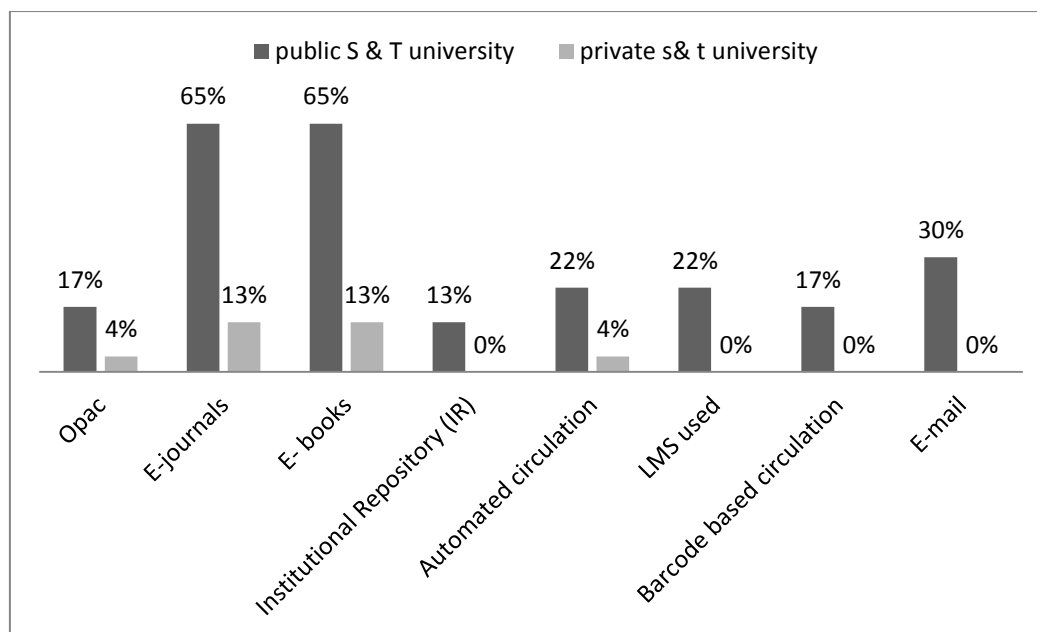


Fig 1: Modern ICT based Services of S&T University Libraries

5.4. Value Added Services of S&T University Libraries

Four of the value added library services are analyzed in the following Table 3:

Sl. No.	Value Added Services	No. of Public S&T universities	Remarks	No. of Private S&T universities	Remarks
1	SMS alert	4	17%	2	9%
2	WhatsApp group	2	9%	1	4%
3	Social media networking	3	13%	0	0%
4	RFID based circulation	3	13%	0	0%

Table 3: Value Added Services of S&T University Libraries

The result of the analysis of data revealed that about 17% of the public S&T university libraries have SMS alert service, 9% are in WhatsApp group and 13% involved in social media networking & RFID based circulation while these services are found very little viz. 9% for SMS alert service, 4% for WhatsApp group only in private S&T university libraries. But social media networking and RFID based services are completely absent in private S&T university libraries.

5.5 Status of Research Advisory Services

It is also observed that regarding research advisory services, public S&T university libraries have used 44% plagiarism checking software and 33% institutional repository software. But it is totally absent in private S&T university libraries as shown in Fig 4.

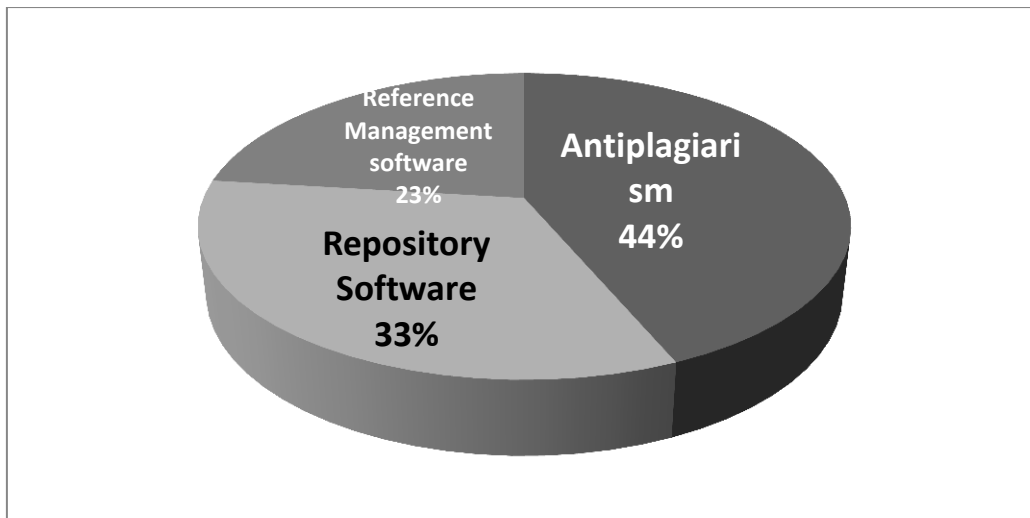


Fig 4: Research Advisory Services of S&T University Libraries

6.0 Discussion

The analysis of data revealed that all the S&T university libraries of Bangladesh are not offering every essential conventional services. This is important to mention that classification of documents in a library should be mandatory for every library under study. The same remark may be implied for Cataloguing Service. The study found that all Public S&T university libraries are providing Circulation Service, Cataloguing Service, Classification Service, Reading Room Service and Newspaper Service while only Circulation Service, Reading Room Service and Newspaper Service are provided by all of the private S&T university libraries. But only 22% of the private S&T university libraries provide cataloguing and classification services.

Reprographic service is the most important conventional service which has great demand amongst the users that has not been emphasized by most of the private S&T university libraries. Initiatives for Archival Services by the private S&T university libraries should be taken up.

Although the value added services has been started by a few of the public S&T university libraries, the S&T university library fraternity of Bangladesh must ensure the introduction of the conventional services in all of the libraries.

From the above discussion, it is evident that the public S&T university libraries has initiated different library services and developed modern ICT based services which shows silver lining for a better tomorrow of librarianship in Bangladesh. The private S&T university libraries should be forced to follow the initiatives of the public S&T university libraries.

7.0 Conclusion

The present study revealed the present scenario of the services of S&T university libraries in Bangladesh. The result of the analysis of data exhibits disproportionate library services by private S&T universities in comparison to public S&T universities in Bangladesh. Although the public S&T university libraries are required to design and develop more services still they are performing better than the private S&T university libraries. So the concerned authorities should take necessary steps to

ensure a list of minimum essential services to be provided by all the S&T university libraries so as to bring harmony and uniformity in S&T education in Bangladesh.

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Collection Assessment Techniques and Tools: Collection-Centered Approach

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Abstract

In today's competitive world where library user's demands are becoming more and more diverse and intense, satisfying them with budget and space constraints becomes a challenge. While collection development libraries may fail in the trap of losing their path from the mission statement while entertaining the ever changing varied user demands. Collection Assessment safeguards the libraries from diverting from their main focus. There are quantitative and qualitative techniques for Collection Assessment. A range of collection assessment tools are available for every technique. This paper discusses various collection-centered approach collection assessment tools.

Keywords: Collection Assessment, Collection Development, Library Collection

What is Collection Assessment?

The *Guidelines for Collection Development* published by the American Library Association states that "Every library collection should be established for a definite purpose (Perkins, 1979). As per the fifth law proposed by Ranganathan, "The library is a growing organism" (Ranganathan, 1931). With time, the objectives and needs of both the parent organization and the library users vary. The purpose and scope of the library collection must change accordingly. The librarians need to periodically assess whether the collection continues to adhere to the objectives as stated in a collection development policy or more generally, the original purpose of the collection. If a library finds that the collection no longer does so, the library must determine what steps must be taken to remedy any shortcomings.

Collection Assessment is nothing but knowing what is in a library's collection and how well those resources meet their intended purpose. American Library Association's *Guide to Cooperative Collection Development* (1994) defines Collection Assessment as "The process of assessing the quality of a library collection, usually in terms of specific objectives, or the needs of the target group of that particular collection; one aspect of collection development." As per Peggy Johnson, "The aim of assessment is to determine how well the collection supports the goals, needs, and mission of the library or parent organization (Johnson, 2011).

It is an essential part of collection development and management. While maintaining the library collection growth, the Collection Developer and or the Librarian must keep in check whether the scope of the collection still meets the needs of the institution and whether the library collection is still useful to the library's users? These are fundamental questions that need to be addressed by libraries in an ongoing manner. Collection Assessment refers to the range of activities related to determining

the quality and utility of library collections or specific collections within a library, given the stated purpose of the collection and needs of the community the library serves.

In recent years, with collections budgets stretched to accommodate multiple formats and with the proliferation of electronic resources, collection assessment is critical to establishing priorities for building collections.

Purpose of Collection Assessment:

Collection Development is an essential activity of any library as it

1. Retains the identity of the Collection
2. Aids to develop purposeful collection
3. Assists in maintaining diversity and proportional growth of the collection
4. Gauges gaps in collection
5. Differentiates the active and dead collection
6. Helps to plan appropriate promotional activities
7. Maximises fund utilization
8. Provides data for library budget Planning
9. Guides about arrangement of collection
10. Determines the strengths and weaknesses of the library's collections
11. Facilitates promotional and remedial activities of the library.
12. Aids in defining and evaluating user activities
13. Offers required data for accreditation and assessment of the library
14. Improvises library services
15. Promotes user satisfaction

Techniques of Collection Assessment:

Two major approaches can be undertaken while assessing any library collection. First approach can be based on the collection itself to determine whether the materials support the institution's needs or if the resources are in scope, given the subject matter (Collection Centered Approach). The other approach focuses on assessment of the collection from the perspective of usability or how the collection is being utilized by the library's users. (User Centered Approach). Both these approaches can be assessed further in detail either quantitatively or qualitatively.

Collection-Centered Approach:

Collection-centered assessment projects focus on the content of the collections to determine the quality and appropriateness of the materials to meet the needs of the library or stated goals and objectives of the institution. As per Credaro (2001), "the success of any method of assessment depends on how well it meets the goals of the evaluation". The objective of Collection-centered assessment projects are mainly

- To analyze the collection by using circulation and in-house statistics
- To evaluate the strength of the collection using a gap analysis (what isn't in the collection) or comparison to other library collection (what does the other have that we don't)

- To assess the age and/or physical condition of the collection

It can be done in a number of ways. A few based on Peggy Johnson's "Best Practices in Collection Assessment for the 21st Century", 2006 are depicted in Table 1 below:

<u>Quantitative</u>	<u>Qualitative</u>
• Collection size and growth	• List checking
• Materials budget size and growth	• Verification studies
• Collection size standards and formulas	• Citation analysis
• Expenditures by Subject	• Direct collection checking
• Ratios	• Collection mapping (assigning conspectus levels)

Table 1: Collection Centered Techniques of Collection Assessment

Tools of Collection Assessment:

Library collection can be assessed quantitatively using a variety of tools available in the library, usually, in the library's system. Some of them are as follows:

1. Circulation statistics
2. Reference counter usage statistics
3. Cost statistics
4. Age analysis
5. Document delivery statistics
6. Citation analysis
7. Shelf Availability Studies
8. Collection comparisons
9. Log analysis
10. Collections Growth

1. Circulation Statistics

Circulation statistics is the basic tool used for Collection Assessment. Circulation statistics offers a great measure of performance for the library collection. It can be used to analyse collection use (Subject wise), collection in demand, collection which needs to be promoted, collection which is in demand for a particular period, dead collection, etc. This facilitates weeding decisions and identifies which items might be moved to more prominent area or storage areas. Circulation statistics also depicts average issue-return of different types of collection by different category of library users over a given time period. For example, during exam periods circulation is at peak but at that period circulation of recreational collection is low, Circulation rate of users from Project based courses is higher compared to Non- Project based courses users. Such inferences can be drawn easily with the help of circulation Statistics. It can also be used to identify which publishers' materials have the highest or lowest use. If the library has an integrated library system (ILS), circulation, statistics can be very easy to gather quickly and analyze. With ILS, library can generate various kinds of reports and generate circulation statistics on a regular basis. Libraries which do not have integrated library system (ILS) needs to prepare circulation statistics manually at the time of assessment. However, certain

mechanisms like maintain daily circulation records, measuring subject wise or user category wise circulation is must for collection assessment (Wiggins & Others, 2010).

2. Reference Counter Usage Statistics

Along with issue return statistics, libraries should maintain records of books used daily at reference counter as it demonstrates the actual handling of the book by the user. The library can find out the details about for what purpose the book was referred, whether it satisfied the user. Reference counter usage data offer first hand information about the usage as it can be verified with the user then and there. This data combined with circulation statistics for reveals useful collection assessment outcomes for a chosen individual title.

3. Cost Statistics

Cost statistics is very important to plan and maintain library budget and offering cost beneficial services. Cost analysis for periodicals defines the inflation rates. Comparison between print and online subscription rates helps libraries to choose the preferable option. Subject wise and publisher wise cost statistics of books provides average cost of particular subject book. It is important to analyze cost because in some disciplines books have a higher publisher list price. E.g. books of Science discipline are comparatively expensive than Social Sciences books.

Cost statistics along with circulation statistics helps to decide the titles, subjects and publishers in demand. One can to divert the collection funds to more useful collection. Cost statistics aids to measure trend of rate of inflation for different publishers and disciplines, and forecast future required budget hike. Thus cost statistics helps for better forecasting, budget negotiations and planning.

4. Age Analysis

Age of library items is a standard and age old component of many approaches to weeding library collections, Book collections may be assessed by analyzing publication dates and date of purchase, Age analysis is helpful for assessing books for which contents are revised on a regular basis such as course books. It also reveals the collection needs to be preserved (North Texas Regional Library System, n. d.).

5. Document Delivery Statistics

Examining document delivery service (DDS) statistics or Inter Library Loan statistics offer a way to determine if there are research needs not being met by the library's collection. Like Reference counter usage statistics, Document Delivery Statistics can offer first hand data. Library can collate data for ILL use by user type, such as faculty, graduate student, and undergraduate students. Libraries can also gather numbers of ILL by institutional department, or statistics for specific book titles or authors that have been requested. ILL statistics illustrate gaps in the current collection and aids librarians to select required books.

6. Citation Analysis

Citation analysis is a unique type of collection assessment tool. By analyzing the publishing trends of faculty, and which titles are being cited, the library can identify materials that faculty are using in

their publications. This not only demonstrates use but can also help identify publishing trends in disciplines (Smith, 2003).

7. Shelf Availability Studies

Shelf Availability Studies are meant to study how users access and retrieve the library collection. Basically, such assessment analyses whether users are able to locate items in the collection. These studies reveal problems faced by users while retrieving required material. These problems might be of various natures – lack of awareness about how to use library catalogue, where the collection is located, errors in catalogue entry, wrong or delayed shelving, unsuitable library timings, lack of help available or ambiguous library signage. This type of study can be done using different methods like interview, observations and surveys.

8. Collection Comparison

Collection Comparison is one of the most common collection assessment tools. In which a library's collection is compared with another library, usually peer libraries but not necessarily so. Such assessments are usually conducted while building a new collection in a specific discipline or for a new course. It is also used to identify gaps in an existing collection. It was a time-consuming and tedious method before the introduction of information communication technology tools in libraries. However, with the availability of software tools such as OCLC's WorldCat Collection Analysis, such assessments became easy and efficient.

List-checking is one of the more traditional and most commonly used collection comparison techniques where a library's current holdings are compared other library's collection list. The other lists which one can compare can be subject bibliographies developed by other libraries, publisher's catalogue, list compiled by professional associations/experts, recommended reading lists, etc. (Crawley-Low, 2002).

One additional collection comparison method is to compare a collection with established collection standards. Various standards have been created by accrediting agencies, professional associations and other organizations. For example, University Grants Commission (UGC) and All India Council for Technical Education (AICTE) standards have recommended certain library collection standards for starting a new college/course. The libraries have to match these standards.

9. Log Analysis

Book collections may be assessed by analyzing transaction logs stored in the library's online catalog, using a variety of searches, including subject keyword, title and author. A log analysis can also be extremely helpful to identify research trends at the institution or by discipline.

10. Collection Growth

Libraries should periodically conduct collection assessment to measure collection growth in a particular subject or a particular format of material in a given period of time. It reveals whether the collection is growing proportionally or skewed in a particular subject or format over a given time period. Library professionals can analyse and find out the reasons behind the same and can take

necessary recovery actions. Such studies conducted periodically can save the library resources and avoid the library collection to go haywire from the mission of the library and its parent organization.

Conclusion

In today's world, information became a commodity. Libraries which were previously considered as service providing organization became part of the service industry. The management and other stakeholders began questioning the purpose, feasibility and utility of library and its services vis-a-vis spent resources. Libraries have to justify their existence and relevance now and then. The Collection assessment aims to determine how well the collection supports the goals, needs, and mission of the library or parent organization. Collection assessment techniques and tools facilitate library administrators to justify the ROI (Return on Investment) value of their collection effectively.

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Indigenous Knowledge of Musical Instruments of Mizo Tribe

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Abstract

Indigenous Knowledge can be said as a special knowledge which consists of a knowledge of a particular society or culture. It can also be called as traditional knowledge, local knowledge and inhabitant's knowledge. Mostly, indigenous knowledge has been passed on from one generation to another generation usually by word of mouth as it was difficult or impossible to be written down during the olden days. It has been used as the main basis or guide for an indigenous agricultural work, food preparation and other wide range of activities in order to preserve and continue the practices of a particular culture or society. The application of indigenous knowledge is greatly influenced by the culture.

Majority of the indigenous knowledge perish due to the encroachment of hi-tech knowledge. In order to preserve the traditional knowledge, documenting and preserving those old and useful literature is needed. The documentation of indigenous knowledge is needed to mark the Intellectual Property Right issues. The scope of this paper is limited to the indigenous knowledge of musical instruments of Mizo tribe. This paper will reflect how the Mizo musical instruments were produced and how libraries can be useful in documenting and preserving the indigenous knowledge of Mizo tribe.

Keywords: Indigenous Knowledge, Mizo, Musical Instruments

Introduction

Indigenous knowledge is important as it brings benefits to the indigenous people who have owned and lived with it. Indigenous communities around the world are constantly struggling to maintain their rights, their traditions and their knowledge. For indigenous people the land is the source of their life, a gift received from the creator that nourishes, supports and teaches. Indigenous knowledge is considered as the main source of income and can be considered as their main resource to contribute in the means for their survival in different ways such as producing food and maintenance of their own livelihood (Gorjestani, Nicolas, 2000).

Indigenous People

Indigenous People are those people who occupy a land before it was subjugated by colonial societies and who consider themselves recognizable from the societies currently governing their territories. Indigenous peoples are culturally prominent societies and communities.

The people living in Mizoram are almost entirely called the Scheduled Tribes and they are loosely called Mizo, which simply means "the highlanders". There are three most commonly known tribes among the Mizo people who were called as the Kukis, Pawis and Lakhers. Most of the Mizos are

speaking in their own dialect. Mizo Tawng and English are the official languages of the Mizo people. As the Mizo people does not have script of their own, they use the Roman Alphabets. As such, the origin of the word 'Mizo' is not known. Music and dance are important in Mizo cultural life which is associated with many festivals. The Mizos are blessed with a precious talent in music and they are often called as the “Song bird of the East”. They celebrated their festivals along with lively music, songs and fascinating vibrant dances (Deryck O. Lodrick, 2019).

Indigenous Knowledge

Local and indigenous knowledge are mainly the sources of knowledge which helps a particular society or culture to have the understanding about the skills or the way of practices which was developed by their ancestral knowledge with long histories of their own interaction with their natural surroundings. Local knowledge is useful in decision-making about their basic ways of maintaining their everyday ways of living. This knowledge is essential in order to preserve their language, their ritual practices, their ways of using the resources and interaction with other society (UNESCO, 2019).

Mizo Musical Instruments

From ancient time, the Mizo people have different kinds of musical instruments even though the date of the origin have not known. The traditional musical instruments of Mizo are very simple. Mizo musical instruments can be divided into three broad categories such as: Beating or Striking Instruments, Wind Instruments and String Instruments.

Beating or Striking Instruments

Khuang (Drum): Khuang (Drum) is made from hollow tree and both of the sides are wrapped with animal skin. It has different sizes and different names are given in accordance to their sizes. The big khuang is known as Khuangpui (Big Drum), the middle khuang is known as Khuanglai and the small khuang is known as Khuangte (Little Drum). The little drum which is made in a longer size comparing to the original size is known as Kawlkhuang. In Mizo social and religious life Khuang are considered to be the most important musical instrument and it is the most traditional musical instrument which is popularly used in the Mizo society. In every church service, it can be said that khuang is a must in their religious function.

Dar (Gong): Another musical instrument of Mizo is Dar (Gong) which is made from brass in different sizes having different names such as Darkhuang, Darbu, Darmang.

Darkhuang: Darkhuang is the biggest gong which considered one of the most valuable musical instruments which is played on all the Mizo society occasion. Before, it was sometimes used as a means of trade instead of money and can also be used as the price of the daughter.

Darbu: Darbu is made up of three different brass-gongs which are of different sizes and it produces three musical notes which can be played by three experts. One expert person can play the gong by himself. When this type of musical instrument is to be played by one person, the one who is playing tied the gongs on both sides of his body with rope and he hung one gong with his left hand in which the gong produces three different rhythmic notes by beating the gong side by side. The gong is most popularly used on Mizo traditional dance called Khuallam and can be also used in other traditional dances.

Darmang: The smallest type of gong is called Darmang. It is to be played with other gongs and is used for keeping the timing in different traditional dances.

Bengbung: Bengbung is played by girls. It is made up of flat wooden bars which produces three musical notations. Its design has some similarities with Xylophone.

Talhkhuang: Talhkhuang is a much bigger musical instrument in comparison to Bengbung. In the process of making Talhkhuang three wooden pieces were carved out. It is played with a wooden hammer. In the olden times, when the village chief put up a memorial stone this instrument was played. It was also believed that this musical instrument is never taken inside the house of the Mizos in the olden times.

Seki: Seki is made from the horn of the local Mithun (Sial). The two hollow horns are beaten together for maintain timing in Mizo traditional dances. It is commonly used on the different types of group dances of the Mizo people.

Wind Instruments

Rawchhem: Rawchhem is similar with that of the Scottish "Bagpiper". This type of musical instrument is formed when nine small bamboo pipes of different sizes and lengths which are then inserted to the dried pumpkin. One of the pipes should be used as a mouth piece. Small portions of the pipes are struck out which can produce sound when the instrument is blown. This musical instrument is played when the musician blows in to the mouth piece, and when he started controlling the holes with his fingers, he can then produce various musical notes.

Tumphit: Tumphit is made out of three small bamboos which are of different sizes and length which are tied together with a string. The upper part of the small bamboo is then cut open in order to create different notes at each tube at different lengths. The use of this type musical instrument was during ritual ceremonies.

Mautawtawrawt: Tawtawrawt is called as a Bamboo trumpet. In order to make this trumpet bamboo tubes are cut into different sizes. The smaller bamboo tube is then inserted to the bigger tube and so on. The last tube was then made on the size of a forefinger which is made in order to blow the trumpet. The whole length of the tube can be more than five feet.

Phenglawng: It is a kind of flute which is made from bamboo. Three holes was made on a piece of bamboo which thus produces three different sounds.

Buhchangkuang: This is a flute that is made out of reed or a paddy stalk and it is generally played by girls.

Hnahtum: When the Mizo boys produce interesting sound by just blowing folded leaves, they called it Hnahtum.

String Instruments

Tingtang: Tingtang is a Mizo guitar which is similar to that of fiddle or violin but it has only one string. In order to make this kind of guitar a bamboo shaft is fixed in the gourd in order to carry the string.

Lemlawi: Lemlawi is an instrument which is made from small pieces of bamboo. The string is then made from a small portion of the bamboo. The sound produced by the string is controlled by the mouth.

Tuium Dar: This instrument is also made out of bamboo having three strings which produces different sounds. From the outer part of the bamboo a cane like strings are bend out. It is played like that of a guitar.

Role of Libraries in Preserving Indigenous Knowledge

Indigenous people preserve and transfer their indigenous knowledge like oral storytelling, poems, and songs or through informal ways of teaching. A great disadvantage of this kind of preservation of knowledge is that human's mind has limited capacity and that the knowledge in someone's mind cannot be remembered all the time. In such a situation library, as one of its fundamental roles is to preserve information and knowledge for the library user can act as the means in preserving indigenous knowledge. Libraries can implement programs in order to collect, preserve and disseminate the traditional knowledge. They can also play an important role in publicizing the value, contribution and importance of the local knowledge to both indigenous and non-indigenous people. Nakata and Langton (2005) suggest that libraries and archives must look at the broad issues involved in the preservation of indigenous knowledge. They declare that libraries must consider not only on the simply part of a historical archive, but a modern body of relevant knowledge. There is therefore the need to provide ICTs such as computers, Internet, digital cameras, camcorders and so on, which can help the libraries in preserving and collecting the indigenous knowledge of a particular society or culture (Okore, et al., 2009).

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Information Seeking Behaviour of Faculty Members: An Overview

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Abstract

The modern era is called the "information age". Information is a basic need in daily life. People struggle to make their lives easier by obtaining information through various sources and channels. The study of information seeking behaviour is important to meet the information needs of the user & also it helps the information provider to develop a process to provide the necessary information of the user. Study on the information seeking behaviour (ISB) of faculty members improves the quality and standards of the libraries. This article seeks to clarify information, information needs, information seeking behaviour, models of information seeking behaviour, etc.

Keywords: *Faculty, Info, Information, Information Needs, Information Seeking Behaviour.*

1. Introduction

The current era is called the "information age". Information is now a fundamental necessity in the progress of society. Everyone needs information to make the right decision. The field of information seeking behaviour clearly states the user's information requirement, search behaviour, and the subsequent use of information. It is important to study the behaviour of academic staff in seeking information to support their access to information resources to meet their basic information needs. Studying the behaviour of academic staff in seeking information is important to support their access to information resources to meet their basic information needs. This understanding helps the library or information provider to design and develop the process to present the user's required information.

A faculty member is an academician who works at a university or college. The emergence of information and communication technology has led to a flood of information in different ways, which has profoundly affected information on the conduct of academia in higher education. Faculty members need information for a variety of reasons, and a major obstacle for them is to get the information they need to satisfy their needs. Researching the behaviour of academic staff in the search for information is critical to helping those access and use information tools to meet their basic

information needs. The research continues to concentrate on information seeking behaviour.

2. Literature Survey

A variety of studies have been conducted on information seeking behavior. Out of that literature, the following literature has been reviewed which helps carry out this study:

The information needs of library users at the Faculty of Veterinary Medicine, Proddatur, Andhra Pradesh, were studied by Kumar, K. and Naveen, Z (2016). The survey was carried out among the teaching staff of the Veterinary Science Faculty. The findings showed that the largest number (53.33 %) of respondents used the library's e-resources to enhance their knowledge.

Patel, Urjita and Chaudhari, B. K. (2015) reported on the information needs of the faculty members of the Agriculture Universities in Gujarat state. The study was aimed at discovering the habit of teaching staff to access information through the College Library. It was noticed from the study that the respondents used the library to develop their knowledge and update themselves in their field, but the internet is the main source of the latest update in their field and a significant source for searching information.

Thilagavathi, T. & Thirunavukkarasu, A (2015) in the study on information needs and the pattern of research among teaching staff at Avinashilingam University, Coimbatore found that a larger segment of respondents, i.e. 81%, used all library tools to update their research and academic area and 17% of respondents used national and interdisciplinary research and academic work.

3. Objectives of the study

- To analyze information seeking behaviour of faculties.
- To analyze the Information, Information Needs, Information Seeking Behaviour, Models of Information Seeking Behaviour.

4. Methodology

This research was done using the survey process. Therefore, for sample studies, faculty members from Pacific University, Udaipur, Rajasthan (A Private University) were taken. A formal questionnaire was distributed to 25 faculty members and 19 of them were respondent. The collected data were analyzed in a tabular form and the study's findings were revealed. Table-4.1 shows the total no. of the questionnaire distributed and no. of respondents and as per percentage-wise, 76 % of faculty members out of distributed questionnaire were responded.

Table 4.1. Distribution of Questionnaire and response received

Sl.	Total No. of the questionnaire distributed	No. of responded	Percentage (%) of Responded
1	25	19	76%

5. Information

Information is defined as raw data processing. It is one of the essential resources of humanity in all areas of existence. Awareness involves conveying information about a situation or spreading knowledge through research, analysis, or practice.

The term information derives from the Latin word 'Informatio', which means to give structure to the mind, 'instruct' or 'teach' (Doraswamy, 2017).

5.1. Definition

The common person who is asked to define information is more likely to see it as an item of information or intelligence, a fact or circumstance that is reported to him (Madden, 2000). According to the Merriam-Webster dictionary, information can be defined as knowledge obtained from the research, study, or instruction, or intelligence and news, or facts and data.

6. Info Needs

Dervin and Nilan indicate that several authors have assessed the effectiveness of research on user's information needs and decided that the study has offered little supervision for practical application. According to them, if their needs and uses become a 'focal point for the functioning of the system', information systems could better serve users, but this "may require the implementation of a redesign of the system and consumption". They also suggested that user-oriented changes include, inter alia:

- Work with documents in a variety of ways to make the system more meaningful for users.
- Development of new index based on relevant criteria for users to complete subject indexes.
- Inclusion of emotionally oriented cues that address the emotional dimensions of the experience among ways of accessing materials/information.
- Changing the procedures by which users' needs are assessed in practice, from keyword orientation, matching symbols and topic to problematic user situations.

7. Info seeking behaviour

Info seeking behaviour relates to how people find and use information. In 1981, the concept was coined by Wilson because existing information needs were not useful as a basis for a research agenda. After all, the "need" could not be explicitly observed, although it was possible to observe and research the way people acted in pursuit of information. In the field of info seeking, however, there is increasing work that connects behaviours to the underlying needs. In 1999, Wilson analyzed aspects of information behaviour and sought a link between communication and information with information in general and the search for information behaviour. These models are offered to solve problems at different levels of information activity and can be related to the prediction of "nesting" models. It has also been suggested that alternative models face similar problems in the search for information and that the models are more consistent rather than conflicting. Finally, a replacement problem-solving model is introduced, claiming that the model provides the basis for linking appropriate research plans.

8. Models of Information Seeking Behaviour developed

Info seeking behaviour is triggered by a need perceived by an information user, who asks for formal or informal sources or resources to fulfill it, resulting in success or failure. To study information seeking behaviour, the following are few models that have been developed.

- a) Urquhart and Rowley (2007) proposed a model to reflect the conduct of students seeking information, especially when accessing electronic information resources. They also illustrated in their model macro and micro factors that influence students' behaviour. The micro variables are the variables linked to the personality of the student, including search strategy, literary information, pedagogy, discipline.
- b) Foster, Allen (2004) came up with a new model which is non-linear for understanding the behaviour towards seeking information amongst 45 academicians. The research is innovative as it formulated a new model, which is in stark contrast to the earlier models. The results of the research were about interdisciplinary information-seeking behaviour.
- c) The model for the search process in Spink (1997) is based on the premise that the user's assessment of information retrieval (IR) device performance, user judgments, and query modification are the main influence factors in the interactive retrieval (IR) process.
- d) The model of stratified interactive information retrieval (IR) developed by Saracevic, 1996 is based on the interaction type model of the acquisition knowledge application (A-C-A). The model has taken broad conceptual borrowings from human-computer interaction (HCI).
- e) Wilson's (1996) model is focused on studies on subjects other than computer science, including decision-making science, psychology, creativity, communication, health and market research. The mechanism of activation is a psychological factor, which is clarified by the various hypotheses that motivate users to process the needs of information.
- f) Kuhlthau, Carol C (1991) developed an information behaviour model that explores the different stages of the process of obtaining information and the feelings, emotions, actions, and tasks performed by the information seeker to obtain information. The stages included in this model mainly include initiation or initial stage, information selection, information source research, problem formula, and problem-relating information, the collection of all required data at one location, and the accurate collection of final information according to the users' needs.
- g) Girja Kumar (1990) developed a model on Information Behaviour about who needs information for what purpose? According to him, in search of information, the following actions are performed: 1. Identification of targets, 2. Determine the requirements, 3. Access to information systems. 4- Identify sources of information 5. Access to information 6. Use of Information and 7. Satisfaction / Dissatisfaction.

9. Need of research on Info Seeking behaviour of faculty members

Libraries are places where information is acquired, processed and stored for use and reuse. The use of info generates facts in the form of knowledge. To meet the info needs of the user, libraries try the best to improve by acquiring the necessary methods and methodologies from time to time. The study of info seeking behaviour of faculty members in the academic library is one of the important ways to explore the need to develop the quality of library materials and services.

10. Data Analysis and Findings

The purpose of this study is to know the information needs and seeking behaviour of faculty members. The survey method was applied here, and a structured questionnaire in this regard was designed and distributed to collect the faculty members' perspectives for information needs, information detection, use of library resources, library facilities, and so on. All the collected data are analyzed in tabular form and displayed for each factor of the questionnaire in both number and percentage.

10.1 Sources and Channels of Information Seeking

When information is required, faculty members used a wide variety of sources and channels. Table-10.1 showed that 09 (47.37%) of the faculty members used the Internet frequently and sometimes, and only 1 (5.26%) of the faculty member never used the Internet. Figure-10.1 shows the graphical representation of sources and channels of seeking information according to the percentage data available in Table-10.1.

Table-10.1 Sources and channels of information seeking by the faculty members

Sources and channels of Information seeking	Frequently	Sometimes	Rarely	Never
Browse the books	4 (21.05%)	13 (68.42 %)	2 (10.53 %)	0
Go to the library / Browse the library catalogue	2 (10.53%)	9 (47.37%)	8 (42.11%)	0
Search through Internet	9 (47.37%)	9 (47.37%)	0	1 (5.26%)
Consult with professionals	0	13 (68.42%)	6 (31.58%)	0
Ask/discuss with colleagues	0	8 (42.11%)	5 (26.32%)	6 (31.58%)

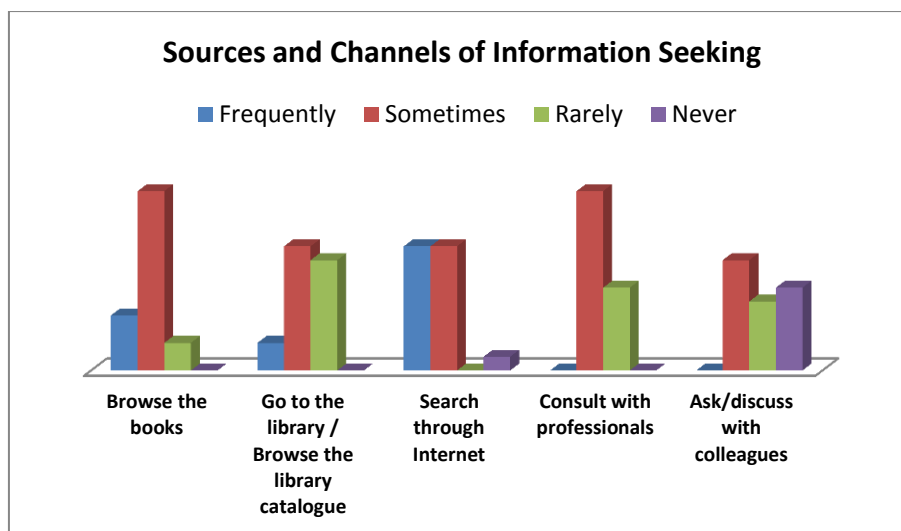


Figure-10.1 Sources and channels of information seeking by the faculty members

10.2 Purpose of Information Seeking

Faculty members are using the library for various purpose of obtaining information and are described in Table-10.2. As per the data analysis table, 10 (52.63%) of the faculty members have used the library for keeping up with current developments while 9 (47.37%) of the faculty members used it for teaching / guiding students and guiding research scholars. Figure-10.2 represents the graphical form of the purpose of seeking information by the faculty members according to percentage data available in table-10.2.

