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Innovations in the Designing and Marketing of Information Services

John Jeyasekar Jesubright and P Saravanan

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Innovations in the Designing and Marketing of Information Services

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Information explosion is the common phenomenon in the modern era in which no library can stand alone in fulfilling the information needs and requirements of its users. Resource sharing provides the means to maximize the usage of library collection irrespective of its type. Networking of libraries facilitates resource sharing among the participating libraries in an effective manner and it indirectly facilitates marketing of library sources among a group of libraries. Technology alone is not sufficient to bring together the sources. The attitudes of the people involved in the information dissemination are also a decisive factor in determining the success of resource sharing through networking of libraries. This chapter presents the attitude of information professionals for effective resource sharing and networking of academic libraries in the southern districts of Tamil Nadu, India. The study revealed that library and information science professionals have a positive attitude towards resource sharing and networking of libraries.

Information explosion has reached its zenith and provides the accessibility in a user-friendly manner. Time, space, situation, assistance, facilitation, tutor, conventional, traditional; all these types of information acquisition modes had been reduced to user-friendly pattern of interaction. Deschooling among teenagers has become an inevitable topic of discussion due to the user-friendly information accessibility. Deschooling is the escapism of teenagers from normal, traditional, and systematic style of information as well as knowledge acquisition. This chapter provides the misuse as well as the negative thinking aspects of teenagers in marketing of information services. The chapter ultimately enhances the quality of designing and realistic ethical norms and values in marketing of information services.

Higher education system has witnessed tremendous changes this decade at a global level due to the invasion of information technology in every aspect. The information centers and information services are no exceptions. The concept of self-learning and acquisition of life-long learning skills are necessary to be information-literate and information-empowered. Day-to-day need of information, competency, and familiarity is using ICT-based information sources, enhancing usage of library resources. Thus, directly or indirectly, information literacy skills or competencies influence the use of library resources. This chapter makes a comparative analysis on information literacy skills possessed by research scholars and their information literacy skills based on the demographic variables. The study revealed a moderate level of information literacy skills among the research scholars, and demographic variables and ICT awareness influences their information literacy skills.

This chapter examines users' opinion regarding various aspects of ICT-based services and facilities provided by the Maulana Azad Library, Aligarh Muslim University, India. The authors used a quantitative study based on the survey method along with the questionnaire as a tool for data collection. Statistical Package for Social Sciences (SPSS) was used for analysis and interpretation of 278 selected questionnaires. Findings of the study reveal a majority of respondents are satisfied with ICT-based services and facilities offered by the library. However, most of the respondents have reported that it is essential to improve the quality of ICT facilities like the speed of Internet connection, scanner facility, and photocopy facility. They also cited a need to increase the number of printing machines. The findings also show that users have a positive attitude towards ICT tools which are used by the library such as various Social Networking Sites (SNSs), e-mail, blogs, etc. for spreading quick information.

This chapter examines the levels of academic integrity of prospective teachers and determines any significant differences in their mean scores of academic integrity with respect to background variables, gender, locale, academic stream, and type of family. Normative Survey Method is used to study 400 prospective teachers from Kanyakumari district, Tamil Nadu, India. Results reveal the teachers have a moderate level of academic integrity and gender, locale of the school, and type of family influence their academic integrity.

Plagiarism is using other's writing without properly crediting the author. The act itself may involve a violation of copyright. It definitely violates academic ethics. In the age of the internet, proliferation of information available online has made it extremely easy to plagiarize. There are various types of plagiarism and academic misconduct, though scholars often disagree as to exactly what constitutes a proper definition of plagiarism. Very often teachers, as well as students, practice it in some form or other due to sheer ignorance. It is the responsibility of the teachers and the librarians to devise strategies to combat plagiarism within the academia by raising awareness within both the teaching and student communities.

Every professional body has a moral code for the conduct of its members. For example, physicians follow the oldest Hippocratic Oath for their professional code of ethics. Every member of the profession should adhere to their ethical code. Eventually, in the era of information overload millions of Terabyte information is found in the web. The e-formats of the information pose challenges to its user. The information service providers have a moral responsibility of providing the right information to the right

Foreword

Libraries are the knowledge centres. They acquire different types of information resources covering universe of subjects with the basic objective of providing equity of access to the knowledge resources held by them. They contribute for learning, innovation, research, preservation and diffusion of knowledge. They also act as community centres through various kinds of services and programs beneficial to the community. Technology is the enabler in transformation of traditional libraries, and revolutionizing their services to make them accessible with ease and comfort.

For generations, libraries are well recognized as knowledge providers to the society which help explore knowledge, information and culture. The invention of the public library is meant more and more people get to use the knowledge resources and services.

Technology is in fact supporting libraries in designing new products and creating possibility to offer new services. But most users hardly understand or possess knowledge in making use of these IT-based products and enjoy the benefits of the new services. Many users are unaware of the library resources possess and how they are useful. Naturally, this constrains the library users in making use of the resources and services. Now most people consider Google is the best alternative to library and hence library is not worth to maintain. In this context, there is a clear need for marketing of library / information services. Generally, marketing in the library environment is to create awareness on the knowledge resources, and services of libraries, and how the information services can make the users satisfy in fulfilling their information needs. Marketing also enables optimum use of resources, creating awareness, and provision of quality services to the users.

Till now, the traditional methods of library orientation have been treated as marketing/publicizing of resources and services, but in the present technology environment, there is a need for innovation in design of new marketing methods and strategies. In the context of technology, the phrase orientation had been changed to 'Information Literacy'. These strategies and methods use IT to make user friendly services and better access to information.

In the present context, the need for new strategies and innovations had become essential. Many professionals have identified innovative methods, and it is worth to make them known to the LIS professionals and information seekers.

The attempt made by Dr. P. Saravanan and Dr. J. John Jeyasekar to identify the theme of the book and collect the articles on the subject of *Innovation in Designing and Marketing of Information Services* is an appropriate initiative in line with the current times. This book consists of 19 articles covering various themes relating to the main theme of the book. They deal with library users, technology, innovation, academic integrity, library services, etc.

This book is well edited and useful for the LIS professionals. I congratulate the editors for making such a fruitful attempt to publish this book will be useful addenda to the existing literature on the core theme of the book, marketing of LIS Services. I suggest every LIS professional to go through these articles/chapters to enrich their knowledge.

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Preface

The words “Thinking is allowed” are printed in bold on the full first page of a book we came across. Pondering on that, we can certainly say books create the right atmosphere to think and are therefore also a vehicle of democratic transformation. Libraries and Information Centers as a store-house and Library Media Specialist as disseminators of the thought-stimulating information contained in these books and serials do a wonderful job of promoting democracy. The libraries are the agents of societal change and therefore should be developed with the right enthusiasm. The greatest challenge being faced is sustaining and strengthening their relevance in the digital era. Staying relevant involves the library and information professionals and the technologies to a greater extent and the library authorities, the patrons and the document collections to a smaller extent.

The core element in any marketing strategy and practice is customer satisfaction. The modern library is now generally called an information market and the library user is a consumer of information. The ultimate aim of marketing here is to provide the right information to the right user at the right time (Das & Karn, 2008). One of the other components is the information. The format of the information has undergone several changes from the earliest clay tablets to the modern digitized format, a paperless society. An information resource center/ library should be able to handle any type of these formats. The onus of providing the right information to the right user lies with the knowledge workers as the library and information professionals are called in the information era. An important aspect of providing information to the patron or user is finding what the user needs so that the right information can be provided. Librarians conduct user studies to analyze the user needs.

Nevertheless, recent surveys reveal that many of the rightful users are not utilizing the library resources, which is another serious challenge. Librarians should understand that they are not the only one to offer information services. They have to compete with the internet or in the parlance of modern-day commoner, the Google. Unless and until librarians understand this and be proactive, the relevance of the libraries would be lost. Marketing techniques like initiation programs, meetings, advertising, building relationships, etc., are used here to make the non-users into potential users. Innovative services too play a vital role in taking the library services beyond the physical barriers of the library. The success of all these hinges on the crucial human element, i.e., the Library and Information Service provider and also the library authorities.

Ever since the invention of modern printing technology the libraries have undergone tremendous changes. There are many other technologies which have tried to encumber the paper media. The microforms of documents such as the microfiches, and the microfilms dominated for a short time. Though

they helped the libraries shrunk the physical space, they did not pose a severe threat to the print media. However, with the advent of modern computers, and their peripherals, and with advancement in Information and Communication Technology (ICT), more and more application algorithms are coming out. These applications can be utilized to promote the library services. The author of the first chapter has outlined how modern apps like YouTube, Twitter, Blog, etc. can be utilized to maximize the library usage. The chapter describes the concepts of marketing and also the marketing principles in Library and Information Science and highlights the role of Librarians in marketing the library products and services.

Every technology that has been invented since the Gutenberg days has found an application in the libraries. Some of the new and emerging state of the art technologies introduced in the libraries are Artificial Intelligence (AI), Virtual Reality (VR), Robotics, Drones, Cloud Printing, Internet of Things (IoT), Radio Frequency Identification (RFID), etc. The author of chapter two has provided a compilation of the emerging technologies and their applications in the libraries. This chapter also gives necessary inputs to the intended readers on the need-based adaptability of these technologies.

The effectiveness of any product or service depends invariably on the end-user, who in the context of library and information services is the clientele. Delivering of products and services to the library clientele to their utmost satisfaction is an art. This art is based on matching, adapting, and executing the services which are best suited to satisfy customers. The information resource center's success depends on its functional effectiveness in meeting the needs of clientele and hence their behavior ought to be influenced. Hence information behavioral studies form an integral part of user studies. Dr. Ashwani Kumar, a Post-Doctoral Fellow has proposed a new functional model for the online information seeking behavior of academicians. This chapter also compares the proposed model with other models, namely, Wilson's, Dervin's, Ellis', and Kuhlthau's.

Jiao and Onwuegbuzie (1997) defined library anxiety as an unpleasant or uncomfortable emotion characterized by worry, confusion, tension and helplessness, which occurs when a patron is in the library setting. These emotions affect the intellect, psychology and behaviour of the library patron. Therefore, the library professional should take care of the patron to be comfortable in the library setting. The fourth chapter explains concepts and causes of library anxiety and also presents the methods to be adopted by the library professionals to make the patron comfortable.

Though library is relatively a small organization, it operates in a complex, dynamic and uncertain environment. A library being a social organization has to take care of increasing government regulations, union activities and increasing community interest. Ranganathan's first law of library science "*Books are for use*" gave a new point of view to the operations of the libraries. Libraries have become a public establishment rather than one for the use of a privileged few. Public budget is being spent on evolving the library resources, facilities, and infrastructure. A librarian has to persuade people to benefit by the knowledge treasured up in books (Ranganathan, 1988). This is absolutely true in a knowledge-driven society where knowledge is considered as an individual as-well-as institutional asset. Sridhar (1994) defines "a non-user of a library is one who has a right to use the library but he does not do so over a specific period and/or for a specific sample of collection are transactions". The non-use of library and the ways and means to convert the non-users into absolute users are elucidated in the fifth chapter.

Some of the reasons for marketing library services as enumerated by Vishwa Mohan, Srinivas, and Shakuntala (1996) are promotion of the use of information resources; create perception of need and thereby create demand; ensure the optimum use of information; and cope with the information explo-

sion. Information explosion is a much more serious problem than what the laymen presume. Since the invention of internet, information is growing leaps and bounds. Doubling of knowledge happens at a remarkable speed (assumed value = x number of years). Remarkable speed (x) here implies any number one can guess. Some studies assign the value six years, while some others sixteen years. Even more surprising values are three years, two years, sixteen months, three months, and even 350 days! (Raish, 2009). At the same time library funding has been dwindling. In-order-to make use of the available resources to the optimum level, the resources are to be shared. The sixth chapter is all about resource sharing in a networked environment.

Information retrieval (*IR*) can be defined as finding material (usually documents) of an unstructured nature (usually text) that satisfies an information need from within large collections (usually stored on computers). As defined in this way, information retrieval used to be an activity that only a few people engaged in reference work. Now the world has changed, and hundreds of millions of people are engaged in information access every day when they use a web search engine or search their email. Information retrieval is fast becoming the dominant form of information access, overtaking traditional database style searching (Manning, Raghavan & Schutze, 2009). There are both advantages and disadvantages in easy information access. The author of the seventh chapter argues that easy information access has prevented the Deschooling tendencies found among the teenagers.