Table-10.2 Purpose of Information Seeking

Sl	Purpose of Seeking information	Yes	No	Can't Say
1	Teaching / Guiding students	9 (47.37%)	3 (15.79%)	7 (36.84%)
2	Guiding research scholars	9 (47.37%)	7 (36.84%)	3 (15.79%)
3	Keeping up with current developments	10 (52.63%)	6 (31.58%)	3 (15.79%)
4	Writing a book or article/research report	8 (42.11%)	8 (42.11%)	3 (15.79%)
5	Workshop and Seminar Presentations	6 (31.58%)	8 (42.11%)	5 (26.32%)

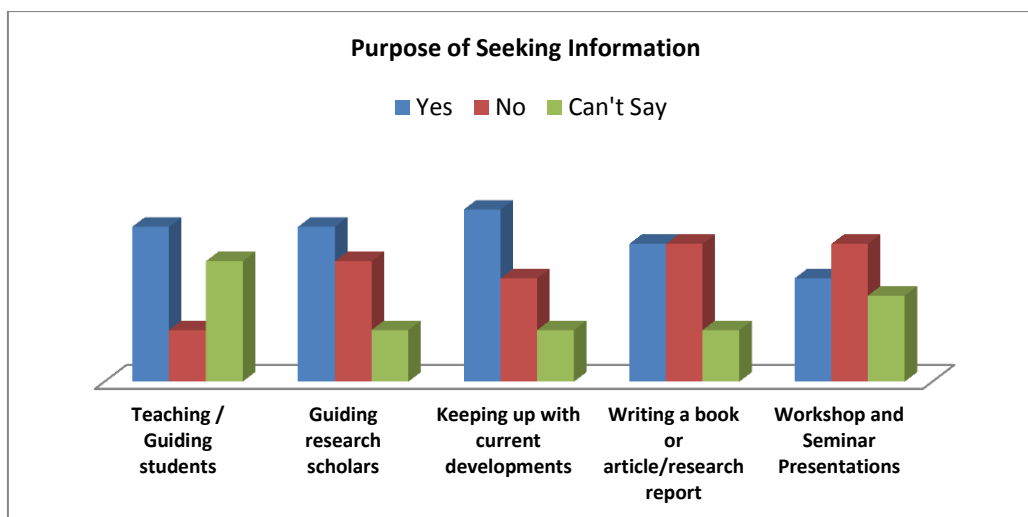


Figure-10.2 Purpose of Information Seeking

10.3. Use of Library Resources

About the library resources used by the faculty members, Table-10.3 shows that 14 (73.68%) of faculty members were using the digital library frequently, whereas 12 (63.16%) of faculty members were using the Textbooks/ Reference books and E-Books/E-journals frequently. Figure-10.3 represents the graphical form of use of library resources by the faculty members according to the percentage data available in Table-10.3.

Table-10.3 Use of Library Resources

SL.	Library Resources	Frequently	sometimes	Rarely / Never
1	Text books / Reference books	12 (63.16%)	5 (26.32%)	2 (10.53%)
2	Journals / Magazines	2 (10.53%)	17 (89.47%)	0
3	E-books/ E-Journals	12 (63.16%)	6 (31.58%)	1 (5.26%)
4	Digital library	14 (73.68%)	5 (31.58%)	0
5	Thesis / dissertations	10 (52.63%)	7 (36.84%)	2 (10.53%)
6	CDs / DVDs	0	13 (68.42%)	6 (31.58%)
7	Conference / Seminar Proceedings	6 (31.58%)	13 (68.42%)	0
8	Newspapers	0	17 (89.47%)	2 (10.53%)

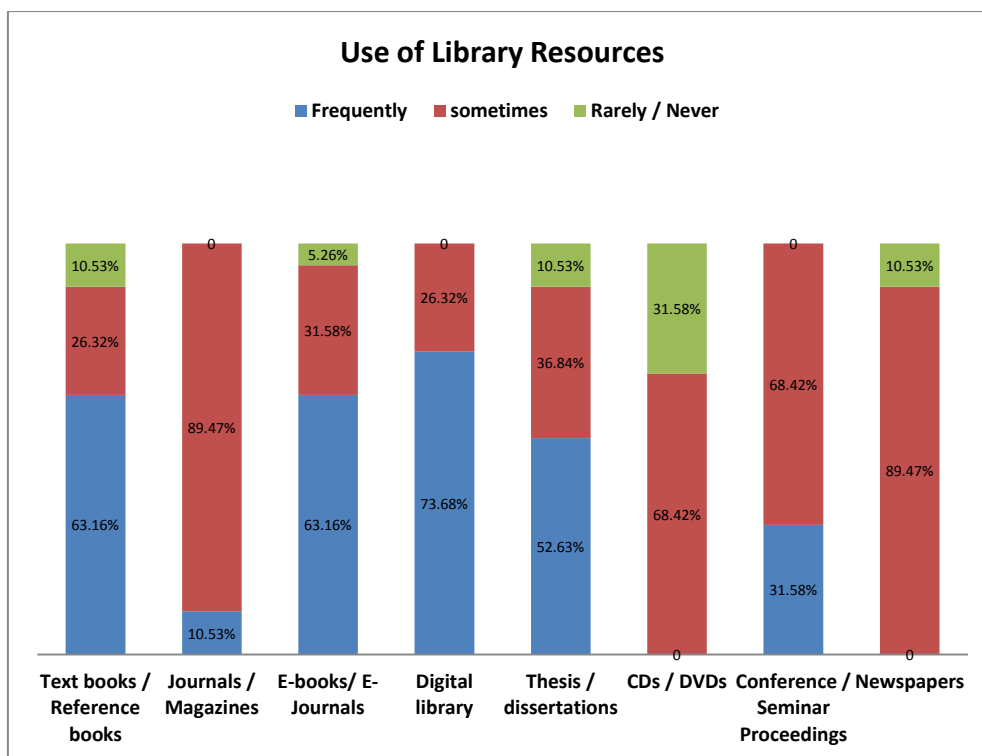


Figure-10.3 Use of Library Resources

10.4 Use of Library Services

The faculty members are using different types of library services in their library and Table - 10.4 shows that 14(73.68%) of the faculty members were frequently accessing E-Resources, while 10(52.63%) of the faculty members were frequently using circulation (issue/return of books) services. Figure-10.4 represents the graphical form of library services used by the respondents according to the percentage data available in table-10.4.

Table-10.4 Use of Library Services

SL	Library Services provided by the University	Frequently	Sometimes	Rarely / Never
1	Circulation (Issue / Return of Books)	10(52.63%)	4 (21.05%)	5(26.32%)
2	Reference Service	4(21.05%)	7(36.84%)	8(42.11%)
3	OPAC (Online Public Access Catalogue)	4(21.05%)	4(21.05%)	11(57.89%)
4	Photocopy services	4(21.05%)	15(78.95%)	0
5	Access to E-Resources	14(73.68%)	5(26.32%)	0

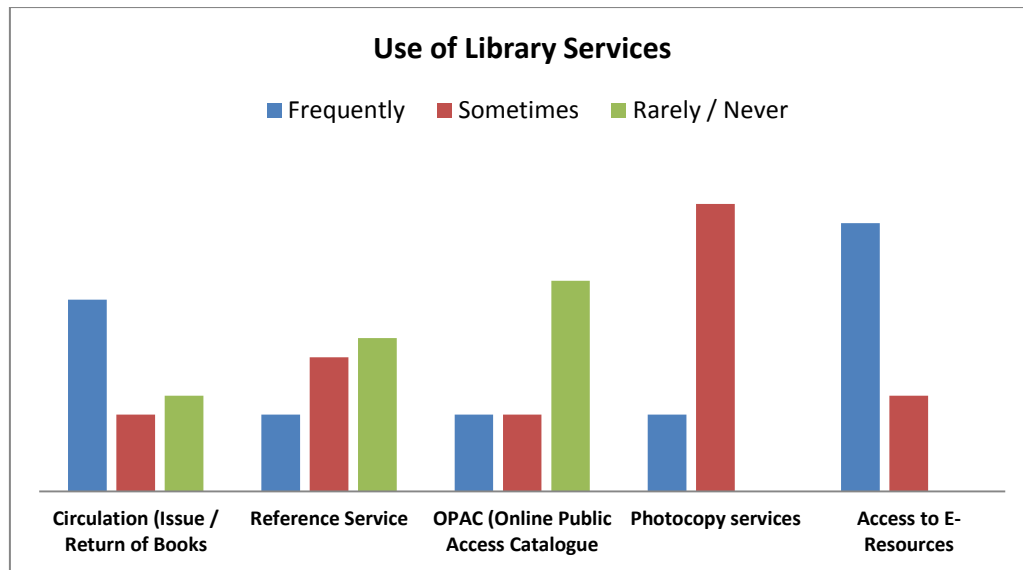


Figure-10.4 Use of Library Services

11. Major Findings of the Study

The following are the main findings of the study, as determined by the data collected from the respondents.

- A total of 25 questionnaires were distributed to the respondents, of which 19 were respondents and the response rate was 76%. (Table 4.1)
- From the data analysis, it is revealed that 09 (47.37%) of the faculty members often used the Internet as their sources and channels for seeking information. (Table 10.1)
- A large number of faculty members i.e. 10 (52.63%) used the library as the main objective to keep up with the current developments. (Table - 10.2)
- Most faculty members i.e. 14 (73.68%) were often using digital libraries when they needed information. (Table -10.3)
- The majority of the respondents i.e. 14 (73.68%) faculty members used e-resources when they need any information. (Table 10.4)

12. Conclusion

Info seeking behaviour of faculty members is paramount for libraries because librarians have an important part to play in serving faculty members and ensure their info needs. This paper has found that their objective in obtaining info was to maintain the current ground in the area and the growing field affecting ideas/technology. It has also been found that faculty members are using the Internet as their main sources/channels, and accessing e-resources whenever any information is needed. Study on information (ISB) seeking behaviour of faculty members will help improve the quality and standards of libraries.

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Library Services for Research Support and Management

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Abstract

This Paper is going to cover the various aspects of how library services benefits those who covers the deeper use of research on various data's and how much is that research supports the given data, also how it helps to improve the library system with the help of management (Library Services Management), How much data does library provides in research work the changes that has been taking place in libraries and what are the various challenges involved in Library services concluding it with the overall view of Library Services all across the Libraries

Keywords: Research, Management, Internet, Data, Library Services

Introduction – Library Services

Library Services are the Resources like materials and various activities provided by the services to the person carrying out any extensive research on certain projects whether it making a manuscript paper or researching about certain person of interest. This type of researches helps a person gain knowledge on new or existing things related to past or present situations. This type of services are not only availed by students to cover for their curriculum but also but professors and doctors to keep in touch with new trends or learn about market, medicines, scientific discoveries etc.

Why are Library Services required?

As explained before, library services are required by all kinds of users ranging from students to professors to lawyers etc. Different Users requires library services for different research or knowledge purposes. They are required by:-

1. **Students:** To study for their given or chosen subjects for their curriculum for cracking tests. Ex- Quantitative Aptitude book for CAT exam.
2. **Professors:** To keep their knowledge updated about their own or various other subjects relating to geography or history or social sciences.
3. **Lawyers:** Laws and their vast amount of Law codes are not always easy to remember.

Junior level lawyers use law books from library to keep their facts checked upon a certain law like companies act law, consumer forum law etc.

4. **Doctors:** Doctors avail the Library Services in order to keep themselves updated about the various trends in medicines and their benefits.

How Much Data Can Library Provide for Research?

In order to learn new things like changes in stock market, changes in marketing environment, programming changes, working mechanics of antibiotics etc. which are always variable in nature and keeps changing, one must know about the basics of it from scratch. One cannot Buy stocks without the marketing knowledge on how it regulates, similarly, one cannot explain how relativity works without studying about it firsthand. Library Services provides the basis needs for all of the workings starting from the study of market to medicines to coding, the materials provided by the library are vital. But how is it much more flexible than internet? In internet you mostly have to pay to read books (Kindle) or pay a subscription for every website in search for information making it both expensive and time consuming. Most libraries are free to use and requires very little amount to be a member. Borrowing any number of books then becomes flexible and knowledge can easily be availed that way. The information and knowledge provided by the library books gives us enough data to carry out research and also acts as reference that we can add as a intermediary of our research. In short, library services provide sufficient data for any kind of research or works.

Library Services in Research Support

Though internet maybe a world-wide accessible source in most places, however, most information on the internet isn't as valuable as the resources and information provided by the library services. Because of various reasons, the ones who commit to deep research chooses library rather than the internet.

We can Divide those Researches in many parts: -

1. Mathematical/ Statistical Research

Let's take an example of Statistics Research for population density of a country. The researcher must know about what is population density then he/she might move on to know different variants in population density (How it is calculated) and then he/she will research about the country and its population standards, is it growing or lowering. This entire variable needs extensive research that can be accessed from the library itself before heading into deep analysis in internet. Now let's say we have data of china's population in 2016 of death rate, mortality rate, demographic trends etc. and we want to compare it with India's population in 2016 and predict the outcome of which country will be heavily populated within 2022. For all this past data tabulation in order to predict the future outcome can be done from the library services itself from any books about statistics and mathematics.

2. Research Within the Institution

Now for School and Colleges Research, which is mainly in forms of projects and assignments, instead of searching for hours and hours from the internet, one can easily visit the library to carry out their projects and assignments which in turn helps them in updating their knowledge which counts as a part of research. Projects and assignments for example, Growth of industries, gives us a vivid picture of how the growth of industries took place, how business model works, how industrial revolution

rotated generations after generations. Similarly, in case of big project like Hadron Collider case study assignment, it tells us the atomic particles involved in the hadron collider, the basic physics behind it and many more.

3. Business Research

Let's assume we have funds laying with us and we plan on starting a business. But what kind of business? What marketing conditions are surrounding the business? how to cope up with environment change in business etc. to be able to answer this question, one must be able to understand the nature of the business and has to do extensive research on carrying out various studies relating to marketing conditions, stock market, business trends etc. By researching on previously known business trends, how to survive in the long run, how and where to invest, research about the essential capitals required and on creating proper financial reports.

Changes in Library Services – Innovation

1. Information System

With Thousands of books available, it becomes difficult to search for them even if they are placed in orders of science, arts, business etc. With the installation of Computer Systems and storing of Book's data base on it, one can easily find books on where they can be found in the library based on their numbers relating to shelf, row, column etc. With this system one can also pre order books directly from the library based on certain keywords.

The library of National Congress, Washington has floors after floors of books with even rooms of book storage. The information system stored in the computers helps them navigate which book is placed exactly where.

2. Open Access

Libraries which have their own websites welcome all kinds of publications from journals to manuscripts giving a chance of people to share and express their knowledge on the internet for the world to see. Working on such papers also requires research as it includes statistical data and facts pertaining to the particular event or cause.

Oxford University Press is the perfect example where thousands of journal publications are published relating to Data Science, Sports, Journalism etc.

3. Online Libraries

Library services on collaboration with Network have made online library a new trend recently. With the same books and journals that we search for in the libraries can also be found online of the same library. It's more simplified and easier to use as navigating for books becomes simple and time management is properly utilized.

Library of National Congress, New York public library, Vancouver public library and various other libraries have their very own online library service open for all who are willing to gain

knowledge and use it as for research. It is also available for the members belonging to the online services of the same Library. Journal publications and idea sharing are also welcomed online which helps in further growth of the library through the means of social media like LinkedIn, Instagram etc.

Management of Library Services

Hundreds and thousands of books are edited, published and goes into the collection of libraries. Some of those books maybe unavailable as it taken by someone else when it is really needed by a user. Managers must ensure a collective Checking Parameter in order to point out which books are missing, which books are not available and which books are available but similar in nature. If Statistical Analysis book is unavailable, one can suggest a book similar to it with a different author. The library services must keep in mind the various subjects and authors related to certain books in case if something runs out. Information system then comes into play at situations like this. This kind of management system is important in order to keep an everyday check of what books they can provide and which books they can't.

As New subjects are preparing to come across, Libraries around the world must prepare for issuing/ordering of those so-called new subject books so that Students or Professors may avail it. In such cases, Management must employ proper vendors for the timely deliverance of the required materials needed to keep the libraries stocked up. The library system then must ensure that those new books gets placed according to their correct order to be later added on the database of the computers. Choosing the right vendor is important as the vendor will bridge the gap of the distribution system leading towards the work of the library services on delivering the materials to the ultimate users.

Digital Library Management System plays a key role on the library services. It helps on evaluating the candidates/employees working under the library, to research about other available system for thinking outside the box and how it can be implemented, developing a selective criterion as well as keeping a check on its assets and liabilities. With regard to open access, the management should do a proper run of its digital services oh how the library services are updated with regular trends on its networking platform for its online continuation. Since it's a digital world, the library system must keep its online resources updated at every interval so that public can keep themselves updated with the knowledge and information shared by them.

Challenges Faced by the Libraries

1. E-Books

Libraries with or without online databases faces stiff competition from E-books like Amazon Kindle and Google books as they provide the same material but is easily available unlike in libraries, and are purchased every day. Furthermore, Library faces shortages of books when it's not available from the vendors which do not happen in case of E-books as it has no vendors.

2. Proper Data Base System

Library System Databases are Vital to keep an everyday check of its books coming in and

going out hence the system has to be programmed every day for its proper functioning. Old and obsolete System without any upgrade makes it slow for the Library system to operate as these types of systems are expensive and not easily accessible.

3. Restrictive Parameters

In Certain Libraries around the world, the entry is till people with proper library IDs. The people without the ID are allowed only for limited time hence they are unable to grasp the time needed to go through the books and conduct research. Making Such IDs takes time and Costs a lot as well hence it faces challenges against libraries which are open to all.

Conclusion

Are library System up to the mark when it comes to Delivering the right System and materials to the public, largely depends upon the Library itself. The duty of the Management is to ensure that the Library System Are updated and gives the public what they want without losing its value. Also, it must face the challenges of E-books and E-journals around the world and how it can be authenticated. Proper Library editors and Authors Guidelines must be maintained so that publication process is smooth and Timely Managed.

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Review of Global Information Literacy Standards and Frameworks - Implications for the Reimagined India

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Abstract

The present paper is the outcome of the efforts to review the global scenario of information literacy standards and frameworks and its implications in reimagining Indian higher education in the digital environment. Several initiatives have been taken by the institutions at the global level all over the world in order to develop information literacy standards and frameworks. However, for the present study the author has selected only major initiatives that are accepted and used by academic fraternity to create information literate citizens. While exploring studies on information literacy in Indian scenario the author found that very frequently the topic has been researched by many researchers but not yet any standard or framework has been developed for information literacy in India. The author emphasizes the need to have uniform standards at the university level to conduct an information literacy program at all levels of higher education, in order to cater information needs of the next generation in the digital environment. It will result in creating responsible information literate citizens even in a multidimensional digital environment.

Keywords: Information Literacy, Higher Education, Standards of information literacy, ACRL Framework, Digital Environment.

Introduction

The significance of information in day-to-day life is inevitable; it is an important factor for the survival of human beings. Search for information is a natural phenomenon that each individual is in the need of information for some or other reasons. Information can be defined as data, fact, news, or anything which answers the questions a person has in his/her mind to solve a particular problem. It can be available in different forms and formats, sometimes tangible or sometimes in an intangible setup. The concept of information has been defined by information scientists in a variety of contexts. Clarke and Summers (1981) in the New Webster's dictionary, defined information, it may be news or intelligence communicated by word or in writing; data or facts: knowledge derived from reading or instruction, or gathered in any way. According to Buckland (1991) information has to do with becoming informed. It is a reduction of ignorance and uncertainty. Further he mentioned three most important uses of information- first, when someone is informed about something, what he or she knows earlier is changed, in this sense information is considered as process. And it may be considered as the act of informing and communicating knowledge. Second usage is 'Information as knowledge'- the information which reduces uncertainty could be considered as information as knowledge, the knowledge which cannot be touched or measured in any direct way, means that it is intangible. It has to communicate, express, and represent in some tangible or document format. The third usage is that the things presented as informative, in this sense information can be viewed as a thing. It includes data, text, documents, objects, and events. Having the quality of imparting knowledge or communicating information, whatever information is stored and retrieved from the

systems should be considered as ‘information as a thing.’ Further Reitz (2004) in the dictionary for Library and Information Science defined information as ‘information or text available in a readily understandable form to which meaning has been attributed within the context of its use’. In a more dynamic sense, the message is conveyed by the use of a medium of communication or expression, whether a specific message is informative or not depends in part on the subjective perception of the person receiving it.

Significance of the Study

Information is conceptualized generally as something which students need during their studies when they construct meaning about the topic in the process of learning (Eskola 1998). The contemporary era is the digital era, where students are digitally born and facing the challenge of information explosion due to technological innovations. Information is available in various modes, mediums, and formats at the fingertips of the students. It is an age of knowledge and information revolution, where inculcating information literacy skills among the students at all level of higher education become prior responsibility. Students need to be trained about the identification and selection of the right information, filtering of information, evaluation, and proper use of obtained information or presentation of information. They must develop strategies to handle an overflow of information. The obvious provider of these strategies is the information literacy librarian. (Bridges 2005). In this dynamic digital environment, the role of librarians becomes crucial to make students information literate. The professional requirements are constantly changing; the means of storing and making information available are continually changing with the innovation of information technology. The academic librarian in the past was an intermediary between the information and the seeker of that information. However the role is changing drastically, today they are instructors or facilitators. As part of this new role, the academic librarian must now identify specific competencies and develop strategies to help users to acquire these competencies in the digital environment (Birks & Oesleby 2003).

Several initiatives have been taken by the institutions at the global level all over the world in order to develop information literacy standards and frameworks. However, for the present paper the author has selected only major initiatives that are accepted and used by the academic fraternity to create information literate citizens.

Conceptual framework

In the field of library and information science many organizations are working for information literacy education on the global level. Several higher education institutions across the globe have formed committees in the campus with the agenda that is to include information literacy as a graduation outcome. If we look back in 1989, a final report of American Library Association (ALA) presidential committee on information literacy, presented four components of information literacy i.e. “the ability to recognize, when information is needed, - to locate – to evaluate, and use effectively the needed information (American Library Association 2006).

Major Initiatives at Global Level

Thus the ALA report defines information literacy as “A set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information. To be information literate, then, one needs skills not only in research but in critical thinking.”

Further report says, “To have such society will require school and colleges that understand and integrate the concept of information literacy into their learning programs. Educational institution should play a leadership role in promoting advantage of the opportunities inherent within the information society. Because, **information literate people have learned how to learn, because they know how knowledge is organized and how to find needed information and use that information in a particular manner that others can learn from them. These are the people who are prepared for lifelong learning and they always find the information needed for any task or decision.**”(American Library Association 2006)

In 1990, the National Forum on Information Literacy (NFIL) was founded in order to respond to the *Final Report* recommendations of the ALA Presidential Committee. NFIL is an “alliance of over 75 organizations working toward national and international awareness of the information literacy and encouraging activities leading to its acquisition.” Further in March 1998, NFIL issued *A Progress Report on Information Literacy: An Update on the American Library Association Presidential Committee on Information Literacy: Final Report*.

Further in 1998 the American Association of School Libraries (AASL) and the Association of Educational Communications and Technology (AECT) published *Information Literacy Standards for Student Learning*. The AASL/AECT standards provide detail competencies for students in school level.

Since 1989, in the absence of national standards, many schools and university systems have developed information literacy competency standards (Library Association, 2000).

In 1999, The *Society of College, National and University Libraries (SCONUL)*, **the** working group on information literacy published “Information skills in higher education: a SCONUL position paper” (SCONUL, 1999). The paper introduced the Seven Pillars of Information literacy skills model. The model has been adopted by many librarians and teachers all over the world to inculcate information literacy skills among the students. The model was revised in 2011 and then reviewed in 2015. The model outlined the relationship between information and IT skills and their potential progressive development within the higher education curriculum. (DaCosta, n.d.).

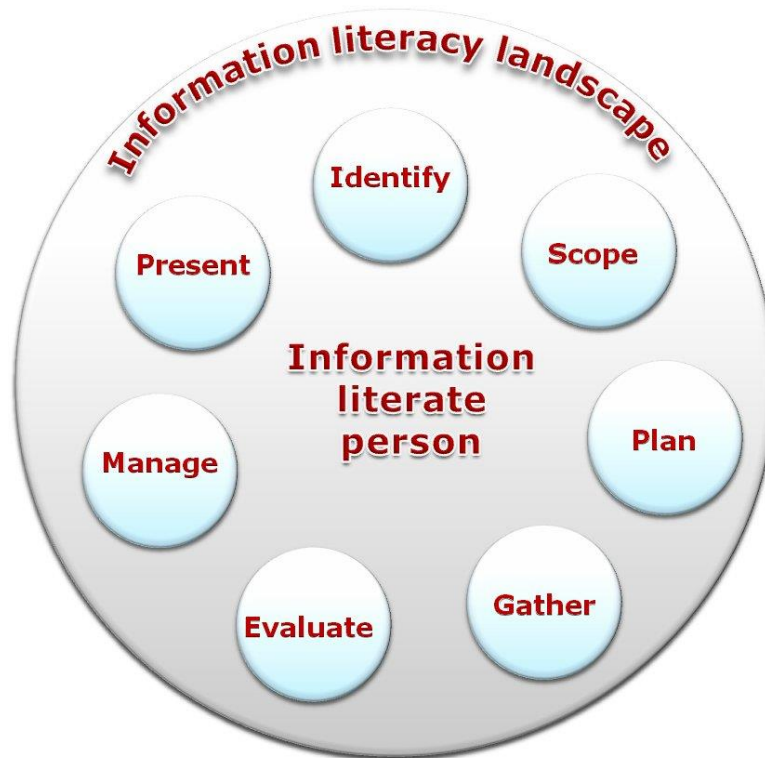


Figure 1 Seven Pillars of Information Literacy

Source: <https://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf>

Further, a division of the American Library Association (ALA), - Association of College and Research Libraries (ACRL), in the year 2016 brought new framework for information literacy in higher education. The framework consists of six frames arranged in alphabetical order but did not follow a particular sequence in which they must be learned.

1. Authority Is Constructed and Contextual
2. Information Creation as a Process
3. Information Has Value
4. Research as Inquiry
5. Scholarship as Conversation
6. Searching as Strategic Exploration. (ACRL 2016)

The present framework is based on a cluster of interconnected core concepts with flexible options for its implementation. It visualizes information literacy as extending the bend of learning throughout students' academic as well as social learning goals. Definition of information literacy is offered by this framework is emphasizing dynamism, flexibility, individual growth, and community learning:

“Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning.”(ACRL 2016)

Each frame consists of the learner's knowledge practice and disposition that are developing their information literate abilities. "The *Framework* offered assistance for librarians to redesign instruction sessions, assignments, courses, and even curricula. It promotes to collaborate on pedagogical research and involve students in that research. It allows wider conversations about student learning, scholarship of teaching and learning, and the assessment of learning on local campuses and beyond." (ACRL 2016)

Table 1: ACRL Framework (2016)

Authority Is Constructed and Contextual	Identifying the credentials and specialization of author or creator before referring his or her work. Learners understand to critically examine all evidence and to inquire about origins and suitability of the content for their information need.
Information Creation as a Process	Understanding the importance of the information creation process, lead students to make refined choices when matching information materials with their information needs.
Information Has Value	Students will learn to use and make responsible use of information as creators and will understand their rights when participate in an academic and research society.
Research as Inquiry	Learner seeks multiple perspectives during information gathering and assessment. Their abilities to refine research questions will increase, they will learn to use more advanced methods of research, and also to explore more inter- disciplinary perspectives.
Scholarship as Conversation	Learners' familiarity with the sources of evidence will develop. Entry in the Scholarly conversation for novice learners will become easy with the help of existing methods and modes of discourse in the field.
Searching as Strategic Exploration	Students would understand that information searching is a contextualized and complex experience that is affected by the cognitive, affective, and social dimensions of the learners.

Source: <http://www.ala.org/acrl/files/issues/infolit/framework.pdf>.

Digital Environment and Information Literacy Skills

Studies conducted on information literacy in the digital environment emphasize that the digital environment presents many opportunities to develop students' information literacy skills. Markless (2009) explored a new conception of information literacy for the digital learning environment in higher education and recommended a new framework for information literacy in higher education with a rationale for its appearance. The further study covered the importance of developing information literacy and the influence of the digital environment. A study conducted by Reedy and Goodfellow (2012) proposed a framework for digital information literacy for Open University students. The study points out how digital literacy is different from information literacy. The study introduces various levels and stages of digital information literacy skills. Lawal (2017) studied information literacy and the future of digital information services at the University of Jos Library. The study explored the current developments in digital information resources at the University. It examines some of the new opportunities and challenges in digital information services presented by the changing context with respect to information literacy and the need for digital information literacy

skills training. Findings provided relevant policy considerations in digital information literacy practices for academic libraries in Nigeria.

There are many online avenues that can be used by libraries to create a digital information literacy program. While discussing information literacy in the digital environment in United States DaCosta (n.d.) said that many librarians have looked to online tutorials as a means of providing 24/7 instruction and to appeal to the different learning styles of the Google generation. Some libraries have developed subject or task-specific tutorials, such as citation or plagiarism. Some libraries have only been able to add links to resources, or contact details for subject librarians, but others have been able to develop information literacy instruction. Further the author specified that there are databases like Primo, which stands for Peer-reviewed instructional materials online and is produced by the instruction section of the ACRL. This can be used to find materials related to information literacy or library skills in general and sub-divided by subject area. Further the author described that many academic libraries in the United States have taken the opportunity to incorporate library resources and support within their institutional virtual learning environments (VLE), known as course management systems (CMS), and have chosen to make use of *LibGuides*, which are provided on a Web 2.0 platform and are easy to create. They allow for multimedia content to be incorporated, as well as widgets and applications compatible with Facebook, Twitter, and other social networking software. *LibGuides* are general and course-specific guides, websites and portals, and also for library instructions. The ease with which they are created has encouraged librarians to prepare a guide, rather than a handout, to supplement teaching and to even add to the guides during class sessions. *LibGuides* are hosted on a server controlled by Springshare, which is an advantage to libraries that are unable to access their own institutional server. The author also indicated that the assessment of information literacy skills is equally important while teaching it.

Indian Scenario

In order to understand the Indian scenario for information literacy, existing literature was examined. Regarding relevance of information literacy in the digital environment Mishra and Mishra (2010) mentioned that information literacy in library services is required not only to optimize the use of library resources but also to train the users about authenticity of information sources and access that information from the World Wide Web. Librarians have to inculcate skills like web searching techniques, evaluation of online information resources and establishing authenticity and reliability of online information resources among the library users. Juin (2011) studied the role of school librarians in promoting information literacy among school students based on the ACRL standards of information literacy. Golwal (2011) conducted a case study on E information literacy and developed subject wise tutorials for M.Sc. and Ph. D. students of Dr. Babasaheb Ambedkar University Marathwada. Sarman (2013) studied information literacy skills of the university students in the electronic environment. The study provided recommendations to the university libraries for the integration of information literacy content into the university curriculum as well as to create thinkers who can make maximum utilization of information in a wider information and communication technology environment. Kamatchi (2013) developed a web-based information literacy module for pre-service teachers in Chennai and tested the effectiveness of the module to develop the information literacy skills of pre-service teachers in the digital environment. Kale (2013) did an experimental study to assess the information literacy skills of student-teachers and develop a module to inculcate information literacy skills among the student-teachers. Aminian (2014) studied students' information literacy level in three educational disciplines

of human sciences, fundamental sciences, and engineering and compared it with the existing standards of ACRL. Pattar (2015) investigated the design and development of Information Literacy Programs and Practices in the Electronic Environment with Special Reference to Engineering College Libraries in Mumbai. Nachiappan (2015) explored Information and computer literacy skills among research scholars of Alagappa University. Gandhe (2017) found that Indian higher education is lacking in the inclusion of information literacy skills in the learning environment. There is no standard framework of information literacy available which will match the Indian Universities' education system. The author mentioned that in the Indian scenario, the definition of information literacy needs to be modified and basic library skills must be included in the set of required skills. It is down to the librarian to ensure that the information literacy teaching remains pedagogically sound, regardless of the medium. Singh (2017) assessed the information literacy competency of postgraduate students and instruction initiatives of agriculture university libraries in north India.

The literature review confirmed that in India many types of research have been done on the topic of inculcation of information literacy skills among students or researchers at various levels and in several ways. Majorly based on ACRL framework or researcher has developed their own tutorials or modules to conduct the program.

Findings and Suggestions

Although it is evident from the existing literature that in India the topic of information literacy has been researched by many researchers in various scopes, but not a single uniform standard or framework has been developed by the Indian information scientists. Except some of the autonomous colleges' incorporated information literacy as one of the subjects into their course work. And by introducing research-oriented project activities they are trying to induce the use of information literacy skills. Recently University Grant Commission (UGC) introduced an information literacy program for some courses, but the assessment and outcome of the course need to be researched. Therefore there is a need to develop a comprehensive information literacy framework or guidelines at the university level in order to impart information literacy skills among the students, especially in the digital environment. In India, librarians do conduct programs like library orientation, user education, and library tour and also develop user manuals to offer easy use of library resources and services. Further, they name it information literacy programs, however, in a true sense, the concept of information literacy is much more comprehensive and profound in itself. We train our students to search library material in the library through OPAC, however, we are not training them or inculcating skills of critical analysis of resources available on the World Wide Web. They should know the responsible and ethical use of information and information technology.

Conclusion

The development of information literacy is a continuing process, so many of the skills need to be introduced at a simple level and reinforced at increasingly sophisticated levels to develop depth as the student progresses through his or her studies. Information literate students are competent, independent learners. They know their information needs and are actively engaged in the world of ideas. They show confidence in their ability to solve problems and know what relevant information is. They manage technology tools to access information and to communicate. (Colorado educational Media

Association, 1994.). The system is requiring training our students to face the challenges that are imposed by the information and communication technology during the teaching-learning process and while handling the vast array of information. Then only, the technology will become a blessing rather than a curse; and it will also help to create responsible citizens.

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Emerging Technology in 21st Century's Libraries: A Step towards Future

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Abstract

Due to information outburst it is very difficult to switch over large information with traditional library. In today's library environment, to provide the right way, is not probable without Information Technology application. IT has become necessity and need. IT services facilitate to execute the information desires of the users. This chapter represents a scope of significant and valuable innovative technologies to put into service at the library. Also centre of attention on the technology's applicability and the benefits it could convey to the library and some vision probability of technology to build up library service.

Key words: *Information technology, Information tech application in libraries, Futuristic library development. Innovative library services*

Introduction

Progressively, technology is altering with the time and the current generation's library users are too choleric with the technology. It's acknowledged that everyone the success depends upon the satisfaction of the library users. So, in this scenario of 21st century the fastest library service is more approachable through the world-wide Information technology (Berners-Lee, Cailliau, Groff, & Pollermann, 1992). Information technology has basically influence the operations of library and its services and this has to boot nice impact on the education and training of the users on plentiful levels. Information is a resource that has no value until its extract process and utilize. IT deals with system, information storage, information access, information retrieval, information analysis and intelligent higher cognitive operation. It additionally refers to the construction, assembly, processing, storage, presentation and dissemination of information and to boot the processes and diplomacy that transform all this to be done.

Literature Review

Latest advances in IT haven't solely accrued staggeringly the flexibility to access, store and process info within the library however even have brought important changes within the concept, organisation, functioning and management of library and knowledge systems (Peyala, 2011). Haneefa (2007) investigate the appliance of ICT in special libraries in Kerala, India. Within the study, it's found that the library catalogue was the utmost common space for automation. The investigation disclosed that, inadequate information and communication tech infrastructure because the major reason behind users' discontentment. The study has counseled to reinforce library automation and to target effective and economical application of information and communication tech. Chandrakar &

Arora (2010) present the Indian approach on the utilization of IT on copy cataloguing from totally different sure sources like IndCat, and catalogue of Library of Congress. So, the review illustrate that, the acceptable use of information technology in library is way essential. It's conjointly think about that the right infrastructure and information technology enabled setting will offer higher and quicker services to users.

Objective of the study

- To provide relate awareness of the uplifting use of ICT for modern library operation.
- A concept of IT & its relevancy in present era
- A brief discussion on different ICT tools using by library in 21st century
- Service offered by library using ICT application.
- A brief concept of some innovative technology for futuristic library service
- Some common problem facing by library for using 21st century's Information communication technology

Concept of Information Technology

IT reflects the combination of three technologies, digital computing, information storage and skill to transmit digital signal through telecommunication network. Fast alteration in semiconductors technology, data storage & network, collective with move on in software system, has enabled new application, price reduction and widespread diffusion of IT. The increasing array application makes IT additional helpful & additional fuels the enlargement of IT.

Cloud storage is the one of innovative sample of the Information Technology in 21st century. With the help of this technology any people or organizations will store their data on remote internet servers and access it from anyplace, any time within the globe. While storing information on servers isn't a substitute plan, cloud corporations have easy the method to the intention that average users will advantage of the technology. It's often proficient by permitting users to share servers with alternative customers, reducing storage minimums to levels which will accommodate the typical user and introducing web-based, easy interfaces for uploading and accessing information.

Why information technology used in libraries?

The information seeking behaviour of the users is also shifting according to their varied needs. To meet these execution needs, storage capacities of information and retrieval techniques should be enhanced. The excellence, user friendless, effectiveness, consistency and stability of library services can be much better through Information technology. Information technologies assist the process of identification, collection, storing, processing and disseminating of information. The library professionals are utilizing ICT to keep pace with the problem of information explosion. It is an intermediate of communication for libraries to their patrons. ICT formulate library work easier, more rapidly, cheaper and more effective. It helps to deal with information overload as information retrieval is made easier in computerized systems.