While information is assimilated, organized, and transmitted, a need arises to increase the information literacy level of the end-users about the organized information so that it is put to optimum use. Library resources in the information era are so complex and information literacy has direct influence on academic productivity. Academic success and excellence are the objectives of the higher education system. Hence evaluation of the information literacy levels among the academic community is imperative for the institutions to design their methods of pedagogy (Jeyasekar & Saravanan, 2018). The eighth chapter makes a comparative analysis on information literacy skills possessed by research scholars and their information literacy skills based on the demographic variables.

The ninth chapter is a case-study of the library users' perception towards ICT based services and facilities. Though marketing of library and information services and products is a relatively new concept, it has tremendous impact in shaping their future. It helps in managing libraries better since it brings commitment to customer focus. A major reason for applying marketing in any library is not to increase profit but to increase user satisfaction and increase of funding in turn. Because, increased customer satisfaction will result in increased willingness to use and pay for services offered. An enhanced perception of the value of the library will translate into increased level of support to the library (Gupta, 2006).

The academic community throughout the world is undertaking efforts to educate the students and teachers about academic misconduct. Plagiarism is a type of academic misconduct prevalent in the modern era since information is available at a click of the mouse. Hence to avoid plagiarism the academic community offers guides and tutorials to explain types of plagiarism and how to avoid it. The increasing awareness is forcing academic institutions everywhere to help students and faculty understand what academic integrity is, and its consequences. Academic dishonesty had to be dealt in teacher-student level. The teacher himself has to be a person with high academic integrity. In the tenth chapter, the investigators have attempted to study the academic integrity of prospective teachers. The objectives of the study were to study the level of academic integrity of prospective teachers and to find out whether there is any significant difference in the mean scores of academic integrity of prospective teachers with respect to the background variables, gender, locale, academic stream and type of family.

The need for professional ethics is crucial in order to maintain scientific integrity and to avoid professional misconduct. Professional misconduct is a behaviour that is contrary to a professional code of conduct. Misconduct can include sexual harassment, plagiarism or misrepresenting one's qualifications. Plagiarism is the act of using other's writing without properly crediting the author. The eleventh chapter emphasizes the need for the academic community to collaborate together in combatting the menace.

Ethics is defined as a set of codes for the behaviour of an individual within a specific profession. It epitomizes the ethical code, rules of demeanor, moral attitude, sense of right or wrong, responsibility, honesty and integrity, etc. Every professional organization has a code of ethics which the members have to adhere to in the performance of their professional duties. Information overload is a problem area right from the days of Gutenberg. However, from the beginning of the nineteenth century it has reached an unmanageable level. Library and Information professionals are making every effort to manage the information resources judiciously. In this endeavour a challenge faced by them is professional integrity and ethics. The twelfth chapter analyses the ethical issues and codes threadbare.

The products and services provided by libraries have undergone total transformation due to the technological innovations. The library and information centers face the challenge of survival, perhaps due to the changing educational scenario, the impact of technology, and declining budgetary provisions. In the resource crunch situation, the available resources are to be utilized to the optimum level. Open educational resources are a boon to the information-thirsty as well as information-overloaded library user. When a common layperson is much dependent on the information that is freely on the internet, the academic community too relies on the openly available resources. The thirteenth chapter of this book gives inputs on a wide range of such resources making it a useful reading to the academic community.

In the technology-driven world, automating a library and also the retro-conversion of the bibliographic meta-data is a great challenge to the practicing librarian. He should be aware of the various library automation software packages also known as Library Management Software (LMS), and their advantages and disadvantages. If caught unaware, one would be exploited by the commercial software vendors. The marketing strategies of the LMS provide useful information to the professional in selecting and purchasing the required software. The fourteenth chapter does a neat job of equipping the library and information professional in this aspect.

The fifteenth chapter deals with the library ambience suitable for information delivery. Unless a patron is attracted by the environment of library, he / she may not visit the library again. While designing the information product for delivery the learning environment need to be taken into account to make it environment friendly and sustainable.

Physical aspects of a library are crucial factors while planning for establishing a library or information center. The physical security of the library assets including the building, documents, patrons and staff are very vivacious matter. Physical security measures of a library range from the time-tested methods like the employment of security guards to the recent technological development like RFID. The authors of sixteenth chapter have discussed all these techniques / technologies, their advantages and disadvantages, besides, the etymology of safety, security, threat and risk. The chapter also provides the basics of information security. A modern library is not a place where physical documents are preserved but also the digital information. Hence information security is a crucial aspect a library professional should have some knowledge. Furthermore, the chapter provides a checklist for the professionals to take into account to ensure the safety and security of the trinity of the library.

The epistemology of scientific metadata has several facets including the communication of science. The invention of modern printing system coupled with new electronic resources has transformed the mode of scholarly communication. Information is freely available anywhere and anyone with access to internet and a computer system or hand-held electronic communication device can access it, albeit with the inherent dangers (Jeyasekar & Saravanan, 2018). A major threat in the networked world of information resources is its security. The last chapter provides an evaluation on the research literature produced in the field of information security.

Marketing is a planned approach to identify and gaining the support of the 'community' and then developing appropriate services in a manner which benefits the users and furthers the aim and objectives of information services (Yates, 1983). Though several decades have passed since Ranganathan stated his Five Laws of Library Science, it is relevant even today. Ranganthan's laws place considerable emphasis on the users and the books / information needed by the users. The successful marketer will try to understand the target market's needs, wants, and demands (Kotler, 2000). The Library and Information Professional has to design and market the information products and services based on the library patron's needs, wants, and demands. This book has highlighted some of the needs and wants of the patrons and also some challenges faced by the service providers while designing the services. Various authors from varied backgrounds have shared their ideas and experiences, which will benefit the readers in providing better service. We wish you a happy reading.

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Introduction

Philip Kotler, the acclaimed author on *Marketing* states that the three developments—globalization, technological advances, and deregulation—spell endless opportunities. Marketing deals with identifying and meeting human and social needs. One of the shortest definitions of marketing is "meeting needs profitably" (Kotler, 2000). Kotler also defines "Marketing is a social and managerial process whereby individuals and groups obtain what they need and want through creating and exchanging products and value with others" (Kotler, 2000). Therefore we have humans on one side and their needs on the other side. But how to make these two sides meet. It's through the social and managerial process of marketing. In the information environment the clientele are the humans and their needs is information which is available in various resources. It is the knowledge workers who make them available of the resources. They provide the information on the platter when it is required and also in anticipation.

MARKETING CONCEPTS

The fulcrum of marketing is the customer and his needs. The producers and the products rest on this fulcrum. The marketing concept rests on four pillars: target market, customer needs, integrated marketing, and profitability (Kotler, 2000). Target market is the one for whom the goods or services are intended. Customer needs may be a stated need or unstated need, and real need or delight need. Integrated marketing makes every department of the organization working towards the single agenda of meeting the need of the customer. The ultimate intention of marketing is to help the organization achieve its goal profitably.

The major marketing principles, which are popularly known as the *four Ps'* of marketing mix, are (i) Product; (ii) Price; (iii) Place; and (iv) Promotion. Robert Lauterborn (1990) suggested that the sellers' *four Ps* correspond to the customers' *four Cs*. According to Lauterborn's *Four P – Four C* comparison, the Product correspond to Customer solution; Price to Customer cost; Place to Convenience; and Promotion to Communication. Two more concepts namely, Process and People have been added over the years. These concepts provide the fundamental framework for thinking about ways in which an organization's marketing strategy is implemented. They also consider a range of aspects concerning marketing and also reflect on how they interact with each other (Gupta, 2006).

Products in a library or information center are the services like reference and referral service, current awareness service, selective dissemination of information, bibliographic services, online database searches, document delivery, and interlibrary loan. Price in library context refers to the time and effort

the patron spends to avail these services provided by the library. Place of library service can indicate the physical space of library, or its branches, bookmobiles, and in the electronic age any electronic device, platform and network which provide information to the patron. Promotion indicates the persuasive techniques used to communicate to the targeted patrons. Five kinds of promotion include: publicity, public relations, personal representatives, advertising, and sales promotion (Sharma & Bhardwaj, 2009). Public relations and publicity influence the patrons' perceptions, behavior and attitude. Publicity for library is made through visual media, brochures, one-to-one contacts, exhibitions, book fairs, book talk, etc. The Library and Information Science Professionals is the People and the mode of their acquisition of information is the Process.

APPLICATIONS OF MARKETING

The applications of marketing range through a broad spectrum of areas. Some of them are Determining corporate marketing images, and to track brand images; Consumer research, determining consumer behavior and attitudes; Segmentation research; Market structure analysis, market share analysis; and Advertising evaluations; Predicting brand loyalty, consumer innovators, like/ dislike of a service (or product), etc. Determining the brand images are of great importance for business establishments. Similarly consumers' attitudes and perceptions are of greater importance. Segmentation is the process of identifying user-groups with similar user needs and grouping and studying their behavior together. The products and services too need to be evaluated so that it matches the need of the consumers.

While marketing concepts are applied to libraries, they enable them to identify various groups of users and also to adopt tailor-made library services based on those different groups and their varied needs. This process is called segmentation. Sherkow (1985) defines segmentation as the process of identifying various groups of users and modifying your services and information based on those different groups and their different needs. Users studies are being conducted in libraries all around the world in-order-to analyze the user behavior and their information needs. Nevertheless, the neglected sector is the non-users. The non-users of the library and their needs and behavior too should be studied, if the libraries want to stay relevant in the face of stiff competition.

According to Ojiambo (1994) the purpose of application of marketing principles in the libraries is

1. To know the purpose and resources or product of your library/information center. Identify the goals of your library/information center and, in particular, goals for the marketing program.
2. To know your competitors. Libraries and information centers are in competition with several non-profit and profit-making organizations in providing information.
3. To identify your users of "publics". A major step in library and information centers' marketing is identification of your "publics" or segments and a complete analysis of the marketing situation.

DESIGNING THE INFORMATION SERVICES

While marketing is centered on the needs of the users, designing is based on the user. According to the stakeholder theory of designing, the need-satisfying goods and services flow from the producer groups to the consumer groups. The producer groups in general and the consumer groups in particular are the stakeholders. In scientific communication the researchers are the information producer group and the consumers groups are the information seekers. The types of the library users are different and their needs too vary. The ultimate goal of a library is to satisfy the information needs of these users, whether expected or perceived one.

Norman (1988), an inventive author on designing, advocates for simplicity in-spite-of growing societal complexity. In Norman's view, the designer must take an empathic approach to not only understand but also take the place of the user. Another book of Norman (2010) *'Living with Complexity'* is particularly relevant to the design of a library user experience because many library resources and research tasks involve some inherent complexity. In the absence of empathic design, there is a disconnect between what the designer intended and how the user experiences the system; the automated library catalog presents a good example. A better user experience is achieved by doing more than just making everything simple; it involves designing products and services for the elimination of confusion (Krug, 2000).

The format of communication has also become complex. A huge volume of electronic data is available to anyone with electronic computing device and internet. Information overload, a phenomena of the twentieth century, add to this complexity. Studies show that when faced with complicated tasks that involve vast quantities of information, people tend to adopt simplifying decision strategies that require less cognitive effort, but that are less accurate than more complex decision strategies (Paredes, 2003). Information overload affects peoples' behavior, cognitive structures, and comprehension. The linguistics too changes creating a cultural and generational barrier. In such a situation, the librarian should be able to study and understand needs of the user groups to design better library services. The librarian should also be able to adapt to the changing needs and tech-savvy.

CONCLUSION

There is no vacuum in nature. The needs of people are always there. However, the needs are contextual and may vary. In the knowledge-driven environment, the basic need of a person is the priceless information. The major challenge of this era is not only information explosion characterized by information overload but also adversity of quality information. Information-seekers are unable to distinguish between the right and wrong information. Knowledge workers are the human element involved in the information retrieval system and hence the solution to all these lies with them.

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Chapter 1
Innovative Marketing Strategies in Academic Libraries: An Overview

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ABSTRACT

Advancements of Science and Technology have made a tremendous impact on all walks of life. Library and Information centers are no exception. The ICT-based marketing techniques are employed in libraries in an innovative way to maximize the usage. A similar approach can be followed in academic libraries, especially in higher educational institutions with an intention to maximize the use library resources to user's satisfaction. In this context, the chapter analyzes the various facets of marketing techniques in academic libraries. This chapter highlights the intention of academic libraries to use the resources at maximum level. The library home page in the institutional websites and links provided in them to the variety of e-resources play a pivotal role. Social Medias, blogs, and other promotional materials are extensively used as innovative marketing strategies in academic libraries. Efforts to familiarize the library professionals in adopting different marketing strategies help to use the resources at optimum level.