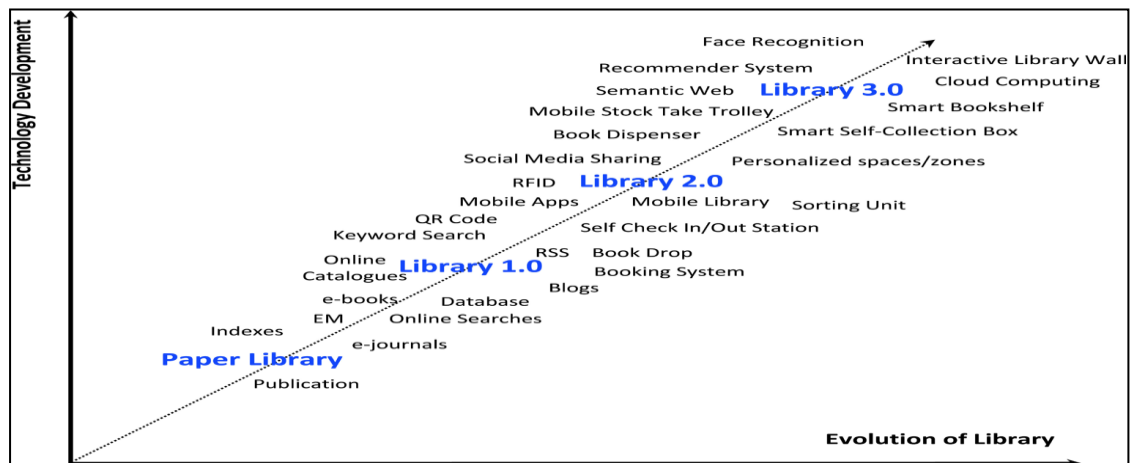


Figure 1: Library development scenario using Information technology

[Source: <https://www.semanticscholar.org/paper/Library3.0-for-Public-Library-Chan/405eb4001f7ba931e9f21517bead757edf487684>]

Use of information technology in libraries

Tools and services:

- ❖ **Computers:** Computer-based technologies have become leading forces to shape and reshape the products and services the library has to offer. The achievement of the IT enabled services in the library is based on the efficiency of the equipment provided in the library.
- ❖ **OPAC:** ICT has revolutionized the preparation of cataloguing within the library. Mistreatment OPAC users will see the holdings of the library collections. It reduces the value of maintaining a catalogue. It conjointly eliminates pen and work, at the side of it helps within the preparation of union-catalogue. OPAC is that the easiest method to urge the knowledge of assortment, weekly new arrivals and different recent addition to the libraries.
- ❖ **Union Catalogue:** Union Catalogue: A union catalogue could be a combined catalogue telling the assortment of variety of libraries. Union catalogue contain a spread of media, as well as gift book format, every kind microform, cards and additional recently, networked electronic databases. Print union catalogue square measure usually organized by title, author or subject (often using a controlled vocabulary); electronic versions usually support keyword and mathematician queries. They conjointly permit researchers to look through collections to that they might not otherwise have access, like manuscript collections. The most important union catalogue ever written is that the yank National Union Catalogue Pre-1956 Imprints (NUC), completed in 1981. Another example is Copac provided by analysis Libraries UK that was outmoded by Library Hub Discover in 2019. Another example is AMICUS, provided by Library and Archives North American nation.
- ❖ **CD-ROM:** CD-ROM: Shared CD-ROM databases square measure one among the foremost skilful analysis tools out there in today's trendy library. A massive quantity of

technical, business, legal and applied mathematics data is placed on-line for speedy, coincidental knowledge searches by multiple patrons. Just about thousands of CD-ROM titles square measure out there to the trendy library, representing many immeasurable items of information. trendy index and retrieval package merchandise offer the suggests that to perform intelligent, context primarily based searches, typically reducing months of old school analysis to a number of minutes of laptop time. Well-designed CD-ROM networking package provides tools to alter user access whereas rigorously managing these valuable resources.

- ❖ **Scanner & Printer:** Book scanning or book conversion (also: magazine scanning or magazine digitization) is that the strategy of fixing physical books and magazines into digital media like footage, text, or electronic books (e-books) by victimization an image scanner. Digital books are merely distributed, reproduced, and browse on-screen. Common file formats are DjVu, mobile Document Format (PDF), and labelled Image File Format (TIFF). To convert the raw footage optical character recognition (OCR) is used to indicate book pages into a digital text format like code or different similar format that reduces the file size and permits the text to be reformatted, searched, or processed by different applications.

Printer: To satisfy all users, several libraries provide all the essential functions like print scan or copy. Doing-everything-on-my-device syndrome could be a authenticity currently in libraries too, as a lot of and a lot of users put into effect mistreatment their own devices to access the library's assortment or to print.

- ❖ **RFID:** RFID reader may be a device that may receive and transmit a radio emission. It's engineered to inscribe knowledge keep within the tag's microchip. Owing to the upper price, active and semi-passive RFID tags square measure used for valuable plus following. The passive RFID tags square measure utilized in RFID library management systems. The utilization of RFID reduces the quantity of your time needed to perform circulation operations. This technology helps librarians eliminate valuable workers time spent scanning barcodes whereas sorting out and checking in borrowed things. For the users, RFID hastens the borrowing and come procedures
- ❖ **Quick Response (QR) Code Technology:** Walsh (2009) has mentioned as "QR codes may be wont to encipher numerous types of knowledge once used for mobiles, most usually text; uniform resource locators (URLs); phone variety's (prompting your phone to decision the number); text message and number (prompting your phone to text the number); and phone details (vcard). The QR readers most faithfully work with the text and URL choices, significantly as a number of the suppliers of the software system conjointly give hosting services. In hosted solutions, QR codes generated through their software system link to a re-direction link on their website, providing knowledge on traffic from a selected code to their customers"

Quick Response (QR) Codes area unit use within the Library: • On the catalogue, individual records of books and journal titles obtainable on the shelves embody a QR Code. By reading the code, you'll be able to save the Title, Author and sophistication mark of the book you're viewing on the catalogue to assist you discover it on the shelves (link to catalogue to look at example) • Library Floor plans have a QR Code that links users on to

associate degree MP3 Audio Tour on it Subject Floor. (Downloads square measure in MP3 format and therefore the file size is around seven.5 Mb)

- ❖ **Teletext:** Teletext, or broadcast Teletext, may be a videotext normal for displaying text and rudimentary graphics on fittingly equipped TV sets. Teletext sends knowledge within the broadcast signal, hidden within the invisible vertical blank interrupt space at the highest and bottom of the screen. The Teletext decoder within the TV buffers this data as a series of "pages", every given variety. The user will show chosen pages exploitation their device.
- ❖ **Barcode:** A barcode reader (or barcode scanner) is associate device for reading written barcodes. Sort of a flatbed scanner, it consists of a lightweight supply, a lens and a lightweight detector translating optical impulses into electrical ones. in addition, nearly all barcode readers contain decoder electronic equipment analyzing the barcode's image knowledge provided by the detector and causing the barcode's content to the scanner's output port.
- ❖ **Facsimile:** A facsimile may be a copy or replica of Associate in Nursing recent book, manuscript, map, art, or alternative item of historical worth that's as faithful the first supply as potential. It differs from alternative kinds of replica by trying to copy the supply as accurately as potential in terms of scale, colour, condition, and alternative material qualities. For books and manuscripts, this also entails a whole copy of all pages; thence Associate in Nursing incomplete copy may be a "partial facsimile."

Customer services:

- **Document delivery services:** It's troublesome for the library to obtain each kind of resources revealed across the world as a result of money constraints. So, the exchange of library resources likes books, journals, etc. Among the libraries are considerably essential. to beat these issues pc and also the web have gotten a good contribution in DDS. Through this medium 1st document are regenerate into digital kind at the moment these are often received at anyplace by users through electronic message. Besides, the storage written language like electronic periodicals, documents etc. are often disseminated to users on demand
- **Inter-library loan:** Inter library loan means that a cooperative arrangement among libraries by that one library might borrow material from another library. In different words a loan of library materials by one library to a different library.
- **Indexing-abstracting services:** a way that is employed to retrieve data kind a table in memory or a file on a right away access store or the art of collection an index. The preparation of abstracts, typically in a very restricted field, by a private, associate degree industrial organization of r restricted use or a poster organization: the abstracts being revealed and provided frequently to subscribers. Additionally the organization manufacturing the abstracts such services could also be either comprehensive or selective.
- **Chat services:** on-line chat could talk over with any reasonably communication over the web that provides a right away transmission of text-based messages from sender to receiver. On-line chat could address similarly point-to-point communications similarly as multicast communications from one sender to several receivers.

□ **CAS:** The aim of a current-awareness service is to tell the users concerning new acquisitions in their libraries. Public libraries especially have used show boards and shelves to draw attention to recent additions, and plenty of libraries turn out complete or selective lists for circulation to patrons. Some libraries have adopted a follow of selective dissemination of knowledge.

□ **SDI:** Selective dissemination of knowledge ("SDI") was originally a phrase associated with library and data science. SDI refers to tools and resources accustomed keep a user wise to of latest resources on specific topics. Selective Dissemination of knowledge (SDI) was a thought 1st represented by Hans Peter Luhn of IBM within the 1950's.

□ **Scanned copies:** A scanning service for material not obtainable electronically, that is control by the Library. This includes articles from journals and chapters from books Users of the service ought to bear in mind that we have a tendency to operate among the restrictions of the Copyright Act.

□ **Bulletin board services:** A Bulletin Board System, or BBS, could be a computing system running computer code that enables users to attach and log in to the system employing a terminal. Once logged in, a user will perform functions like uploading and downloading computer code and information, reading news and bulletins, and exchanging messages with different users, either through piece of email or publicly message boards.

□ **Reference service:** By victimisation pc and net technology, the reference service has become terribly easy. Numerous varieties of info resources just like the book of facts, directories, dictionaries, databases, on-line library catalogues, maps, biographies, patents and on-line info resources area unit obtainable on the web which might be wont to give needed info to the users. Within the reference section, queries area unit answered through the phone. For prepared reference service, library employees use net and E-mail facility. The pc has provided a good promptness to reference section. The role of technology in reference services area unit as follows:

- Library staffs fulfill the stress of the users through numerous electronic resources like information, catalogue information, directories etc.

- In reference service, services are provided to the users concerning info obtainable on the web when obtaining delivered through the pc.

□ **Reprographic Service:** Reprographic technology is employed for the replica of the documents. Exploitation technology, the photocopy and therefore the replica of the documents has become terribly simple and accessible. During this technology, written documents area unit reborn into digital kind, then photocopy is ready. For identical, pc scanner and package is needed. This service is provided to library users for photocopy of some pages of books, journal articles or alternative materials.

□ **Translation Service:** Mechanical translation is disbursed with the assistance of ICT. For this purpose, varied on-line tools like Bablefish translator and Google translator may be accustomed create translation from foreign languages to English and vice-versa.

□ **Bibliographic Service:** Through the pc, listing services became convenient. Nowadays, libraries and publishers area unit providing listing service to the library users listing package like

EndNote, RefWorks, Zotero and Mendely area unit abundantly useful to compile the list of references for the analysis work.

□ **Database Search Guide:** at this time, databases became the central focus for exploration of sorts of the analysis drawback. Researcher's area unit exploitation databases vastly for his or her analysis work. Looking and retrieving the net resources or knowledge from the info has become terribly simple within the ICT surroundings. Generally, libraries give the info looking steerage through the library web site. The search steerage helps to analysers and schools for his or her research and learning.

□ **SMS Alert Service:** Existing e-mail alert services like transferral new books to the notice of users for suggestion, intimation of arrival of indented documents by users, informing availableness of reserved documents for assortment, evaluative regarding which/when books area unit due, library circulars, e-journals signed, amendment in timings, info regarding necessary events, etc., is upgraded by causation through SMS alert services. SMS messages are sent to cluster of users at the same time through several free applications, and negotiator websites/clients. To send SMS to gather the requested books, acknowledging the user regarding renewal of a book, OPAC service, Users might request the gap and shutting hours of the library.

□ **Electronic services and e- resources:** The necessary reality is convincing several libraries to makeover towards digital e-resources, that area unit found to be more cost-effective and a lot of helpful for straightforward access. this is often particularly useful to distant learners UN agency have restricted time to access the libraries from outside by web access to unremarkably obtainable electronic resources, in the main compact disc, OPACs, E-Journals, E-Books, explosive trace detection and web, that area unit replacement the medium

□ **Digital library:** A digital library may be a library within which collections area unit keep in digital formats and accessible by computers. The digital content could also be keeping domestically, or accessed remotely via laptop networks. A digital library may be a variety of info retrieval system.

□ **Suggested purchase:** Library professionals will receive the suggestions from the users sent via mobile phones. In such cases users needn't to go to the libraries and write the wants during a register.

□ **Electronic textbooks:** E-readers and tablets have new options that permit students to spotlight and add annotations to the text, even as they might with paper texts. They provide students the aptitude to link to extra info.

Electronic sources:

□ **Audiovisual materials:** The Audiovisual assortment contains a good vary of audiovisual material to support the analysis and study wants of employees and students.

□ **Internet:** With the appearance of digital revolution, communication has become easier and quicker and call are mad in a flash. The web that is that the latest among the superhighways has impede the space and created it easier to possess access to info to any or all folks in the slightest degree places and in the slightest degree the days

- **Library web site:** Library website helps to acknowledge the facilities and knowledge sources accessible within the library. In most of the library web site on-line catalogue is enclosed. On-line catalogue helps to determine a shopper whether or not the data is offered within the library.
- **Database:** information is associate organized assortment of knowledge for one or a lot of functions, sometimes in digital kind. The info is usually organized to model relevant aspects of reality, in a very manner that supports processes requiring the data.

Innovative technologies to put into operation at the library of the future:

- ✓ Big data
- ✓ Artificial Intelligence
- ✓ Block chain technology
- ✓ Internet of things
- ✓ Library bookmark apps
- ✓ User-focused interfaces and application
- ✓ Augmented reality
- ✓ Digital interfaces for printed books
- ✓ Driverless cars
- ✓ Drones

Advantages of exploitation ICT within the library

ICT makes library work easier, faster, cheaper and simpler. Helps to manage info overload as info retrieval is created easier in processed systems.

Access to variety of learning resources

- Immediacy to information
- Anytime learning
- Anywhere learning
- Collaborative learning
- Multimedia approach to education
- Authentic and up to date information
- Access to online libraries
- Teaching of different subjects made interesting
- Educational data storage
- Distance education
- Access to the source of information
- Multiple communication channels-e-mail, chat, blogs etc.
- Access to open courseware
- Better accesses to children with disabilities
- Reduces time on many routine tasks

Problems of using information technology

Challenges of Using ICT for stipulation of Library Services There is awareness that a lot of benefits are derived, through the adoption and use of Information and Communication Technologies (ICTs) in libraries, however, there are many challenges to be addressed. These include:

- ❖ **Restricted Financial Resources:** The acquisition and maintenance of the important equipment depends on the availability of fund. Mostly, there is lack of funds in many libraries leading to inability to acquire, the necessary ICTs that would enable them connect to the internet, make subscription to various online database and obtain software licenses.
- ❖ **Lack of ICT services and ICT Skills:** The computers are used to receive and store large volumes of information. Shortage of computers and other facilities remains a big challenge to many libraries.
- ❖ **Lack of ICT Policies:** There is lack of systematic ICT policy in developing countries and it impedes the deployment of ICTs.
- ❖ **Unfortunate safeguarding of ICT Equipment:** Many libraries do not have space and conducive environments for keeping ICT equipment. In addition, most of the ICT equipment is not adequately maintained in most libraries as a result of the maintenance cost which is usually very high
- ❖ **Unpredictable Power Supply:** In developing countries, large areas are still without a reliable supply of electricity
- ❖ **Unsatisfactory bandwidth**
- ❖ **Short of technical IT knowledge by library staff**
- ❖ **Continuous change of software and hardware**
- ❖ **Copyright and intellectual property right management**

Conclusion

As terminal remarks, it's reminded that libraries are useful in a very quickly dynamical situation; they ought to bear in mind of latest technologies to continue and maintain the importance of the service offerings. Exploitation of knowledge Technology in gift libraries is sanguine to achieve right info at the correct time within the right place and at the correct cost. Info Technology helps to advancement the rank of the library and it condense the work stack of the library professions. Info Technology has broken the world wide boundaries, new instrumentality and ways facilitate to supply higher services to our patrons.

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Digital library and valuable collection of old manuscripts in Gazi Husrev-bey's library Sarajevo

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Abstract

The staff of the Gazi Husrev-bey's Library, on the occasion of the 480th anniversary of the existence of this institution, worked on digitizing old periodicals. The goal of this project was primarily to provide researchers with easier access to informations and acces to the large number of rare or unique library units, with as few physical limitations as possible, and to protect original copies from further decay and damage. The digital library was officially opened and started operating in January 2018.

The manuscript collection of the Gazi Husrev-bey's Library in Sarajevo contains a total of 10,585 manuscript codices, and 16,907 works in Arabic, Turkish, Persian and Bosnian. The manuscripts originate from various parts of the Islamic world and were created between the 12th and 20th centuries.

Many manuscripts are distinguished by extraordinary calligraphy and various ornaments. The manuscript collection of the Gazi Husrev-bey's Library represents five percent of the remaining total number of written monuments of Bosnia and Herzegovina from the Ottoman period, and is considered the most valuable collection of its kind in the Balkans today.

Keywords : *Digital Library, Periodicals, Magazines, Gazi Husrev-bey Library, Digitization, UNESCO, Manuscripts*

Digital library and valuable collection of old manuscripts in Gazi Husrev-bey's library Sarajevo

Gazi Husrev-bey library in Sarajevo is the oldest library in this region about which accurate information is available regarding the date of founding. Gazi Husrev-bey predicted in the Vakufnam about his madrasa that: "What is left from the costs of building a madrasa, let good books be bought for that, which will be used by readers in the mentioned madrasa, and copied by those who dealing with science."¹ Therefore, the exact year of the founding of Gazi Husrev-bey library is 1537, and the exact date is even known, and that is the 8th of January in 1537., according to the Gregorian calendar. Also, this was the first public library with a librarian in this region.

¹ Gazi Husrev-begova biblioteka. (2020, July 4). History of the Gazi Husrev-bey library. Gazi Husrev-Bey Library. <https://ghb.ba/en/historijat/>

The library was part of the Kursumli madrasa until 1863, when, at the urging of Topal Osman Pasha, a larger room was added next to the Gazi Husrev-bey mosque intended for the library. Until 1935, the Library was located in that room, but due to the constant increase in the fund and lack of space, it was later moved to the premises near the Emperor's Mosque, where it remained until 1992 and the beginning of the aggression on Bosnia and Herzegovina. In April 1992, for security reasons, it was relocated to several locations in the city.²

During the war, the Library's book collection changed its location several times, and was completely preserved, which is brilliantly shown in the BBC film *The Love of Books: A Sarajevo Story*. After the aggression in Bosnia and Herzegovina, the Library was housed in a building next to the women's ward of the Gazi Husrev-bey Madrasa.

Today, the Gazi Husrev-bey Library has been returned to its original home and is housed in a beautiful and representative building, in the heart of the Old Town next to the Kursumli Madrasa, built exclusively for that purpose.

The library currently has more than 100,000 library units, and the entire material is divided into seven funds: the European Fund, the Fund for Oriental Studies, the Fund for Serial Publications, the Manuscript Fund, the Ottoman Material Fund, the Islamic Community Archive and the Photo Library Fund.³ In addition, the Library has a Museum on its premises.

Gazi Husrev-bey library is a library whose collections are of truly invaluable cultural, historical and material value. One of the very valuable collections that the Library owns is the collection of serial publications and it has over 1834 titles. The most important publications from this fund are old magazines, newspapers and periodicals that were published in Bosnia and Herzegovina, but also in Yugoslavia in the period from 1866 to 1945.

Unfortunately, during the aggression on Bosnia and Herzegovina in the period 1992-1995. many libraries lost their valuable holdings and extremely valuable copies of books, magazines, and even manuscripts and unique works, but fortunately, the entire holdings of Gazi Husrev-bey library remained intact during all four years. Precisely for this reason, the importance of this fund is even greater because the last copies of some magazines in Bosnia and Herzegovina have remained in this Library.

The holdings of the Gazi Husrev-bey Library are multilingual and printed in several letters, and the themes that are processed in the publications contained in its holdings, is much wider than the borders of today's Bosnia and Herzegovina. As a result, over the years, the Library has received requests for its use by researchers and users within Bosnia and Herzegovina, but also outside its borders, which prompted the Library staff to start thinking about digitizing valuable and old materials.

The goal of the project of digitization of old periodicals was primarily to provide researchers with easier access to information and to a large number of rare or unique library units, with as few physical restrictions as possible, but also to protect original copies from further decay and damage. *It was a very complex process which, in addition to technical preconditions (scanner and software for optical character recognition, software for storing and searching information), involved trained people, as*

² Gazi Husrev-begova biblioteka. (2020, July 4). Gazi Husrev-bey's Vakf. Gazi Husrev-Bey Library. <https://ghb.ba/en/historijat/>

³ Gazi Husrev-begova biblioteka. (2020, July 4). History of the Gazi Husrev-bey library. Gazi Husrev-Bey Library. <https://ghb.ba/en/historijat/>

well as material and social support to make the digitization process according to international standards.⁴

Historically, the beginnings of the process of microfilming the holdings of the Gazi Husrev-bey Library date back to 1958, when microfilming activities of old manuscripts and rare and unique works were initiated. During the war, especially in 1995, thanks to a donation from the Institute of Islamic Civilization and Culture (ISTAC) in Malaysia, the Library procured all the essential technical equipment for microfilming, so that by the end of 1996 about 5,000 copies of manuscripts had been made. The process of microfilming the old manuscript collection was brought to an end in 2003, after which more attention was paid to the Periodicals Fund.⁵

In 1998, along with the process of microfilming, the process of digitization of the funds of the Gazi Husrev-bey Library began, which was a really complex task at the time, given the insufficient amount of information about this process. Gazi Husrev-bey library was a pioneer in this process in Bosnia and Herzegovina, so it was forced to seek advice for many challenges outside the borders of our country. *The mentioned challenges could be classified into four groups, namely: Issues of protection of physical copies, technological challenges, inventory of materials and challenges related to metadata*⁶.

Towards the end of 2014, *a proposal for the project of digitization of old GHB periodicals* was made. The first phase was completed at the end of 2017 with the formation and commissioning of the *GHB Digital Library*. This digital repository is divided into eight categories that users can search and whose content they can access, namely: Archive, Photo Library, Islamic Community Newsletters, Manuscripts, Manuscripts-Catalogs of the GHB, Monographic publications that include material in European and Oriental languages, then serial publications to which the greatest attention was paid, and finally GHB internally, a space containing materials intended for internal use by Library employees.⁷

It is possible to search most of the posted materials, because the OCR procedure was performed on complete texts, which makes it much easier for users to search for the desired articles and texts, and the word they are looking for will be found anywhere in the text. Since the OCR process is not flawless, a lot of corrections were needed in the text reading by the computer itself, so this is still being worked on, but a large number of publications have been corrected and are fully ready for use and search.

Anyone can join the digital library, only registration is required. Exceptionally, the user can log in without registration, as a "guest", but in that case he has limited access to the content (only the first 10 pages of each title). The contents of the Digital Library may only be used for personal use and research, and any type of commercial use requires the special approval of the Gazi Husrev-Bey Library. The design of the Digital Library was done in a way that meets all the needs of individual

⁴ Lavić Hamza. (2018, January 29). *Digitalna Gazi Husrev-begova biblioteka*. Preporod Info. <https://www.preporod.info/bs/article/10803/digitalna-gazi-husrev-begova-biblioteka>

⁵ Lavić Hamza. (2018, January 29). *Digitalna Gazi Husrev-begova biblioteka*. Preporod Info. <https://www.preporod.info/bs/article/10803/digitalna-gazi-husrev-begova-biblioteka>

⁶ Ćurovac Ejla. (2018). Digitalna biblioteka Gazi Husrev-begove biblioteke: projekt digitalizacije stare periodike. *Zbornik Radova – Asocijacija Informacijskih Stručnjaka, Bibliotekara, Arhivista i Muzeologa (BAM)*, 10, 154–160. <https://www.ceeol.com/search/article-detail?id=846187>

⁷ Ćurovac Ejla. (2018). Digitalna biblioteka Gazi Husrev-begove biblioteke: projekt digitalizacije stare periodike. *Zbornik Radova – Asocijacija Informacijskih Stručnjaka, Bibliotekara, Arhivista i Muzeologa (BAM)*, 10, 154–160. <https://www.ceeol.com/search/article-detail?id=846187>

funds of the Library, and this project provides for the possibility of qualitative and quantitative expansion of software.

The very principle of searching and working on the digital repository is quite simple and when choosing the basic fund they want to access, users get a list of publications together with a picture and a short description. They can then select the publication they need and proceed to read and research it. Each page is set up separately for easier opening of documents, but also for the protection of the publications themselves, in order to prevent their downloading and use. On each page, and on the photographs and postcards from the photo library, there is a stamp in the middle with the logo of the Gazi Husrev-bey library, as another form of protection of this material. Also, copyright was taken care of, so that none of the posted publications that belong to the European Fund or the Fund of Periodicals are no longer under copyright.

The manuscript collection of the Gazi Husrev-bey Library in Sarajevo contains a total of 10,585 manuscript codices, and 16,907 works in Arabic, Turkish, Persian and Bosnian language. The manuscripts originate from various parts of the Islamic world and were created between the 12th and 20th centuries. Of this, about 60% is in Arabic, about 30% in Turkish, and the rest are manuscripts in Persian and Bosnian (written in Arabic). Although most of these manuscripts come from large Islamic centers such as Mecca, Medina, Cairo, Baghdad, Damascus, Istanbul and others, a significant number of them originated (written or transcribed) in our region, and not only in cities and towns, but often in villages and small towns.⁸

The thematic structure of the manuscript is diverse. Among them are works of general and encyclopedic character, then manuscripts of the Qur'an and Qur'anic sciences, hadith (tradition), Islamic dogma and apologetics, fiqh (Islamic law) with all its branches, prayers, ethics, preaching, mysticism, philosophy, logic, linguistics, literature, history, geography, medicine, veterinary medicine, mathematics, astronomy, astrology, natural sciences and occult sciences. *A significant number of these manuscripts are unique or rare copies, such as autographs, transcripts collated with the autograph, transcripts made in the 12th, 13th or 14th century, manuscripts transcribed during the author's lifetime or immediately after his death, unique copies of a manuscript, and manuscripts that stand out with the calligraphically written text of the work, various types of illuminations, unvan, specially made leather binding decorated with various ornaments of mostly geometric motifs and manuscripts that stand out with some other characteristics.*⁹

The oldest manuscript in Gazi Husrev-bey library is the fourth volume of the well-known theological-mystical work *Ihya ulum ad-din* from Abu Hamid Muhammad al-Ghazali (died 1111), which was transcribed during the life of the author, in 1106. According to antiquity, it is followed by a manuscript of the same work from 1131, a collection of hadith *Firdevs al-ahbar* from 1151, and a commentary on the *Qur'an Kitab* from 1176. Nearly 300 manuscripts of this collection were transcribed before 1500. Individual manuscripts can be considered masterpieces and pearls of oriental calligraphy in terms of decorations, ornamentation and artistic impression, such as the juzes of Mehmed-pasha Sokolović, Mushaf Fadil-pasha Šerifović, Hafiz's beautiful poems with miniatures,

⁸ Gazi Husrev-begova biblioteka. (2020c, July 4). *Manuscript fund*. Gazi Husrev-Bey Library. <https://ghb.ba/en/fond-rukopisa/>

⁹ Gazi Husrev-begova biblioteka. (2020c, July 4). *Manuscript fund*. Gazi Husrev-Bey Library. <https://ghb.ba/en/fond-rukopisa/>

Džami's collection of poems and dozens of copies of luxuriously decorated mushafs, collections of prayers and divans of poetry in Turkish and Persian language.¹⁰

At the UNESCO General Assembly held on 30th of October in 2017 in Paris, the Manuscript Collection of the Gazi Husrev-bey Library in Sarajevo was entered in the Register *Memory of the World* dedicated to the movable world cultural heritage.

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¹⁰ Gazi Husrev-begova biblioteka. (2020c, July 4). *Manuscript fund*. Gazi Husrev-Bey Library. <https://ghb.ba/en/fond-rukopisa/>

Infrastructural Overview of College Libraries towards Implementation of Virtual Reference Service (VRS): A Study of North-Western India

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Abstract

Reference Service enables libraries to provide information to a person who needs it, either directly from an appropriate source, or indirectly by providing the person with the source or teaching him how to find the needed information in the sources. With new technologies, users' information seeking behaviour (ISB) along with their expectations from the reference service has witnessed a sea change, which motivate the Librarians to embrace the Internet as an appropriate medium for information exchange, communication, and instruction, including both synchronous and asynchronous tools and played a pivotal role in transforming the in-person desk-based TRS to VRS. Libraries in India by-and-large have implemented ILMS (e.g. RFID) for their automation but the status of VRS adoption in the Indian context is scarce barring a few cases wherein libraries are providing reference service through email or web-form (asynchronous). Thus, in the light of the above facts the present study has been planned by the researcher as a meaningful understanding and deliberate investigation pertaining to the domain of VRS. The study result reveals that although, VRS was not being offered by almost all of the libraries and Synchronous VRS (SVRS) was offered by none of the libraries under the study. It is clear from the result that the college libraries of North-Western India cater to the need of a heterogeneous user community as the institutions belonging to a wide variety of disciplines, enables the researcher to capture a wide range of perspectives relating to the status of VRS. Again from the study we can infer that the libraries were having basic ICT infrastructure thus making a case for implementing VRS without significant expenditure, which can resolve the shortage of sufficient staff of the libraries in near future.

Keywords: Virtual Reference Service, Traditional Reference Service, Information Seeking Behaviour, VRS Implementation, ICT Infrastructure, College Libraries, Librarians' Perspective, North-Western India

1. Introduction:

Samuel Green, in his 1876 paper titled, "Personal Relations Between Librarians and Reader," wrote, "helping users locate information is essential because the public is not trained to find information" (Bopp & Smith, 2001). The assistance of users forms the kernel of reference service the essence of which was beautifully expressed by the father of Library science Dr. S. R. Ranganathan as the process of establishing "contact between the right reader and right book at the right time and in the right personal way" (Ranganathan, 1989). Ranganathan defines Reference Service as: "Personal Service to each reader in helping him to find the documents answering his interest at the moment pin-pointedly, exhaustively and expeditiously" (Ranganathan, 1961). Reference Service enables libraries to meet the information needs of the users (Chowdhury, 2002). In response to developments in society and library use, reference services began in the late 19th and early 20th centuries as the libraries started witnessing an increase in the volume, variety and format of available information resources.

Assistance to users in finding required information has become more relevant in the 21st century owing to multiplicity, magnitude and enormity of information forms and formats, especially online information.

With new technologies, users' information seeking behaviour (ISB) along with their expectations from the reference service has witnessed a sea change. Users of the current generation now possess a wider range of information needs and inquiries while the sophistication with information searching has also increased tremendously. To meet such information needs and demands, libraries need to expand the scope of reference beyond using the mail, telephone, or fax machine with the help of the computer and the Internet. Technological innovation played a pivotal role in transforming the in-person desk-based traditional reference service (TRS) to VRS.

2. Literature review:

Literature reviews are systematic syntheses of previous work around a particular topic. A literature review is a systematic explicit and reproductive method for identifying, evaluating and interpreting the existing body of recorded work produced by researchers, scholars and practitioners (Fink, 1998, p.3). The review of the literature for this study focuses on VRS/DRS as discussed by different authors in their scholarly writings.

Vogus (2020) examined various facets of virtual reference services to reveal the effectiveness of virtual services, how to improve them, and why users prefer one method of virtual reference services to another. Anna & Srirahayu (2020) evaluated virtual reference and information services at university libraries in Indonesia from two specific aspects: from the aspect of the library that provides virtual reference services and from aspects of users of virtual reference services. The exploratory study of Mawhinney (2020) examined user preferences with regard to virtual reference services and factors that account for these preferences from a different vantage point than previous literature by relying on semi-structured interviews with users. In their article, Mawhinney & Kochkina (2019) presented the results of a study on virtual reference service, where they seek to determine whether or not the texting service is filling a different information need than chat and email by examining the level of difficulty and the topic of questions using these different methods of communication. Barrett & Pagotto (2019) examined whether the service model, staffing choices, and policies of its chat reference service were associated with user dissatisfaction, aiming to identify areas where the collaboration is successful and areas which could be improved. In their article chapter Cleveland & Philbrick (2018) provide an overview of virtual reference services, discuss key issues related to the provision of virtual reference services, review the literature on virtual reference services in academic health sciences libraries, and present a study on the trends in virtual reference services in academic health sciences libraries. Hutchinson (2017) discussed the implementation of LibAnswers by the University of Saskatchewan and its impact on the functioning of the reference service.

3. Objectives of the Study:

- a) To assess the current status of basic ICT infrastructure & manpower available at the libraries of North-Western India.
- b) To ascertain the current state of reference service being offered in the libraries of North-Western India.

- c) To investigate the availability of instruction based service being offered in the libraries of North-Western India.
- d) To investigate the librarians' perception towards traditional and virtual reference service (TRS and VRS) in the libraries of North-Western India.

4. Scope of the Study:

The scope of the study comprises various facets pertaining to virtual reference service (VRS) including technological innovations, assessment of their suitability, and current status of reference service in libraries of North-Western India. Various aspects of VRS Web-tool including chat, integrated file sharing, FAQs database, and co-browsing, etc., perceptions of Librarians' regarding the VRS as-well-as, users' awareness and value judgement regarding the same constituted a major study component and provided valuable inputs for devising a realistic framework of VRS implementation and its sustainability.

5. Research Methodology:

The research problem investigated by the study was the culmination of several factors including the present infrastructure of actual VRS implementation in north-west Indian libraries, especially SVRS. To gather data for addressing these issues, the quantitative method was found to be appropriate as it facilitates measuring, ranking, categorizing, identifying patterns and making generalizations. The research framework of this survey was designed upon a structured research questionnaire created through Google form and circulated online via email to the eminent college library professionals of north-western India. The questionnaire was prepared for library professionals with a view to understand, describe, interpret, contextualize, and gain in-depth insight pertaining to the research problem and research questions/objectives of the present study from their perspective. It took almost 8 months (from March 2020 to October 2020) and distributed among 350 library professionals of which 302 (86%) took part in this survey from different region of north-western India.

SN	State	Respondent	Non-Respondent
1	Ladakh	2	2
2	Jammu & Kashmir	33	7
3	Himachal Pradesh	21	12
4	Punjab	53	1
5	Haryana	48	3
6	Rajasthan	145	23
Total		302 (86%)	48 (14%)
All Total		350 (100%)	

Table 1: State wise Cluster of Sample Universe

6. Data Analysis:

Data analysis and interpretation holds a crucial position in the research process. After collection of data it was imported as .csv file (Google sheet) for further analysis and visualization using spreadsheet software. Finally the data analysis for the present research was done quantitatively with the help of both descriptive statistics and inferential statistics. It aims to organize, classify and summarize the data being collected for better comprehension and interpretation leading to understand and explore answers or solutions to the research problem which originally triggered the research.

7. Results and Discussion:

The respondents of the varied disciplines may exhibit a wide range of attributes, behaviours, experiences, incidents, qualities, situations, and so forth which facilitates gaining greater insights understanding the variation in librarians' perspectives, ranging from Current Status of Reference Service, reference collection size, VRS infrastructure and librarians' perception regarding VRS.

7.1. Core Disciplines of the Sample institutions:

The universe of the study comprised selected college libraries of the north-western India. Library professionals from those institutions formed the set of respondents. The general information about the core discipline of those libraries are discussed below.

SN	Core Discipline	No	Percentage
1	Science	21	7
2	Social Science	59	20
3	Engineering & Tech.	21	7
4	Health & medicine	9	3
5	Engineering & Tech. & Health and medicine	15	5
6	Science, Engineering & Tech and Health & medicine	29	10
7	General (Multidisciplinary)	137	45
8	Business & I.T	11	4
Total		302	100

Table 2: Core disciplines of sample institutions

Table 2 indicates that there are all total 8 types of core discipline among the sample institutions from "Science" to "Engineering & Tech.", "Health & medicine" to "Business & I.T." etc. Among them almost half (=45%, 137) libraries belongs to "General" or multidisciplinary field while "Social

Science” libraries positioned second with 20% (=59) coverage. It is clear from the above observations that the libraries of the above institutions cater to the need of a heterogeneous user community belonging to a wide variety of disciplines. This enables the researcher to capture a wide range of perspectives relating to the status of Virtual Reference Service (VRS).

7.2. Availability of Human Resources:

For effective implementation of VRS in a library, availability of efficient library staff is one of the essential needs. Following table give detailed overview of number of staff in the sample libraries according to their respective designation.

SN	Designation	No	Staff Per Institution
1	Librarian	227	0.8
2	Assistant Librarian	81	0.3
3	Library Assistant	138	0.5
4	Para-Professional	22	0.1
5	Library Attendant	258	0.9
6	Clerical Staff	302	1.0

Table 3: Number of staff in the library

Table 3 above describes the availability of library professionals and other staff in the select institutions’ libraries. It was noted that almost 44 libraries had no ‘librarian’ and 221 libraries either didn’t have any ‘Assistant Librarian’ or the position. Moreover, half of the library (=138) occupied with ‘Library Assistant’ and almost 90% (=258) library have a ‘Library Attended’. For every library, only the ‘Clerical Staff’ availability was verified. Though the upper study result revealed that the sample libraries are not occupied with sufficient library staffs, a fewer staff can manage VRS efficiently and systematically with its facility to allow librarians to take up more queries in less time.

7.3. Availability of infrastructure and efficient manpower:

Availability of ICT infrastructure and trained staffs are conducive for Computer-Mediated Environment (CME) which is essential for providing Virtual Reference Service (VRS). The following table scrutinized about the availability of existing ICT infrastructure and trained staffs in sample libraries.

	Highly Inadequate n(%)	Inadequate n(%)	Adequate n(%)	Highly Adequate /Suitable n(%)	Total n(%)
Computer	0 (0)	16 (5)	95 (32)	191 (63)	302 (100)
Server	6 (2)	36 (12)	133 (44)	127 (42)	302 (100)
Library automation software	0 (0)	33 (11)	69 (23)	199 (66)	302 (100)
Official cell phone	45 (15)	21 (7)	202 (67)	34 (11)	302 (100)
ICT Trained staff	0 (0)	30 (10)	142 (47)	130 (43)	302 (100)
Internet connection	0 (0)	0 (0)	159 (53)	143 (47)	302 (100)
Local Area Network (LAN)	0 (0)	0 (0)	124 (41)	178 (59)	302 (100)
Wi-Fi	15 (5)	0 (0)	129 (43)	158 (52)	302 (100)
Scanner	0 (0)	12 (4)	145 (48)	145 (48)	302 (100)
Printer	0 (0)	0 (0)	157 (52)	145 (48)	302 (100)
Library web site	14 (5)	16 (5)	128 (42)	144 (48)	302 (100)
OPAC	32 (11)	24 (8)	134 (44)	112 (37)	302 (100)
VRS Software/Tool	94 (31)	121 (40)	68 (23)	19 (6)	302 (100)

Table 4: Existing infrastructure and manpower available in the library for VRS

Table 4 indicates that little more than 50% of the libraries found ‘computer’, ‘library automation software’, ‘LAN’ & ‘Wi-Fi’ highly adequate to serve their patron while little more than forty percent mentioned the adequacy of this infrastructure. It was also found that ‘Official cell phone’ (78%), ‘ICT Trained staff’ (90%), ‘Internet connection’ (100%), ‘Local Area Network (LAN)’ (100%), ‘Scanner’ (96%), ‘Printer’ (100%), ‘Library web site’ (90%) , ‘OPAC’ (81%) were available (highly adequate and adequate) in almost all the libraries. The table also reveals that only in some of the library ‘Library automation software’, ‘Wi-Fi’, ‘library website’ and ‘OPAC’ were highly inadequate. It was found from the above table that most of the libraries were having basic ICT infrastructure thus making a case for implementing VRS, (both synchronous and asynchronous) including chat-based reference service. Thus libraries can plan for taking VRS initiatives without significant expenditure towards building ICT infrastructure.

7.4. Types of Reference and Information services provided in the library

A question was asked to the librarians of select institutions regarding types of Reference and Information Services (RISS) provided in their respective libraries. As per the responses received the data was tabulated.

	Very Frequently n(%)	Frequently n(%)	Sometimes/ occasionally n (%)	Rarely n(%)	Never n(%)	Total
Quick/Ready reference and other directional services	97 (32)	142 (47)	30 (10)	33 (11)	0 (0)	302 (100)
Information and Referral services	48 (16)	181 (60)	66 (22)	7 (2)	0 (0)	302 (100)
Inter Library Loan	36 (12)	133 (44)	33 (11)	100 (33)	0 (0)	302 (100)
Document Delivery	82 (27)	81 (27)	63 (21)	54 (18)	22 (7)	302 (100)
Fee- based services	0 (0)	6 (2)	45 (15)	24 (8)	227 (75)	302 (100)
Procedural	0 (0)	51 (17)	66 (22)	67 (22)	118 (39)	302 (100)
Long Range Reference Service	38 (13)	40 (13)	115 (38)	88 (29)	7 (2)	302 (100)
E-mail alerts	79 (26)	127 (42)	36 (12)	60 (20)	0 (0)	302 (100)
News paper clipping	78 (26)	111 (37)	63 (21)	34 (11)	16 (5)	302 (100)
Electronic clipping	37 (12)	94 (31)	57 (19)	11 (4)	103 (34)	302 (100)
Indexing and abstracting	51 (17)	48 (16)	43 (14)	48 (16)	112 (37)	302 (100)
SDI	94 (31)	42 (14)	45 (15)	30 (10)	91 (30)	302 (100)
Display of new arrivals	127 (42)	160 (53)	15 (5)	0 (0)	0 (0)	302 (100)

Table 5: Types of Reference and Information services provided in the library

Table 5 makes it clear that the highest response (60%) for “information and referral services” was provided ‘Frequently’ while 16% provided this service ‘very frequently’. ‘Display of new arrivals’ (95%) and ‘quick/ready reference and other directional services’ (79%) were provided regularly (‘Very Frequently’ and ‘Frequently’) by the majority of the institutional libraries. ‘E-mail alerts’ (68%) and ‘news paper clipping’ (63%) were regularly (frequently and very frequently) provided by the libraries. ‘Inter-Library Loan’ (57%) and ‘SDI’ (45%) were also regularly provided by a little less than 60% and little less than half of the libraries respectively. About 75% librarian opined that they never facilitated ‘Fee-based services’ in their libraries while 39% libraries never offered ‘Procedural’ and 21% ‘Long Range Reference Service’ to their patron. The result clearly indicates that the sample

libraries were providing either traditional desk-based in-person reference service or by asynchronous mode of VRS like Email. So, there exists a great opportunity for those libraries to initiate VRS at their campuses.

7.5. Instruction based services provided by the library:

Library instruction also referred to as user education, library orientation or information literacy is a process of making library patrons understand how to make effective and efficient use of library resources and information through the acquisition of skills to identify, locate, search, retrieve and exploit information in the library (Igbena, 1990). Instruction based services are very useful services assisting the users in searching, locating, finding, evaluating and using information with least effort. This facilitates better use of library resources, as they can be put to maximum utilization.

	Very Frequently n(%)	Frequently n(%)	Sometimes/ occasionally n (%)	Rarely n(%)	Never n(%)	Total n(%)
One to one instruction	112 (37)	33 (11)	109 (36)	32 (11)	16 (5)	302 (100)
Group instruction	30 (10)	109 (36)	82 (27)	17 (6)	64 (21)	302 (100)
Orientation tours	11 (4)	145 (48)	118 (39)	21 (7)	7 (2)	302 (100)
Induction sessions	24 (8)	40 (13)	63 (21)	63 (21)	112 (37)	302 (100)
Information literacy sessions	32 (11)	46 (15)	79 (26)	66 (22)	79 (26)	302 (100)
Printed guides and handouts	31 (10)	99 (33)	61 (20)	15 (5)	96 (32)	302 (100)
Audiovisual presentations	36 (12)	39 (13)	154 (51)	24 (8)	49 (16)	302 (100)
Web-based guides and handouts	57 (19)	64 (21)	30 (10)	9 (3)	142 (47)	302 (100)
Course-integrated instructions	0 (0)	0 (0)	97 (32)	133 (44)	72 (24)	302 (100)
Database/e-resources Mediated searching	79 (26)	159 (53)	16 (5)	15 (5)	33 (11)	302 (100)
Access/searching OPAC	157 (52)	94 (31)	27 (9)	0 (0)	24 (8)	302 (100)

Table 6: Instruction based services provided by the library

Table 6 reveals the preference of instruction based services provided by the libraries of select sample institutions. It was found that the highest response (52%) for 'access or searching OPAC' was in 'very

frequently' provided category while 31% provided this service 'frequently'. Little more than fifty percent (53%) of the librarians opined 'database/e-resources mediated searching' were provided frequently while 26% responded that they provided this service very frequently, followed by 'one to one instruction' (37%). 'Orientation tour' (52%) and 'group instruction' (46%) offered by the select libraries occupied Rank 4 & 5 respectively. Other instructions based services provided by select institution libraries were 'audiovisual presentation', 'printed guides and handouts', 'web-based guides and handouts', 'information literacy sessions' and 'course-integrated instructions' ranging from R6 to R11 with no sharp difference. The table/result reveals that all the libraries under study were providing instruction based services by and large.

7.6. Librarians' perception regarding various types of reference service:

	Traditional reference Desk n(%)	VRS n(%)	No Impact n(%)	Total n(%)
Quick/Ready reference questions	63 (21)	160 (53)	79 (26)	302 (100)
Detailed, research questions	96 (32)	126 (42)	80 (26)	302 (100)
Reader's advisory questions	160 (53)	64 (21)	78 (26)	302 (100)
Directional questions	112 (37)	127 (42)	63 (21)	302 (100)
Procedural questions	118 (39)	160 (53)	24 (8)	302 (100)

Table 7: Perception regarding various types of reference service

Table 7 depicts librarians' perception regarding the preference of TRS over VRS and vice versa. It indicates that more than 50% librarians pointed out that 'quick/ready reference questions' and 'procedural questions' can be better handled by VRS than TRS. As per the librarians of 42% institutional libraries, 'detailed research questions' as well as 'directional questions' are more effectively answered through VRS than TRS. However, in the case of 'readers advisory questions' librarians of 53% (=160) institutions opined that TRS would be a more effective method than VRS. This perception comes along with the belief that VRS can play a major role and add value to the existing reference Service model.

8. Conclusion:

In the current e-centric world and changing user information needs and information-seeking behaviour (ISB), the demand for online information services is growing day by day. The biggest issue is how the libraries are responding to this paradigm shift. It has become imperative to critically assess the perception, perspective and attitudes of the library and information professionals and users regarding VRS. The study has attempted to explore and demonstrate the function of free VRS tools and services with pointing the perception of college librarians of north-western India for the same. And the study result suggests that the libraries should initiate VRS to extend the scope of Traditional Reference Service (TRS) in terms of time and space to make users more successful and productive. And to do this, the librarians should acquire essential competencies and skills pertaining to ICT driven communication. Upon the introduction of VRS, the user training program, proper implementation & revision of policy & guidelines, the procurement of the new communication technologies & other tools, the initiation of a collective or cooperative VRS movement to break through budgeted constraints and proper marketing to conscious users may be a potential solution. Through innovative and instant communication tools, used in VRS, the reference librarians portray or showcase the value and worth of the library among the users. Users can only realise the benefits and important of synchronous mode of VRS when the libraries take initiative in this direction.

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Library and Information Services Rendered by Two Private Universities in West Bengal: A Comparative Study

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Abstract

Libraries are centers of information and services, where librarians provide information directly to their clientele. From Library, users can independently search and gather necessary information and resources for their research work. Academic Libraries, with proper services, help users to gather accurate information at the right time and thereby establish a strong relationship between Librarians and users. Academic Library ensures proper connection with information and its users. This paper shows how two private universities in West Bengal provide Library and Information services to their users. This paper aims to perform a comparative analysis of the services rendered by the libraries of these two universities.

Keywords: Academic Library services, Content analysis, Information Services, Reference Service, Research Service, Social media Service.

Introduction

Library is the heart of the institution. Library is a documentation and information centre. Basically library provides physical collection or digital access of materials. Library services are important part of an organization. A good library always provides quality services to the users. Library is a growing organization so services are also growing day by day. Basically Library are provided reference services, current awareness services and lending services but university library provide their services to the researcher. Library always updated by gating new information. Many eminent personalities define libraries throughout the ages-

According to S.R Ranganathan, "A library is a public institution or establishment charged with the care of books, the duty of making them accessible those who require the use of them."

In *The Librarian's Book of Lists* (Chicago: ALA, 2010), George Eberhart offers this definition:

"A library is a collection of resources in a variety of formats that is (1) organized by information professionals or other experts who (2) provide convenient physical, digital, bibliographic, or

intellectual access and (3) offer targeted services and programs (4) with the mission of educating, informing, or entertaining a variety of audiences (5) and the goal of stimulating individual learning and advancing society as a whole.”

According to Britannica – “Library services available throughout the world vary so much in detail from country to country that difficult to present anything but the most general picture of this activities. Nevertheless, they follow a broad but discernible pattern. That has evolved over the years”.

There are four types of library-

1. Public library
2. Academic Library
3. Special Library
4. National Library.

Academic Libraries are also divided as - a) University library, b) College library and c) School library.

This paper is going to draw comparison between two private university academic libraries –

- 1. Brainware University Library**
- 2. Adamas University Library**

The concept of an academic library in India comes from Taxila University from 700 B.C to 300 A.D in ancient India. In that time Nalanda University (450 A.D.) became an educational centre in India and enriched library collections. In modern era academic library has developed their services through e-journal & e-books. Sometimes academic library become a publisher of books or journals through digitalize way.

Methodology

This study follows two types of method one Analysis of data collected from the university websites. And Analysis of data collected over phone. This techniques help to get better result of our study.

Scope and Coverage

This two private university geographically located in a same state and same location with similar kind of subjects fields. This study covers how many services they offer to their students. This study help this two university libraries to review their services . This study only covers their library services.

Objectives

Our main objectives are:

- The main focus of this study is what type of services are provided by this two university libraries.
- Which university library services are more effective for the users?
- Which University Library provides best external services?
- How researcher helped through this two University library services.

Review of literature

Wilson, L.R. and Tauber, M.F. (1958) in their book on “The University Library: The Organization, Administration and Functions of Academic Libraries.” described about conventional and technological based services of an academic library.

Syed Andaleeb (1998) wrote in his research article on “Explaining User Satisfaction with Academic Libraries: Strategic Implications”, that Library users are become glad by getting various information. Also users are satisfying with such model and book exhibition. For an appropriate type of service needs a better understanding with library users.

Simmonds, Patience L. and Andaleeb, Syed Saad (2001) said in their article on “Usage of Academic Libraries: The Role of Service Quality, Resources, and User Characteristics” that Academic Library raises questions about the books serials, electronic resources, new technology, providing service information to the library users in the present time. User’s satisfaction depends on user’s facilities. The explanatory factors involve in service resources, quality factor, users characteristics.

Lakshmi, R.S.R.Vara (March 2003) in “Measurement of College Library Performance: An Evaluative Study with Standards” said that Library is a major part of higher study. Library should maintain a standard to betterment of its services.

Adeniran, Pauline (2011) said about the satisfaction of users with academic libraries services: staff, students and researcher. in his article on “User satisfaction with academic libraries services: Academic staff and students perspectives.” He opined, Library has to improve the quality of service to enable them the challenges of better service.

Barua & Mahapatra (2017) elaborate about various services especially academic library services in the book “Academic Library System”.

Background

Brainware University started their journey 2016, with central library there are four more department libraries, they are- 1. Nursing Library, 2. Pharmaceutical Library, 3. School of Law Library and 4. Allied Health Science. Total book collection in central library including departmental library 15300(approx.) as of 11/1/2021. The library provides offline and online services. Online services are e-book, e-journal, database etc. In addition,, Brainware University library has collaboration with national and international organization, British council and Chitrabani Library to enrich their services.

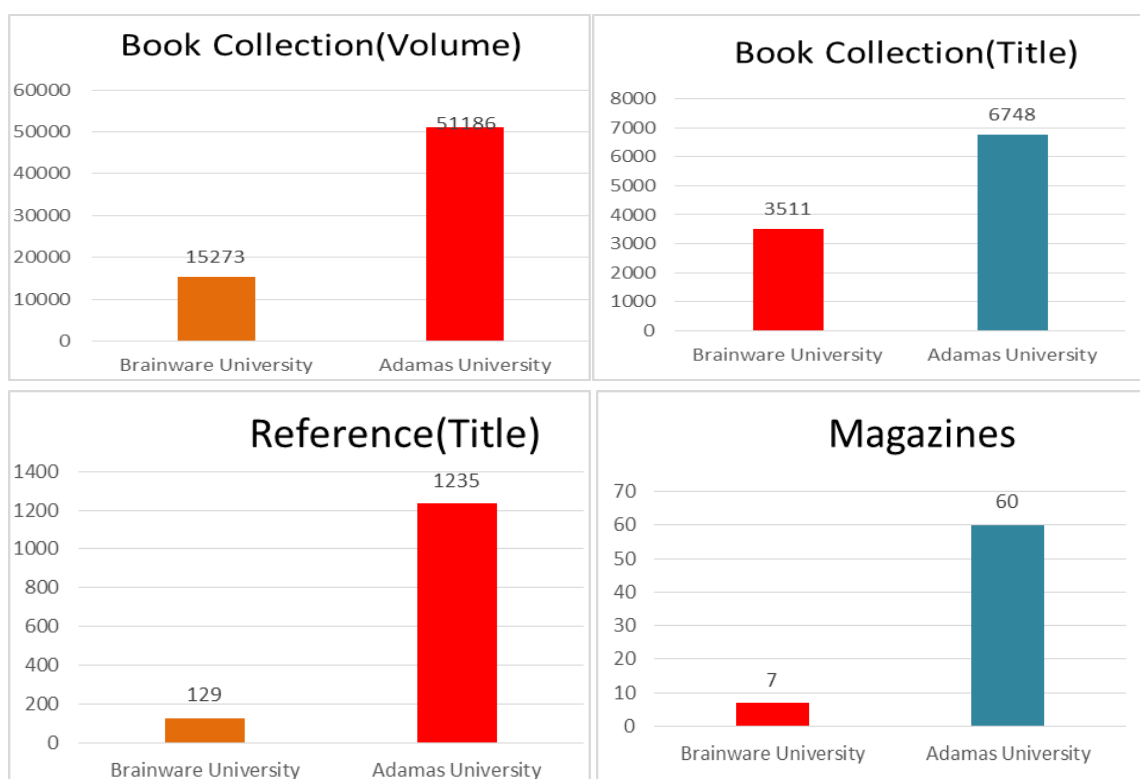
Adamas University is also a private university in west Bengal. It was established in 2014. There are four departmental libraries -1. School of Engineering Technology, 2. School of Law and Justice, 3. School of Pharmacy, 4. School of Education .Their total collection of books 51000(approx.), according to their website. They also provide e-resource, e-book, offline and online service.

Analysis

Basically these two university libraries have some differences in their book collection and other collections. The University library services are also different when it comes to external services. We discussed about similarities and differences of this two private University Libraries.

1. Collection:

Brainware University has 15273 books with 3511 titles (according to their website) and Adamas University have books 51186 (according to their website) with 6748 titles. This shows that total collection of books are more in Adamas University. Brainware university help their students with 13 career development books but career development books are not available for Adamas University students. Brainware University story book collection is 129 is very little as compare to Adamas University, they has 1235 story books. Brainware University have 7 magazines and Adamas University has 60 magazines. Dictionary collection of Brainware University is 15 and in Adamas University Dictionary collection is not separately mentioned. Journal collection is 7 on Brainware University and the number of collection of CD/DVD is 94 and Adamas University has 60 print journals and 916 CD/DVD. In addition Adamas University has 5 online databases containing 10 thesis and 2000 e-books.



2. Services:

These two Libraries give online OPAC services, reference services, reprography services, current awareness services, magazine and newspaper facilities, e-mail alert service, telephonic alert service and NDLI membership to their students. Brainware University is providing Inter library loan facility but Adamas University did not give this facility. Here we discussed various services of University Libraries according to the following parameters:

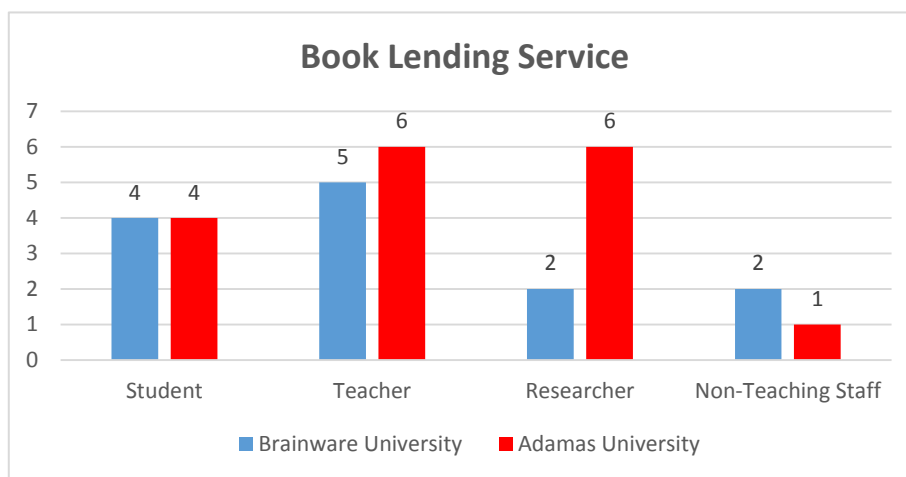
a. Reading and Lending services:

Brainware University Library provides following book facility:

Brainware University	Students	Teacher	Researcher	Non-Teaching Staff
No of Books	4	5	2	2
Days	15	30	30	30

Adamas University library also provides following book facilities:

Adamas University	Students	Teacher	Researcher	Non-Teaching Staff
No of Books	4	6	6	1
Days	20	30	30	14



b. Library Orientation: These two University libraries give orientation program to its user for better understanding how library works.

c. Reference and information services: These two universities are similar reference services.

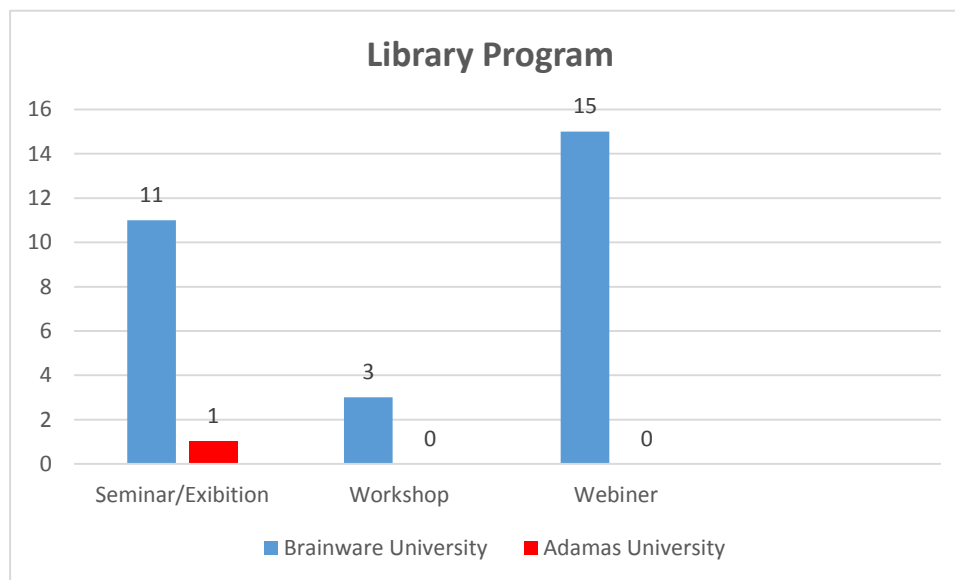
d. Current awareness services(CAS): This two University CAS services almost similar but Brainware University library added social media(Face book) as a platform to reach more users.

e. Inter-library lone: Brainware University Inter-library lone service available with Brainware Group of Institution-SDET but Adamas University don't have Inter-library Lone service.

f. Reprography Service: Reprographic Service is given by both libraries .

g. Book Reservation/Preservation: Book reservation by Brainware University libraries and Adamas University doing in a traditional way. But in digital platform Brainware University uploading Previous Year question Paper .This facilities are not available in Adamas University library.

h. Exhibition and Extra curricula activity: Brainware University library organized seminar and book exhibition for students and users since 2018, Total number of Programs in 2018 was 2, in 2019 no of programs was 6, and in 2020 Brainware University library also doing great job with 3 programs (04/03/2020), workshop-3 (16/01/2021), and 15 (20/11/2020) webinars. Adamas University organized only one Exhibition in 2019, in compare to Brainware University Library this number of program is not sufficient.



i. External Services: Brainware University took step to promote their library services through social media, organizing webinar and e-book services but Adamas University did not give these types of services to its users. Brainware University Library started their Facebook page on 5th October 2020. After 3 months, this page got 615 likes and 626 followers. Till 7 January 2021, 186 information were posted in the facebook page. Facebook page provide various information regarding University library.

j. Student Development Program: Brainware University gives opportunity to their students to know how library works but this facility is not available in Adamas University Library.

k. Digital Section: Brainware University Library has digital section in every department but Adamas University has provide only one digital section. It is a major difference in these two University Libraries.

Conclusion

After analyzing the information segment wise of these two university libraries, we found some differences. Adamas University Library has more collection than Brainware University. Adamas University library has more books than Brainware University Library collection. Similarly story book title of Adamas University 9 to 10 times bigger than Brainware University collection. And magazine collection of Adamas University Library is also better than Brainware University Library.

In alert services, e-mail and telephonic services are unique features of the Brainware university library. Brainware University Library also delivered copyright free e-books and e-mail alert services.

University Library should focus on their teachers and researchers. Adamas University give extra one books to their researchers and faculties. Students get 5 more days for returning the book as compare to Brainware University Library. Brainware University Library gives one extra book to the non-teaching staff, this is also a good initiative.

Inter-library loan is a good feature that is implemented on Brainware University library.

Brainware University library organize various workshop and during lockdown and pandemic situation, due to Covid-19, they also introduce webinar. Brainware University Library hosted 15 webinar .Adamas University library not conducted any webinar and they have no Face-Book page to promote their library.

Adamas University has number of good e-book collection. This is a good service for students as well as researchers.

In term of external services Brainware University doing good job with limited resources. Adamas University should include the good services which are being provided by Brainware University library, to give a better library services to their users. Brainware University and Adamas University library both offer some unique services. Both of them should adopt each other's good services to enhance their facilities.

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Comparative Evaluation of Content Management of UGC Approved Central University Library Websites in Delhi

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Abstract

The present study evaluates content diversity and management of six UGC approved central university library websites of Delhi. The study is based on a self-evaluative method of research. A total of 94 criteria elements have been identified through literature review and observation of select library websites and a checklist has been designed based on the same. Findings reveal that the top three library websites to provide maximum information are B. R. Ambedkar Central Library of Jawaharlal Nehru University (72.3%), Delhi University Library System of University of Delhi (56.4%), and G.K. Chadha Library of South Asian University (52.1%) respectively. A large number of least common features have been found in all four considered websites, that reflect the unsatisfied picture of university library websites in today's digital environment. Also, there is no individual library website which is providing maximum information in all four aspects (general information, library collection, information about electronic sources, and library services). Every library website is lacking in one aspect or another. Provision of providing more than just basic information, innovative and better services, and user-friendly content organization and management are few suggestions.

Keywords: Library Website, University library, Academic Library, Content Evaluation, Library and Information Science

1. Introduction

The existence of a library in the modern world is full of challenges. The rapid advancement of technology is continuously questioning the need for libraries today. The internet provides abundant information to fulfill almost all kinds of information needs of people. The potential of internet to replace library has become a major topic of debate today and therefore, library needs to prove its inevitable importance and individual identity that cannot be replaced. For this, the library has been adopting modern technologies and using them innovatively for becoming a competitive, effective and efficient provider of information. Developing library websites is one such example.

A well-equipped and well-maintained library doesn't guarantee its full utilization among users. The biggest challenge is to make the existing as well as potential users aware of the library resources and services and to attract them to the library. In other words, reaching out to the users is one of the major aims of any library today. And library website helps to achieve that aim to a great extent. Besides that, library website also opens the opportunity to provide various library and information sources and services in electronic format, which further explains the library's efforts to compete with other information systems.

Library is considered as a heart of an academic institution, which acts as a supporting pillar to accomplish the higher mission of education. Students, researchers and staff are target users of a university library and all library activities are directed to fulfill their different academic information needs. Being an important part of higher education institution, a university library put emphasis on maintaining adequate and quality collection in both print and electronic formats, providing basic and innovative services etc. and thus helping the target users to meet their different academic information needs such as: preparation of assignments, projects and exam by students, aiding lectures of teaching staff, and various reference and information requirement of researchers. This results into quality education output eventually which further contributes to the overall development of a country.

This article is particularly focused on academic library websites that are being used as a tool by LIS professionals to reach the target users (students, researchers, faculties, etc.) so that proper utilization of information sources and services could be accomplished and users' different academic information needs could be fulfilled. This would help in creating a quality higher education environment in an academic institution.

2. Statement Of The Problem

The major purpose of academic libraries is to increase their usage among users for their different academic needs like preparing assignments, tests, projects, research studies, and preparing for exams, etc. University libraries are getting financial support from the government to maintain quality information sources and services. Today, LIS professionals are very well aware of the fact that maintaining quality and relevant collection is not sufficient to fulfill the said purpose. Therefore, they are making innovative use of modern technologies to increase library usage among users. The majority of university libraries are maintaining their websites for different purposes- creating awareness about library among users, providing online sources and services, etc. The present study is based on the evaluation of university library websites concerning their content diversity and its management. The purpose is to study and analyze the select university library websites to understand (with the help of a checklist) the level of maintenance and their quality and relevancy etc. Also, these library websites have been compared with one another so that the merits and demerits of individual websites could be explained more clearly.

3. Scope and Limitations

The library websites of UGC approved central universities in Delhi are selected for the study. According to the information published on the official website of UGC, there are seven such universities as on date 01.06.2020. The names of the universities are as follows:

1. Indira Gandhi National Open University
2. Jamia Milia Islamia
3. Jawaharlal Nehru University
4. Central Sanskrit University (Rashtriya Sanskrit Sansthan)
5. Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapith
6. South Asian University
7. University of Delhi

Only six of the above mentioned seven university library websites have been selected for the study because the library website of Central Sanskrit University is not well maintained as information related to library resources, services, etc. are scattered over the main website of the university rather than being in the library web page itself. This makes it misfit for the present study.

4. Methodology

The study is based on self-evaluative method which involves the designing of a checklist based on thorough literature review and observing the features of concerned library websites. A total of 94 criteria have been identified and divided into four major groups:

1. *General Information*
2. *Library Collection*
3. *Information about E-Resources*
4. *Library Services*

The above mentioned four categories represent the major aspects of library websites under study. Each library website has been observed very closely for the purpose of data collection as well as data analysis. The retrieved data has been organized into table form and further statistical calculations have been performed.

5. Objectives

The objectives of the present study are as follows:-

1. To study the general information provided by library websites under study.
2. To study the availability of information related to different types of library collection.
3. To study the information on electronic/online resources provided by the concerned library websites.
4. To study the services provided by the libraries under study.
5. To evaluate and compare the university library websites and their contents.
6. To give suggestions for further improvements.

6. Review of Literature

A sufficient amount of literature is available covering the broader area 'website evaluation', but only a few articles have been selected for detailed review purpose because of their close relevance to the different aspects of present study such as university library website, checklist design, content management of library website, etc.

Haridasan and Uwesh (2014) evaluated the content of 13 UGC approved central university library websites in India. The checklist has been prepared for data collection. The primary purpose of the study is to improve the present condition of library websites by incorporating all the elements that have been suggested or recommended based on the study. Findings show that almost all the library websites are providing basic details related to general information, links to other resources, collection, and services, etc. and such library websites are less which provide more than basic information. The least common general features that have been found are location, site map, library tour, FAQs, and administrative activity. Types of the collection that have been found in few websites only are manuscript, maps, projects, and photographs. The least common library services mentioned in the websites are DDS, indexing, reference, research support services, training, and guidance, etc. In the case of e-resources, maximum library websites are providing e-books, e-journals, online databases but not online seminars, institutional repository facilities, etc. application of web 2.0 tool is also a rare feature of library websites under study. This study recommended the improvement of all library websites by incorporating all the missing elements.

Khatri and Baheti (2013) evaluated the university websites of Maharashtra and their library web pages. The study aimed to analyze the credibility of the websites. The self-evaluative method has been used for conducting the study and the checklist has been prepared based on the literature review. The elements chosen for analyzing credibility are the design of websites, user-friendly access issues, validity factors, etc. The library web pages have been studied based on various contents like general information, collection, and services. Findings reveal that almost all websites are providing graphics and information related to the history of the university, copyright registration, contact details, etc. On the other hand, very few websites have update details, academic event calendars, accreditation information, etc. which are equally important to ensure the credibility of any website. As far as library web pages are concerned, only a few are there which provide the basic information related to the general details about the library, working hours, collection and services, etc. Overall, the library websites are not maintained properly.

Kumar and Bansal (2014) emphasized the essential qualities of a good library website in detail. Eight newly built IITs in India during 2009-10 have been selected for evaluation of their library websites. The study described some of the important qualities of the library website in detail. Simply designed homepage having precise, sorted, and relevant information, a user-friendly interface, and a balanced combination of texts and graphics enhance the quality of the library website. Second is site design that focuses on the organization of the content. Navigation through the site should be easy. The third element is the content design which is considered the most important part of any website. Content quality could be ensured by incorporating the most important assets of a library that need exposure, ad banners must be avoided, and language should be simple, informal, and friendly. Besides these, the use of web 2.0 tools such as blogs, wikis, podcasts, bookmarks, etc. has also been emphasized. The comparison of eight IIT library websites shows that none of them qualifies the criteria completely and the reason could be their recent origin at that time of the study.

Kumar and Mir (2017) analyzed and compared the content and usability of 4 central university library websites of the central zone of India. A checklist has been developed covering the contents related to general information, collection, services, retrieval interface, accessibility on universities web pages, other links. Results show a satisfactory picture of all four library websites. They all include the maximum contents mentioned in the checklist. Information related to authority, mission, sitemap, etc. are not common.

Lee and Teh (2001) conducted the study to evaluate the content and design of twelve academic library websites in Malaysia. The mixed-method approach has been used for the study. Results show that majority of library websites provide general information like name of the library, introduction, rules and regulations, opening hours etc. OPAC facility is also a common feature but very few provide links to OPACs of other libraries also. Links to other internet sources like e-journals, e-books, e-reference sources, etc. are also provided. Access to internal electronic database services such as examination papers, thesis abstracts, university publications, and lectures and links to external internet sources (subscribed databases) are also provided by maximum library websites. The least common features that appear in the websites are the information related to technical services, interactive services, instructional supports, multiple language facilities, etc. Besides these objective analyses, another aspect has also been included in their study. The LIS professionals and users of the websites have been asked to rate the evaluation criteria as per their opinions. And the significant difference has been found in their ratings. Overall, few features have been emphasized in the study to take care of, while maintaining a good library website. Seamless access of OPAC through the web, incorporation of more interactive services, multiple language support, the embedding of instructional materials, regular updation, removing of dead links, providing internal information resources (database services)

into the internet. The majority of library websites have simple and basic features and therefore this study concluded that the expectation level is much higher than what library websites are doing at present.

Mahalakshmi (2015) conducted the evaluative study to analyze the content, navigational speed, strength, and weaknesses of the library websites of six Universities of Coimbatore District. 85 criteria have been developed for evaluation purposes. The general information provided by maximum websites includes an introduction, contact, graphics and pictures, copyright details, site map, feedback, etc. and information about location, updation, annual reports/statistics, membership, library policy, etc. are provided by only a few websites. The common types of collection found in six library websites are books, periodicals, CD/DVDs, audio-video, e-resources, and online databases. Very few library services are provided by all websites which reflect the immediate need for improvement in these websites. No library website provides internet services, reading rooms, bibliography, ILL, reprography, and other value-added services like web 2.0, user guidelines, news alerts, online tutorials, etc.

Pathak, Pal, & Rai, (2008) analyzed the content management and usability of library Web sites of all IITs in India based on checklist criteria, designed by surveying the library websites under study. It has been found that all library websites are informative but are dissimilar in their contents provided and are not much user-friendly. General information like rules and regulations, web OPAC links, update details, collection, and services are provided. Few websites reveal borrowing rules, journal holding information, etc. classification of content on websites is not user friendly as users prefer various services on the main page only. So, the categorization and labeling of information on the website are not user friendly. In the end, few criteria for quality library websites have been mentioned such as easy language, clear and logical structure, options for different user groups, up-to-date, short, and concise information.