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INTRODUCTION

In the present scenario the Disruptive Technology (DT) which disrupts and replaces an existing technology making it obsolete, has affected the academic libraries and has transformed them into new digital era libraries. With the support of the DT, Information and Communication Technology (ICT) and Internet, the users can access the information sources at their fingertips. These technologies provide opportunities to access information very easily and to make use of the academic libraries, resources and services to the maximum level. Technologically some of the academic libraries have moved far ahead in the recent years. The academic libraries have to move according to the signs of the time and adopt innovative marketing strategies suited to the academic libraries in order to render effective and quick services and satisfy the users.

ACADEMIC LIBRARIES

Libraries are the store house of knowledge and information, which collectively act as the driving force for the progressive development of a society. Knowledge and information are identified, collected, organized and stored in the form of both print and digital version and made accessible to all those who have thirst for knowledge. There are different types of libraries and each performs different kinds of functions to meet the needs of their users. These libraries are of various types, namely – public, special and academic libraries. According to S. R Ranganathan (1940), "A library is a public institution or establishment charged with the care of collection of books and the duty of making them accessible to those who require using them."

"An academic library is an integral part of a college, university, or other institution of post-secondary education, administered to meet the information and research needs of its students, faculty, and staff" (ODLIS, 2002). Academic libraries have emphasized to focus less on physical collections and more of digital documents. Academic libraries play effective roles in supporting the objectives of the academic environment of learning, teaching and research service. The success of the academic libraries depends on a variety of services to the users' level of satisfaction. The purpose of a library is to make accessible reliable information to their users in an appropriate, precise and applicable manner. With the introduction of ICT which allows easy and fast access to information in a suitable form, the traditional methods of accessing library services has been altered. The ICT has fashioned and created numerous changes in the way people live and access library resources.

MARKETING

The concept and practice of marketing originated in circa 35 C.E. and in the 18thcentury it has become a full-fledged subject. In the *Oxford English Dictionary* the word 'marketing' is revealed as "to buy or sell". Initially marketing was applied in commercial organizations and businesses. The meaning of the word "marketing" is the action or business of promoting and selling products or services, including

market research and advertising. (Suresh Kumar, 2010). Philip Kotler, the guru of marketing defines, "Marketing is the analysis, planning, implementation and control of carefully formulated programs designed to bring about voluntary exchanges of values with target markets for the purpose of achieving organizational objectives" (Kotler, and Mindak, 1978). Marketing is therefore all about recognizing the users' needs and mounting strategies and services to reach out to them. It is a long-term innovative process that is entrepreneurially driven.

Marketing is the key to gain the goals of any organization or institution. The four elements of marketing concept are target market, satisfying needs and wants, co-ordinate marketing and organizational goals. Through the process of marketing the services and products are made accessible to the patrons from their point of origin. The modern way of marketing is the digital way of marketing of the products of any institutions. Social media like WhatsApp, Facebook, Twitter etc., are more frequently used for marketing.

MARKETING CONCEPTS

According to Saracevic and Wood (1981) "the marketing information services and information products involves the eight key marketing concepts".

- Market research and analysis
- Segmentation of the patrons
- Development of products and services
- Costs and pricing
- Promotion
- User education
- Dissemination
- Evaluation of products and services

MARKETING CONCEPTS IN LIBRARY SERVICES

Marketing is a social and managerial process by which an individual or groups attain what they want and need through creating, offering and exchanging products of value with others. In view of the above definition it can be stated library activities are the teamwork or the efforts of group work. The librarians and the library staff have an important role to play in attracting more users to the library. They have to render their services at any time and cooperate with the users and market their products and services in this internet and digital era. The fundamental purpose is to educate the faculty members and the students how to make use of the library products and enjoy different services in the library.

MARKETING IN LIBRARY AND INFORMATION SCIENCE

For the success of any company or organization their products should be marketed. In the same way it can be applied to the academic libraries also. Unless and until what is available in the library is showcased the users will not come to know and will not access the library resources. The aspect of marketing library services began long before the concept was born. Samuel Swett Green in their speech at the ALA Conference in 1876 advocated "improved personal relations between librarians and readers" (Roxanna and Anastasia, 2016). It could be said that today's marketing of library services has its roots in parts of the USA and Northern Europe, in countries with few illiterates and more money, libraries, and library schools than the rest of the world.

The basic objectives of libraries are to promote their resources and services using effective and efficient marketing strategies and techniques and to achieve high level user's satisfaction. The core aim of the marketing information is to attract more patrons and to promote them to make use of the services and resources of the libraries to the maximum extent.

CONCEPT OF MARKETING IN ACADEMIC LIBRARIES

The recent years have been witnessing that marketing has become a primary part of academic libraries and Information centers. As a result, these have become profit making organizations. Further, there is a shift in the nature of information storage, dissemination and services due to adopting modern technologies and innovations. Instead of user approaching the academic libraries and information centers, the needed information must reach to the user's desk, whether in home, classroom, office, workplace, or in any field of life (Ravichandra Naika, 2013).

PURPOSE OF MARKETING IN ACADEMIC LIBRARIES

The main purposes of marketing are:

1. Achieving objectives of the academic library
2. Satisfying the wants and needs of the user
3. Providing right information to the right user at right time

The main purpose of marketing in academic libraries is to encounter a four pronged challenge

- Increase in user, their selection, their expectations and their demands
- Difficulty in ways of rectifying user and their needs and servicing them.
- Mounting in the initial cost of information and information technology and their needs to power the technology and find out new levels of economies of scale to serve the increasing potential clientele.

- In the case of lack of public sponsorship and subsidy the need to find alternative source of revenue.

The concept of marketing process in the academic libraries includes the following steps

- The academic libraries should clearly be aware and must understand the mission and vision of their libraries and adopt the effective strategies to obtain them.
- The academic libraries understand the market through investigating the user's wants, needs, demands and the essential demands.
- The market is segmented on the basis of various characteristics and behaviors of the patrons.
- Marketing strategies of academic libraries both print and digital versions are planned and organized for target market segment with the process of developing and maintaining a workable fitness of the organizations objectives, skills and changing marketing opportunities.
- For effective marketing well defined marketing techniques take place at four levels such as top, divisional, unit and product and service levels.
- Adopt proper marketing tactics and mixes and execute them.
- Adopt modern techniques and reorganize the exciting strategies in accordance with the changing user need.

MARKETING OF ACADEMIC LIBRARIES FOR EFFECTIVE USAGE

In this present scenario the academic libraries are facing different challenges like applications of new information technologies, ongoing budget cuts, changing demands of research and teaching. Both traditional and digital marketing are the most effective and attractive tools for promotion of the library services (Zhixian Yi, 2016). Over the years academic libraries have enjoyed positive and good relations with the users. The internet environment and technological advances have made academic libraries to alter and adapt these innovations for the efficient and effective functioning of the library systems and services. Attractive usage of resources and services are fundamental and possible with the help of effective marketing strategies. Librarians and staff should take this internet age as an opportunity rather than as challenges. The academic libraries should rethink, repack, alter their existing activities and encourage innovative technologies for the promotion of the effective and successful flow of information resources to meet the objectives of the libraries (Kumar, 2017).

There are different ways to promote the effective usage of academic libraries products and services and marketing of products

- Focus on users' needs and provide fingertips services
- Organization of orientations and workshops on regular basis
- Arranging the information literacy programmes
- Awareness and training of the print and digital resources of the libraries for easy use.
- Through referral services
- Conducting workshops to library staff to create awareness about the use of modern technologies

- Attract the users by conducting book exhibitions of new arrivals with the support of various vendors.
- Displaying new arrivals in the library
- Creating and updating the library websites
- Through inter library loans and lending services
- Providing reservation services
- Providing professional advice to the users
- Provision of seating and study facilities
- Through library publications
- Providing translation services

MARKETING OPPORTUNITIES IN ACADEMIC LIBRARIES

Following are the some of the marketing opportunities which can be imbibed in the academic libraries

- Abstracting services
- Reference services
- Newspaper clipping services
- Current Awareness Services
- Indexing services
- Notification of newly published research
- Selective Dissemination of research
- Circulation of periodical contents
- Literature search
- Notification about conference, seminars and workshop
- Photocopying of journal articles
- Repacking and consolidation services.

MARKETING STRATEGIES OF ACADEMIC LIBRARIES

Marketing strategies are the processes that can help the academic libraries to concentrate its limited information resources and services and to attain the greatest opportunities to promote and render their services to the users. Marketing strategies are the keys to satisfy the users.

They are the written tools used to plan out the information sources and products of the libraries and they can also support the ways to increase information products and services, how to price information products and services and their distributions. They help the academic libraries to attain their set goals and reach out their services.

FUNCTIONS OF MARKETING STRATEGIES OF ACADEMIC LIBRARIES

- Investigation of users
- Enhance the visibility of library resources
- Planning marketing strategies, target market and new products
- Improve the excellence of library services
- Promote the cooperation with faculty and administration
- Establish the value of education
- Implementation of the marketing plans
- Control with regard to quality, standards, expected results and progress of marketing goals.
- Recognition of the objectives in connection with the parent organization's aims and the information centre's requirements
- Improve the good will of the library
- Increasing the demand for existing information resources and services
- Equip new resources based on the users need
- Helping the librarians and the library staff to intone with the users and develop user friendly relationship
- Implementation of the new activities which increases the usage and motivates the staff to develop customer-oriented outlook.
- Encourage the users to discuss about what to offer in the library.
- Generation of adequate funds to the library.

INNOVATIVE TECHNIQUES FOR MARKETING

Innovative marketing is a set of innovative processes and actions that market and communicate new products and services to a targeted group of customers. Innovation is an activity which includes new ideas that have an innovative impact to a new product and services. Marketing is the tool which enables the marketers to promote their products and services. The concept of innovative marketing is all about introducing market research into user's needs, trends and behaviors and develop product designing and introducing a new product in a unique place, placing the product in unique way and promoting the products in an unconventional way.

McCune and Fink (2001) abridge the techniques that should be employed in marketing of academic library services. They are the following

- Academic libraries should have budget for marketing
- They should brand their resources and services
- Marketing activities should be teamwork
- Libraries should undertake variety of lectures, reception and exhibition
- Libraries should make use of the press and media to market their services
- Academic libraries should regularly evaluate their effort in marketing their products and services.

INNOVATIVE MARKETING STRATEGIES OF ACADEMIC LIBRARIES WITH WEB TECHNOLOGY AND SOCIAL MEDIA

The advancement of Information and Communication Technology (ICT) has developed new ways of marketing the academic library products. It also enables to adopt digital marketing strategies to face the challenges and how to manage their collections. ICT has transformed information resources of the academic libraries, different users and their information needs, their approach to accessing the information of print into digital format. Today it is possible, that any user can access information without their physical presence in the libraries. Varieties of information sources are available over the World Wide Web, and can be accessed according to the convenience of the users. The preferences of users toward using digital resources are increasing drastically in the academic libraries, because it assists the easy and remote access of information, quick searching for pinpointed information and also saves the time of the user.

Change is essential in any surroundings to exist, prosper, survive and move forward. Academic libraries are not an exception to this phenomenon. Identifying, exploring and integrating the emerging technologies in academic libraries, introducing and identifying new resources, rising cost of information resources, awareness of new publishing models and demanding patron's requirements are the elements, all the time linger in the minds of academic library professionals. The academic libraries need to implement the changing technologies to render effective and fruitful services to their users. Once it is imbibed, it is implemented. Next is promoting and marketing the resources as products and services. "Promoting, marketing and providing effective services to the users community according to the changing environment is very important' (Kumar, 2016).

The academic libraries act as information centers and transform the acquired information in organized manner with searchable options which links the past and the future. Academic libraries are the brain center of academic institutions, where the students and faculty members quench their thirst for the knowledge. In this next generation and digital divide the library professionals are ready to render their services into 24X7 modes and update with the current marketing technologies.

The following are some of the innovative marketing strategies for the Academic Libraries

Library Website

Library Websites are the most significant marketing tool. Constant updating of library websites is of great help for promotion of library activities. The websites act as the gateway to access the e-Resources such as journals, books, databases subscribed by the library. Access to online catalogue provides the quick link to the collections of the library. With the advent of disruptive technology, the websites can be viewed through various mobile devices at anywhere.

YouTube

YouTube facilities are of great help for the academic libraries to market their resources. The libraries can have their own account on YouTube for uploading new arrivals, exhibitions etc. Intellectual content of the students and the faculties, presentations and demonstrations on subscribed databases, videos on book, comments, audios, tutorials on usage of information sources and other related events of the libraries.

E-Newsletters

Frequently publishing the library's e-newsletters will help to promote the activities like libraries and the staff participating to promote the library services.

E-Mail Alerts

E-mail alerts about new publications, articles, journals which are of interest to users, informing about the new subscriptions, various conferences, workshops, seminars, debates by academic library can communicate through E-mail alerts.

Blogs

Blogs are the effective means of communication, which can be created and updated by the library professionals. A library can create a subject specific blog which can give more information on research activities undertaken by the libraries. New research activities, information sources and so on can be communicated through blog.

Facebook

Today Facebook can be used as one of the most significant tools for promotion of library activities. The upcoming events, new additions of the library and blog of the librarian can be shared on the Facebook. Facebook is one of the effective tools to analyze the services by library or to receive feedback from the users as it has the various options such as, like or dislike and also to write a comment. Short videos about the different services of the library, guides to new database subscribed by the library can be shared through Facebook.

Remote Access Facility to Subscribed Sources

Today's user can access information at anywhere and anytime. Providing remote access to library database through applications EzProxy serve the information need of user at any point of time.

Twitter

Twitter is an important social media tool which can be used to promote library activities. It increases the visibility of the library and enables the users to gain information about the dates of book exhibition or even sale of weeded-out books. It enables the users to have direct feedback to the new databases, journals and books subscribed by the library. The Twitter can be used to inform the users about any changes in library timings.

Knowledge Portal

Knowledge portal is another technique to market the digital documents. For the easy access the academic libraries should create digital libraries and create a knowledge portal where in a single click all the free e-Resources of the World Wide Web (WWW) and all the digitized resources of the library can be accessed.

RSS Feed

RSS Feeds are the easiest way to update the latest activities to the user. RSS Feed can be added on the academic library website, so that instead of browsing through the entire website user can get the current information at one click. RSS Feed can be created for new additions to the library, electronic newsletter created to the library, news and events posted on library website.

Tutorials on Various Databases

Conducting tutorials for different databases subscribed by library will promote the use of database and also it will create awareness about their accessibility to users.

Pinterest

Pinterest is an internet menu that provides an opportunity to libraries for marketing and promotion of their services. The academic libraries can prepare their own board and pin photos of library, audiovisual clips, and attractive posters by creating library profile. Libraries can also download attractive posters for display in library which are available freely on Pinterest.

Assist in Scientific Endeavors

The academic libraries can create ORCID profiles for its researchers, to enable them to create their unique identity in the world of scholarly communication. Organizing training programs on reference manager tools like Mendeley, Zotero and EndNote will help in highlighting the importance of source and services.

Tumblr

Tumblr is a customizable social media tool, which can be used to display information about new services by new arrivals. Images of orientations, book exhibitions, images of posters presented by students at various conferences, workshops and seminars can be shared using Tumblr. It has a facility of knowing the comments of people who are following the account; therefore it can be used as feedback tool also.

ROLE OF LIBRARY PROFESSIONALS IN MARKETING

The library professionals have key role in promoting the library resources and services. They should take key interest in marketing their library products effectively. They have to adopt all the latest technologies, should be aware of emerging technologies, knowledge on ICT based information sources and services.

Marketing has been marked as one of the areas of competency that is essential for library and information professionals. Chandra (2011) brought out the important impact of library professional's competency to marketing in the ways.

- Innovations in academic library resources and services
- Effective and cooperative teamwork
- Encouraging strong interpersonal relations
- Positive and closer relationships with the users
- Dynamism and transparency in library administration
- Flexibility in attitude
- Excellence in providing library and information services
- Library's development

ROLE OF LIBRARY PROFESSIONALS

• Library professionals should update themselves with modern technologies to render quick services to their users.

- Develop appropriate marketing plans.
- Arrange book exhibition and display the new arrivals regularly.
- Assign the responsibility to the staff.
- Use positive images to communicate the library messages.
- Develop user loyalty to user relationships.
- Adopt new technologies and strategies to market the library resources.
- Conduct library tours for new users.
- Equip themselves with Web and Social Media.
- Produce creative brochures and posters which advertise its products and services
- Use the Internet tools for marketing.
- Direct email to target academics.
- Active participation on online forums, list serves and video conferencing with other library associations
- Discover new ways of servicing the resources
- Explore the opportunities
- Provide value added products and services

- Willingness to serve 24X7 mode
- Invite vendors and publishers on libraries for presentation of their products
- Conduct online interactive reference services
- Encourage participants to information desk
- Celebration of special events like anniversaries of libraries, open access week (last full week of October each year), birth anniversary of Dr. S.R. Ranganathan (12th August, celebrated in India as National Librarian's Day), world book day (23rd April of each year), National Library week (second full week of each April in the US and 14th to 20th of each November in India), etc. in collaboration with literary club of the colleges and schools.
- Alert the users with latest updates
- Ever ready to help the user at any time
- Create relationships with other library professionals and scholarly activities.

SUGGESTIONS FOR MARKETING STRATEGIES

1. Define the purpose of marketing.
2. Design the marketing strategies to provide efficient services.
3. Identify the right user and provide services at right time.
4. Focus on selective resources that library needed to promote.
5. Design strong steps to face the competitors.
6. Adopt of modern technologies while marketing.
7. Use simple language, which may communicate clear message to the users.
8. Adopt marketing strategies based on the libraries budget
9. Awareness of the problems of the users
10. Get the feedback of the users and work on it

FUTURE SCOPE FOR MARKETING LIBRARY AND INFORMATION PRODUCTS

- Every academic library should develop yearly marketing plans.
- Academic libraries should actively participate in library consortium.
- Adopt an appropriate marketing approach to develop information resources and services systematically and properly.
- Libraries should recognize user's needs and demands and design new user friendly and relevant products and services.
- Libraries should have centralized Help-desk.
- Library professionals should adapt and embrace changes.
- Need to re-design the curriculum.
- More funds should be allocated to the libraries.
- Library staff should be more committed to their profession.

- Introduce new technologies to market their products.
- Constant efforts should made by the library management to improve the services offered by the library.
- Libraries should update themselves with latest technologies.
- Library management should encourage the library professionals to take part in conferences, seminars and workshops.
- More facilities should be adapted for effective marketing.
- Regular library orientations and user education should be introduced to the users.
- Academic libraries should rearrange the marketing strategies based on the changing need of the user and implement again.

CONSTRAINTS

Some of the constraints faced by the libraries and library professionals while adopting innovative technology for marketing information products and services are:

- Lack of fund in the academic libraries
- Lack of facilities to market library resources and services
- Lack of proper communication between library professionals and users.
- Less awareness of the modern technologies.
- Unimportance of library curriculum in the library syllabus.
- Lack of training in marketing.
- Lack of use in WWW and Social Media.
- Scope of academic libraries and parent institution.

CONCLUSION

Information and knowledge have become significant sources of political and economic power as they have become the core principal driving force for the acquisition of political strength, wealth and knowledge. The academic libraries spend lot of money to provide fruitful services to the users still some users are not satisfied with the services. The libraries try to serve their users by providing the needed information immediately through information services like Selective Dissemination of Information, Current Awareness Services, and Translation services, Indexing and Abstracting Services, Bibliographic Services, Document deliver services, Reservation Services, Reprographic Services etc. All these activities are to be centered on the requirements of the users and all these are aimed at providing information search and provision, process which best can done by efficient and effective marketing of information marketing products and services. Marketing is a constant activity in academic libraries, it need active participation of library professionals and implementation of marketing process.

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Chapter 2
Cutting Edge:
Technology's Impact on Library Services

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ABSTRACT

Libraries and librarians are constructing a better world by experimenting with the latest technology for their patrons. As technologies evolve from time to time, new tools have been discovered to provide optimal services in minimal time. In developed countries like USA, UK, and Germany, the libraries are adopting new technologies for learning, research, and information to give the patron the best possible services. Librarians are struggling more to implement these cutting-edge technologies for learning, research, and information for their users.

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INTRODUCTION

According to Technopedia Technology Website Cutting-edge technology refers to technological devices" techniques or achievements that employ the most current and high-level IT developments; in other words, technology at the frontiers of knowledge. Leading and innovative IT industry organizations are often referred to as "cutting edge." The cutting edge is also known as leading-edge technology or state-of-the-art technology".

The basic aim of Libraries is to achieve the goal of acquiring, storing, preserving and organizing the information and distribute them in large scale. An era of Information technology many new features and devices have been implemented to impart the best possible services to the end users, forging closer work relations with other department, libraries in the modern era have hugged many technologies which bring users more closer to the services being offered by the libraries. For example, access to full-text journal databases impacts on the acquisition of serials while reference and inter library loan departments use full-text databases to bring the information and client together in a timelier manner.

The libraries of the current era are facing many challenges, as research and services are reshaping, and needs of researchers are increasing, people don't have time to visit the libraries and get the desired material of their choices without wasting time. The cutting-edge technology has brought revolution in all walk of lifestyle. Similarly, libraries have also hugged this kind of technologies for the best possible services. To offer quick and quality services information to its users, the libraries are becoming trend-setter in the age of digitization, the world has become a global village and information in one corner of the world is quickly spreading in the other corner in no time.

The libraries in global age have adopted new technologies which work for the betterment of its users. The innovative styles in academic libraries are attracting more users in the cutting edge era. The last few years are considered to be the most glorious period of cutting-edge technologies. Many trades have highly been affected by these technologies. The libraries across the globe are striving to overcome these technological changes. For this purpose, they are experimenting numerous technologies in order to give an access to the material available in their library.

Libraries and librarians are constructing a better world by experimenting with the latest technology for its patrons. As technologies are evolving from time to time and new tools have been discovered to provide optimal services in minimal time. In developed countries like USA, UK and Germany, the libraries are adopting new technologies for learning, research and information to give the patron the best possible services. Librarians are struggling more to implement these cutting-edge technologies for learning, research and information for their users (Kumar, 2009).

SOME POPULAR CUTTING-EDGE TECHNOLOGIES

There are numerous technologies being adopted by librarians in their library services in order to satisfy the needs of their present and prospective members, some popular cutting-edge technologies are mentioned here:

Big Data

To create a personalized users experience library uses big data. The purpose of this technology is to provide the user's information about their choices, providing resources and services under this technology the librarians must keep their personal data in mind (Cuifeng, 2013).

Virtual Reality

The users may be brought closer to the library under this technology virtual reality technology has been implemented in developed countries which included training/workshops and a virtual tour of the library. Many new technologies have been introduced across the globe, but the potential of virtual reality (VR), Augmented reality (AR) and mixed reality (MR) are top trends among librarians to show the world the experience being made in the library field. MR, AR, and VR are virtual field trips which could be used in the library services for a solar system, tornado, walk around refugee camp, the 3D model for the human body, vacation spot, preview a college system or test driving a new car. These are some advanced technologies being adopted in developed and many developing countries which can help the patron to try it beyond the four walls of the library (Swanson, 2007).

Augmented Reality

This technology is based on combine digital with reality, in Pakistan people are also curious to implement the same technology in model libraries.

Artificial Intelligence

In our daily activities the Artificial intelligence is gaining more attraction as this application focus on delivering information to the users. People are considering it as a challenging job to the libraries, but, the name denotes that it is artificial, not human. By adopting this feature in services, the libraries can connect people to information easily (Russell, et al, 2016).

Block-Chain Technology

Under this technology a decentralized database can be used, which provides access to everyone to the pseudonymous digital transaction via networking, the data can be collected and stored for the user accessibility. Block-chain technology is another tool-set being adopted by the librarians in different libraries, this technology was introduced in 2008 initially, under this technology a decentralized database can be used, which provides access to everyone to the pseudonymous digital transaction via networking, the data can be collected and stored for the user's accessibility (Nicholson, 2017).