Silva (2019) created a framework to evaluate the content and design features of 14 university library websites of Sri Lanka based on a review of the literature and expert evaluation. Also, the paper evaluated university library websites of Sri Lanka based on the designed checklist including 95 criteria related to content and design features of the websites. Findings reveal that the design of the Sri Lankan university libraries' websites is more compliant with the evaluation framework than the website content. The majority of library websites are providing almost all general information. Library resources are also provided through the website but only half of them are providing past exam papers. Very few library websites provide 'ask a librarian' service, online help facility, and services for differently-abled users. As far as external links and current awareness are concerned, only a few websites are there which provide access to subject gateways, search engines, and Frequently Asked Questions (FAQ). It has been recommended to incorporate all the content features mentioned in the framework to improve the quality of library services for the users.

7. Data Analysis and Interpretation

The collected data has been organized in table form for further analysis and interpretation. The data analysis is based on point system. One point has been assigned to each criteria element. Total points (along with the percentage) have been calculated at the end of each table (from Table 2 to Table 6) in order to rank the six library websites on the basis of various factors and compare them with one another.

Sr. No.	Name of the University	Name of the library	Year of establishment	Library URLs
1	University of Delhi	Delhi University Library System (DULS)	1922	http://crl.du.ac.in/index.htm
2	Jawaharlal Nehru University	Dr. B.R. Ambedkar Central Library (BRACL)	1969	http://lib.jnu.ac.in/
3	Jamia Milia Islamia	Zakir Hussain Library (ZHL)	1920	https://www.jmi.ac.in/zhlibrary
4	South Asian University	Prof. G.K. Chadha Library (GKCL)	2010	http://library.sau.ac.in/
5	Shri Lal Bahadur Shastri National Sanskrit University	Mahamahopadhyay Padamsri Dr. Madan Mishra Granthalaya (MMG)	1962	https://www.slbsrsv.ac.in/library/about-library-0
6	Indira Gandhi National Open University	Library Documentation and Division (LDD)	1986	http://www.ignou.ac.in/ignou/aboutignou/division/ldd/introduction

Table 1: Basic Information

Table 1 contains some basic information, such as names of the universities, their libraries, year of establishment, and library URLs. Zakir Hussain Library (ZHL) of Jamia Milia Islamia University is the oldest one established in 1920 and Prof. G.K. Chadha Library (GKCL) of South Asian University is the latest one, established in 2010. For the convenience of the study, acronyms have been used instead of the full names of the libraries in the following tables.

Sr. No.	General Information	DULS	BRACL	ZHL	GKCL	MMG	LDD
1	About	✓	✓	✓	✓	✓	✓
2	History	✓	✓	✓	✗	✗	✗
3	Mission	✗	✗	✗	✗	✗	✓
4	Vision	✗	✗	✗	✗	✗	✗
5	Objectives	✗	✓	✗	✓	✗	✓
6	Authority	✓	✓	✓	✓	✓	✓
7	Library policy	✗	✓	✗	✗	✓	✗
8	Library rules and Regulations	✓	✓	✓	✓	✓	✓
9	Library committee	✓	✓	✗	✓	✓	✗
10	Location	✗	✓	✗	✓	✗	✗
11	Sitemap	✗	✓	✓	✗	✓	✓

Sr. No.	General Information	DULS	BRACL	ZHL	GKCL	MMG	LDD
12	Library hours	✓	✓	✗	✓	✗	✓
13	Library Guide/tour	✗	✗	✗	✓	✗	✗
14	Membership	✓	✓	✗	✓	✗	✓
15	News and events	✓	✓	✓	✗	✗	✗
16	Photo Gallery	✗	✓	✓	✗	✓	✓
17	Copyright	✓	✓	✓	✗	✓	✓
18	Floor plan/ library sections	✗	✓	✓	✗	✗	✓
19	Date of updation	✓	✗	✓	✗	✓	✓
20	FAQ	✗	✓	✗	✓	✗	✓
21	Visitors Hits	✓	✗	✓	✗	✗	✗
22	Contact	✓	✓	✓	✓	✓	✓
23	Feedback/ Suggestion/Grievances	✓	✓	✓	✗	✓	✓
24	Staff directory	✓	✓	✓	✗	✓	✓
25	New Arrivals	✓	✓	✓	✓	✗	✗
26	Awards and Achievements	✓	✗	✗	✗	✗	✗
27	Annual reports/ Statistics	✓	✓	✗	✗	✗	✓
28	Guides and tutorials	✓	✓	✗	✓	✗	✗
29	Library calendar	✗	✗	✗	✓	✗	✗
30	Links to branch libraries	✓	✓	✗	✗	✗	✗
31	Download forms	✗	✓	✗	✗	✓	✓
	Total points	19	24	15	14	12	18
	Percentage	61.3%	77.4%	48.4%	45.2%	38.7%	58.1%

Table 2: General Information

Table 2 shows the general information provided by each library website. General information includes all those criteria elements that help existing as well as potential users to quickly know about the library and its different aspects. It plays a major role in attracting new users as it helps in creating first impressions. Also, it helps in building trust and confidence among users by providing information related to authority, contact, rules and regulations, location, etc. and thus impacts the decision of a user to further explore the website and utilize its resources and services.

The Table 2 shows that BRACL (77.4%) provides maximum information followed by DULS (61.3%), LDD (58.1%), ZHL (48.4%), GKCL (45.2%) and MMG (38.7%). The majority of libraries provide general information like introduction, authority, library rules, and regulations, library committee, site map, library hours, photo gallery, date of updation, contact, feedback, staff directory,

and new arrivals. The information provided by only a few library websites is history, mission, objectives, library policy, location, library guide/tour, news and events, floor plan/library sections, FAQs, visitor hits, awards and achievements, annual reports/ statistics, guides and tutorials, library calendar and links to branch libraries.

Sr. No.	Library Collection	DULS	BRACL	ZHL	GKCL	MMG	LDD
1	Books	✓	✓	✓	✓	✓	✓
2	Journals	✓	✓	✓	✓	✓	✓
3	Magazines	✓	✓	✗	✓	✓	✓
4	Reference sources	✓	✓	✓	✓	✗	✓
5	Back volumes of Journals	✓	✓	✓	✗	✗	✓
6	News papers	✗	✓	✓	✓	✓	✓
7	Thesis and dissertations	✓	✓	✓	✓	✓	✓
8	Manuscripts	✓	✗	✓	✗	✗	✗
9	Government publications	✓	✓	✗	✗	✗	✗
10	World bank publications	✓	✓	✗	✗	✗	✗
11	Audio-video and CDs/DVDs	✓	✓	✓	✓	✗	✓
12	Donation/Gifts	✗	✓	✗	✗	✗	✓
13	Projects	✗	✓	✗	✗	✗	✗
14	Archives	✗	✓	✗	✓	✗	✗
15	Faculty/Library publications	✓	✓	✓	✗	✗	✗
16	Previous exam papers	✗	✗	✗	✗	✗	✓
	Total points	11	14	9	8	5	10
	Percentage	68.8%	87.5%	56.3%	50%	31.3%	62.5%

Table 3: Library Collection

Table 3 shows the types of library collection (both print and electronic) revealed by all six university library websites. The collection development of any library depends upon its nature and purpose of existence. Since this study is about academic library websites, so the collection should fulfill the academic needs of target users (students, researchers, and faculties). This section includes the criteria points that describe the variety of academic library sources.

Here also, BRACL (87.5%) ranks first which provides maximum types of library collections, followed by DULS (68.8%), LDD (62.5%), ZHL (56.3%), GKCL (50%) and MMG (31.3%). Books, journals, magazines, reference sources, back volumes of journals, newspapers, thesis, and dissertations, audio/videos, and CD/DVDs are provided by almost all libraries. The least common types of collections found in library websites include manuscripts, government publications, World Bank publications, donations, projects, archives, faculty/library publications, and previous year exam papers.

Sr. No.	E-Resources	DULS	BRACL	ZHL	GKCL	MMG	LDD
1	E-book	✓	✓	✓	✓	✓	✓
2	E-journals	✓	✓	✓	✓	✓	✓
3	E-Newspapers	✗	✓	✓	✓	✓	✗
4	E magazine	✗	✗	✗	✓	✓	✗
5	Conference proceedings	✗	✗	✗	✗	✗	✗
6	Internal Electronic database services	✓	✓	✗	✓	✗	✓
7	External electronic database services	✓	✓	✗	✓	✓	✓
8	CD Rom Databases	✗	✗	✗	✗	✗	✗
9	CD/DVDs	✓	✗	✓	✓	✗	✗
10	Institutional Repository	✓	✓	✓	✓	✗	✗
11	Subject gateways	✓	✗	✗	✗	✗	✓
12	Reference and citation sources	✓	✗	✓	✓	✗	✓
13	Consortia resources	✓	✓	✗	✓	✗	✗
14	Trial E- Resources	✓	✓	✓	✓	✗	✓
15	Open access e-resources	✓	✓	✓	✓	✗	✓
16	Links to other libraries online catalogues	✗	✓	✗	✗	✗	✓
17	Search engines	✓	✗	✗	✗	✓	✗
	Total points	12	10	8	12	6	9
	Percentage	70.6%	58.9%	47.1%	70.6%	35.3%	52.9%

Table 4: Information about Electronic/Online Resources

Table 4 contains information about electronic/ online resources provided by university library websites under study. Maintaining quality electronic resources and making them accessible is a challenge for any library today. Library websites provide a platform to not only bring users and electronic resources closer at one place but also to provide easy access to these resources through online only.

DULS and GKCL (70.6%) maintain maximum types of electronic resources, followed by BRACL (58.9%), LDD (52.9%), ZHL (47.1%), and MMG (35.3%). The majority of libraries provide e-books, e-journals, e-newspapers, internal and external electronic databases, institutional repository, reference and citation sources, trial e-resources, and open access e-resources. Only a few library websites provide e-magazine, CD/DVDs, subject gateways, consortia resources, links to other libraries' online catalogs, and search engines. No library website includes conference proceedings and CD ROM databases.

Sr. No.	Library Services	DULS	BRACL	ZHL	GKCL	MMG	LDD
1	OPAC	✓	✓	✓	✓	✓	✓
2	Circulation	✓	✓	✓	✓	✓	✓
3	IT services	✗	✓	✗	✓	✗	✗
4	Remote access facility	✓	✓	✓	✓	✗	✓
5	Search facility	✗	✓	✗	✓	✗	✗
6	Reading room	✗	✗	✓	✓	✗	✓
7	Bibliography services	✓	✗	✗	✓	✗	✗
8	Locker facility	✗	✓	✓	✗	✗	✗
9	Book reservation	✗	✓	✓	✗	✗	✓
10	Reprographic	✓	✓	✓	✗	✗	✓
11	Reference service/desk	✓	✓	✓	✓	✗	✓
12	Referral service	✗	✓	✓	✗	✗	✓
13	ILL	✓	✓	✓	✓	✗	✓
14	Plagiarism check	✗	✓	✗	✓	✗	✓
15	DDS	✗	✗	✗	✗	✗	✗
16	CAS	✗	✓	✗	✓	✗	✗
17	Newspaper clipping	✗	✓	✗	✗	✗	✗
18	Researcher support services	✓	✓	✗	✓	✗	✗
19	Services for differently abled users	✗	✓	✓	✗	✗	✓
20	Tutorial, Training and guidance	✓	✓	✗	✗	✗	✗
21	Book Banks	✗	✗	✗	✗	✗	✗
22	Email	✗	✗	✗	✗	✗	✗
23	Web 2.0	✗	✓	✗	✗	✗	✗
24	Social Networking services	✗	✗	✗	✓	✗	✗
25	RSS	✗	✗	✗	✓	✗	✗
26	Indexing and abstracting service	✗	✗	✗	✗	✗	✗
27	Technical services	✗	✓	✗	✗	✗	✗
28	List of print journals	✓	✓	✓	✗	✗	✓
29	List of e journals	✓	✗	✗	✗	✗	✗
30	List of e books	✗	✗	✗	✓	✗	✗
	Total points	11	20	12	15	2	11
	Percentage	36.7%	66.7%	40%	50%	6.7%	36.7%

Table 5: Library Services

Table 5 shows different library services provided by university libraries as shown through respective library websites. Unlike other general websites, the aim of the library website is not limited to being an informative tool only but also to become a digital platform to serve the users there only so that it could be no more essential thing to visit the library to avail its resources and services. This section includes the criteria elements that represent both traditional and modern services provided by libraries today.

The table shows that BRACL (66.7%) provides maximum library services, followed by GKCL (50%), ZHL (405), DULS, and LDD (36.7%), and the least number of services provided by MMG (6.7%). Only a few library services have been found common in the majority of library websites are OPAC, circulation, remote access, reprographic/information desk, ILL, and list of print journals. Other services such as IT services, Search facility, Reading room, Bibliography services, Locker facility, Book reservation, referral, plagiarism check, DDS, CAS, newspaper clipping, research support services, Services for differently-abled users, Tutorial, Training and guidance, Book Banks, Email, Web 2.0, Social Networking services, RSS, Indexing and abstracting service, Technical services, List of print journals, list of e-journals and list of e-books are not common features of maximum library websites. This doesn't reflect the good picture of library websites of central universities of Delhi.

Sr. No.	Component	DULS	BRACL	ZHL	GKCL	MMG	LDD
1	General information	19	24	15	14	12	18
2	Types of library collection	11	14	9	8	5	10
3	Information about electronic resources	12	10	8	12	6	9
4	Library services	11	20	12	15	2	11
	Total	53	68	44	49	25	48
	Percentage	56.4%	72.3%	46.8%	52.1%	26.6%	51.1%

Table 6: Number of Criteria Points Gained

Table 6 shows the number of criteria points gained by each library website out of the total 94 points. This makes the analysis a bit easier and nuclear as it enables the evaluation of library websites individually as well as with one another. The website of BRACL is at the top level with 68 points out of 94. The second position is secured by the website of DULS with 53 points. Next is the website of GKCL with 49 points and got the third rank. Then there is the website of LDD which secured the fourth rank with 48 points. Next is the website of ZHL with 44 points and secures the fifth position. The website of MMG is in the last position with the least number of points, i.e, 25.

But the table also shows that there is no such library which is providing maximum information related to all four aspects covered under the study. The website of BRACL includes 72.3% of total criteria elements, followed by the website of DULS (56.4%), GKCL (52.1%), LDD (51.1%), ZHL (46.8%), and MMG (26.6%). Therefore, no individual library is doing excellent in all four aspects together.

8. Findings

Major findings of the present study are as follows:

1. In all three cases of (a) general information (Table 2), (b) types of the library collection (Table 3), and (c) library services (Table 5), the library website of Jawaharlal Nehru University provides maximum amount of information and that of Shri Lal Bahadur Shastri National Sanskrit University provides the least amount of information as compared to others library websites.
2. The library website of the University of Delhi and South Asian University provides an equal amount of information related to electronic resources (Table 4) and the library website of Shri Lal Bahadur Shastri National Sanskrit University provides the least amount of information.
3. The top three library websites providing maximum general information (Table 2) and types of library collection (Table 3) are BRACL, DULS, LDD respectively.
4. The top three library websites providing maximum information related to types of electronic information resources (Table 4) DULS, GKCL, and BRACL respectively.
5. The top three library websites providing a maximum amount of information related to library services (Table 5) are BRACL, GKCL, and ZHL.
6. Overall, the top three library websites are BRACL, DULS, GKCL respectively (Table 6).
7. No library website fulfils the expectation level of providing maximum information in all four major areas of the library. Each one is lacking in one aspect or another.
8. Many library websites do not display a few important criteria elements directly. Rather these elements lie hidden under the headings or sub-headings which are far from representing them. This can lead to inaccessibility of important information to users. For example, DULS provides information related to Membership in the sub-section Library rules and regulation which further lies under the section Library Governance. Similarly, LDD provides feedback, ILL, book reservation services in the 'Download' section, and types of the collection has been given under the heading 'Statistics'. This exact problem has been observed in the study of S.K. Pathak, Mita Pal, and Vijay Rai, in which, the information related to latest arrivals and links to e- journals had been given under different other sections rather than on main page. (2008). The paper pointed out that the websites are not user friendly because of their improper classification of content.

9. Suggestions

1. Library websites should provide more than just basic information. Library policy, location, library guide/tour, news and events, floor plan/library sections, FAQs, visitor hits, awards, and achievements, etc. are not the common features of the majority of library websites under study.
2. The library websites should focus on providing more innovative, improved, and better services which is the major purpose behind the whole idea of library website development.
3. The incorporation of web 2.0 tools should also be given special attention.
4. The classification and organization of content should be more user friendly.

10. Conclusion

The major purpose of the study is to evaluate and compare the content of university library websites of Delhi that fall in the list of UGC. A total of 94 criteria elements have been identified based on literature reviews and observation of each library website under study. Almost all library websites provide basic information but this is not the higher aim of developing library websites in general. The study shows that there is a large number of least common features in the majority of library websites which means libraries are still lacking in providing important information to users. Also, there is no library which is covering information related to all four aspects (general information, library collection, e-resources, and library services). Each one is lacking in one aspect or another. The top three library websites based on the present study are B. R. Ambedkar Central library of Jawaharlal Nehru University, Delhi University Library System, and G.K. Chadha Library of South Asian University respectively.

This can be concluded that there has not been found much difference in the results of this study in comparison to previous studies. Though the library websites of the concerned universities are well-maintained but not to the level of expectation. University library websites have to do a lot more to create a distinct identity of themselves and the library in general, from other modern, effective, and efficient information systems.

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Effectiveness of e-resources and library extension services offered by Brainware University Library during COVID-19 period: A study

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Abstract

As the world responds to the COVID-19 pandemic, most governments have temporarily closed all educational institutions. These nationwide closures impacted 90 percent of the student population in all over the globe. To meet the quick demand in this situation, librarians maintain digital collection, e-resources and provide information in digital mode. Brainware University (BWU) library also offered different digital library services like e-resources and various library extension services during COVID-19 period to its user community. This study was carried out to find out the effectiveness of e-resources offered by BWU library during COVID-19 period by performing a users' study using questionnaire method. This study also tried to explore the effectiveness of the various library extension services provided by BWU Library during the pandemic situation. The findings showed that maximum numbers of users were satisfied by the digital services offered by BWU Library during COVID-19 period. Some suggestions were also offered in terms of giving digital library services.

Keyword: Digital Library service, E-resources, Extension services, extension activities, Library Services, User services, User satisfaction.

Introduction

The COVID-19 pandemic poses many challenges to libraries, including the accessibility of physical materials in support of teaching and learning. Consequently, there is a transition to distance learning on an unprecedented scale. Institutes are racing to shift their courses online; students are engaging with e-books and e-learning; and researchers are drawing chiefly on electronic journals.

E-Resources and services are resources in which information is stored electronically and which are accessible through electronic systems and networks. Digital libraries and publishers have risen to the occasion, offering more and more free content and curating personalized collections so that people can continue to read and learn without disruption. E-Resources and services is a very broad term that includes a variety of different publishing models, including OPACs, CD-ROMs, online databases, e-journals, e-books, internet resources, electronic link, and web publishing etc. Indeed, as the demand for credible e-resources surges, digital libraries have emerged as vital pathways to high-quality e-

books, journals and educational content. Beside these digital services libraries are also provide some extension services through digital mode, like Virtual Workshops, Webinars, Virtual Conferences etc. Extension service is one of the services, which library provides beyond the wall of the library. Therefore, apart from the routine services any special services which library provides to their users comes under the extension services. Through various programmes and proper planning, the Extension Services are efforts to reach the maximum number of people. [Impact of e-resources and services on higher education and research, 2018].

ALA Glossary of Library and Information Science 1983 defines *Library Extension Services* as - “the provision by a library of materials and services (including advisory services) to individuals and organizations outside its regular service area, especially to an area in which library service is not otherwise available.”[Begam, 2017]

Mc Colvin considers it as means “to increase the number of readers and the volumes of work and later to make the library more useful to more people”. [Begam, 2017]

Dr. Ranganathan considers “Apart from such methods of pure publicity, libraries are. now days developing certain new types of work which, in addition to their being directly educative or recreational, lead also to publicity as an important secondary product.”[Senthur & Yakkaldevi, 2014]

He has given the following techniques or programmes to provide library extension services:

- Intellectual Centre
- Library Talks and Public Lectures
- Library Exhibitions
- Story Hours
- Festivals and Fairs
- Display of New and Topical Books
- Quiz Programmes
- Celebration of Books’ Week

Literature Review

In Nigeria, **Onadiran, R W (1999)**, examines students’ opinion on the services of Bello University Library. Specially examines the extent of students’ satisfaction with university library services and reasons for dissatisfaction.

Shukla, Akhandanand (2010), stated that to make the library familiar the extension services should be arranged so that people may get maximum benefit from them. The extension services increase the number of readers and use of the libraries. Due to involvement of information and communication technology (ICT), its products and services become more reachable to all and become globalize.

In **Impact of e-resources and services on higher education and research, 2018, the author, FujitsuLH531** stated that electronic resources are becoming more important these days as they are more up-to-date and can be accessed anywhere of the world. A strong e-book or e-journal can satisfy the requirements of a maximum number of users.

Falt, Eric and **Das, Partha Pratim** stated that many digital libraries and publishers offering more and more free content in this COVID-19 situation so that people can continue to read and learn without disruption.

Objective of the Study

The main purpose of this study is –

1. To examine how the e-resources provided by the Brainware University Library were effective to the user community of the library during COVID-19 period.
2. To know the responses of the user community to the different types of library extension services provided by the Brainware University Library during COVID-19 period.

Scope of the study

The present study confine to know how the e-resources and extension services of Brainware University Library was effective to the users' community during COVID-19 period.

Research Methodology

As a method of research three steps has been followed:

- Methodology: A user study has been performed by using a Close Ended Structured Questionnaire through Google Form and these forms were distributed among total registered members of all the libraries.
- Data collection: In case of data collection we collected data from BWU library. Questionnaires were distributed among total registered members of all the libraries which are 3112 (as on March, 2020).

In case of e-resources (e-book links sent by the BWU library) only 378 members responded.

Extension services of BWU library has been categorized into two types: Webinars and Virtual Workshops. During the said period, total 15 webinars were arranged by BWU library and virtual workshops were 3.

- Analysis: Analysis of this study has been presented through bar charts. In case of e-resources we have shown the number of responses of the users and in case of Extension services we have shown the total number of participants and views.

E-Resources and library extension services offered by Brainware University Library during COVID-19 period:

All types of libraries have promoted their digital library services in the time of COVID-19 period for their users. Brainware University library also provided e-resources and library

extension services through digital platform. University library sent different types of e-book links to their users according to the syllabus through e-mail and also gave online membership service. University library also provided different types of extension services through digital platform in the COVID-19 period, such as arranging Webinars, Virtual workshops, dissemination of information through Social Media, like Facebook etc.

The following services were provided by the university library in COVID-19 period:

- **E-resources**
 1. E-book links (sent to the library members according to the syllabus)
- **Extension services**
 1. Webinars
 2. Virtual Workshop

Findings and Discussions

E-resources:

BWU library shared e-resources (E-book links) with their users during the COVID-19 period.

The study has been conducted for all registered members of BWU libraries. The total numbers of registered library members were 3112 (as on March, 2020) out of which only 378 members responded. So, the study has been conducted on only these 378 members.

By showing the bar charts we will come to know if the e-resources shared by university library is really fruitful for the users or if they are really satisfied.

Figure 1 showing the number of users consulted or read the e-resources shared by the BWU library during COVID-19 period. In this chart 83% users consulted the e-resources, 16% users not consulted the resources.

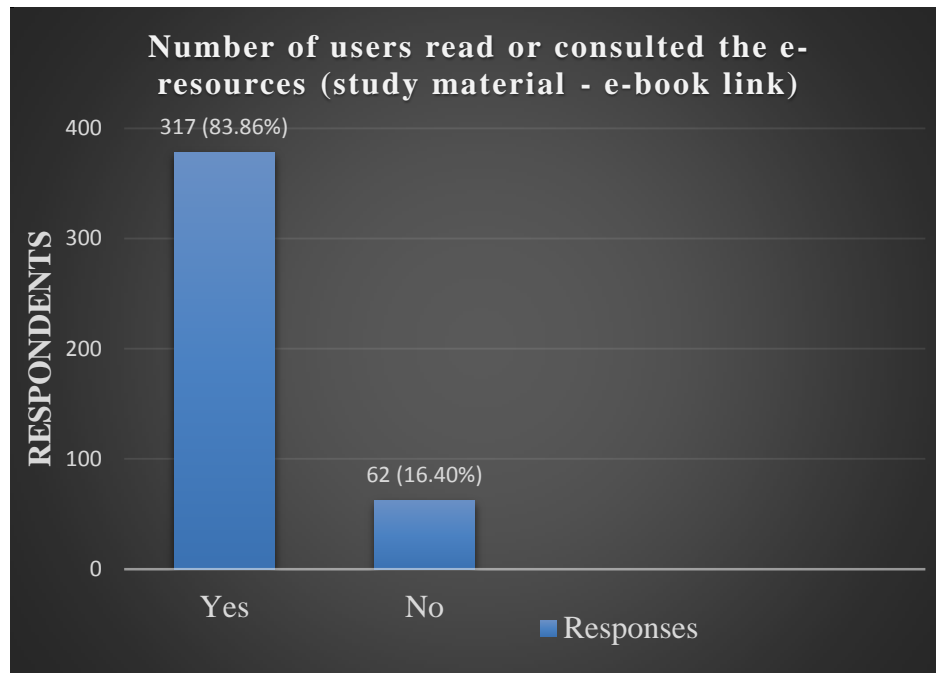


Fig.1 Number of users read or consulted the e-resources (study material - e-book link) shared by the library

Figure 2 showing if the users are satisfied with the e-resources shared by the BWU library or if the shared e-resources sufficient for all courses in their program of study. The chart is showing 70% users are satisfied, 31% users not fully satisfied.

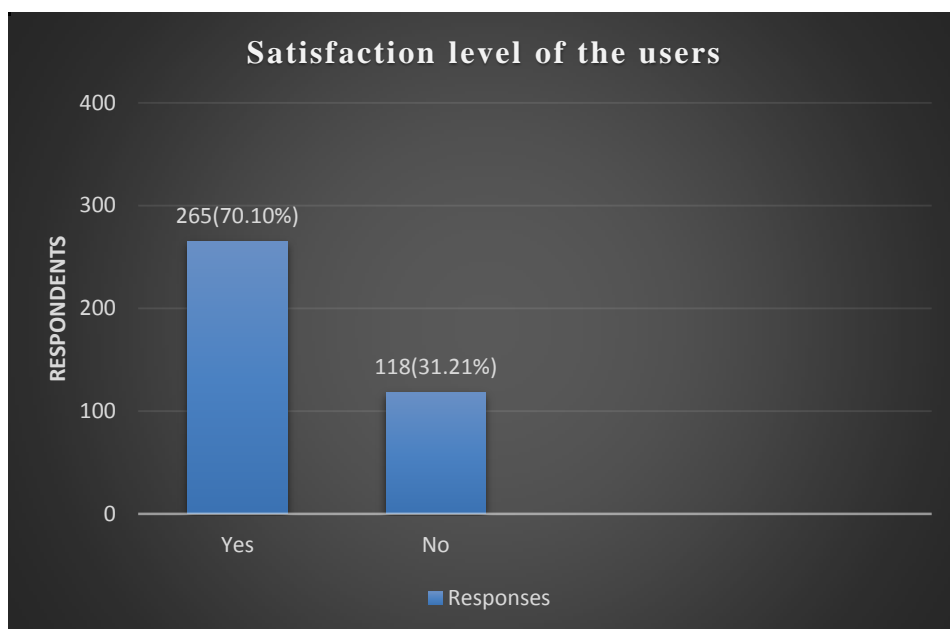


Fig.2 Satisfaction level of the users

Figure 3 showing if the availability and sharing of e-resources has increased their level of engagement with the library. In this chart 17% users are strongly agreeing, 45% users are agreeing, 30% users have a neutral feeling, 4% users slightly disagree and 4% strongly disagree.

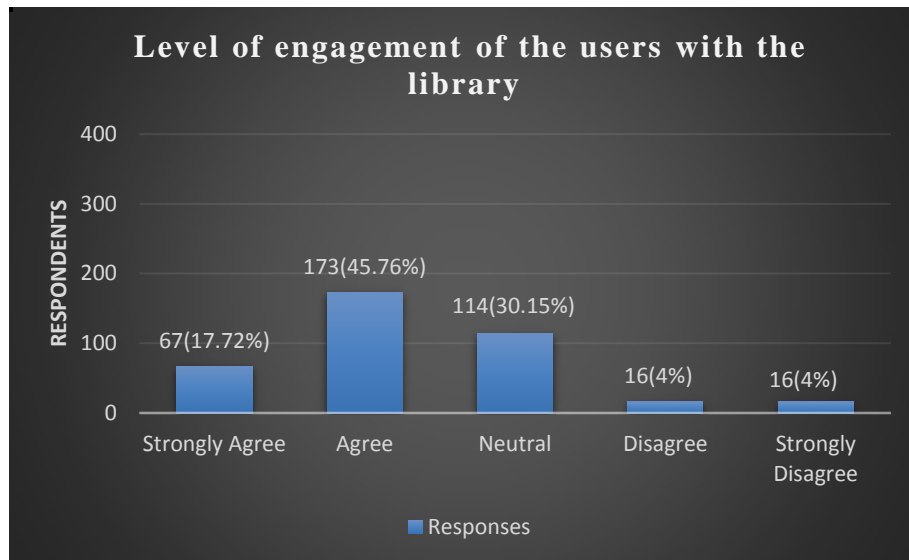


Fig.3 Level of engagement of the users with the library

Figure 4 showing if the users need any further co-operation or help from the library. According to this chart 43% said yes, 59% said no.

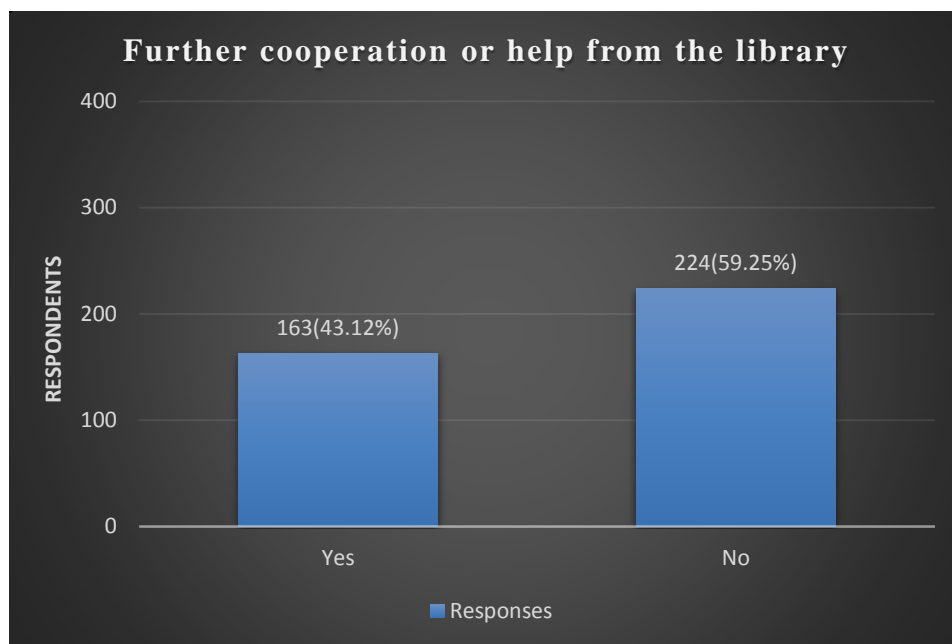


Fig.4 Further cooperation or help from the library

Library Extension Services:

BWU library arranged different types of extension services; like, webinars, virtual workshops for the BWU library members during COVID-19 period. For this library created a YouTube channel.

The following bar charts are showing the numbers of participants, number of views and total numbers of webinars or workshops arranged by the BWU library.

Figure 5 showing the numbers of Webinars organized by BWU library during the COVID-19 period. During this pandemic BWU library arranged total numbers of webinars are 15. Total numbers of participants are 13,378 and total number of views are 25,086.



Fig.5 Webinars

Figure 6 showing the number of virtual workshops arranged by BWU library during the COVID-19 period. During this pandemic BWU library arranged total numbers of workshops are 3. Total numbers of participants are 2,968 and total number of views are 4,133.

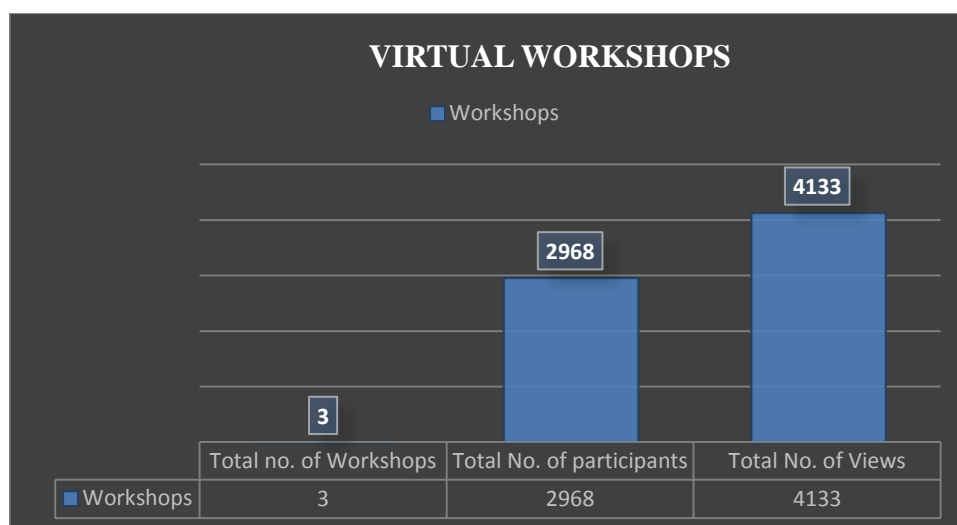


Fig.6 Virtual Workshops

Recommendations

- Recently library has started a Facebook page, but library can also use other social media platforms like, Instagram, Telegram etc.
- Library can also use some informational websites like, Blogs, wiki etc.
- Instagram : Instagram can be used to provide library services to their users.
- Telegram : By creating a group in Telegram library can give information as per users' need.
- Wiki : A Wiki is a collaborative tool that allows users to contribute and modify one or more pages of course related materials.
- User orientation programme, workshop through you tube.

Conclusion

Libraries took a mammoth task to provide a learning path to all its members. Though the very data showed that, yes, we do live in a digital age but we are not that equipped or willing to put the work to make it a success. As we can see that out of 3112 members only 378 responded, which also make it a fascinating study. This pandemic forced us to stay home and adopt a new learning process but still we are not able to grasp the facts in full.

The close-ended questionnaire provided the data the maximum members who responded, were happy with the services. But as member of the library fraternity, we can assume we have a long way to go to adopt the new normal.

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Application of RFID Technology in Central University of Jammu (CUJ) Library: A Study

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Abstract

Today there are electronic security systems which help the libraries to control, minimize or avoid library material theft and unethical losses. The use of electronic security equipment component typically provides alarm notification to the appropriate authority, entry control, and site surveillance. The major elements of any electronic security system in a library includes the collection security .Library is a place where not only information regarding books is available but is also available in various in the form of periodicals , reports, theses ,etc. For security of all these resources, use of RFID technology becomes essential which enables libraries to provide a safe and secure facility for library employees, library resources and equipment and library users. RFID technology as an application in the library management system can be helpful in using automated library integrated system to boost library working productivity. This paper indicates RFID based library integrated system which allows effective and efficient issue-returns of the library books including the security of library resources .It further describes different component of RFID system along with its application in Central University of Jammu library.

Keywords: *RFID Technology, RFID Tags, RFID Frequency Identification, Library Automation, Central University of Jammu (CUJ).*

Introduction

With the changing scenario of digital environment in library world, the objective for providing information to its end users, the use of latest technologies becomes an essential part. In order to automate library services and for the execution of Fourth Law of Library Science, "Save the Time of User", technology plays a great role and help us in providing right information to the right user at right time in a right way .One of the technologies which is used in libraries is Radio Frequency Identification (RFID). RFID is a technology which helps in identification and data collection which further facilitate automating the library services and allows large number of tagged books using radio frequency. The RFID-based library management system allows quick transaction flow for traceability and security benefits for the library.

Objectives of the Study

The present study is undertaken in order to achieve following objectives:

- To give brief idea about the RFID, its importance in the library system,
- To know how RFID works and describes different components of RFID technology.
- To find out the preliminary budget for the development of RFID technology in the Central Library, Central University of Jammu (CUJ) and finally its applications in Libraries.

Brief Profile of Central Library, Central University of Jammu, Jammu

Established by the Central Universities Act, 2009(Act No. 25 of 2009 read with the Central Universities Act, 2009), the Central University of Jammu came into existence on August 08, 2011. The Central University of Jammu strives to promote its vision of "becoming a centre of excellence in academic education and research and reached at a place among the nation's most significant institutions "by acting as a hub through which its users have access to all relevant information. The Library remains open on all working days from 9.00 am to 5.00 pm. The library has a rich collection of about 26000 volumes ,comprising of 20 different subject areas which includes books, printed journals, full text online tools and other non-book materials like CD's/DVD's to cater the needs of its users. The Library subscribes to about 70 printed journals, magazines and 13 newspapers. The total membership of library is 1200 which include both staff and students. The main aim of library is to connect its users with the expertise and information of various disciplines, thereby enhancing the research's aspirations and expectations at Central University of Jammu. The Central Library building is spacious, having an area of about 4200 sq. feet and is centrally air-conditioned. It has two reading halls meant for its readers, having the seating capacity of 100. The Library is divided into different Sections, for its smooth functioning. Some of these sections are Acquisition Section , Technical Section, Circulation Section ,Reference Service, Scholar Section ,Computer Lab, photocopy section, Reading Section, Periodical Section.

The library is managed by professionally qualified staff. To keep its readers up-to-date with the latest developments in technology, the library is subscribing more than 5000 Electronic National and International journals .The library is member of INFLIBNET consortium e ShodhSindhu. This consortium provides access to electronic resources like Springer, Taylor and Francis, MathSciNet, JSTOR, American Physical Society, JCCC ,I SID ,etc. The library uses open access scheme, the library works to optimize the usage of library resources and services. Most knowledge-based services, such as reference and reprographic services, internet browsing, e-resources are being provided by the CUJ Library to its users.

For automation purpose, the Central Library of Central University of Jammu (CUJ) is using latest version of open source software Koha. Web-OPAC can be accessed over the internet. The databases of books used to be updated on day-to-day basis with the details of newly procured books of different disciplines.

Objectives for Using RFID in CUJ

RFID is used in CUJ because of following reasons:-

- To have RFID based automated system in order to avert theft of library materials. In order to prevent the unissued document outside the library, an RFID tag will be placed on each document and two EAS gates at the entrance for checking unissued document from the library purpose.
- In order to correct the arrangement of documents on the shelf and easily figure out the misplaced documents, an RFID powered Shelf Management reader should be available.
- To have a fully automated library that has a counter for self-issue/return.

Components of RFID used in CUJ

The proposed system is based on RFID readers, assisted by gate and transaction antennas, and a library of RFID transponders that can store information that can be read/written electronically even without physical interaction with the aid of the radio medium.

Various Components of RFID used in CUJ are as follows:-

- RFID tags that are programmed chip with unique information which is pasted on the books/CDs/DVDs that are used for issue/return purpose.
- Staff Station Readers or sensors which is used for sending query though the tags kept on staff station device used for issue/return purpose
- Gate Antenna for checking and when an un-borrowed object has gone through it, it will activate the alarm and which makes library staff to check it before the documents go outside the library.
- Middleware Server on which the software that interfaces with the integrated library software is loaded helps in showing the details of the user and documents he wants to borrow or return.
- Handheld Reader used for stock verification purpose and also for retrieving the misplaced library materials which is crucial job for every library to carry on routine basis.
- Self Check In/Out Kiosk where users himself can issued/return the books.
- Book Drop Trolley where user can drop the library issued books placed inside/outside the library but within the university campus.

Need of RFID in Central University of Jammu

Following are challenges being faced by CUJ Library that made it necessary to use RFID in library are:-

- Rising theft where each user cannot be frisked while going out of the library by taking documents
- Dislocation of library materials which makes library user to find documents on their respective shelf
- Regarding verification of stock which is a time consuming process.
- Lack of Security control in issuing/returns of the library documents

Implementation of RFID in CUJ Library

As implementation of RFID involves a big amount where authority can't provide such allocation for libraries but Central Library, Central University of Jammu implemented RFID technology in 2018 with the help of sponsorship of J&K Bank under Corporate Social Responsibility where our esteemed Vice- Chancellor has played key role in getting RFID implemented in CUJ Library.

Phase I (Planning and Survey) (Financial Year 2017-18)				
Formation of Committee comprising Librarian, DDO and technical expert. Committee will discuss various factors involved such budget expenditure, required hardware and software, cost effectiveness and availability of manpower.				
Phase II – RFID Budget Estimate 2018				
S. No.	Item Description	Item Price	Qty.	Amount
1	Self Adhesive RFID Tags	15.00	25000	3,75,000.00
2	Exit Gate Antenna	4,00,000.00	1	4,00,000.00
3	Staff Station Reader	1,00,000.00	1	1,00,000.00
4	Installation and Commissioning	1,25,000.00	1	1,25,000.00
5	Middleware software			
6	Computer Server	1,50,000.00	1	1,50,000.00
7	Handheld Reader	1,00,000.00	1	1,00,000.00
8	Smart Card Reader	6,000.00	1	6,000.00
			Total	12,56,000.00
Phase III (Self Issue/Return) Financial 2021-22				
S. No.	Item Description	Item Price	Qty.	Amount
1	Self Adhesive Tags	15.00	10,000	1,50,000.00
2	Self Check Out Kiosk	3,50,000.00	1	3,50,000.00
3	Book Drop Station	3,75,000.00	1	3,75,000.00
			Total	8,75,000.00
GST@18% Extra and Freight Charges will be extra				

Table 1 : Showing Budget Estimated

Application of RFID Security Technology in CUJ

RFID solutions are designed to increase the operating performance of the library. This enhanced capability is provided by RFID tags which do not require line of sight to be read, so that books are actually handled less. The tag combines book identification and book security in to one label, minimizing labelling time and cost. More than one book can be read at a time, thus speeding circulation. The tags can be placed on any type of media, including CDs, DVDs and Videocassettes. The RFID tags are read/write, providing flexibility in what is encoded. They can also be put into the patron cards, speeding up the process even more. Library staff can check out and check in several items simultaneously without having to locate and scan individual bar codes. Patrons self check out

systems are also available to libraries that incorporate RFID technology. RFID solutions can also speed up the return process. As library items pass over the RFID check in antenna, they are automatically checked into the central library database. With the power of RFID tag, regular inventories can become a reality. Shelf readers allow staff to read the RFID labels easily without having to remove books from the shelves. The shelf reader can also be used to search for a single or specified group of items and alarm the user when an item has been miss-shelved.



Fig.1 Library RFID Management System

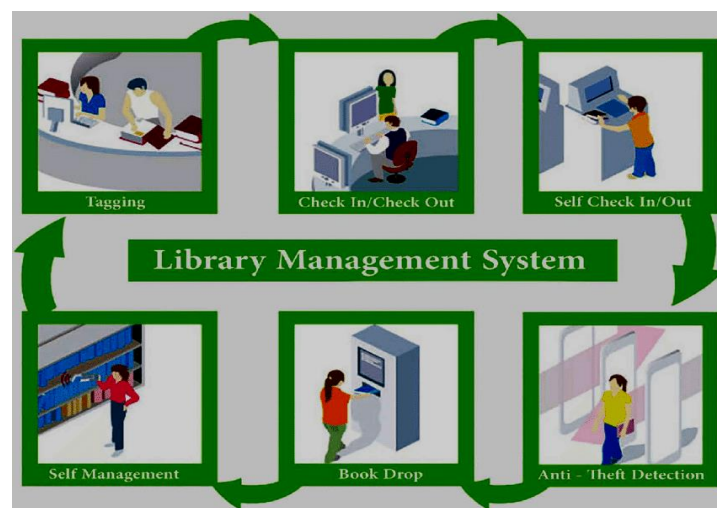


Fig 2. Library RFID Management System



Plate 1: Showing various Components of RFID in CUJ.

Findings of the Study

As Central Library, Central University of Jammu have not collected any data for implementing but keeping up-to-date with the latest technology in the field of libraries, Central Library, CUJ have implemented RFID

Due to Application of RFID technology in CUJ the following were the findings:

- Improved staff productivity and service quality.
- Increased the pace of operations, i.e., decreases the amount of time needed for circulation operation, inventory verification, etc.
- Improved efficiency.
- Increased user satisfaction and hence improves the images of libraries.
- Provided reliable statistics for management information system and management control
- Saved the time of the users
- Enhanced availability of information
- Self charging and discharging is possible.
- Locating dis-located books.

Challenges faced by CUJ Library

Various Challenges faced for proper implementation of RFID in CUJ Library are as follows:-

- Due to high cost involved in implementation of RFID, it is not a cup of tea for everyone to implement it.
- Tag collision: Sometimes user comes with two or three books for issuing purpose, then the staff station reader don't read all the tag if they are pasted on the same place. Therefore, location of pasting tag shall be taken into consideration like on one book tag shall be placed on top of the end of the back side of the book; on other book tag shall be placed on the middle and on other book the tag shall be pasted on the bottom.
- User privacy concern: As library is handling library user data, their privacy shall not be disclosed to the unknown and their data shall be handled carefully.
- Reader collision: Sometimes two users come to library holding their card standing on the circulation counter, their tag id may collide which confuse the reader.
- Uninterrupted power supply will result in smooth functioning of the technology which further smoothening the circulation activities and other library activities.

Conclusion

In CUJ library, Radio Frequency Identification (RFID) systems are used for book identification, self-checkout, anti-theft control, etc. These applications will contribute to substantial labour cost savings, boost customer service, prevent theft of books and provide a continuous update of book collections. It also enhances the speed and efficacy of lending, returning and tracking books, enabling library staff to do manual work which helps to improve their role in delivering user based services. RFID readers and RFID tags must be of high quality to achieve the best results. RFID technology is very costly and has provided good results for many libraries around the world. It is generally understood that there are real concerns about the application of the technology and it will be prudent for administrators to make good use of their community position to launch a pro-active approach to innovations that will have a positive effect on end-users of libraries. In competition with the latest technologies in the field of libraries, the high cost of RFID equipment should not be an obstacle.

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Use and Application of Digital Technologies Services in Social Science Research Institution in Mumbai: A Study

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Abstract

Digital technologies have transformed the research and development environment. It has gained the importance all over the world. In this present scenario digital technology is required in the field of educational, management, business administration etc. The main purpose of this research is to acquire the understanding of impact of digital technology on social sciences research institutions. In this present scenario digital technologies are leveraged in multidisciplinary arenas and have been a crucial element of the workflow process for several industries. This study explores the usage of digital resources in libraries. This study is undertaken from two admired social sciences institutions such as Tata Institute of Social Sciences, Mumbai (TISS) and International Institute for Population Sciences(IIPS). Information and Communication Technology (ICT) is the main areas of digital technologies which enables the users to get involved in effective usage of digitized library resources. Especially during these unprecedented times when the academia has shifted to online platforms the need to use digital technologies for information exchange and retrieval is felt. Digital technologies hold the potential to completely revolutionize the way libraries serve their users.

Keywords: Digital Resources, Digital Technologies, Information and Communication Technology (ICT), Research and Development, Social Sciences, E-Learning, Digital Libraries.

Introduction

The 21st century has leveraged the potential of digital technologies and it has taken great advantages on every organisation, it has taken an important role in everyone's lives. The access towards the digital resources is changing drastically because in older times people don't depend on the digital technologies for getting the information they mostly used the conventional mass media platforms like Newspapers, Radio, Televisions, Books to meet their information needs. This century has experienced a shift towards digital technologies. The information needs of the users have been evolving followed

by the information access patterns of the researchers. Allowing everyone access to information at the click of the mouse.

Digital technologies have various blended opportunities which have the facilities for using electronic learning materials. Digital resources are preserved in any digital formats like Text, Audio, Images, CD/DVD, Pen drives, etc. It gives out the contentment over the web and indexing system should be done for scholarly works, so the researchers can utilize and retrieve data if required.

Popular Digital Tools and Technologies

There are various digital technologies tools and applications which included in digital resources which helps in daily utilizing in getting the information. i.e.

- **Online Public Access Catalogue (OPAC):** It is an online database which helps users in the library catalogue to find their books, CDs, DVDs, and other kinds of materials which is relevant to them. In simple language, it is said to an electronic version of card catalogue (Goode).
- **Wikis:** It is a website which helps users to create, add, edit, update and share the content of resources on library services for the collaborative environment (Godwin-Jones, 2003)
- **Web 2.0 Technologies:** It is said to be an second stage of the Internet. It allows the users to share their thoughts and events through collaborating with the people in social networking sites (Donelan et al., 2010).
- **Information and Communication Technology (ICT):** It is an information technology which users use for their daily basis like computers, Internet, Mobile phones, Ipads, E-kindle, etc. It is a very useful technology in libraries because it stores and can retrieve the data or transmit the data in an electronic format (Andriessen&Koopman, 1996).
- **Instant messaging:** It helps library users to enable real-time communication and interactions between each other and receive messages through IM or wireless device. It is useful for online chatting with friends, reference management, getting online assistance, etc.(Low & Wilson, 2003).
- **Podcasts:** Users can upload and share the online digital audio files over the internet and download it to the computer or any media devices such as events upload, conferences video uploads, etc. and can get weekly updates.
- **Blogs:** It is a kind of making an online journal website which can have daily updates which share among a small group of people. Users can get the latest post and updates for the information of events, conferences, or some changing environments around (Lawson-Borders & Kirk, 2005).

Objectives:

The objectives of the study are enlisted as follows-

- To examine the usage of digital resources in selected institutions such as Tata Institute of Social Sciences (TISS) and International Institute for Population Sciences (IIPS).
- To examine the impact and benefits of digital technologies on research and development

- To examine frequency of access to the digital resources and availability of different types of materials in Tata Institute of Social Sciences (TISS) and International Institute for Population Sciences (IIPS).
- To measure the levels of user satisfaction by the existing digital information resources.
- To find out the problems faced by the stakeholders while accessing digital resources in Social Sciences Research Institutions.

Research design

The research design adopted is exploratory in nature with a qualitative approach. The researcher has used various tools to detain the appearances of the participants about the Impact of Digital Technologies on Social Sciences Institutions in Mumbai. The quantitative research design helps in understanding the various aspects of accessibility of the participants in the Impact of Digital Resources.

Sampling method

Non-probability purposive sampling has been used. Diverse respondents were considered to know the reasons, consequences and strategy of the impact of digital technologies. The researcher targeted the two social sciences institutions Tata Institute of Social Science and International Institute for Population Sciences (IIPS) to know the range of usage of e-resources.

Sample size

No. of Respondents from TISS	No. of Respondents from IIPS	Total No. of Respondents
59	8	67

Table 1: Sample Size

The sample size is the main study of the research. The researcher has got the sample size no. of (N=67) from the two social sciences Institutions such as Tata Institute of Social Sciences (TISS) no. of (N=59) and International Institute for Population Sciences (IIPS) no. of (N=8).

The research tools are an important part of any research methods it helps to measure the user's perspective. A researcher needs data for collecting the tools or techniques. (Pandey&Pandey) The tools and techniques are a measurement and it guides the researcher in data collection and also in analysing the data. Tools may vary in complexity, interpretation, design and administration.

There are different tools which researcher can collect data through are mentioned below:

- Questionnaire
- Interview
- Observation
- Survey

The data was collected from Masters Students from all the combine schools and centres from Tata Institute of Social Sciences, Mumbai and from M.Phil. PhD scholars and faculty of TISS and IIPS. This data was analysed using Google forms and Google sheets.

Scope and Limitations

The scope and limitations of the study are aligned across the social science research institutions that were taken in consideration for purpose of the study, two institutions Tata Institute of Social Sciences and International Institute of Population Sciences were taken into account for the study.

Data Analysis and Interpretation

General Information of the Respondents from Institutions

SN	No. of Respondents from TISS	No. of Respondents from IIPS	Total No. of Respondents
1.	59 (88.0%)	8 (12.0%)	67 (100.0%)

Table 2: General Information of the Respondents

Table 2 shows the number of respondents who participated in the in the study. From TISS 59 (88.0%) including Masters students, M.Phil., Ph.D., and faculty members and respondents from IIPS 8 (12.0%) including M.Phil., Ph.D. scholars participated.

SN	Type of Respondents	Total no. of Respondents	Percentage
1	Master's Students	25	37.3%
2	M.Phil.	8	12.0%
3	Ph.D.	30	44.7%
4	Faculty	4	6.0%
Total		67	100.0%

Table 3: Detailed Profile of Respondents

Table 3 shows the frequency of the respondents from both the Institutions TISS and IIPS their results came out that Masters student's respondents are (37.3%) M.Phil. are (12.0%) Ph. D. is (44.7%) and Faculties responses are (6.0%). A total number of (N=67) responses out of total 100 were graphically presented in the chart. The above table shows the majority of the respondents are from Ph.D. who utilized digital technologies for their research and development work.

Gender Based Distribution

Figure 1 shows the distribution of the gender-wise responses, the male respondents are higher which 59.7% compared to female respondents which 40.3% of the population of respondents total no (N=67).

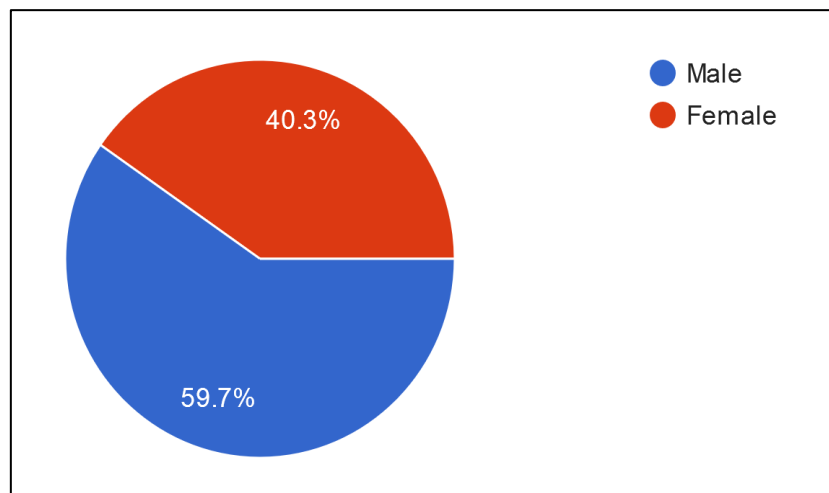


Figure 1: Gender wise distribution

Frequency of visiting the library

SN	Visiting in Library	Frequency	Percentage (%)
1	Daily	38	56.7%
2	Once in 2-3 days	11	16.4%
3	Once in a week	8	12.0%
4	Once in 15 days	1	1.5%
5	Occasionally	9	13.4%
6	Never	0	0.0%
Total		67	100%

Table 4: Frequency of visiting the library

Table 4 shows the frequency of the visitors visiting in the library and it is the most important part of the collection shows how the respondents are attracted to the library resources. 56.7% of respondents are visiting daily to acquire their materials for work, 16.4% visit library once in 2-3 days, 13.4% respondents visited library occasionally, whereas 12.0% visit once in a week, and 1.5% visit only in once in 15 days.

Specific opinion about library e-resources

SN	Description	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree	Total
1.	Electronic Resources are likely to replace print resources.	0 (0.0%)	29 (43.3%)	13 (19.4%)	16 (23.9%)	9 (13.4%)	67 (100.0%)
2.	Library e-resources are not used because of lack of skills of users.	3 (4.5%)	10 (14.9%)	20 (29.9%)	25 (37.3%)	9 (13.4%)	67 (100.0%)
3.	Poor collection of materials in the digital library is the reason for its non-development.	1 (1.5%)	9 (13.4%)	22 (32.8%)	27 (40.3%)	8 (11.9%)	67 (100.0%)
4.	The Faculty members are using digital resources for enhancing and upgrading Communication skills.	1 (1.5%)	4 (6.0%)	16 (23.9%)	39 (58.2%)	7 (10.4%)	67 (100.0%)
5.	All activities and programs in electronic information handling are to be based entirely on the needs of users.	1 (1.5%)	5 (7.5%)	19 (28.4%)	33 (49.3%)	9 (13.4%)	67 (100.0%)
6.	Students are leading users of e-resources.	0 (0.0%)	9 (13.4%)	21 (31.3%)	22 (32.8%)	15 (22.4%)	67 (100.0%)

SN	Description	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree	Total
7.	Faculty members' attitudes seem to be very positive towards E-Resources for their study and research.	0 (0.0%)	4 (6.0%)	25 (37.3%)	31 (46.3%)	7 (10.4%)	67 (100.0%)
8.	Separate computer facility should be provided to the students at least with a ratio of 1:30.	3 (4.5%)	4 (6.0%)	17 (25.4%)	36 (53.7%)	7 (10.4%)	67 (100.0%)
9.	Basic training has to be given to students to effectively use the E-Resources of the library.	0 (0.0%)	3 (4.5%)	11 (16.4%)	39 (58.2%)	14 (20.9%)	67 (100.0%)
10.	Management should provide the necessary infrastructure for the success of e-resources	0 (0.0%)	1 (1.5%)	12 (17.9%)	35 (52.2%)	19 (28.4%)	67 (100.0%)

Table 5: Opinions about library resources

Table 5 shows respondents' opinions about library e-resources, 43.3% of respondents disagree with electronic resources are likely to replace print resources whereas 23.9% are agreed and 13.4% strongly agrees.

Conclusion

The comprehensive awareness about the digital resources should be brought for research and development by arranging workshops and conferences in respective social sciences

institutions. Orientation programme should be conducted for regular intervals regarding the benefits and valuable use of digital resources in a way of user-friendly. Librarians and library staff should collaborate with users when in need to give them updates about the newly come digital resources. To get more familiar with the online resources library should give special training and guidance for using digital resources and its services for easily accessing and measuring the effectiveness. It was found in the study that entire research is based on primary data in digital applications from selected two institutions (TISS) and (IIPS). The users have used most about the digital tools and services they acquire the materials from the e-resources for their research and development they are not pretending to be the most printed materials. The procedure of digital resources has gone very stronger with the implementation and introduction of new technologies in the library functions and services. Nowadays people find resources more convenient and user-friendly in online digital resources.

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Role of Social Media to Enhance Library Service: a Case Study of Brainware University, Kolkata

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Abstract

In this era of digital technologies, social media plays a crucial role in every aspects of human life. Library especially academic libraries take a major step to enrich its users through social media platforms like Facebook, YouTube, What's app, Telegram etc. In India, like any other academic Institution, the Brainware University Library, West Bengal, made a digital platform by using Facebook and YouTube to connect its users in a very smart way. Due to the ongoing pandemic situation, these social networking platforms became more beneficial for its users and helpful in distance learning and knowledge sharing. The Brainware University Library focuses on Facebook and YouTube as it is very easy for the users to get access to the contents on these platforms. The main focus of this study is to show how the library Facebook page and YouTube channel are functional to its users for academic and research purposes. This study is purely based on collecting and analysing data of users' activity on Brainware University Facebook page and YouTube Channel. This study has also proposed some ways to promote the library and its services through other social media platforms like Wikis, twitter, Linked In, Instagram etc. in future.

Keywords: Digital technology, digital era, Social media, Facebook, YouTube, Knowledge sharing.

Introduction:

Information and communication technology has changed drastically over the past 20 years, with a key development being the emergence of social media. Before a decade or so, people were less connected to socialize with limited options to have join-together. But today, people get information on their fingertips ranging from news to promotional videos at any time because of social media. Social media has become an integral part of our lives now. Social Media are web-based online tools that enable people discover and learn information, share new ideas, interact with new people across the world very easily. It has made the communication easier than before. The development of mobile technology has played an important role in shaping the impact of social media all over the world. There are different kinds of social networking site such as Facebook, Twitter, YouTube, LinkedIn, Google plus

and much more. Each has its own attributes to enhance the communication among users. Studies have shown that quite a good number of people spend 20% of their time on social networking platforms every day, this shows how relevant and popular social media platforms have become in recent times. The importance of social media can be seen in several fields such as business, entertainment, food, lifestyle, welfare and a host of others. Instant messaging, status updates, image-sharing, video-sharing are few of the major elements that play a significant role in the recognition of social media. Social media not only enables communication for one's personal life but also for professional life.

As technology is rapidly growing and everything has become online and to meet this rapidly growing technology everything has to be available on the internet. People started adopting digital marketing instead of marketing offline and social media plays a major role in promoting online business.

This social media has an impact in Library and Information Science also. Libraries are using social media to the advantage of their institutions now-a-days. Social media offers more than just traditional ways of marketing library services. It allows user to create, connect, and share information and help libraries to get closer to the users. Social media grab the attention of the new users, helps in distance learning, knowledge sharing and locating information. Social media platforms are useful for promoting books and collections, as well as obtaining information on what are popular or unpopular with users.

Facebook is one of the most popular social media platforms which is also used by libraries in now a days. It is one of the best way for communication. Students tend to be very active on social media, and librarians have embraced popular platforms as a way of communicating with users as well as networking with other libraries for this purpose.

Brainware University Library use social media to develop Library services and interact with users through this social media. From October, Brainware University started to provide Facebook service. In this few month Facebook gets a huge response from the users.

Literature review:

In developed countries libraries are using current trends to promote their services. Facebook is used by the library to inform the library users about new arrival, latest events through posting photos, videos and links to resources about the library. Promoting of library services has to be more creative, customized and of interest to the users of this century.

Khan & Bhatti (2012) stated that the user behaviour towards the use of social media for marketing of library resources, services was positive and they highlighted that libraries should be connected with the internet services and develop their social media page.

Connell (2009) suggests that, "a library would want to use social network sites effectively, librarians should be cautious in establishing communications and relationships with their student friends and avoid mass friending".

Deyrup (2010) highlighted that Web 2.0 applications can be used for marketing purposes, librarians are using SNSs like Myspace and Facebook "to promote library affiliation and community building; the virtual environment; Second Life, to create alternative library spaces; and RSS feeds, wikis, and blogs to post announcements and post other information".

Hinchliffe and Leon (2011) stated that, to keep pace with evolving information technologies, librarians use a group of software applications including blogs, wikis and podcasting, media-sharing

tools such as YouTube and Flickr, and social networking services such as Twitter and Facebook to market their services and resources with mixed success.

Horn (2011) indicated that “Online Marketing Strategies for Reaching Today’s Teens”, states that SNSs are the best tools for promoting library collections, marketing the library itself by posting different photos inside the library of books, journals, rooms and so on, and promoting library programme.

Ezeani & Igwesi, (2012) acknowledged that Social Media provide important opportunities to libraries. Librarians can use these platforms for promoting library and information services. The study indicates the challenges libraries in the use of Social Media as: lack of awareness of Social Media, lack of trained staff, lack of Government intervention, bandwidth problem, technophobia, and unreliable power supply.

Mundt (2013) established that Social Media is used to promote library services. However, of all Social Media tools, most libraries are using the Facebook platform. Facebook is particularly considered useful for selecting suitable methods to evaluate the marketing success of Social Media presence. The study identified barriers to Social Media utilization as: lack of staff resources or competence, privacy issues and a general hesitation about the potential benefits of social media, and lack of Social Media policies.

Chu & Du (2013) investigated the use of Social Networking tools in academic libraries, examined the extent of their use and library staff’s perceptions on their usefulness and challenges. Like other tools Facebook and Twitter were considered the most successful tools. Most library staff had positive opinions on the usefulness of Social networking tools, but hesitancy among library staff and limited participation of users were barriers to usage.

Objective:

The main purpose of this study is how social media especially Facebook and YouTube enhance the library service of brainware university library. Also the study indicates the purpose and benefits of using social media platforms in a library. it also shows that how social media promote a library and its services in this modern era.

Methodology:

As a method of data collection situational analysis is used to review the web pages like Facebook page and YouTube channel of Brainware University library.

In case of data collection of Facebook page we collect data from Mr. Biplab Kumar Chanda, Assistant Librarian of Brainware University and for YouTube channel we collect data from Mr. Sujan Bandhu Chakraborty, Assistant Librarian of Brainware Group of Institutions.

Major Findings:

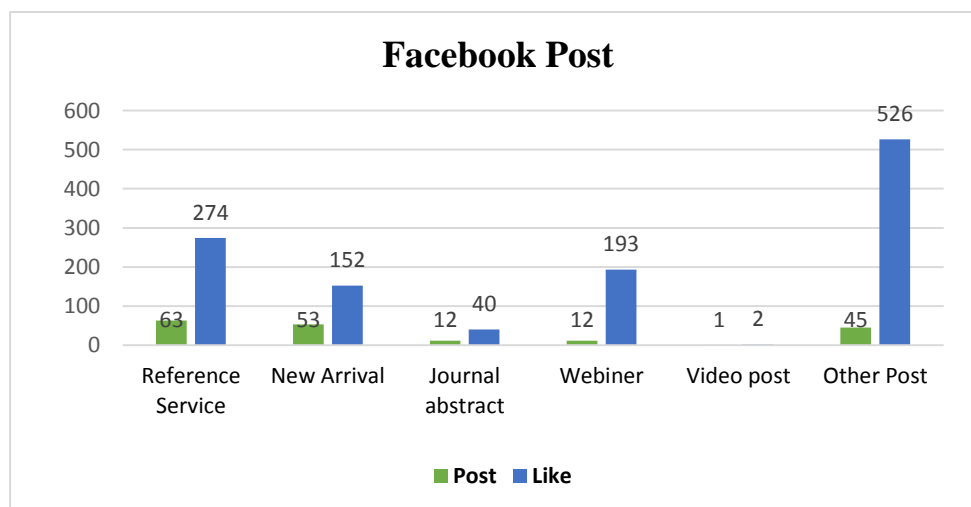
Facebook:

Brainware University Library started the Facebook page on 5 October 2020. After 3 months this page got 624 like and 626 followers. Within 7th January 2021 total 186 information are posted in Facebook page. Main focus of this page is current awareness service. 63 posts are about reference services and this post got 274 likes, 53 posts are related to new arrivals and it got 152 likes, 12 posts are about Journal-Abstract and got 40 likes, 12 posts are about webinar and got 193 likes, 1 video related post got 2 likes and rest are other posts which got 526 likes. We categories the posts of Facebook page into following manner: reference service, new arrival of book, CAS service, webinar related post, video post and other post.

Facebook Page Post:

Item	Reference Service	New Arrival	Journal abstract	Webinar	Video post	Other Post
Post	63	53	12	12	1	45
Like	274	152	40	193	2	526

Facebook Post



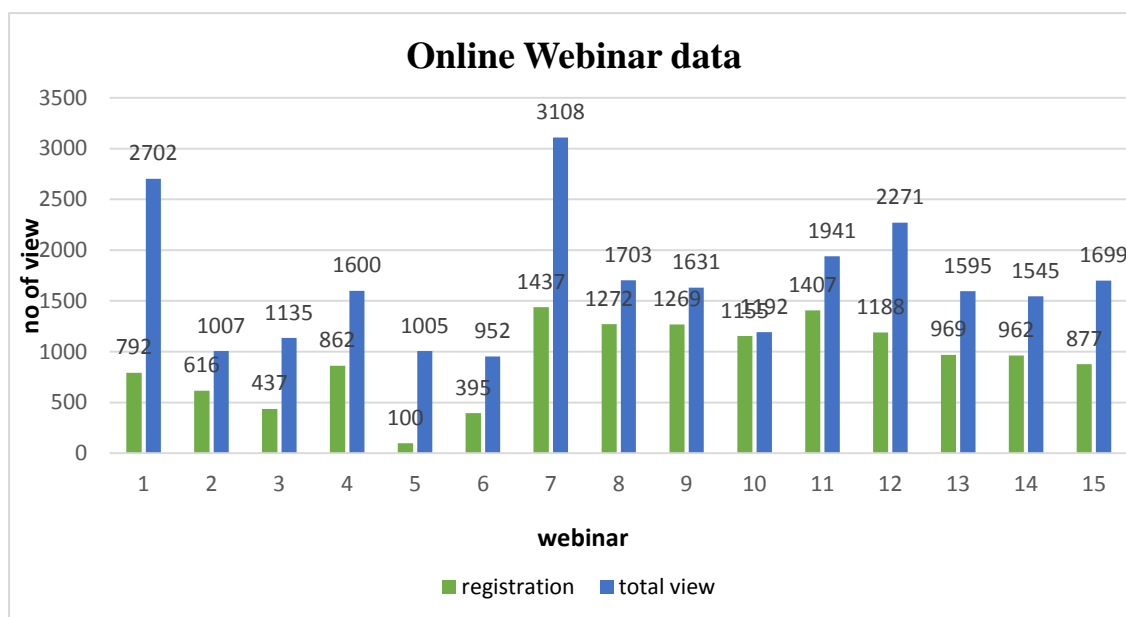
You tube:

Brainware University started YouTube channel on 11h June 2020 and till now it has 1.53k subscriber and total viewers 31895. Total no of seminars occurred till January are 15 and online workshop are 3. The Library also celebrate Republic day by Organizing special lecture on “the lesser known sides of a rural Humanity: Colonial Domination and Adivasi Resilience in the 19th and 20th century” and has got huge response. The webinar data are given below:

Webinar data:

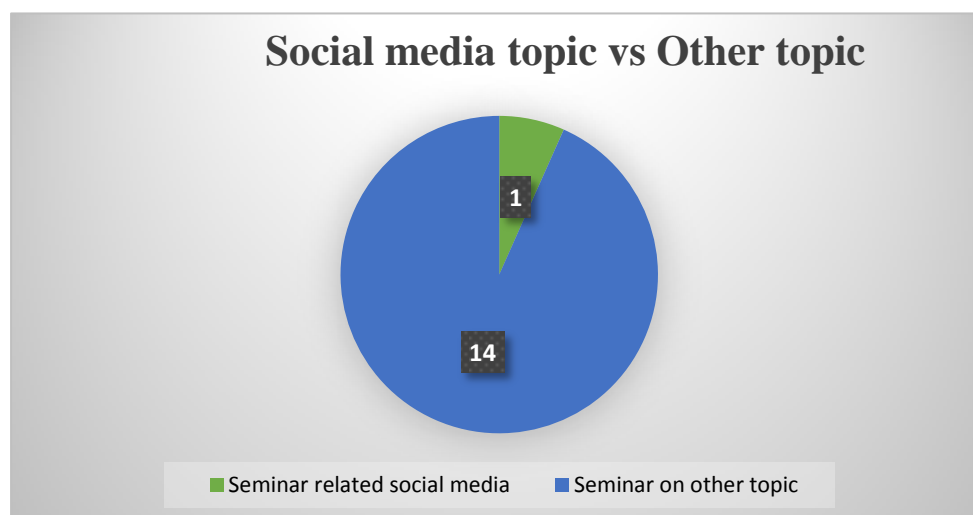
Name of webinars	Total no of registration	Total views
Digitization and Copyright:Issues & Challenges	792	2702
Reaching the Unreached: Engaging Communities Through Effective Use of Social Media	616	1007
Towards NAAC Best Practice: Moodle as a tool for E-Learning	437	1135
Extending Services Beyond the Library Wall"	862	1600
Lhotse Expedition	100	1005
"ইম্পিরিয়াল লাইব্রেরির প্রথম ভারতীয় গ্রন্থাগারিক ড: হরিনাথ দেDr. Harinath De, the first Indian Librarian of the Imperial Library	395	952
"বাংলা অভিধান ও রবীন্দ্রনাথ	1437	3108
Digital Rights Management: Slant to University Libraries	1272	1703
Searching and Browsing E-Contents from National Digital Library of India (NDLI)	1269	1631

Name of webinars	Total no of registration	Total views
Awareness on COVID-19	1155	1192
Maintaining Research Integrity With Reference Management System	1407	1941
Open Access and Its Impact on Library Resources and Services	1188	2271
Good Academic Research Practice At University Level"	969	1595
Care & Safe Handling Practices of Paper-Based Materials In Libraries During Covid Period	962	1545
ভারতবিদ রাজেন্দ্রলাল মিত্র: জীবন ও কার্যসমূহ	877	1699



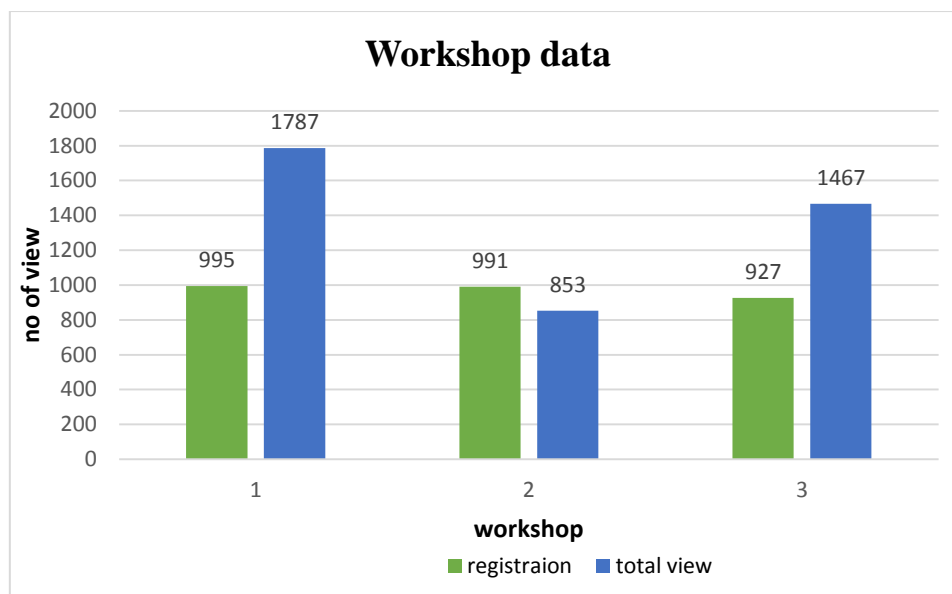
As we focused about the social media role in library service analysing the data collected webinar, the total No. of webinar are 15 out of which there is only one webinar regarding social media.