Internet of Things

This technology has gained more momentum, as it has become essential for users; RFID and Internet of things are connecting various devices which can be used for transferring the data, in case of an Internet of things the data can be transferred over the internet only. The modern library adjust IoT in different segments such as smart building technology for example cooling, heating and lighting can be controlled from smart phones app under this technology. It can also be used for people countering in different section of the library.

Library Mobile Apps

Mobile apps have become a top trend after the invention of android applications. Through these apps, peoples have access constantly to their mobiles. By adopting mobile apps in the library services, the library will gain more usability of it. Converting services through mobile apps may connect patron and users on one page. Self-service printing, copying, and scanning solutions: As many people don't print at their home, under this service, a central access to printing can be given to the users to print pages of their choice and pay dues online for the services (Hahn, 2012). Library services in modern information technology offer such services for the present and prospective members in order to update them about new facilities being launched in the library.

3D Printers

3D printing has also become a buzz word for the last few years. Many libraries have adopted these services because the charges of 3D Printing are becoming cheaper with the passage of time. As 3D printing has become a highly debated topic for last few years. Also, assuming the library could provide access to appropriate modeling software along with staff support; a 3D printer could enable and support rapid prototyping of experimental apparatuses and custom parts.

Robots

Robots technology in the 21st century has great value in Library services many developed countries have implemented such technology which is helpful for the users and patrons both.

Drones

The Drone is a small flying device which can be controlled remotely. Many librarians have implemented such technology in their libraries. These Drones can provide services to the handicapped peoples and all those who don't have time to visit physically to the library. So, implementation of this technology will give more services to the users directly.

Digital Interface for Printed Books

Fujitsu has developed a prototype device which can be used to highlight the desired information in a digital book. For this purpose, a finger link may be used for a digital object. Everyone was talking about physical objects in real world. By implementing this technology in the library services one can find and highlights the important excerpts. thus, it is a combination of a real world with a digital object. There are many libraries which can implement these kinds of cutting-edge technologies in their services. The governmental institutes which have huge amount of budget can buy these technologies in their libraries, many other massive technologies being implemented in developed countries. There are also some other technologies needs to be implemented in library services those are (Ebbesen, 2019).

User-Focused Interfaces and Application

The personalized interaction between the system and the users have become a future perspectives of library services whether this is interaction via digital exhibitions featured on screen or an interactive game projected onto the floor for children to interact with. A big screen inside the library which displays different kind of information inspires users to find certain books or allowing them to take a selfie. Libraries are allowing users to use these digital technologies for experiencing purposes.

Driverless Cars

Sci-fi movies are experiencing these days in the library across the globe. According to author Ida Joiner in his book Emerging Library technology has described that Driver less cars may also be introduced in future which can travel between destinations with ought human drive can be of high importance for future libraries.

Library Maker-Space

This is also known as hack-lab or hacker-space which allow a library users to produce something special by implementing their intellectual skills such as Video, audio editing, 3D Printing, traditional arts and crafts to bring awareness among other users.

Me Card Technology

To provide users with greater and easier access to the information and collections held by libraries across the province. The technology developed by the project team underpins a reciprocal borrowing service among numerous libraries and features a self-service web form that allows users with a library card from one library to self- register to access collections of another desired library (or libraries)

Learning Management System (LMS)

For Virtual Learning Environments, the Learning Management System (LMS) should also be adopted in the library services, which enable the users to use the online delivery of courses material with the help of Web Applications and software.

Easy Video Creations

In partnership with Information Technology Services, enabled easy video creation for faculty and students. With only a flash drive and the push of a single button, users can activate a video camera, microphone and lights to begin recording.

E- REQUISITION SLIP

Digital Signboard System

Somerset County Library System developed a more dynamic and cost-effective way to promote programs and resources in high-traffic areas of the library. The creative solution brings together a Raspberry Pi computer, large-screen monitors, WiFi, and Google Docs Presentations to reduce digital signboard costs by almost $1,000 per display. The project also reduced poster printing costs and actually made it easier for staff to remotely update and push new content to their customers.

Coding Clubs

Coding clubs a new technology which teaches our children and us that how to make the use of technology the way we want it. As technology is everywhere which effects our live, but the question is how to use these technologies. BBC has designed a tiny programmable computer named Microbits. Which teaches the children how to code and how to get solved a problem and its proper solutions.

Digital Storytelling

Written words had always love affairs with Libraries in any format, such as papers, CD Rom, microfilm or web page. In current era libraries entertained writers and coders both to create new and interactive stories where from readers get benefits to control the narrative flow (Shen, et al, 2018).

Open Libraries

The concept of open library is new and controversial one but many peoples are getting benefits from the same library services. Such kinds of services are unmanned and beneficial for the communities and ensure the need for libraries is fulfilled. Open libraries are being used to extend open hours and not to

reduce staffed hours. Peter-borough libraries are the first and best example of such kind libraries based on UK. The most valued aspect of such kind of libraries is the ability to borrow books and to access the information outside the normal opening hours.

Cloud Printing, Copying, and Scanning

The digital era has adversely affected the printing facilities at home. People are no longer taking interest to page large number of pages via their printers at home. Libraries provide these services to patrons and users are getting printing facilities from their libraries directly. The cloud printing support mobile networking and one can give direct printing command via cloud printing. These services attract more users who often do not visit their libraries but for printing facilities they use their smart phones, tablets and laptop anywhere.

Kinetic Bikes in the Library

This kind of technology is spreading all over the world. Under this technology a person who often visits the library have their smart phones and expects to charge their mobile phones at their library. Visitors in one place charge their mobiles in a charging kinetic bikes and reading the library material until get their mobile charged.

Streaming Services

Streaming services are increasing in many libraries across the world. Gone are the days when users were taking DVD on loans from the library. Streaming TV and film are becoming a reality and one can see movies and lectures through their library account. One member can stream ten films or episode per month under this technology.

Embedded Digital Libraries

Embedded Digital library is another milestone helps the librarian to expand the mission of their library by providing digital content services in a wider range.

Digitallearn.org

This is a free public library association website which allows the readers to use it as policy documents for internet privacy and cloud storage. These kinds of helpful stuff make our lives safer, easier and more reliable.

Quantum Supremacy and Quantum Computing

These computers are in experimental age which will be able a user to perform calculations faster than that of digital computers. Many Library Databases have been connected with the Alexa and Siri by the modern libraries. Under this technology some voices technology from Microsoft, Google, Apple and

Amazon allow the users to ask any questions in their natural language and command the computer to answer them. Usages of this kind of technology in library services will allow the librarians to respond to their patrons with the help of these devices.

CUTTING-EDGE TECHNOLOGY DISADVANTAGES

Electronic technologies have number of advantages and people are utilizing them in all walk of lives. Similarly, libraries across the globe are also experiencing the same technologies. Albeit cutting-edge technology has made the work of librarians easier but since then these technologies have also some disadvantages which should not be ignored when it comes to electronic technologies and must be taken into consideration when evaluating how a new tool may or may not enhance the service.

There is tremendous pressure to jump on the bandwagon, to be on the ''cutting edge,'' to be seen as forward thinking, and to have the advantage over the competitors. This pressure often encourages institutions to jump too soon without consideration to the market it serves. Sometimes, it may be all right not to be on the ''cutting edge.''

Something that is easy to overlook, goes unnoticed until it isn't working, is time consuming, but is very important, is the maintenance, upkeep, upgrades and regular testing of all the various tools we employ. We have to change, fix, correct, improve, check, and update more in technical options we provide.

It is critical to have an organized maintenance program. As technology is becoming obsolete with rapid changes in IT sector, user get frustration while using poorly maintained tools in their distance education, it becomes very difficult for the staff to upkeep these technologies with rapid changes. It is a balancing act to determine when, how or why it is necessary to change, and the ripple effect of a change in on campus technology to the end users of that technology.

A strong feedback from users and experts is required while selecting the right technology for the delivery of information for the distance education. A careful evaluation, collaboration and feedback from users, and constructive criticism to the creators and vendors of the products may kindly be entertained before selecting the same tools (Black, 2001).

PRESENT AND FUTURE PERSPECTIVE OF CUTTING-EDGE TECHNOLOGIES

Present Perspective

Researchers in the contemporary environment are strongly believed in digital contents rather than to retrieve books and similar material. For this, they want to access learning materials online. Their changing expectations are highly affecting the library professionals, but keeping in view their extensive demand the librarians are exploring new ways to fulfill their demand without any hamper. New tools and technologies have been introduced and people are expecting to use these technologies to get optimal benefits from these available resources.

Libraries are adapting new trends based on digital applications and artificial intelligence in the current era of information technology. As new horizons of technology trends have highly affected different services. Similarly, Libraries are a trendsetter and implementing these new technologies for their patron to provide them with access to reach the library resources and services without wasting time.

Many Libraries in Developed countries like USA are Striking their bests to offer sustainable information resources and services at affordable prices to meet the dynamic needs of the of library users. Therefore, many library practitioners, administrators and academia are trying to adopt emerging technology in order to answer the questions being raised via stringent budget and high expectations of library users (Clark, et al, 2015).

Emerging technologies in education are defined as "tools, concepts, innovations, and advancements utilized in diverse educational settings (including distance, face-to-face, and hybrid forms of education) to serve varied education-related purposes (e.g., instructional, social, and organizational goals)". For librarians, "emerging technologies refers to any new technology that can help support user services, instruction, library management, and technical services". Today's technology boom brings with it many opportunities for libraries to boost its services. "Emerging technologies are new evolving innovative technologies with great uncertainty and unpredictable futures". (Rotolo, et al, 2015).

Emerging technologies in the context of libraries can be any tool that is being used in a novel way to serve your users (Jain, 2014). An emerging technology is not necessarily a new invention. As a matter of fact, many older technologies are being reinvented and used creatively for modern purposes. However, the term 'emerging technologies' is often used without a clear meaning or definition (Halaweh, 2013).

Future Perspective

The future libraries are seen to be most productive than those of the past. The Information portals and robotic assistant will be used as guides in the coming few years. The real innovations remain to be seen in the library services across the world. In the digital age, Information technology, Internet and World Wide Web (WWW) has become an information superhighway for global libraries to deliver and disseminate information to the end users. Utilizing the internet platform, in the era of digital technology, networking and computer technology and much more have provided the global libraries with innovative approaches to enhance and integrate information resources and services Yang, et al, 2015).

SOME SUGGESTION FOR LIBRARY PRACTITIONERS

The library practitioners must keep in mind Some important steps while coming across these cutting-edge technologies

Start Experimenting

Do you know that some shortcut/hack can make your work more productive? Are there any tools/programmes being not implemented and could be used as supportive tools? You can consult with your professionals to apply the same who already used them. One can search it online for inspiration and then get stuck in. So start them as experimenting based and you will be aware latterly.

Mentors are King

Mentors are known to be the king in concerned field. There are some guru in the market who designed and implemented them successfully. There are some people who are python champion. There are some more people in your colleague who discovered some niche or industry specific. You may request them politely to share it with you or can give you few tips to help you out. People are usually sharing knowledge about such tools pleasurably.

Be a Tech Guinea Pig

If any library is installing new software for their team, just test it on volunteer basis or if a new programme has already been installed then check it again and again and make yourself as a champion of internet. Testing and checking it repeatedly will make you stronger and expert in the same software which can help you in your promotion. Become needs of the boss and make sure that without you no one other than you understand it effectively. Experiencing new tools always make a man stronger and skillful.

Create Something

Excel yourself in library career will make you more superior. Learning is a fun and taking interest in new technologies will boost your skill up. Sometime people are enjoying spending time on some good software for deeper knowledge. Make everything as an enjoyment tools in IT especially in emerging tool. There is no better solution other than taking interest in new tools and make them your hobby.

Sign up to Learn

All digital technologies once introduced in any field provide demo information to make it more prominent. In this case you must sign up to learn everything online. This kind of practice will make you more technical while operating them. There are always more websites which experiencing the same tools as you are going to launch them. Experiencing them will make your work easier.

CONCLUSION

Libraries have become one of the key nodes of delivery and distribution of information in this digital age. Library patrons do not usually find time to visit the library personally to access and search the library material they need. As emerging technologies are affecting all trades of life, similarly libraries are also experiencing the same technology in order to fulfill the dire needs of their users.

The data browsing, information visualization and library digitization have highly involved the staff and users both to quench their thirst of knowledge in the age of information technology. The emerging technologies have highly affected the users and library practitioners both to full their needs in the post-

PC age. This chapter provides librarians an idea that how to adapt useful technologies to fulfill the dire needs of their community. Although adapting such technologies will create some hurdles initially, but slowly and gradually the library practitioners will make their users abreast in near future. This chapter is just a glimpse of some of the fantastic technologies being occurred in the field of librarianship and library services.