Webinars	
Seminar related social media	Seminar on other topic
1	14



Online Workshop Data: The online workshop data are given below:

Name of workshop	No of registration	Total view
অভিধান: ক্রমবিকাশ ও ব্যবহারিক দিক	995	1787
“Do Librarians need to be SMART?”	991	853
“শতবর্ষে সত্যজিৎ রায়”	927	1467



Analysis of Data:

Facebook post data indicates that the service given by the Brainware University Library on their Facebook page are very helpful to the users. Reference Service, Abstract Service and Webinar post are the most popular among the users. Because today Facebook is the most populated social media site and very easy to grab for the users and it is almost free of cost. The library decided to give such services through social media platforms as students need not come physically to the library. In the Covid- 19 pandemic situation users are very much benefited through the services.

YouTube is another social media where users show their interest to learn new things through online. The pandemic situation does not allow the users for seminars. But the webinars, workshops help them to learn something new.

In earlier times this was very difficult to reach any users but social media gives us the opportunity to reach any users at any time. These two social media platforms are very useful to a new organization to promote themselves almost free of cost and comparatively easier than other social media platforms.

Limitations:

The main limitations of social media are:

1. Lack of electronic gadgets and poor network connectivity.
2. Lack of knowledge about working of social media.
3. Social media is bounded by copyright law though it delay in taking action against copyright materials.

There are also some limitation of library using social media:

1. Library can share only copyright free information on social media.
2. Library barely use social media due to lack of knowledge of technology.

Future Plan:

1. User orientation program workshop through YouTube.
 2. Using other social media platforms like telegram, Instagram, WhatsApp, wiki.
- Telegram: creating groups according to departments and give information as per need.
 - Instagram: Instagram can be used to deliver library services like Facebook.
 - WhatsApp: Creating groups according to departments and give information as per need.
 - Wiki: A wiki is a collaborative tool that allows students to contribute and modify one or more pages of course related materials. Wikis are great hypertext tools that let one person or a group of people manage content easily. They are used to create static websites manage online communities, connect businesses with their customers and even write magazines and books. Some examples of wikis are: Wikibooks, wikitionary, wikispecies etc.

Suggestion:

The study suggest the followings:

1. Online quiz competition.
2. Online storytelling and story writing programme.
3. Digital Magazine.
4. Social Awareness programmes.
5. SDI i.e. Selective Dissemination of Information. It is mainly alerting service meant for individual users, mainly specialist used to keep informed of new sources on specified topics.

Conclusion:

This study indicates that the promotion of the library through social media especially Facebook is more convenient than other ways. Brainware University library mainly focused on Facebook for promotion and you tube for knowledge sharing. As reference service is a important service of any library Brainware University library Facebook page offer reference service to its users in very convenient way. This library Facebook page also works as a 'Digital Notice Board'.

Brainware University library create a platform for knowledge sharing through you tube channel. As seminar cannot organise during the covid- 19 pandemic situation, library organise webinar on various topic through you tube channel. There is a especially one topic on social media of the webinars. As the ratio of the social media topic to other topic is 7:93 which comparatively less, we should organise more webinars related to social media. As we know that webinars are almost free of cost compare to seminar, Brainware University library should focus on this and organise more for betterment of its users.

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Web Storage Technology Platform: Benefits and Setbacks for Academic Activities in Northern Nigerian Universities

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Abstract

This study titled “Web Storage Technology Platform: Benefits and Setbacks for academic activities in Northern Nigerian Universities” is an opinion paper which examined the concept of Web Storage Technology Platform (WSTP), the benefits of WSTP for academic activities were also explained and the setbacks were explained. The study concluded that deployment of WSTP in Northern Nigerian Universities will certainly shaped and removed the stress attached to the academic activities and data loss in particular, the study recommends that University managements should improve the Internet connectivity for academics to utilise the WSTP for their academic activities, WSTP Service Providers in collaboration with National Universities Commission (NUC) should create more awareness on the benefits of WSPT for Nigerian Universities.

Keywords: *Academic activities, Benefits, Setbacks, Web Storage Technology Platform*

Introduction

It is no longer debatable in this digital age that all activities and operations conducted by individuals and organizations are upgraded, simplified and automated due to the advent of web-based technologies, Internet and globalization of networks or Information and Communication Technology (ICT) in general.

Information and Communication Technology is an emerging area in information age that revolutionized all aspects of educational, health, agricultural, security, and economic sectors, there is no operations or activities that ICT didn't touched. The functionalities of ICT made it instrumental

and essential for every sector especially education to fully embrace the technology. It is clear that ICT transformed educational settings by providing special ways of teaching, learning and research which are core activities in Universities, also ICT provides tools and processes that ease the conduct of academic activities in Universities (Abba, Mohammed, Hussaini, Mohammed, & Mohammed, 2020)

One of the tools provided by ICT is Cloud Computing Technology which is an emerging field in ICT that gives opportunity for its users to store documents/files in the cloud. The WSTP is one of the essential components of Cloud Computing Technology (Jiehui, Ji, Jianqing, & Zhijie, 2011). WSTP enable online platform users to utilise the available resources and services using a remote server accommodated on the Internet. Academics can use WSTP for their activities/operations such as storing academic documents/files (theses, dissertations, student results etc), learning, collaboration, documents sharing, web communication (Qasem, Abdullah, Jusoh, Atan, & Asadi, 2019).

It is evident that academics in Northern Nigerian Universities are faced with a lot of menaces in the conduct of their activities/operations despite the benefits offered by WST platforms. Furthermore, academics in Northern Nigerian Universities are continuously losing valuable documents/files as a result of inefficiency of hardware storage devices, as such WSTP provide avenue to solve these pressing issues affecting academics in Northern Nigerian Universities.

Concept of WSTP

According to Alsufyani, Safdari, and Chang (2015), WSTP is a collection of different computers that are scattered across the globe which provide resources and services based on demand from users via the Internet. Furthermore, WSTP is an online setting comprising numerous resources, applications and services that users can access and utilise using remote servers hosted on the Internet.

It is clear from the above definition that WSTP is a reservoir of resources, applications and services that are accessible and useable virtually without any cost of hardware and or software installations, what users need is only Internet-enabled devices for them to access and use the available resources and services on the platform anywhere and anytime (Almazroi, 2017).

Because of the unique nature of Nigerian Universities especially Northern Nigerian Universities which include awful student enrolment, inadequate funding, stress from overloaded academic activities, the academics in Northern Nigerian Universities can benefit from the capabilities provided by WSTP ranging from accessing larger number of applications, resources and services at no cost or without a license, installing or downloading any software (Turab, Abu & Shadi, 2013).

As online environment it provides resources, applications and services based on demand from users via the Internet. Users doesn't need to purchase, install or design anything, as such WSTP boost functionality, improve capacity and provide additional services to users based on demand. Google, Microsoft, Amazon, Apple, Alibaba and Hadoop are some of the established IT service providers that offered resources and services to users based on demand (Almazroi, 2017).

Some of the types of WST platforms that can be use by academics for academic activities are; google cloud, amazon web service (AWS), Microsoft windows azure, Alibaba cloud, rackspace, Hadoop, softlayer and IBM bluemix among others. These platforms possessed some functionalities that

enabled academics to utilise for their activities which include availability and accessibility, reliability, agility, scalability etc.

The platform also possessed some features that enabled teaching, learning and research easier for academic activities which include broad network access, on demand self-service, measured services, rapid elasticity and resource pooling. The platform has three (3) components which comprised client computers/Internet-enabled devices, datacentre and distributed servers.

Benefits of WSTP

Some of the benefits of Web Storage Technology platforms for academics as identified by Almazroi (2017) and Qasem et al (2019) are as follows:

Backup and Recovery

This is one of the essential benefits of WSTP to academics, due to the fragile nature of hardware storage devices; virus attack; system crash; theft and other unforeseen incidences, WSTP can solve the problem of data loss among academics in Northern Nigerian Universities because all documents/files are stored in the cloud or remote location datacenter.

Availability and Accessibility

Web Storage Technology Platform provide opportunity for users to access and use the resources and services anytime from anywhere with any Internet-enabled device. Largely, Internet is the common medium through which the resources and services are accessed, so they can be accessed within or outside the campus. Due to inadequate Internet connectivity in majority of Northern Nigerian Universities and stress nature of academic activities because of overpopulation the academics can store their documents or files in the platform and access it at his/her convenience.

Academic collaboration

WSTP provide environments for its users to discuss certain issues and it encourages teamwork or partnership whereby academics can assemble themselves in order to address a particular issue(s). It is evident that academics in Northern Nigerian Universities are overwhelmed because of the awful student enrollment, so WSTP is here to help them solve this problem. Google Docs, Cisco Telepresence and Cisco WebEx are some of the technologies that enabled collaboration on WSTP.

Documents/File Sharing

This is one of the benefits that can be derived from the WSTP usage, documents/files, resources, and applications can be shared among the users virtually. This is important especially in Northern Nigerian Universities because of the lack of fund to supply adequate and promising hardware storage devices to academics for their activities and operations.

Innovations

It is glaring that educational budget is declining in Nigeria, so provision of infrastructures, resources, applications and other tools that can be use for academics to create and innovate new ideas are lacking, so WSTP provide all these to academics to utilise and innovate ideas that will facilitate teaching, learning and research. Web Storage Technology Platform allows individuals or organizations to explore research prospects and have the abreast technologies.

Reduced Carbon Imprint

Web Storage Technology platform allows educational institutions to decrease power intake, that decrease carbon emissions. The datacentres are design by service providers in such a way that will reduce carbon emission in the society.

Other benefits include; cost saving, reliability, portability, flexibility, security, effectiveness, simplification and standardization, virtualization among others.

Setbacks for using WSTP

The following are setbacks as identified by Hussein and Khalid (2016) and Al-shqeerat, Jordan, and Hassan (2017) are:

Internet connectivity/Bandwidth

Internet connectivity is considered as one of the major setbacks for using WSTP, because all the resources and services and infrastructure are web-based, so the users can only access and utilise the platform with Internet connectivity/bandwidth. It is evident that Northern Nigerian Universities are suffering from inadequate Internet connectivity/bandwidth, meaning that academics in Northern Nigerian universities are deterred from effective use of WSTP due to inadequate/lack of Internet connectivity.

Network Security/Cybercrime

Academics in Northern Nigerian Universities stored academic documents/files, some of the documents/files are sensitive and confidential e.g student results, students and staff profile, Exam questions etc, and it is arguable that anything online or web-based is not secured due to hackers and other cybercrime. Network security/Cybercrime is really one of the setbacks that prevent academics to use WSTP for their academic activities.

Lack of awareness on WSTP

One of the setbacks that affect WSTP utilisation in Northern Nigerian Universities is lack of awareness among the academics, the awareness level of WSTP is low and this dissuaded its usage for academic activities/operations.

Business Continuity

The services providers are independent companies, so lack of certainty for companies to last over time is one of the setbacks that prevents academics in Northern Nigerian Universities to fully use the platform, this is important to consider because service provider change require so many disturbing questions and agreements.

Lack of stable Power Supply

This is another setback because the Internet-enabled devices to be used for accessing the resources and services require electricity for its operations, and there is lack of stable power supply in Nigeria especially Northern Nigeria, so this really affects WSTP usage for academic activities in Northern Nigerian Universities.

Other setbacks include; technological obsolescence, technophobia, access control, Service Level Agreement, vendor lock-in, compliance and location of service providers, security and confidentiality among others.

Conclusion

Web Storage Technology Platform is a new technology in digital era and an important aspect of Cloud Computing Technology which play a significant role in managing academic activities in universities and therefore, the study concluded that deployment of WSTP in Northern Nigerian Universities will certainly handle the stress attached to the academic activities and data loss in particular, and WSTP utilisation will improve academic performance of the academics in Northern Nigerian Universities.

Recommendations/Way forward

The following recommendations were made:

1. Northern Nigerian University managements should improve the Internet connectivity/bandwidth for academics to take full advantages of WSTP utilisation for their academic activities.
2. The Service Providers should provide more security protocols and close any loopholes that can be use by hackers/intruders to illegally access users' documents/files, this demands for strong network security techniques such as Secure Socket Layer (SSL) and Transport Layer Security (TLS) protocols among others,
3. The Service Providers in collaboration with NUC should create more awareness on the benefits of WSPT for Nigerian Universities and academics in particular through workshops, seminars, symposium, conferences etc.
4. The Northern Nigerian Universities should provide stable power supply for academics to use for their Internet-enabled devices using alternative power supply like wind power plant, solar system, hydro power plant etc.

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Library Makerspace: A New Dimension to the Future Library Services

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Abstract

A Makerspace is a specific area where people can gather, create, invent and learn i.e., a space or an area where some tools are being utilised to make something new or to learn how to make something new. In today's technologically advancing world, a library is not only a house of physical books or other print materials but also a place of activity, place of curation and creation of knowledge and knowledge based products. Library Makerspace is a designated place where the users of the library can create and curate intellectual and physical knowledge based products. This study tries to explore the concept of makerspaces in libraries, its benefits and tools used in the library makerspace.

Keywords: Library, makerspace, library services, digital, library technology, library innovation, active learning, innovation space.

Introduction

Presently day learning happens not only inside the classroom but also outside the four walls. The advancement of Information Communication Technology (ICT) made the teaching-learning accessible from anywhere at any point of time and even by anyone. This transformation in the academic arena paved the way of new thoughts and techniques which are becoming blessings to the educational landscape. Library Makerspace is a new development which adds a new dimension to the traditional library and information services.

Makerspace, a specified place, where people from different strata of the academic and social fraternity gather to work on various creative work, especially knowledge based work. This space facilitates various groups of people with common objectives to share ideas, skills and tools for creating various innovative and knowledge based products. Do It Yourself (DIY) is the central thought of Makerspace. 3D Printer, Digital Media, STEAM or STEM Lab (Science, Technology, Engineering, and Maths – based research and activities), Fabrication software (Fab Lab), welding tools, tools for various wood-working, soldering, supplies of arts and crafts, electronic materials, programming software and tools for fashion design etc. are the useful instruments for Makerspace.^{[18], [24]}

Be it any academic institution, the Makerspace is one of the important service areas of library where a group of library users of common interests can innovate, create and even curate digital and physical knowledge based products using and sharing tools, space and skills. The concept of Makerspace or

Library Makerspace encourages the students and library users to explore their skills, expertise and thereby to learn practically beyond the traditional classroom learning.

Objective of the study

The main objectives of the paper is to

- highlight the role of Makerspace in the Libraries
- explore what are the services can be provided by Makerspace
- know the benefits of Library Makerspace
- know the possible challenges to the Library Makerspace

Related Literatures

Altman et al. (2005) opined that though the makerspaces are common in engineering faculty on university campuses, the makerspace services within academic libraries are ‘steady and substantial’.^[4]

The Library as Incubator Project (2012) described makerspaces as “collaborative learning environments where people come together to share materials and learn new skills”, and concludes that, “makerspaces are not necessarily born out of a specific set of materials or spaces, but rather a mindset of community partnership, collaboration, and creation.”^[2]

Sharples et al. (2013, p. 33) opined “the emerging ‘maker culture’ emphasizes informal, networked, peer-led, and shared learning motivated by fun and self-fulfillment”.^[2]

Educause (2013) stated, “A makerspace is a physical location where people gather to share resources and knowledge, work on projects, network, and build. Makerspaces provide tools and working room in a community environment - a library, community center, private organization, or campus”^[1]

According to Preddy (2013), as the library is playing a role of a centre of information and knowledge for a very long time, therefore, the library is an ideal destination for projects to blossom.^[17]

According to Ellis & Philips (2013), the present time is witnessing the transformation of education from traditional teacher-centric teaching-learning method to a process of active and social learning.^[10] To define the role of makerspace in education, Halverson & Sheridan (2014) stated the makerspace as an evolution of constructivist thought.^[12]

Laura Flemings (2014) described the makerspace as a “metaphor for a unique learning environment that encourages tinkering, play and open ended exploration for all the users of the library”(https://worlds-of-learning.com).^[11]

Brief History of Makerspace

The advancement and production of web based products, emergence of STEAM culture and easy access to the fabrication equipments create a trend of making things digitally and physically. Dale Dougherty, the founder of Make Magazine, named this trend as “Maker Movement”. “Maker

Movement” by Make Magazine, United States in 2005 was the first step towards Maker Space.^{[5], [25]} In the same year, makerspace services were being offered by the US Libraries in their library as making-activities. Fayetteville Free Library was the first public library to offer the makerspace in their library.^[25]

Lay (2014) stated, “The idea of ‘maker culture’ is that learning is best achieved through doing. It’s the philosophy in which a person should create things using their hands or by using technology in a unique way”. The maker culture actually based on practical and skill based learning.^[16]

Library and Makerspace

In today’s technologically advancing world, a library is not only a house of physical books or other print or digital materials but also a place of activity, place of curation and creation of knowledge and knowledge based products. Moreover, Library is a place where people can gather and share their ideas and thoughts, collaborate and communicate with each other. Library Makerspace is a designated place where the users of the library can create and curate intellectual and physical knowledge based products.

Do It Yourself (DIY) is considered as one of the key elements of the Maker culture. Use of technology is the main focus of this culture, which cultivate the learning by using 3D printing, electronics, robotics, laser cutters, CNC (Computer Numerical Control) machines, etc.^[9]

The characteristics of the makerspace reflect the link between a library and makerspace. Due to the digital revolution the role of library is changing time to time. Tashjian (2014) opined that “makerspaces are shifting educational and public organizations from being places where things are made or information is found to places where knowledge and ideas are developed and imagination and creativity are fostered”.^[22] Being an educational organisation, the library is also going through the phases of changes. Library is an important factor which encourages and facilitate meeting of people, sharing ideas, knowledge etc. This is why library has the potentiality of becoming a place of makers.

Users of various ages can collaborate on creative projects in a library, either alone, as part of a team, or with library staff members. The library makerspaces with tools, technology, and social connections allows its users to learn through direct experimentation and from each other. Specific areas are not required for library makerspaces. A pre-existing space can be temporarily altered or created to better meet the needs of users. Maker spaces have also expanded to allow patrons to take classes to learn a specific skill, such as cooking, sewing, or yoga.

As the libraries are transforming from the provider of passive knowledge to the place of cultivation of active knowledge, so Library Makerspace can also be called as Innovation Spaces. Canino-Fluit in his article on “School Library Makerspaces: Making it up as I go” stated that “Makerspaces focus on tinkering, problem posing projects, hands-on learning, and the holistic engagement of the body in learning.”^[8]

Being the center of lifelong learning and incubators of new discoveries and innovations, libraries may provide various makerspace services, based on the users’ age group, like computer programming, Coding, Robotics, Electronics, 3D Modeling, 3D Printing, Laser cutting, Games, traditional Paper cutting etc.^[9]

The Fayetteville Free Library, the New York Public Library, the Westport Public Library in Connecticut, the Chicago Public Library, and the DeLaMare Science and Engineering Library at the University of Nevada, Reno are some of the pioneers in initiations of makerspaces in Libraries.^[23]

Purpose and Benefits of Makerspace in Libraries

Janet Balas (2012) stated “libraries are evolving from places that house materials to places where users can work....Libraries are not just places for the quiet study of scholarly materials, but they can also be places where the creation of audio or video presentations can take place. In the case of some extremely innovative libraries, they can also be places for making actual physical objects.”^[14]

Libraries and makerspaces share many similarities. Libraries are the centre of learning and makerspace provides the opportunity to create, experiment and acquire skills in a collaborative way of learning.

The main purposes of Makerspace in Libraries are to:

- Encourage community involvement
- Develop learning and literacy among the communities
- Boost the culture of making and active learning
- Provide easy access to the tools of creations
- Responding to requests or needs from the community
- Provide Hands-on-learning
- Provide facility of Co-working
- Attain the user specific goals:
 - Creative skills, Critical thinking and problem-solving, practical learning, peer-to-peer collaboration, youth empowerment etc.

STEAM / STEM Education- Science, Technology, Engineering and Mathematics are the key elements of STEAM/ STEM education. Through makerspaces in academic libraries, the students can be provided with the related tools and equipment along with teaching-learning support of STEM so that they can create and practice. Student can create prototypes of various models; explore the functions of devices, troubleshoot them or can create new forms of that etc. through makespace.

Makerspace give the students the experience of open culture, the culture of making, the culture of sharing ideas, knowledge, and the culture of converting ideas into realities.

There are lots of benefits of Makerspaces in the Libraries, especially in academic libraries. Some of them are:

- Easy access to the high-tech tools which boost the creativity of the students. Due to the financial burden some students or users may not have the access to the expensive tools at home. Library makerspace can provide the tools to the students or users for creating, experimenting and innovating in a collaborative way so that new knowledge can be developed

- Self-learning is a key factor in lifelong learning and adult education. Being the centre of lifelong learning library can play a very vital role in promoting self-learning based on practical skills by introducing makerspace as the main motto of makerspace is DIY – “Do It Yourself”.
- Makerspace encourage hands-on learning. Therefore, makerspace in libraries would give the opportunity to the students or users to develop critical thinking and problem solving skills.
- Being the house of knowledge library always played an important role in developing new knowledge and knowledge based products. Library makerspace can facilitate the students or users to transform their ideas into realities using tools available in the makerspace.

Technologies, Tools and Activities in Makerspace

Makerspace’s tools, technologies and activities may be of various types and of different types based on the nature of the library, especially academic library. The following table contained some makerspace equipment based on the type of the academic library.

School Library Makerspace	College/ University Library Makerspace	General
<ul style="list-style-type: none"> ✓ Craft supplies ✓ Cardboard ✓ Plastic materials ✓ Paper ✓ Styrofoam ✓ Paint ✓ Collage materials ✓ Rainbow Loom ✓ Knitting and crochet supplies ✓ Plastimake etc. 	<ul style="list-style-type: none"> ➤ 3D printers ➤ Robotics Materials- ➤ WeDo/Lego ➤ Motors ➤ LED lights ➤ Snap Circuits ➤ Dash and Dot Robots ➤ Cubelet Robots ➤ Arduino/Raspberry Pi ➤ Tinkering ➤ Animation ➤ Game Creation ➤ Website Creation ➤ Digital Music Recording etc. 	<ul style="list-style-type: none"> ❖ Sewing machines ❖ Electric Keyboard ❖ Tinkering tools ❖ Video production materials-green screen and lighting etc.

Table 1: Tools and Technologies used in various makerspaces ^{[6], [9]}

Labs in Makerspace

STEAM Lab- STEAM or STEM stands for Science, Technology, Engineering and Mathematics. STEM lab is one of the key elements of makerspace which is suitable for addressing the limitations of the present laboratory systems for knowledge generation. This lab is designed to integrate the four elements of STEM disciplines. This lab helps users to learn actively and apply the same in the development of skill based products applying the STEM concepts. This is also a community driven

place where common minded people with common interests meet together to nurture their learning and to develop knowledge based products.^[18]

FAB Lab- FAB Lab or Fabrication Laboratory is basically connected with concept of turning ideas into real new products. It also reflects the relation between content of the information and the physical representation of the same. It also emphasised on the process of technology driven community development. This Lab is closely association with “Do it Yourself” movement, open-source hardware, maker culture, and open source movement. FAB lab was started as collaboration between Center of Bits and Atoms, Media Lab, Massachusetts Institute of Technology and Grassroots Invention Groups. Grants were provided by National Science Foundation, USA, in 2001.^[18]

Planning of Library Makerspace

Before planning for a makerspace in a library, the authority of the library are required to taken into account certain key points, like technology and tools to be used, activities, space, and definitely the interest of the users.^[6]

- Monetary factor is a key part for the implementation of the plan for makersapce
- Makerspace to be setup based on the interests of the user community
- A specific area in the library with proper tools for the makerspace is also a key factor
- A Library with a makerspace should also take care of the traditional services it used to provide to the clientele. So there should be a balance between the traditional and cutting-edge technology based services, like makerspace.
- Makerspace comes with both digital as well as physical activities, like, makerspace ranges from digital photo editing to carpentry work, therefore, this need to be taken care of the library staff members.
- One of the key factors is involving users to the makerspace. Makerspace is a community driven activity, therefore, user involvement is very important.
- Library should take care of the activities of the makerspace which generate knowledge based products as this can also add value to the library.
- One of the good side of makerspace is it requires very little number of staffs as this is “Do it yourself” activity. But expert involvement is also required in some of the activities which require special attention.

Makerspace initiatives in India

The concept of makerspace is very new to the Libraries in India, especially in academic libraries. Till date there is merely any makerspace in libraries in India. But some initiatives still are evident in some academic institutions.

In 2002, Vigyan Ashram, a center of Indian Institute of Education (IIE) Pune, developed the first fab lab established outside MIT, having received capital equipment by IITK and NSF-USA.^[9]

In January 2014, CEPT University in collaboration with the Motwani Jadeja Family Foundation developed FabLab CEPT in Ahmedabad.^[9]

In 2019, IIT Gandhinagar arranged an event on “Makerspaces in Libraries: Why and How to Support Making in your Library”. Mr. Adam Rogers, Head of Making & Innovation Studio, NCSU Libraries, delivered the speech on the topic.^[9]

At present, there are some initiatives from the private sectors and some in private-public collaboration, though in commercial interest, but these initiatives are really remarkable to bring the new concept of makerspace to the academic fraternity of India. The following table depicts some of the initiatives taken for makerspace in India so far.^[9]

Table 2: Makerspace initiatives in India at present.^[9]

Makerspace Project	Location	Equipment	Facilities	Type
Workbench Projects	Bangalore	CNC Router, 3D Printer, Milling machine, Power tools and Hand tools etc.	WiFi & electricity, Robotic Studios, indoor and outdoor work areas, Co-working space, Meeting Space, Start-up Accelerator	Private
Nuts and Boltz	New Delhi	Basic tools required for 3D prototyping, Woodwork and Electronics	WIFI, workstations, conference room, display gallery, project storage area	Private
Fablab	Kerala	Basic tools, power tools, 3D printers, laser cutters, CNC machines, PCB Milling machine, Vinyl Cutters etc.	Besides the basic facilities, Fablab consists of two MIT USA Electronics Fabrication labs each at Technopark, Trivandrum and Kerala Technology Innovation Zone (KTIZ), Kochi	Private
JMoon Maker	New Delhi	All basic tools and power tools, prototyping software etc.	Besides the basic facilities, it provides an in-house entrepreneur program offering mentorship	Private

Makerspace Project	Location	Equipment	Facilities	Type
IKP-EDEN	Bangalore	Basic tools along with hardware prototyping, metal working shop, wood workshop, plastics and composites workshop, electronics, fluidics, medical devices, 3D Printing & Laser Cutting	Besides basic facilities, it provides Hacksaw, 3D printer, laser engraver, TSOP infrared set, heat gun, and a lot more	Private
FabLab CEPT	Ahmedabad	All basic hand tools and power tools, 3D Printers, CNC cutters with required prototyping softwares	Along with the basic facilities it offers workshops and training to manufacturing enthusiasts.	Co-run by CEPT University and The Motwani Jadeja Family Foundation
MakersLoft	Kolkata	3D Printer, Laser Cutter, Knitting machine, Block printing, Screenprinting, Hand & Power Tools etc	Workspaces, Training, Workshops, Networking	Private
The Workshop	Bangalore	3D Printer, CNC Machine (DIY), Electronics Table, Metal Work Bench, Wood Work Bench, Power tools and Hand tools.	Besides the basic amenities it offers incubation facilities as well	Private
Collab House	Hyderabad	Tools for electronics, IoT, 3D printing projects	Co-working, workshops, events, training	Private
Curiosity Gym	Mumbai	3D Printers, Power tools and Hand tools, 3D doodlers, IoT kits	Training, mentorship, prototyping kits	Private

Makerspace Project	Location	Equipment	Facilities	Type
Heramb Maker Lab	Pune	3D Printers, 3DPen	Raspberry Pi, 3DPrinting, Digital Furniture Designs and Robotics	Private
Vigyan Ashram Fab Lab	Pune	Laser cutting Machine, Welding station, Roland Milling Machine, 3D printer and scanner, Vinyl cutting machine, Electronic table, hand and power tools etc.	Along with the basic facilities it offers workshops on Raspberry Pi, 3D Printing, Basic Electronics, Arduino, Other DIY Projects, Internet and a MeetingSpace	Institutional. Was the first fab lab established outside MIT. Having received capital equipment by IITK and NSF-USA.

Challenges for Library Makerspace

Makerspace is not meant not only for the technical students or users but also for the students or users from all the academic disciplines. This is really a challenge for the supporter of makerspace to convince the users and all the stakeholders of the libraries as well as the academic institutions.

Lee (2017) pointed out some challenges for implementation of the makerspace. ^[17]

- The cost of the project, technology used and also the space.
- On particular, the specific area for makerspace that has to be separated from the other service areas.
- Proper use and management of the space shared. It is very important to attract the prospective users to the space through their individual interest. That is why the specific area for the makers needs to be developed in such way.
- Makerspace requires trained staffs for managing the tools, technologies used in that area. For this training of the staff members also very important. As makerspace is a growing concept so new technologies will take the place of the old ones so regular upgradation of knowledge of the staff members and training for them are must.
- Makerspace implementation needs knowledgeable persons or experts who can expedite the makers, learners or users. Therefore, proper selection of resource persons and staff members is a vital side of the concept.

To say in particular, makerspace in a library needs additional attentions also. Like

- Makerspace should be implemented in such a way so the traditional library services will not hamper.
- The space for the makers should be identified very carefully so that the regular users of the library will not feel any discomfort.

- Finance for the makerspace is also a concern for the Library. As makerspace requires hi-tech tools and these are costly also, therefore finance for this should be well planned so that this will not spoil the finance for library collection and development etc.
- One of the major challenges for the advocates of the library makerspace is that how to attract normal users of the library to the makerspace as maximum numbers of users, in the present day also feel and believe that library is not a place for manufacturing things even it is knowledge based product.

Conclusion

Dr. S. R. Ranganathan, father of library science in India, in his theory of “Five laws of Library Science”(2013), formulated the fifth law of library science as “Library is a growing organism” and library has also gone through regular and several changes over the decades. This is due to the technological advancement and use of ICT tools in library and library services, in particular. To deal with the ever changing needs of the library users every now and then, evolution of traditional library and library services are inevitable. None can avoid the implementation of new technologies in the library services at present world. Library makerspace is a very potential option for the library stakeholders as the concept supports that library is not just a knowledge hub but also a place where individual skills can be developed. Library makerspace facilitates and encourage the development of creative skills of the users. This would also open a new dimension towards advanced level of library services which is going to be a reality in the near future where librarians would not only be the knowledge managers but also the managers of and facilitators for creation of knowledge based products.

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Chapter - III

প্রাচীন নালন্দা বিশ্ববিদ্যালয়ের গ্রন্থাগার পরিষেবা

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প্রাচীন ভারত তথা বিশ্বের জনপ্রিয় বিশ্ববিদ্যালয়গুলির অন্যতম হল, অতীতের নালন্দা মহাবিহার। এই বিশ্ববিদ্যালয় প্রায় ৭০০-৮০০ বছর ধরে, পৃথিবীর নানান প্রান্তের বিদ্যার্থীদের, বিদ্যা প্রদান করে চলেছিল। আর এর খ্যাতি যেমন, এর শিক্ষা প্রদান ও পরিকাঠামোর জন্যে চর্চিত ছিলো, তেমনি এর সমৃদ্ধ গ্রন্থাগার, সারা বিশ্বের কাছে আশ্চর্যের বিষয় ছিলো। মহাবিহারের এই গ্রন্থাগার শুধু গ্রন্থের গুদাম ঘর ছিলো না। একই সাথে এর উচ্চমানের গ্রন্থাগার পরিষেবা, এই গ্রন্থাগার কে সমৃদ্ধ ও জনপ্রিয় করেছিল। অনুবাদ পরিষেবা, পুঁথি নকল পরিষেবা, তথ্যবিস্তার পরিষেবা- সহ আরো বহু পরিষেবা, এই গ্রন্থাগার কে জনপ্রিয় করে। বলা চলে অতীতের এই গ্রন্থাগার পরিষেবা, বর্তমান বিশ্ববিদ্যালয় কেন্দ্রিক যে কোন গ্রন্থাগার পরিষেবার সাথে তুলনীয়।

সাংকেতিক শব্দের সমাধানসূত্র- নালন্দা মহাবিহার, নালন্দা মহাবিহারের ইতিহাস, নালন্দা মহাবিহারের গ্রন্থাগার পরিষেবা

ভূমিকা

নালন্দা মহাবিহারের গ্রন্থাগার, সকল শিক্ষার্থীদের জন্যে উন্মুক্ত ছিলো। এখানে নব আগত শিক্ষার্থীদের প্রবেশিকা পরীক্ষা দিতে হত। যার পরীক্ষণীয় মূল বিষয় ছিলো মেধা। যার মধ্যে মাত্র ৩০% উত্তীর্ণ হতে পারতো।[১] তাই বৌদ্ধ ধর্ম কেন্দ্রিক শিক্ষা প্রতিষ্ঠান হলেও, এইখানে শিক্ষা বিতরণ বিষয়টি ছিলো, মেধা কেন্দ্রিক। ধর্ম-বর্ণ-জাতী এখানে প্রাধান্য পেত না।

এমন কি শ্রী জিতেন্দ্রকুমার রায়ের মতে, এই বিশ্ববিদ্যালয়ে সম্ভবত ভিক্ষুগীরাও পড়তেন।[২] যদিও এটি নিয়ে বিতর্ক আছে। তবে বিষয়টি সত্য বলা চলে, তখন যদি সত্যই নারী-পুরুষ ভেদে একই স্থানে বিদ্যা চর্চা হত, তবে তা মহান কর্মযজ্ঞ ছিলো।

তাই বলা চলে, অতীতের নালন্দা মহাবিদ্যালয়ের গ্রন্থাগার, সকল স্তরের বিদ্যার্থী ও জ্ঞানপিপাসুদের জন্যে উন্মুক্ত ছিলো।

তথ্যসংগ্রহ

ইতিহাস কেন্দ্রীক রচনার একটি বিশেষ অংশ হলো, তথ্য সংগ্রহ ক্ষেত্র। তাই এ ক্ষেত্রে, সংক্ষেপে, এ বিষয়ে কিছু তথ্য দেওয়া হলো। নালন্দার পত্র ক্ষেত্রের এখনও মাত্র ১০% খনন করা হয়েছে।[৩] তাই অধিকাংশ বিষয় সম্পর্কেই, পত্র প্রমাণ পাওয়া যায় না। তার মধ্যে অন্যতম হলো, গ্রন্থাগার। এর পত্র ক্ষেত্র আজও অনাবিষ্কৃত।

তাই লেখ উপাদানের উপরই, এ ক্ষেত্রে অধিক নির্ভর করতে হয়। তৎকালীন সময়ের ভ্রমণ সঙ্গীদের রচনা (বিশেষ করে, চীনা পরিব্রাজকদের রচনা) ও পরবর্তী রচনা থেকে, এ সম্পর্কে জানা যায়।

চীনা পরিব্রাজক ফা হিয়েন খ্রীষ্টিয় ৩৯৯-৮২৪ মধ্যে ভারতে আসেন। যদিও তিনি প্রায় ১৫ বৎসর ভারতে ছিলেন, তবুও তাঁর রচনায় নালন্দা বিহারের উল্লেখ নেই। [৪] ৬২৯-৬৮৫ খ্রীষ্টে হিউয়েন সাং ভারতে আসেন।[৫] তিনি নালন্দায় তিন বৎসর শিক্ষার্থী ও দু' বৎসর শিক্ষক পদে আসীন ছিলেন। চীনা ভ্রমণকারী ৬৭৩-৬৯৫ খ্রীষ্টে ভারতে আসেন। দশ বৎসর তিনি এই মহাবিহারের ছাত্র ছিলেন। তিব্বতীয় ঐতিহাসিক লামা তারানাথ-এর রচনা থেকেও এ বিষয়ে কিছু তথ্য পাওয়া যায়।