We know that Libraries have always been about sharing knowledge, culture and skills and these new digital tools will make the librarians more skillful/knowledgeable to provide maximal services in minimal times. We hope adapting these technologies will make the work of librarians easier and up-to the mark for the entire community relying on libraries.

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Chapter 3
Functional Model to Online Information Seeking: A Proposal

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ABSTRACT

This chapter focuses on developing a Functional Model of Online Information Seeking Behavior of Academicians to the effective seeking of an online platform. The unavailability of standard, uniform, and multilingual supportive model is the major reason to prepare this proposal. The proposed model will help in an enhancement of the utilization of the databases provided by government-funded agencies. The main aim of this chapter is to explore the online information seeking behavior and provide a functional model to effective seeking approaches for the academicians.

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INTRODUCTION

There are several models have come up with a variety of issues earlier, trying to explain the stages of the information searching process and the behaviors associated with each stage. The past various studies deal with the use of computers and the Internet by academicians in a different context. Most of these studies show several uncertainties in different information-seeking models and an enhancement in the use of the online seeking of information, particularly by academicians. But not such model has been developed which can work at the multilingual platform. In the Indian scenario, the academicians (especially in Humanities and Social science) are facing enormous problem to access and utilize the maximum resources including Govt. resources availed on the internet due to unavailability of such type of standard and uniform model.

Definitions Of Concerned Terminology

Information refers to the ideas or thoughts that individual seek, contribute, or obtain from various formal and informal channels, study and research. WEBSTER's, N. Third New International Dictionary defines information as 'knowledge of a particular event or situation'; the knowledge communicated by others; or obtained through investigation. The researcher is of the view that information is the need of any routine activity of the school, play or work situations.

From the Cognitive viewpoint of 'information science', WEBSTER, N. Third new international dictionary defines information as associated with a text of the generator being modified by (purpose intent and awareness of state of recipient's knowledge) 'conceptual structure' which in turn underlines or shapes the 'surface structure' of aforesaid text.

WEBSTER's, N. Third new international dictionary further elaborated it by defining information as the result of transformation of the generator's cognitive structure (by intentionality, mode of recipients, state of the knowledge, and in the form of the signs), while in another way information is something which on being received may affect and transform the recipients state of knowledge (Eskola, 1998), David and Nilan (1986:16) perceive information as something structured by human being. In the context of this study, the information will be conceived, based on the definition of (Eskola, 1998), as that which is needed by students in process of learning and arriving at the meaning of any subject. It is crystal clear from the study of these definitions that information is a crucial element for the survival of man.

Information seeking is a conscious effort to acquire information in response to a need or gap in your knowledge, (Case, 2002).

Information seeing behaviour includes aspects like motives and purpose of information seeking, the nature and types of information sort, the mode and means to access information, identify, search and acquire information and use of libraries and information system by the user.

Online information seeking behaviour is the active process of obtaining data from the Web. It is a relatively new phenomenon by which the condition of being connected to a network of computers or other devices.

The term is frequently used to describe someone who is currently connected to the Internet. In these days, university, as well as institutional libraries, are continuously adapting and seeking latest as well as effective ways along with high technique to respond to the research-oriented query, teaching and academic

activity. In the information communication technology enable scenario, this proposal is more concerned with maximizing usage of this resource by Academicians in fulfilling their primary aim of research and reaching out to these resources on the Internet using the requisite navigational skills.

Need of the Proposed Model

In Indian perception, it is seen as well as observed that the research scholars belonging rural areas (especially in the discipline of Humanities and Social science) are commonly facing major problem to access and utilize the resources and services (Govt. resources, database and services) availed on the internet. The reason behind this, these resources are available in English languages. Due to this problem, a major gap is creating between sources and seekers. The proposal of the multilingual supportive model will be able to minimize this gap and enhance the utilization of the sources availed on the internet.

Function of the Model

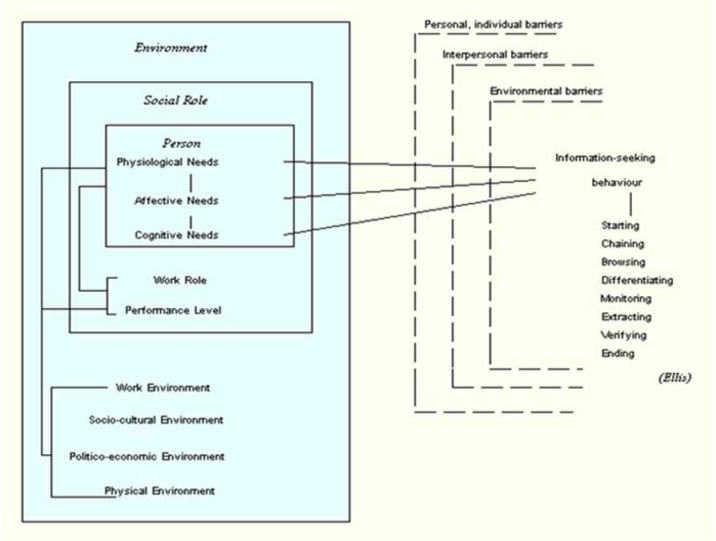
This model would provide an efficient mechanism to those academicians who are not much comfortable in the English language and belong from rural areas. However, it is the active process of obtaining data from the Web. Now a day's information-seeking behavior is an area of online active interest among the academicians, especially in research scholars. In these days libraries and universities are continuously adapting and seeking latest and effective ways along with high technique to respond to the fundamental and interconnected missions of research, teaching and community service. This proposal is more concerned with maximizing usage of the online-based resource by Academicians in fulfilling their relevant need and reaching out to these resources on the Internet using the requisite navigational skills.

A number of surveys and studies on the information seeking behaviour have been carried out during the last decades. Albeit all these models based on the study and surveys included information seeking, information seeking behaviour, information seeking of professional's, information behaviour. In many cases, these models, surveys examined the information seeking behaviour, information behaviour and so forth, but online information seeking behaviour is not targeted towards academicians in Indian scenario by earlier models and study.

Earlier Studies

From the past few years, information science has produced numerous theories and models that explain information seeking behaviour. But with the advancement of technologies, theories of information seeking behaviour have overlapped in parts and conflicted in others. A number of surveys and studies on the information seeking behaviour have been carried out during the last decades. Albeit all these model-based study and surveys included information seeking, information seeking behavior, information seeking of professional's, information behaviour, and in many cases, these models, surveys examined the information behaviour, information seeking behaviour, and so forth, but online information seeking behaviour is not targeted towards academicians in Indian scenario by earlier models and study.

Figure 1. Wilson's model



VARIOUS MODELS OF INFORMATION SEEKING BEHAVIOUR

Wilson's Model of Information Seeking Behaviour

Wilson model, which is commonly described as the Macro-model. In his model, Wilson shows how the information need arises, the actual searching process for information and the testable information behaviour; for example, the information needs differ depending on the work roles or personal characteristics. Therefore, this model can be viewed a well-established theory (Wilson 1999). The limitation of the model is that 'all of the hypotheses are only implicit and are not made explicit. Nor is there any indication of the processes whereby context has its effect upon the person, nor of the factors that result in the perception of barriers, nor of whether the various assumed barriers have similar or different effects upon the motivation of individuals to seek information' (Wilson 1999). However, the very fact that the model is lacking in certain elements stimulates thinking about the kinds of elements that a more complete model ought to include (Wilson 1999).

Cheuk Wai -Yi's (1998) Information-Seeking and Using Process Model

In 1998, Cheuk Wai-Yi developed an information-seeking and using (ISU) process model which was based on the Dervin's Sense-making approach. This model was tested on Various Professional groups. The ISU process model was developed to illustrate the dynamic and diverse Information Seeking Behaviour exhibited by each "individual-in-situation". In this model, it is shown, that human information seeking and using behaviour create the situations that quick requirement of information. This ISU process model is made up of the following significantly different situations and various aspects of information seeking

behaviour which designs a framework for the identification of its associated factors with ISU situation. These situations are respectively: task initiating; focus forming; ideas assuming; ideas confirming; ideas rejecting; ideas finalising; and the passing on of ideas. The various aspect of information-seeking are; use and choice of information sources, information relevance judgement criteria, information organisation and information presentation strategies, feelings, and definition of information. Cheuk Wai-Yi found a particular relationship in his theory between aforesaid seven situation and various aspects of information seeking. Overall on the basis of this study, it can be said that this model explores that user move between aforesaid situation and multidirectional paths. As per Cheuk Wai-Yi people belong the same profession use almost same information sources and medium but still they do not have same needs of information.

Dervin's Sense-Making Model

Dervin's model is not only seen as an Information Seeking Behaviour model, but 'a set of assumptions, a theoretic perspective, a methodological approach, a set of research methods, and a practice' (Wilson 1999). Dervin's model is highly relevant to the research conducted as it shows the steps of the process that students go through when searching for information, the situation: reflecting the task given to the student, gap: reflecting the gap in which information searching process starts by thinking of what could be relevant to the task given, searching general information, evaluating and filtering the information found by measuring its relevance and lastly, the outcome: reflecting the results of the information searching process (i.e. the filtered information that the student uses to answer a specific task question).

A Process Model Based on Ellis's Characteristics

Ellis's explanation of the different behaviour involved in Information Seeking Process is not put as a pictorial model like the previous theories discussed. He explains the stages using the term "features" as he claims that the effect of the different behaviour form a set of stages i.e. Starting, Channing, Browsing, Differentiating, Monitoring, Extracting, Verifying, and Ending. As per Ellis, the interaction between any two features of his model depends greatly on the circumstances a person with the information needs has. But no matter what the circumstances are, the process must start with the Starting feature, and end with the Ending. Ellis's model appears to be between the micro-analysis of information seeking behaviour and the macro-analysis of information behaviour in general; therefore, it is worthwhile mentioning, that both models of Wilson and Ellis work at different levels of the overall process of information seeking (Wilson 1999).

Figure 2. Ellis's Characteristics

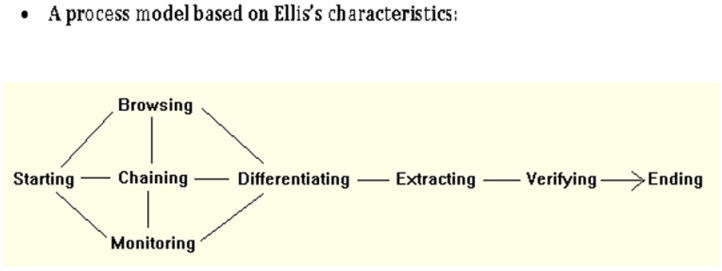


Figure 3. Kuhlthau's model

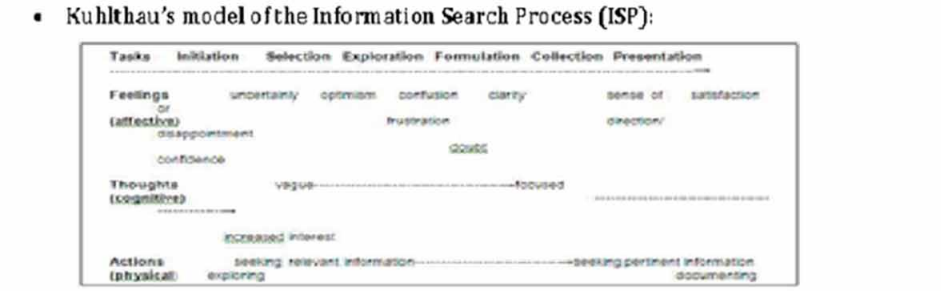
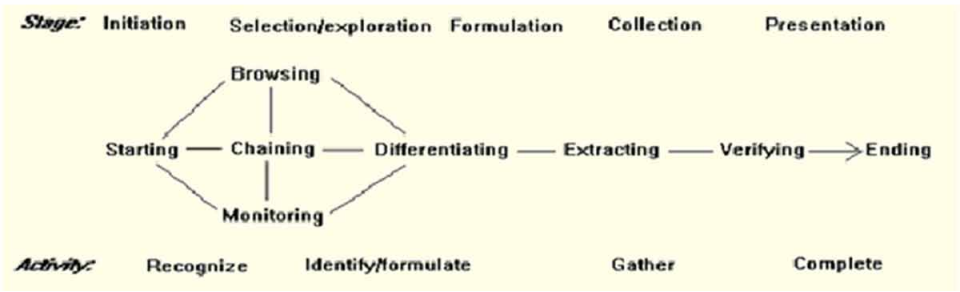


Figure 4. Combined model



Kuhlthau's Model of the Information Search Process (ISP)

The model of ISP describes the various experiences that the information seeker goes through from the early stages of the information search process, until the end. Kuhlthau describes the experiences as "a series of thoughts, actions and feelings accompanying the information seeker" (Kuhlthau 2010). The process of information search usually starts with the feelings of uncertainty, vague, ambiguity, doubt and general thoughts of the problem area. Therefore, the information seeker takes action to collect relevant information to the general topic of the problem, then as the process progresses, the information seeker starts to collect more specific information that answers his/her specific questions in the problem area.

Wilson (1999) suggests that the two models represent major differences and similarities. For example, Ellis presents his model as elements of the information seeking behaviour, and suggests that the behavioral characteristics may vary with different persons or with the same person at different times. Whereas Kuhlthau posits stages on the basis of her analysis of behaviour. Therefore, the two models oppose. The strength of Ellis's model as compared with Kuhlthau's, is that it is based on experimental research and has been tested in successive studies, most recently in the context of an engineering company.

The difference of Kuhlthau's theory as compared with Ellis's model is that she brought the feelings and thoughts of the person with the information needs into recognition, and how these thoughts and feelings gradually change as the process progresses. Ellis's model however, focuses on the logical steps that the information seeker takes to obtain useful information. Although Ellis suggests circumstances change from one person to another, but there may be common patterns amongst information seekers that could be observed through more in depth studies. Thus, it can be assumed that the two theories oppose in a way, and complement each other in another, with each theory looking at information seeking process from a different angle.

Figure 5.

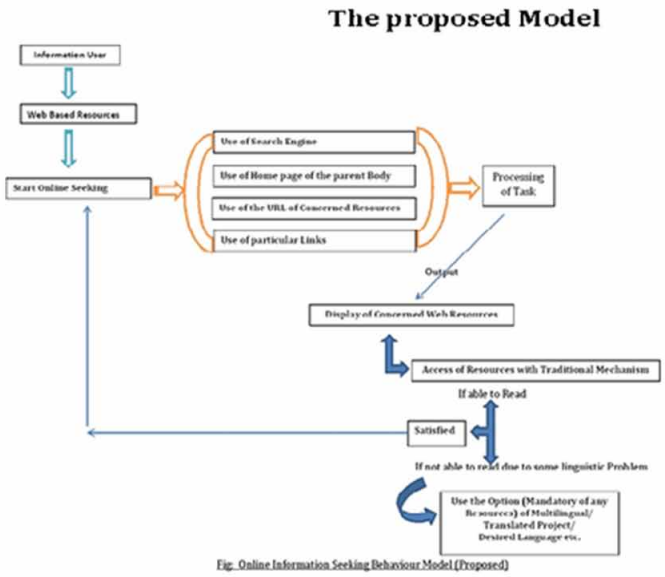


Fig. Online Information Seeking Behaviour Model (Proposed)

The Proposed Model

In the proposed model information user moves towards the internet for web-based resources. In the online seeking process, users firstly use the search engine and go to the home page /main web address of the parent body by which concerned resources or particular link are accessed and overall processing is run to seek particular information. After this processing, the required web resources are displayed in front of the users. If users are able to read that information then no problem, but if the users are not able to read and they are facing some linguistic problem then this proposed model under which a universal mechanism will help to access web resources by users in the desired/multilingual platform.

The Advantage of the Proposed Model

- The maximum utilization of good resources is generating good and qualitative research output.
- This model will assist users affected by language barriers.
- The user will be able to use all type of resources and services, developed by govt. or other agencies.
- Model will be widely usable and easily accessible.
- This model will provide effective and efficient online seeking to the academicians in Indian scenario.

CONCLUSION

Indian academicians are one of the most potential users of the internet-based resources, database and services. But due to lack of technical and latest mechanism, their potentiality is reducing. Those academicians (especially in Humanities and social science) who are belonging rural areas, they are facing tiring problem during access the internet to get web resources. In other words, it can be said that that this tiring problem is almost related with diversity of Language. Because of such problem our research output given by rural scholars is diversely affected. Therefore, there is a very big necessity to develop a universal and standard model or mechanism to minimizing the gap of the qualitative web resources. It will be able to explore the online information seeking behavior of academicians for sustainable education among academicians of higher learning institutions.

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Chapter 4
Library Anxiety:
A Barrier to Effective Use of Information Resources

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ABSTRACT

Recent surveys on usage of library services reveal that nearly one third of the user population uses the library resources effectively to fulfill their information requirements. The remaining two thirds are either under-utilizing or using at minimal level. The reasons for non-usage of library resources include the anxiety towards the information system. Library anxiety is a kind of psychological fear experienced by the users while using information services or accessing the ICT-based information resources in a library. Library anxiety is characterized by negative emotions including tension, fear, feelings of uncertainty and helplessness, negative self-defeating thoughts, and mental disorganization that are experienced in the library setting. It is a kind of psychological barrier that hinders the effective usage of library-based information resources. It is more prevalent among the beginners than others. This chapter highlights anxiety, types of anxiety, different types of library users, causes of library anxiety, and the remedial measures to overcome library anxiety.

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INTRODUCTION

Academic libraries play a vital role in the academic process of the parent institution by supplementing the academic process of teaching and learning of the academic community consisting of students and teachers at any level. It acts as hub for the academic community consisting of students and teachers for knowledge sharing and interacts with print and non-print materials to fulfill their day-to-day information requirements and update knowledge in the emerging field of their interest.

Knowledge explosion, proliferation of information and ICT based library services in academic libraries in general and in particular among the higher educational institution poses several problems and hindrances to the user while accessing library resources. These hindrances are called barriers in library. The feeling of anxiety when approaching library is one of the barriers. It is a kind of psychological barrier hindering users' access to information, which may be described in the broader term, *information barriers* (Swigon, 2006, 2010). Library anxiety is undoubtedly an important issue. It is the common phenomenon occurring among the majority of students (Mellon, 1986; Onwuegbuzie, Jiao, & Bostick, 2004).

In academic library set up, librarians and library professionals have observed that some students feel more comfortable while utilizing libraries than do others. Library anxiety has been defined as an unpleasant or uncomfortable emotion characterized by worry, confusion, tension and helplessness which occurs when a student is in the library setting. Library anxious students exhibits some characteristics, behavioral disorders, poor study habits, library avoidance, and negative attitude towards library, its collections and library professionals. It was also characterized by feelings that one's library skills are inadequate compared to those of one's peers that this inadequacy is shameful and should be hidden. There are very few selected researchers namely Onwuegbuzie and Jiao conducted a series of studies on various aspects of library anxiety in different context list out characteristics of characterized by negative emotions including tension, fear, feelings of uncertainty and helplessness, negative self-defeating thoughts, and mental disorganization.

TYPES OF ANXIETIES

There are mainly two types of anxieties, namely, trait anxiety and state anxiety. Trait anxiety is an individual's inherent tendency to view the world as threatening or dangerous (Battle, 2004). State anxiety refers to specific to a particular situation or stimulus that can vary in intensity depending on situation (Mech & Brooks, 1995). The specific situations such as taking an examination, facing an interview, visiting a strange place, first visit to a library, operating automated machines and so on. Scientific and educational environments may give students the experience of frustration, fear, stress and anxiety called 'academic-related anxiety' (Onwuegbuzie, Jiao & Bostick, 2004). Fear felt by the students in an academic set up are generally classified as state anxiety. Therefore, academic anxieties are state anxieties as they appear in relation to specific stimuli. Common academic anxieties include math anxiety, test anxiety, computer anxiety, information anxiety and library anxiety (Battle, 2004). Thus, library anxiety is a state-based anxiety (Onwuegbuzie, Jiao, & Bostick, 2004) in which students experience uncomfortable feelings or emotions while in a library setting (Jiao, Onwuegbuzie, & Lichtenstein, 1996).

Library anxiety is not uncommon for college students (Battle, 2004), who, when caught in a library-anxious moment, can feel tension, fear and a sense of helplessness (Jiao, et al., 1996; Onwuegbuzie, et al., 2004). It can occur at any point within the library use or search process (Kuhlthau, 1988) and can have a debilitating effect on a student's ability to complete assignments or develop proper information literacy skills (Onwuegbuzie, et al., 2004). Students who suffer from library anxiety will go to great lengths to avoid using an academic library and are more likely to avoid or delay starting or completing assignments that involve the library (Onwuegbuzie, 1997). Research studies on the characteristics of library-anxious student's show that new students are more likely to suffer from library anxiety than experienced college students with freshmen and sophomores showing higher rates than upper class men (Mech & Brooks, 1995).

LIBRARY ANXIETY

The phenomenon of library anxiety was first studied qualitatively by Constance Mellon. Mellon (1986) was the one to coin the term 'library anxiety' first and also to define the tern. Nevertheless, the definition given by Mellon was not in concise form. Jiao (1996) gives a more straight forward definition. Library anxiety is an uncomfortable feeling or emotional disposition, experienced in a library setting, which has cognitive, affective, physiological, and behavioral ramifications. It is characterized by rumination, tension, fear, feelings of uncertainty and helplessness, negative self-defeating thoughts, and mental disorganization, which debilitate information literacy.

Later in 2004, Onwuegbuize published a book titled 'Library anxiety: theory, research, and application'. This is the most comprehensive text available on the library anxiety. Though this book also does not give a simple definition of library anxiety it provides a collection of components that define and identify library anxiety.

Library anxiety is time and situation specific inasmuch as the symptoms only appear when students are in or are contemplating a visit to the library. A student who experiences library anxiety usually undergoes either emotional or physical discomfort when faced with any library or library- related task, whether it is a routine responsibility such as returning a library book or a more complex task such as conducting an extensive library search. Library anxiety may arise from a lack of self-confidence in conducting research, lack of prior exposure to academic libraries, and the inability to see the relevance of libraries in one's field of interest or career path.

COMPONENTS OF LIBRARY ANXIETY

Library anxiety has been found to be multi-dimension construct. Specifically, using exploratory factor analysis techniques Bostick (1992) identified five dimensions of library anxiety, namely

1. Barriers with staff
2. Affective barriers
3. Comfort with the library
4. Knowledge of the library and
5. Mechanical barriers

Using qualitative research techniques, Onwuegbuzie (1997) noted that library anxiety comprised the following six components. They are

1. Interpersonal anxiety
2. Perceived library competence
3. Perceived comfort with library
4. Location anxiety
5. Mechanical anxiety
6. Resource anxiety

Barriers with Staff

Barriers with staff refer to students' perceptions that librarians and other library staff are intimidating, unapproachable, and inaccessible. Users of academic libraries perceived libraries as being too busy to provide assistance in using the library and as having more important duties to perform than helping library users. Students with this perception tend to report high levels of library anxiety (Mellon, 1986).

Affective Barriers

Affective barriers refer to students' feelings of inadequacy about using the library. It stem from students' feeling of ineptness about using library. These feelings of inadequacy are deviated by the assumption that they alone possess incompetent library skills.

Comfort with the Library

Comfort with the library refers to whether the students' feels welcome in the library and views it as a safe and non-threatening environment. Students who are not comfortable in the library tend to have higher levels of library anxiety (Jiao, et. al, 1996).

Knowledge of the Library

Knowledge of the library refers to how comfortable the students' feels with the library and its resources. A lack of familiarity tends to culminate in frustration and anxiety and subsequently, to further avoidance behaviors

Mechanical Barriers

Mechanical barriers refer to the students' feelings that emerge as a result of relying on and using the library's equipment including computers, computer printers, photocopy machines, and charge discharge machines. Students who have difficulty in operating one or more pieces of the library equipment tend to experience high anxiety level.

Interpersonal Anxiety

Interpersonal anxiety relates to an increase in anxiety levels when a student contemplates or is in the process of seeking help from a librarian or other library staff, which is similar to Bostick's (1992) barriers with staff dimension.

Perceived Library Competence

Perceived library competence refers to an increase levels of anxiety culminating in a student having a negative perception of her or his ability to utilize the library competently, it is like Bostick's (1992) affective barriers.