নালন্দামহাবিহারের সংক্ষিপ্ত ইতিহাস

বৌদ্ধদের কাছে নালন্দা খুবই পবিত্র ধর্মীয় স্থান ছিলো। হুয়েঙ সাং-এর মতে, পাঁচশত বণিকের দশকোটি স্বর্ণ মূদ্রায় ক্রয় করা গ্রাম, গৌতম বুদ্ধকে অর্পণ করা হয়। তথাগত এই স্থানে প্রজ্ঞা প্রদান করতেন।[৬] তারানাথের লেখা থেকে জানা যায় যে, শাক্যসিংহের দশ প্রধান শিষ্যের অন্যতম, সারিপুত্র নালন্দার উপকণ্ঠে জন্ম গ্রহণ করেন এবং এখানেই নির্বাণ লাভ করেন। সম্রাট অশোক খ্রীষ্টপূর্ব তৃতীয় শতকে, সারিপুত্রের নামে এখানে স্তূপ তৈরী করান।[৭] তথাৎ অশোকের সময়ে, নালন্দা বিহারে পরিণত হয়।

গুপ্তরাজ সমুদ্র গুপ্ত ও দ্বিতীয় চন্দ্রগুপ্ত যে, নালন্দাবিহারে দান কর্মে যুক্ত ছিলেন, তাঁর প্রমাণ পাওয়া যায়। তাদের বহু মূদ্রা এখানকার পত্র ক্ষেত্র থেকে পাওয়া যায়। ঐতিহাসিকরা, উপরক্ত কথার, এইটি প্রমাণ হিসাবে ধরেন।[৮]

তবে নালন্দা মহাবিহার কে বিশ্ববিদ্যালয়ের স্বীকৃতি দেন, দ্বিতীয় চন্দ্রগুপ্তের পুত্র, প্রথম কুমার গুপ্ত (৪১৩-৪৫৫ খ্রীষ্ট)। এখান থেকে প্রাপ্ত একটি শীলালেখ এই সত্য বহন করে। প্রজ্ঞাবণ মহাশয়ের মতানুসারেও গুপ্তসম্রাট কুমার গুপ্ত এই বিশ্ববিদ্যালয়ের প্রতিষ্ঠাতা বলে উল্লেখিত।[৯]

আসলে নালন্দা বহুকাল আগে থেকেই বিহারে পরিণত হয়। আর বৌদ্ধ বিহারের আদর্শে, এখানে জ্ঞান চর্চা ও তথ্য সংগ্রহের কর্ম শুরু হয়ে যায়। তাই নালন্দা বিশ্ববিদ্যালয়ের যে গ্রন্থাগার ছিল, তাতে তথ্য অনেক আগে থেকেই জমতে শুরু হয়ে গিয়েছিলো। যেমন সংস্কৃত কলেজ বা প্রেসিডেন্সি কলেজ আজ বিশ্ববিদ্যালয়। কিন্তু তাদের গ্রন্থাগার গড়ে উঠেছিল কলেজের হাত ধরে। ক্রমশ তাঁর কলেবর বৃদ্ধি হয়েছে। নালন্দার ক্ষেত্রেও চিত্রটি এক।

নালন্দারগ্রন্থাগারের গঠন

নালন্দা মহাবিহারের গ্রন্থাগার ছিল, মূলতঃ তিনটি ভবনের সমষ্টি। তিব্বতি সাহিত্য থেকে জানা যায় যে, এই তিন ভবনের সমষ্টিগত গ্রন্থাগারকে, একত্রে বলা হত-‘ধর্মগঞ্জ’[১০] এখানে ধর্ম শব্দের অর্থ জ্ঞান। আর গঞ্জ শব্দের অর্থ হাটবাজার। তাহলে ‘ধর্মগঞ্জ’ শব্দের অর্থ হল জ্ঞানের বাজার। প্রকৃত অর্থে বাজারে বিভিন্ন স্থান থেকে বিভিন্ন দ্রব্য আসে। তাই এখানে সম্ভবত নানা স্থানের লব্ধ জ্ঞানের একত্রিকরণের উদ্দেশ্যে, এই নামের কথা বলা হয়েছে। তিনটি ভবনের পৃথক নামকরণ করা হয়েছিল। এই তিনটি ভবনের নাম হল, ‘রত্নসাগর’ (‘রত্নেরমহাসাগর’), ‘রত্নোদধি’ (‘রত্নেরসমুদ্র’) ও ‘রত্নরঞ্জক’ (‘রত্নখচিত’)। যশোবর্মদেবের রচনা মতে, এই ভবন ছিল নয় তল বিশিষ্ট।[১১] প্রকৃত অর্থে এর মধ্যে রত্নোদধি ছিল নয়তল বিশিষ্ট। আর অপর দুটি ভবন ছিল ছয় তল বিশিষ্ট। রত্নোদধি ভবনের গুরুত্ব ছিল অধিক। এখানে অতি গুরুত্বপূর্ণ ও দুস্প্রাপ্য পুঁথি রক্ষিত হত। এমনকি গোপনীয় তান্ত্রিক পুঁথি (যেমন গুহ্যসমাজ) এখানে রক্ষিত হত। তাই ধরা যেতে পারে যে, রত্নোদধি ছিল সম্ভবত নালন্দা মহাবিহারের সেন্ট্রাল লাইব্রেরী। অপর দুটি ভবন কে ডিপার্মেন্ট লাইব্রেরী হিসাবে ধরা যেতে পারে। সময়ে সময়ে

এই গ্রন্থাগার গুলি সংস্করণও করা হত। মুদ্রিত ভদ্র নামক এক শাসক, একদা এই গ্রন্থাগারের সংস্কার করেছিলেন বলে জানা যায়। [১৪]

পরিষেবা

যে কোন গ্রন্থাগারের মূল চরিত্রের একটি বড় অংশ হলো, তার পরিষেবা। নালন্দার গ্রন্থাগারে একাধিক পরিষেবা ছিলো। নীচে তার কিছু চিত্র ধরা হল।

১) তথ্যপরিষেবা

যে কোন গ্রন্থাগারের মূল কার্যক্রম হল তথ্য পরিষেবা। ইং সি ও হিউয়েনসাঙ –এর বিবরণ থেকে জানা যায় যে, তথ্য পরিষেবাতে নালন্দার গ্রন্থাগার ছিল খুবই উন্নত। নালন্দা বিশ্ববিদ্যালয়ের সকল শ্রেণীর পাঠককে তথ্য সরবারহ করা হত। অতীতের নালন্দা বিশ্ববিদ্যালয়ে নানান বিষয় নিয়ে গবেষণা হত। আর গবেষণার জন্য প্রয়োজনীয় তথ্য আসত নালন্দার গ্রন্থাগার থেকে।

২) অনুবাদ পরিষেবা

অনুবাদ পরিষেবায় এই গ্রন্থাগার ছিল খুবই উন্নত। হিউয়েন সাং এ দেশ থেকে বহু পুঁথি সংগ্রহ করেছিলেন। তার মধ্যে বহু পুঁথি তিনি নিজ ভাষায় অনুবাদ করেন। এই অনুবাদ কার্য শুরু করেছিলেন এই গ্রন্থাগার থেকে। নালন্দার গ্রন্থ-সংগ্রহের মধ্যে থাকা বেশ কিছু পুঁথি তিনি এখানে থেকেই অনুবাদ করেন।

একই ভাবে ইং সি ওএখান থেকে বেশ কিছু পুঁথি অনুবাদ করে নিয়েছিলেন। ইং সি নালন্দা থেকে প্রায় ৪০০ পুঁথি সংগ্রহ করেন। [১৫] তাঁর সংগ্রহের অনেক পুঁথিই এই গ্রন্থাগারেই চীন ভাষায় তিনি অনুবাদ করেন।

নালন্দার গ্রন্থাগারে যে অনুবাদ পরিষেবা ছিল, উপরের দুটি উদাহরণ তার প্রত্যক্ষ প্রমাণ। আসলে নালন্দায় বিশ্বের নানান স্থান থেকে শিক্ষার্থী আসত। তাদের ভাষা ছিল ভিন্ন। তাই এদেশের শিক্ষা গ্রহণের জন্য তাদের প্রথমে এদেশের ভাষা শিখতে হত। পরে নিজ দেশে এ শিক্ষার প্রসারের জন্য, এ দেশের তথ্য কে নিজ দেশীয় ভাষায় অনুবাদ করতে হত। তাই অনুবাদ পরিষেবা এখানে এত প্রাধান্য পেত।

নালন্দার এই অনুবাদকার্য আন্তর্জাতিক স্তরে পৌঁছে গিয়েছিল। ৫৩৯ খ্রীষ্টাব্দে চীনসম্রাট সিয়াও-য়েন মহাজান বৌদ্ধধর্মের কিছু পুঁথি অনুবাদ করার জন্য তৎকালীন মগধের শাসক (সম্ভবত জীবিত গুপ্ত)-এর কাছে দূত পাঠান। নালন্দার মহাপন্ডিত আচার্য্য পরমার্থকে, মগধ শাসক চীনে পাঠান। [১৬]

৩) পুঁথি নকল পরিষেবা

নালন্দার গ্রন্থাগারের আরেকটি উল্লেখ্য পরিষেবা হল, এর পুঁথি নকল পরিষেবা। ইং সি, হিউয়েনসাঙ সহ বহু পন্ডিতরা এখান থেকে বহু পুঁথি নকল করে তা নিজ কাছে সংগ্রহ করেছিলেন। রেপ্রোগ্রাফি পরিষেবার আদিরূপ হিসাবে, নালন্দার এই পরিষেবাকে ধরা যেতে পারে।

সাহিত্য পর্যালোচনা

প্রাচীন নালন্দা নিয়ে, বহু গবেষণা হয়েছে। শ্রী জিতেন্দ্র কুমার রায়, নিজ গ্রন্থ 'নালন্দা : নালন্দা মিউজিয়াম ও ধ্বংসাবশেষের সংরক্ষণ' [1] গ্রন্থে নালন্দা নিয়ে বহু কথা বলেও, আলাদা করে সে অর্থে তার গ্রন্থাগার নিয়ে তেমন কিছু বলেননি। The University of Nālandā গ্রন্থেও লেখক Hasmukhlal Dhirajlal Sankalia, একই প্রস্থ নিয়েছেন। [2] Rakesh Kumar Bhatt নিজ গ্রন্থ History and Development of Libraries in Indiaতে সংক্ষেপে নালন্দার গ্রন্থাগারের পরিচয় দিলেও, পরিষেবা সেখানে অস্পষ্ট। [3] Growth of libraries in India প্রবন্ধে Anis

Khurshid এই গ্রন্থাগারের পরিষেবা নিয়ে তেমন কিছুই বলেিনি। **Archaeological Survey of India, Government of India**-র রিপোর্টেও- এখনও প্রযুক্ত এ বিষয়ে তেমন কিছু বলা হয়নি। আসলে অতীতের নালন্দা মহাবিহারের গ্রন্থাগারের পরিষেবার ইতিকথা, আজও প্রায় তমসাবৃত্ত।

পরিষেবে

প্রায় ৭০০-৮০০ বছর, এই বিশ্ববিদ্যালয়ের গ্রন্থাগার তাঁর সারা বিশ্ব থেকে আগত শিক্ষার্থীদের ও শিক্ষকদের, জ্ঞান-তথ্য প্রদান করেছে। এমনকি উপরে উল্লেখিত, এই গ্রন্থাগারের তিনটি পরিষেবা, বর্তমানেও বিশ্বের সকল বিশ্ববিদ্যালয়ে এই তিন পরিষেবা প্রধান্য পায়।

রঙ্গনাথনের পঞ্চনীতিতেও এই তিনটি পরিষেবার উল্লেখ আছে। তা হলে বলাই চলে যে, অতীতের নালন্দা বিশ্ববিদ্যালয়ের গ্রন্থাগারে, আধুনিক পরিষেবা প্রদান করা হত। যা পরবর্তীতে গ্রন্থাগারের পঞ্চনীতিতে স্থান পায়। প্রকৃত অর্থে, অতীতে ভারতে গ্রন্থাগারের অভাব ছিল না। তবে তা অধিকাংশই ছিল রাজশক্তি বা রাজপুরুষের সম্পত্তি। তবে বৌদ্ধ ধর্মের প্রভাবে, ভারতের শিক্ষা ব্যবস্থার উন্নতি হয়, বহু বিশ্ববিদ্যালয় গঠিত হয়, যার হাত ধরে গ্রন্থাগারও প্রতিষ্ঠিত হয়।

গ্রন্থাগার গুলিতে তথ্য জমা হতে থাকে। আর বিশ্ববিদ্যালয়ে যে জ্ঞান-তথ্যের সৃষ্টি হয়, তা নিজ গ্রন্থাগারে জমা হতে থাকে। তবে শুধু গ্রন্থাগারে তথ্য জমা হলেই তো হবে না। চাই সঠিক পরিষেবা। যার প্রত্যক্ষপ্রমাণ নালন্দার গ্রন্থাগার।

তাই একেবারে শেষে বলা চলে, অতীতের নালন্দা বিশ্ববিদ্যালয়ের গ্রন্থাগার পরিষেবা হল, সারা বিশ্বের গ্রন্থাগার পরিষেবার পাথেয় সম।

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ভার্চুয়াল মাধ্যমে গ্রন্থাগার পরিষেবা: সুবিধা এবং অসুবিধা

সূত্রত ঘোষ

লাইব্রেরি অ্যাসিস্ট্যান্ট

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সারসংক্ষেপ

আধুনিক প্রযুক্তির ব্যবহার আমাদের প্রাত্যহিক জীবনকে যেমন গভীরভাবে প্রভাবিত করেছে, তেমনি আমাদের শিক্ষাব্যবস্থাকেও করে তুলেছে সহজসাধ্য। প্রযুক্তির তেমনই একটি উন্নততর রূপ হল ভার্চুয়াল লাইব্রেরি। ভার্চুয়াল লাইব্রেরির ধারণাটি দাঁড়িয়ে আছে পুরোপুরি আধুনিক তথ্য-প্রযুক্তির উপর যেখানে গ্রন্থাগার রূপে কোনো স্থানের বিশেষত্ব থাকে না।

‘ভার্চুয়াল’ কথাটির আভিধানিক অর্থ অপার্থিব। ল্যাটিন শব্দ ‘ভার্চুয়ালিস’ থেকে ‘ভার্চুয়াল’ কথাটির উৎপত্তি। ভার্চুয়াল লাইব্রেরি হল প্রকৃতঅর্থে দেওয়ালবিহীন গ্রন্থাগার যা ১৯৯১ সালে স্যার টিম-বার্নার্স-লি এর মস্তিষ্কপ্রসূত। পরবর্তীকালে বার্টান্ড ইব্রাহিম ভার্চুয়াল লাইব্রেরির বিকাশে উল্লেখযোগ্য ভূমিকা পালন করে।

নতুন প্রজন্মের ব্যবহারকারীদের গ্রন্থাগার ব্যবহারকে সহজসাধ্য করে তোলার লক্ষ্যে এবং তথ্যের অসীম ব্যাপ্তির কথা মাথায় রেখে ভার্চুয়াল লাইব্রেরির অবতারণা, যেখানে সমস্ত তথ্য পাওয়া যায় বৈদ্যুতিন মাধ্যমে এবং স্থান-কাল নির্বিশেষে।

এই সংক্ষিপ্ত গবেষণাপত্রে ক্রমান্বয়ে ভার্চুয়াল লাইব্রেরির পরিদর্শন, লক্ষ্য, সুবিধা, সাহিত্য-পর্যালোচনা এবং সমস্যা তুলে ধরার প্রয়াস বর্ণিত হয়েছে।

সাংকেতিক শব্দের সমাধানসূত্র- ভার্চুয়াল, গ্রন্থাগার পরিষেবা, প্রযুক্তি, তথ্য, অপার্থিব, ভার্চুয়ালিস

ভূমিকা

রবীন্দ্রনাথ ঠাকুর তাঁর ‘লাইব্রেরি’ নামক প্রবন্ধে বলেছেন - “লাইব্রেরির মধ্যে আমরা সহস্র পথের চৌমাথার ওপর দাঁড়াইয়া আছি। কোনো পথ অনন্ত সমুদ্রে গিয়াছে, কোনো পথ অনন্ত শিকড়ে উঠিয়াছে, কোনো পথ মানব হৃদয়ের অতলস্পর্শে নামিয়েছে। যে যেদিকে ধাবমান হও কোথাও বাঁধা পাইবে না।”- তাঁর এই উক্তি যেন আজ বর্ণে বর্ণে সার্থক। বর্তমান তথ্য বিস্ফোরণের যুগে সামগ্রিক তথ্যের একত্রিকরণ বিশ্বের যেকোনো গ্রন্থাগারের পক্ষেই অসাধ্য। আর এই ভাবনা থেকেই ভার্চুয়াল লাইব্রেরির উৎপত্তি যা সম্পূর্ণরূপে আধুনিক প্রযুক্তিনির্ভর, যেখানে তথ্য বা পাঠ্যবস্তু ডেটাবেসের মাধ্যমে এক বা একাধিক কম্পিউটার সিস্টেমে সংরক্ষিত থাকে এবং তথ্য সংগ্রহের জন্য একটি সিঙ্গেল ইন্টারফেস ব্যবহার করা হয়। অর্থাৎ ভার্চুয়াল লাইব্রেরি স্থান কাল নির্বিশেষে তথ্যের প্রাপ্যতাকেই গুরুত্ব দেয়।

লক্ষ্য

গতানুগতিক গ্রন্থাগার ভাবধারা থেকে বেড়িয়ে এসে ডিজিটাল আকারে তথ্য এবং জ্ঞান সংগ্রহ, সংরক্ষণ, পরিচালনা এবং আর্থিক সাশ্রয় ভার্চুয়াল লাইব্রেরির প্রধান লক্ষ্য। বিভিন্ন উৎস থেকে সংগৃহীত তথ্য ডিজিটাল পদ্ধতিতে পরিগ্রহণ করার সুযোগ বৃদ্ধি করা, আন্তর্জাতিক ও আঞ্চলিক যোগাযোগ বৃদ্ধি করা, গবেষকদের

গবেষণায় প্রভূত উন্নতিসাধন ,ছাত্র-ছাত্রীদের পাঠে সহায়তা ,সর্বোপরি বয়স ও শিক্ষাগত বৈষম্য নির্বিশেষে সমাজের সর্বস্তরে তথ্য ব্যবহারকে সুনিশ্চিত করার লক্ষ্যমাত্রা নিয়েই ভার্চুয়াল লাইব্রেরির পথচলা।

সুযোগ ও ব্যাপ্তি

ইন্টারনেটে উপলব্ধ বিভিন্ন শিক্ষা সম্পদ যা ভার্চুয়াল লাইব্রেরির প্রধান সংগ্রহ। বিষয় ও ক্ষেত্র নির্বিশেষে যে সকল উৎস থেকে তা সহজলভ্য সেগুলি হলো -ডিরেক্টরি অফ ওপেন এক্সেস বুকস , ডিরেক্টরি অফ ওপেন এক্সেস জার্নালস , ডিরেক্টরি অফ ওপেন এক্সেস রিসোর্সেস , বুকবুন , গুগল স্কলার , ওপেন সাইন্স ডিরেক্টরি, সোশ্যাল সাইন্স ডিরেক্টরি ইত্যাদি।

গ্রন্থাগারিকের ভূমিকা

ইন্টারনেট ভিত্তিক ডিজিটাল সম্পদ, বিশ্বমানের নেটওয়ার্ক ব্যবস্থা , সর্বোপরি ইন্টারনেট ভিত্তিক তথ্য পরিষেবাকে কেন্দ্র করে গড়ে ওঠে। ভার্চুয়াল লাইব্রেরি যেখানে গ্রন্থাগারিক তথ্য সংগ্রহ , সংগঠিতকরণ , তথ্য চিহ্নিতকরণ, সম্পদ ব্যবহারে নির্দেশদান , তথ্য সংরক্ষণ তথা প্রযুক্তি বিন্যাসে অগ্রণী ভূমিকা গ্রহণ করবেন।

সামগ্রিক পরিদর্শন

ভার্চুয়াল লাইব্রেরিকে ইন্টারনেট ভিত্তিক ডিজিটাল লাইব্রেরি হিসাবে সংজ্ঞায়িত করা যেতে পারে। তবে ডিজিটাল লাইব্রেরির সাথে ভার্চুয়াল লাইব্রেরির একটি সুস্পষ্ট পার্থক্য বিদ্যমান যেখানে ডিজিটাল লাইব্রেরি হলো কাগজবিহীন গ্রন্থাগার। এখানে কোনো মুদ্রিত তথ্য থাকে না ,পরিবর্তে মুদ্রিত তথ্য ডিজিটাল তথ্যে অর্থাৎ বৈদ্যুতিন মাধ্যমে রূপান্তরিত হয় যেমন - সি ডি রম ,ডি ভি ডি , ম্যাগনেটিক টেপ ইত্যাদি অপরদিকে ভার্চুয়াল লাইব্রেরি সম্পূর্ণরূপে বাহ্যিক সংগ্রহ মুক্ত।

বর্তমান পরিস্থিতিতে ভার্চুয়াল লাইব্রেরি পরিগ্রহণের প্রবণতা অনেকাংশে বৃদ্ধি , পেয়েছে তবে এক্ষেত্রে কিছু সুবিধার পাশাপাশি কিছু অসুবিধাও পরিলক্ষিত হয়।

সুবিধা

১. সাম্প্রতিক তথ্য প্রাপ্তির নির্ভরযোগ্য উপায় হলো ভার্চুয়াল লাইব্রেরি।
২. এখানে তথ্য প্রাপ্তির জন্য কোনো নির্দিষ্ট সময়ের প্রয়োজন নেই অর্থাৎ যেকোনো সময় তথ্য উপলব্ধ।
৩. বিশ্বের যেকোনো স্থান থেকে ইন্টারনেট সংযোগের মাধ্যমে এটি গ্রহণযোগ্য।
৪. বিভিন্ন বয়সের বিভিন্ন জীবিকার পাঠকদের চাহিদা অনুযায়ী তথ্য এখানে সহজলভ্য।
৫. শারীরিক প্রতিবন্ধকতা যুক্ত পাঠক, যারা প্রয়োজনীয় তথ্য গ্রহণের জন্য অন্যত্র যেতে অসমর্থ তাদের ক্ষেত্রে ভার্চুয়াল লাইব্রেরি তথ্য প্রাপ্তির নতুন দিগন্ত উন্মোচন করে।

৬. গতানুগতিক গ্রন্থাগার ব্যবস্থার মূদ্রিত উপাদান তৈরির প্রধান উপকরণ হলো কাগজ, যা তৈরির জন্য অসংক্ষ বৃক্ষচ্ছেদন করতে হয়। সেদিক থেকে ভার্চুয়াল লাইব্রেরির পরিমণ্ডল অনেকাংশে পরিবেশবান্ধব

৭. সমাজের বিভিন্ন শ্রেণীর মানুষের মধ্যে তথ্য প্রযুক্তিগত বৈষম্য অনেকাংশে নির্মূল করে ভার্চুয়াল লাইব্রেরি।

অসুবিধা

ভার্চুয়াল লাইব্রেরি গড়ে তোলার প্রধান অসুবিধাগুলি হলো -

১. এখানে গ্রন্থস্বত্ব হলো প্রধান প্রতিবন্ধকতা। লেখকের অনুমতি ব্যতীত নির্দিষ্ট সময়সীমার আগে তার মেধা বিতরণ দণ্ডনীয় অপরাধ।

২. ভার্চুয়াল লাইব্রেরি যেহেতু সম্পূর্ণরূপে প্রযুক্তির এর উপর নির্ভরশীল তাই এই গ্রন্থাগারের উপযুক্ত পরিমণ্ডল গড়ে তোলা ও পরিচালনার জন্য প্রত্যহ পরীক্ষা- নিরীক্ষার প্রয়োজন।

৩. উপযুক্ত দক্ষতা তথা তথ্য গ্রহণ ও ব্যবহার করতে পারা বা না পারা প্রযুক্তিগত বৈষম্য সৃষ্টি করে।

৪. এই গ্রন্থাগার গড়ে তোলা, রক্ষনাবেক্ষন , ব্যবহারকারীদের উপযুক্ত তথ্য অনুসন্ধান , গ্রহণ তথা ব্যবহার সম্পর্কে সম্যক ধারণা প্রদান করার জন্য দক্ষ পেশাদার অত্যন্ত প্রয়োজন।

সাহিত্য পর্যালোচনা

মুত্তাইয়া কোগানুরামাঠ ' ভার্চুয়াল লাইব্রেরি : এন ওভারভিউ ' নামক প্রবন্ধে বলেছেন - ভার্চুয়াল লাইব্রেরি নতুন প্রজন্মের গ্রন্থাগার ব্যবহারকারীদের নতুন পথের সন্ধান দেয়। তাঁর মতে ভার্চুয়াল লাইব্রেরি হল ভবিষ্যতের নতুন লক্ষ্য।

লিজ ব্রুক 'অস্ট্রেলিয়ান লাইব্রেরি জার্নাল' এ বলেছেন ইন্টারনেট ও ওয়ার্ল্ড ওয়াইড ওয়েব এর ক্রমবর্ধমান উন্মতি এবং তথ্যের অবাধ পরিগ্রহণ গবেষণাই উৎসাহ দেয়। তবে কিছু প্রশাসক উদীয়মান এই বৈদ্যুতিন পরিবেশকে ব্যয় হ্রাস করার সুযোগ হিসাবে দেখেন।

স্যার অরিক, জে .টি .- এর মতে ভার্চুয়াল লাইব্রেরি হল ইন্টারনেট বেসড ডিজিটাল লাইব্রেরি।

জে .সি .ফাগান তার 'মার্কেটিং দ্য ভার্চুয়াল লাইব্রেরি ' নামক প্রবন্ধে ভার্চুয়াল লাইব্রেরি বিপণনের ক্ষেত্রে নানান সমস্যার সমাধান এবং শিক্ষাশ্রয়ী গ্রন্থাগারের ভার্চুয়াল লাইব্রেরি তে উত্তরণের বিষয়টি তুলে ধরেছেন।

উপসংহার

আমেরিকা লাইব্রেরি এসোসিয়েশন (এ এল এ) ১৯৯৫ সালে 'এথিকস এন্ড দ্য লাইব্রেরি বিল অফ রাইটস '- এ উল্লেখ করেছে প্রত্যেকের তথ্য পরিগ্রহণ করা উচিত। প্রাচীন প্রথাগত গ্রন্থাগার ব্যবস্থা থেকে আধুনিক যুগের ভার্চুয়াল লাইব্রেরির বিকাশ প্রযুক্তিবিপ্লবের এক তাৎপর্যপূর্ণ স্বাক্ষর বহন করে চলেছে। তবে নতুনকে স্বাগত জানানোর অর্থ কখনোই পুরোনোকে অগ্রাহ্য করা নয়। তাই গ্রন্থাগারে স্বশরীরে উপস্থিত হয়ে বিভিন্ন রকম গ্রন্থ

পাঠের যে আনন্দ ও উপযোগিতা তা ভার্চুয়াল গ্রন্থাগার ব্যবস্থায় দুর্লভ। তাই প্রযুক্তি এগিয়ে চলুক প্রথাগত গ্রন্থাগার ব্যবস্থাকে সঙ্গী করে। কারণ গ্রন্থাগারই হল একটি জাতীর অতীত, বর্তমান ও ভবিষ্যৎ।

তথ্যসূত্র

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Watch বাংলা প্রবন্ধ লাইব্রেরি - রবীন্দ্রনাথ ঠাকুর (Library - Rabindranath Tagore) Bangla Audiobook Essay on YouTube, n.d.

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A few glimpses of IVCLIS 2021



Welcome address by Dr. Sankar Gangopadhyay, VC, Brainware University



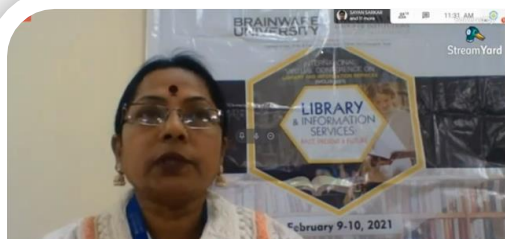
Presidential address by Ms. Mahua Pal, Registrar, Brainware University



Chief Guest, Dr. Binod Behari Das, Former Chief Librarian, Jadavpur University delivering speech



Guest of Honour, Dr. Asitabha Das, University Librarian, Kalyani University delivering speech and Invited Talk



Bandana Basu, Librarian, Brainware University & Convenor, IVCLIS 2021



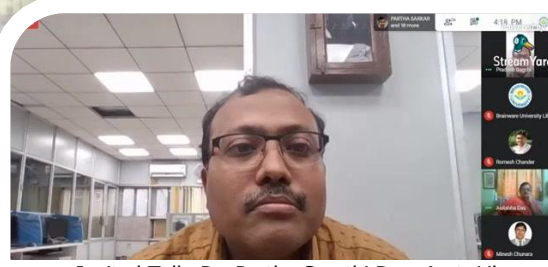
Mr. Pulak Patra, Deputy Registrar, BGI-SDET delivering speech



**Keynote Address, Mr. Demian Katz,
Director of Library Technology at Falvey Memorial Library, Villanova, USA**



Invited Talk, Dr. Ashis Biswas, Librarian, Victoria Institution (College)



Invited Talk, Dr. Partha Sarathi Das, Asst. Library and Information Officer, National Library of India, Govt. of India



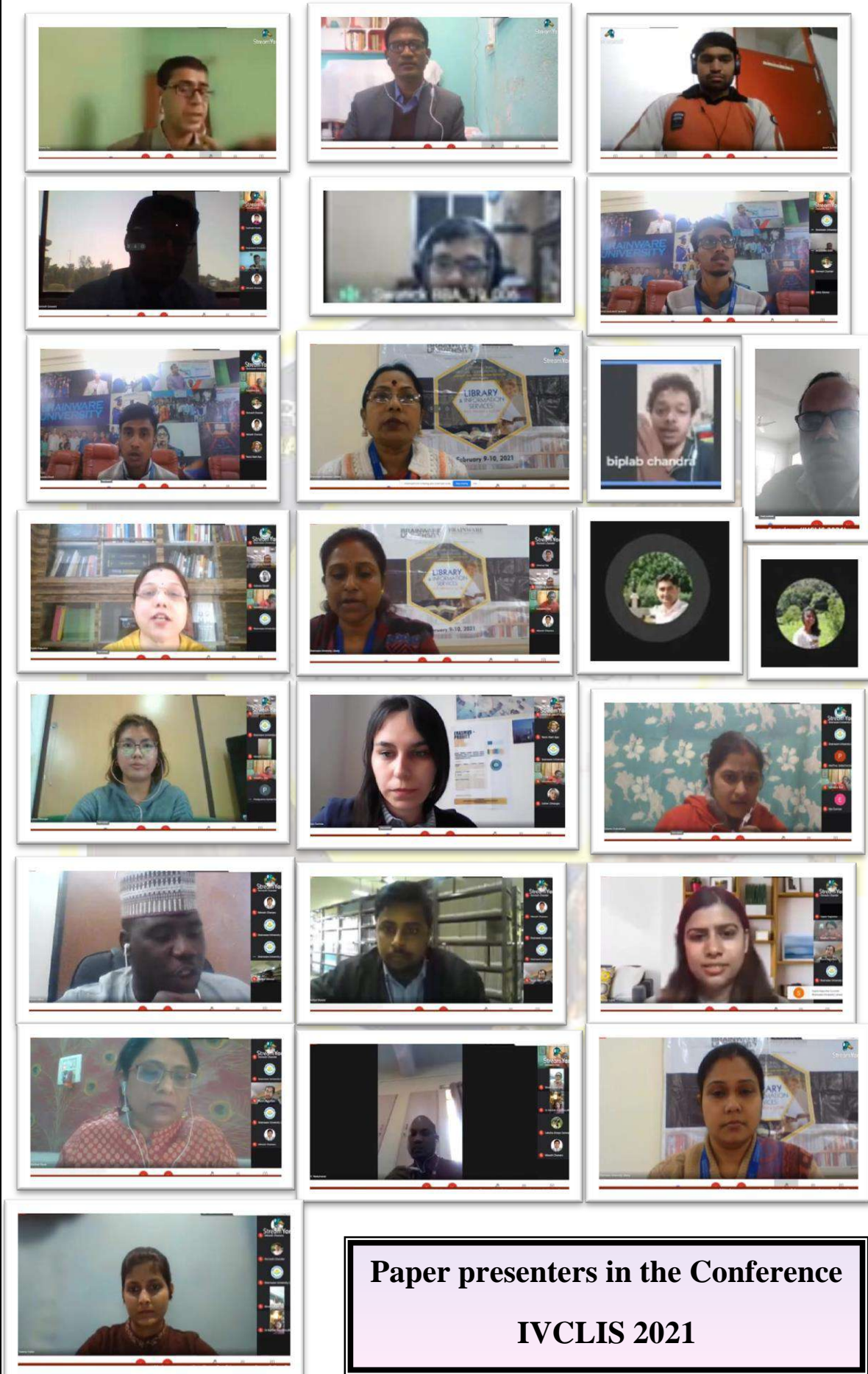
Invited Talk, Mr. Prodosh Kumar Bagchi, Librarian, Mujaffar Ahamed Pathagar (Library)



Invited Talk, Dr. Barnali Roychoudhury, Assistant Professor, DLIS, Netaji Subhas Open University

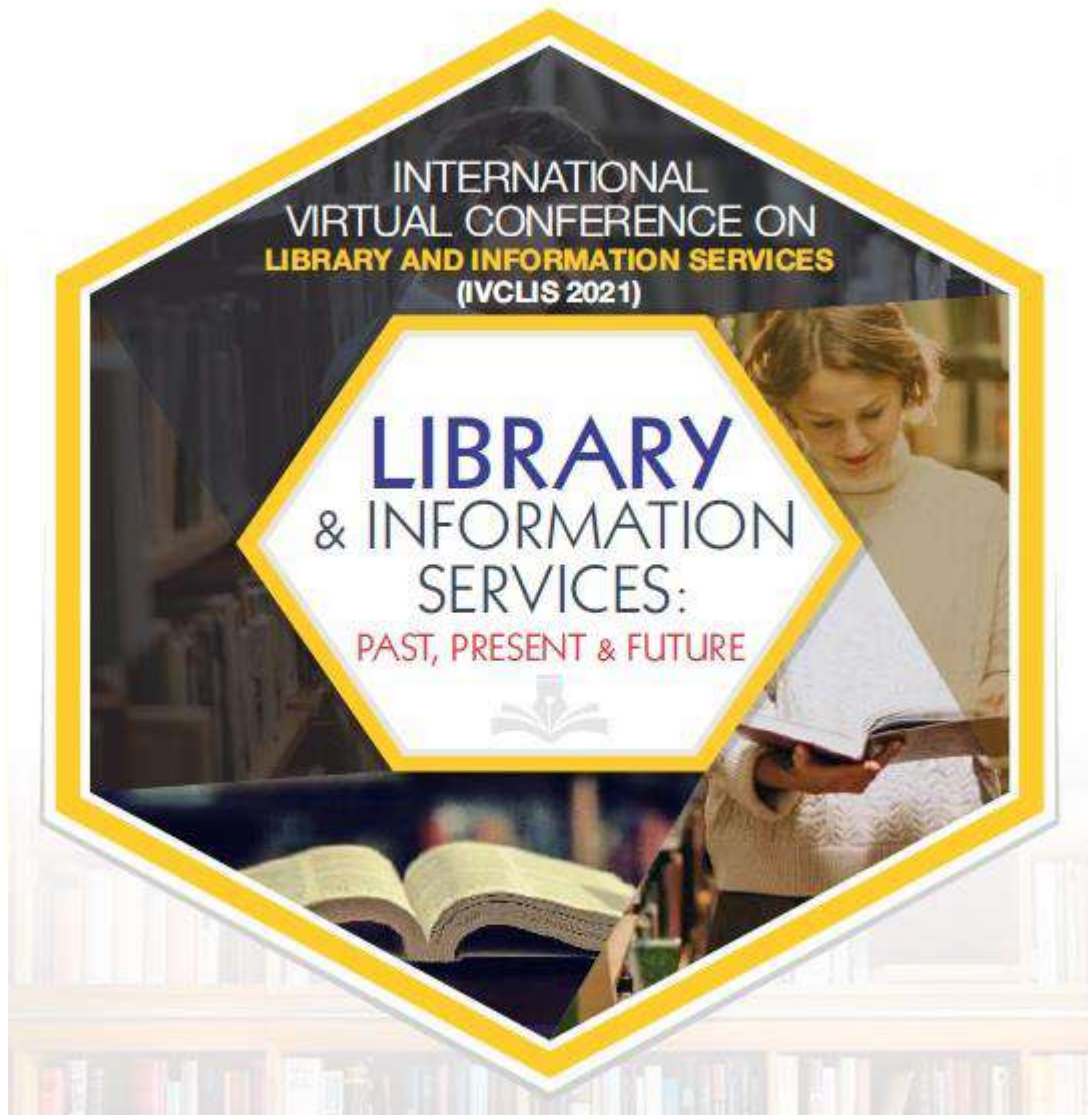


Invited Talk, Mr. A.K.M Nurul Alam, Deputy Director, Bangladesh Bank Library and Country Coordinator, SLiMS, Bangladesh



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