Perceived Comfort with the Library

Perceived comfort with the library pertains to the anxiety that arises from a student's perception of how safe and welcoming the library is, which is identical to that of Bostick's (1992) comfort with the library.

Location Anxiety

Location anxiety pertains to the student's level of perceived familiarity with the library, which is equivalent to Bostick's (1992) knowledge of the library dimension.

Mechanical Anxiety

Mechanical anxiety refers to the elevations in anxiety levels when students are contemplating using, attempting to use or actually mechanical library equipments, like Bostick's (1992) mechanical barriers.

Resource Anxiety

Resource anxiety refers to the anxiety that stems from a student selecting an article or a book from a library, computer search that was not available in the library.

CHARACTERISTICS OF LIBRARY ANXIOUS USERS

Library anxiety is a kind of psychological fear experienced the users in academic libraries when they confronted with need to gather information from the library. The characteristics of these library anxious users may not only be limited to fear, but also it is reflected in their behavioral changes in different behavioral patterns. The first qualitative study conducted by Constance E. Mellon in 1986, proposes the grounded theory of library anxiety, and she has attempted to list out some characteristics of library anxious students by analyzing the behavior of the beginners in the library. When the students are con-

fronted with the need to gather information in library, students become so anxious that they are unable to approach the problem (information search or document search) logically and effectively. Library anxiety was seen as being characterized by:

- Being overwhelmed by the size of the library;
- Not knowing where to find things and not understanding how the library is organised;
- Lack of confidence about knowing how to start research; and
- Lack of knowledge about what to do in the library, accompanied by feelings of inadequate and fear of asking for help (Mellon, 1984).

Several behavioral changes seen among the library anxious students are as follows:

- Feelings of confused, embarrassed, frustrated, overwhelmed, threatened and lost;
- FEAR, phobia, worry, and nervousness;
- negative and self-defeating thoughts;
- A sense of unease, and discomfort; and
- Feeling of helpless, inadequate, incompetent, intimidated and unsure. (Jiao & Onwuegbuzie, 1999).

In addition to these characteristics, some of other characteristics reflected among library anxious users are tension, stress, uncertainty, confusion, emotional disposition, avoidance tendency and so on. Moreover, these behavioral changes are specific to the library environment and unrelated to general trait anxiety.

THEORETICAL MODELS LIBRARY ANXIETY

Model is a schematic description of a theory that accounts for its properties and may be used for study of its characteristics. Library anxiety is due to the manifestation of several variables. To understand better casual nature of library anxiety, models of library anxiety are needed that can be tested using quantitative and qualitative techniques. The first model presented is Kuhlthau's model of the information search process. Models developed related to library anxiety are broadly classified into four groups as follows:

1. Kuhlthau's Information Searching Process (ISP) Model
2. Cognitive – Affective Stage Model of Library Anxiety
3. Information Literacy Process (ILP) Model of Library Anxiety
4. Anxiety – Expectation Mediation (AEM) Model of Library Anxiety

Kuhlthau's Information Searching Process (ISP) Model

According to Kuhlthau (1991), the information search process involves the following domain: the cognitive (thoughts); the physical (actions) and the affective (feelings). The information search represents a process of constructing meaning from the information they encounter that involves thoughts, actions

and feelings, which represent the whole experience of the individual (Kuhlthau, 1991). Kuhlthau (1998) developed a six-stage process of the Information Seeking Process (ISP). They are: *task initiation, topic selection, prefocus exploration, focus exploration, information collection* and *search process.*

In the *initiation stage*, the goal is to recognize the need for information. Cognition involves contemplating the problem, understanding the task, and lining the problem to existing knowledge and experience. Action typically entails discussing possible topics and strategies with peers, mentors, instructors and other professionals. Feeling encompass uncertainty and anxiety that occur when individuals first become cognizant of their lack of knowledge, awareness or uncertainty (Kuhlthau, 1988).

Next stage is *topic selection*, the goal is to identify and select the general topic area to be researched and strategy for conducting search to be followed. Thoughts involve weighing the various options in light of personal experiences and interest, assignment requirements, and the amount of time available. Action involves conferring with peers, mentors, and instructors. Some individuals may undertake an initial, informal search of the information available and search for a synopsis of alternative topics. Feelings of anxiety often decrease after selection has been made (Kuhlthau, 1988).

The third stage of the information search process is *pre-focus exploration*. The task here is for the individuals to research information on the general topic selected to the previous stage in order to increase their understanding. Thoughts surround becoming adequately informed about the topic to form focus. Actions involve locating information relevant to the general topic, reading to become informed and relating new information to what is already known. Reflecting on useful idea is likely a useful strategy at this stage. Because information found rarely in sufficiently compatible with previous knowledge and information from different sources often appear to contradict one another, library users may find this stage frustrating and threatening, resulting in confusion, uncertainty and moreover, anxiety. This stage is most anxiety producing stage in the process.

Fourth stage of the information seeking process is *focus formulation*; the goal in this phase is to develop a focus from the information that emerges in the previous stages. Thoughts become more clearly defined as a focused perspective of the topic is formed. According to Kuhlthau (1993), focus formulation represents a turning point of the process because feelings become more positive, with anxiety levels decreasing as confidence increases alongside a sense of clarity.

Information collection is the fifth stage of the process whereby the quality of the interaction between the library user and the information system is maximized. The goal of this phase is to collect information pertaining to the focused topic. Thoughts involve defining, extending, and supporting the focus. Actions center on selecting information pertinent to the focused perspective of the topic. The library user at this stage, armed with a clearer sense of direction and more focus, is in a position to request relevant, focused information from library staff and systems that facilitate a comprehensive search of all accessible resources, confidence continues to increase and anxiety level decreases as more information is extracted.

Keefer (1993) indicated that in the first three stages of Kuhlthau's (1991) model, students experienced more feelings of apprehension, anxiety, and even fear. However, when they focus on specific topics, they showed more positive mood. Not all students experienced decrease in their original anxiety. Some students could not reach the focus stage and they continued to be negative all the way through their assignments. Keefer (1993) also noted that in the library setting, freshman or older students were often

confronted with other overwhelming problems that increase their anxiety about assignments such as not knowing details of call numbers, stacks, rows, aisles, signs, maps, periodicals sections, computer systems, abstracts and indexes, microfilms, and microfiches. Keefer noticed that as a result of mental and cognitive stress, some students, while attempting to find books, may overlook signs, misinterpret maps or direction, and fail to look in obvious places.

Cognitive-Affective Stage Model of Library Anxiety

The Cognitive-Affective Stage Model of library anxiety was proposed by Onwuegbuzie, Jiao and Bostick (2004). This model describes the thoughts and feelings of the students before, during and after using the university library for research. At the library preparation stage, library anxiety may be experienced by students in different ways. There are some dispositional, situational and environmental variables that come into account at this stage. Dispositional variables like academic procrastination, study habits, perfectionism, self-esteem, hope, self-concept and social interdependence may influence the library preparation stage and heighten levels of library anxiety (Onwuegbuzie, Jiao & Bostick, 2004). Environmental antecedents that play an important role at this stage include student's employment status, age and year of study (Onwuegbuzie, Jiao & Bostick, 2004). Additionally, situational antecedents that may affect the library preparation stage include learning styles (i.e., noise preference, responsibility, persistence orientation, visual orientation, tactile orientation, kinaesthetic orientation, multiple perceptual orientation, mobility preference, structure, peer orientation, morning preference, afternoon preference and evening preference) (Onwuegbuzie, Jiao & Bostick, 2004).

The second stage of the Cognitive-Affective Stage Model of library anxiety, library use stage, represents the time during which the student completes the task. It encompasses the last four (4) stages of the Kuhlthau's Information Search Process (ISP) model, including exploration, focus formulation, information collection and search closure. The anxiety experienced at any of these four (4) stages can prevent the completion of library task and is carried to other stages of the search process. Library anxiety experienced at the third stage of the model, library reflection stage, occurs depending on student's attitude. Students with high anxiety levels tend to blame themselves for being not successful in their research process. The research shows that success and failure of library task has a greater impact on the later performance of high anxious students than on the achievement of those with low library anxiety. The failure at this stage increases worry, emotionality and low performance of these students further. These three (3) stages of the Cognitive-Affective Stage Model of library anxiety are cyclic in nature. Thus, a student may go through many cycles especially when the task is complex (Onwuegbuzie, Jiao & Bostick, 2004).

The Information Literacy Process (ILP) Model of Library Anxiety

According to the ILP model of library anxiety, library anxiety interferes with information literacy on three (3) distinct levels include input, processing and output stages. At the input stage, library anxiety occurs when user encounters the target stimulus or information. At this stage, the anxiety exhibits the efficient pre-processing of the new information. The anxiety level experienced by user at this stage depends on

his ability to recognize, attend to, concentrate on and encode on external stimuli. Library anxious users with "high levels of anxiety at this phase often attend more to task-irrelevant information and material, thereby minimizing the capacity to receive input" (Onwuegbuzie, Jiao & Bostick, 2004). The second stage of the ILP model, processing stage, describes the application of new understanding to the task. The user may "understand the new information but not be unable to apply the new knowledge to a specific problem" (Onwuegbuzie, Jiao & Bostick, 2004). Levels of anxiety experienced by users at this stage of the ILP model "appears to depend on the complexity of the information extracted, the extent to which memory is needed, and the degree to which the material is organized in a way that is compatible with the users learning style" (Onwuegbuzie, Jiao & Bostick, 2004). At the output stage, library anxiety involves the uneasiness experienced when users are required to demonstrate their ability to produce previously learned material. Library anxiety which experienced during the output stage "might hinder users; ability to present or to use the information" (Onwuegbuzie, Jiao & Bostick, 2004).

Anxiety-Expectation Mediation (AEM) Model of Library Anxiety

Jiao and Onwuegbuzie (2002) propose the Anxiety-Expectation Mediation model of library anxiety. This model contains variables which are related to the information seeking performance, as measured by students' scores on their research proposals. According to this model, "library anxiety and self-perception serve as factors that mediate the relationship between performance in writing a research proposal and other cognitive, personality and demographic variables" including age, grade point average, learning style, academic procrastination, and self-perception (Jiao & Onwuegbuzie, 2002).

MEASURING LIBRARY ANXIETY

The psychological fear experienced by the users in academic library is firstly identified as *library anxiety* by Mellon (1986) through the qualitative survey. Followed by Mellon, several attempts are made to measure perceived library anxiety by the researchers in information science. In 1992, Sharon Bostick, has developed a tool called Library Anxiety Rating Scale (LAS) to measure library anxiety and the same is validated to measure among the students in higher education system. The approach followed in development of tool is quantitative approach. The LAS measures the constructs of library anxiety through 43 question of Likert Scale. Bostick identified five variables that impacted a person's level of library anxiety: (i) barriers with staff; (ii) affective barriers; (iii) comfort within the library; (iv) knowledge of the library; and (v) Mechanical barriers. The LAS of Bostick is modified by three researchers to create new scales. They were: Hebrew Library Anxiety Scale (H-LAS) by Shoham and Mizrachi (2001), modified LAS for students in Kuwait by Anwar; Al-Kandari and Al-Qallaf (2004), and Multidimensional Library Anxiety Scale (MLAS) by Van Kampen (2004).

Shoham and Mizrachi (2001) translated the Library Anxiety Scale of Bostick (1992) into Hebrew and reduced the statements from 43 to 35 to reflect the cultural differences. The modified scale (H-LAS) was divided into seven factors: staff factor, knowledge factor, language factor, physical comfort factor, library computer comfort factor, library policies or hours factor, and resources factor.

Modified Library Anxiety Scale for students in Kuwait is developed by Anwar, Al-Kandari and Al-Qallaf (2004). It had 34 statements, on students in Kuwait to test its suitability for a culturally different population. They dropped nine statements: four relating to personal safety, because 'safety was not a problem at Kuwait University', three relating to mechanical barriers because 'Kuwait University libraries use magnetic token-operated copying machines and change machines are not needed. Students are expected to bring their own paper for the printer; one relating to confusion in the library, 'because it was considered to involve much more than library' and one relating to space in the library, 'because university library buildings are new and have more than enough space'. The factor interpretations in their study were mostly different from those in Bostick's study. "Kuwait – LAS" has identified four factors of library anxiety. They are: staff approachability, feelings of inadequacy, library confidence, library constraints.

Multidimensional library anxiety scale was prepared by Doris J. Van Kampen in 2004. It consists of a 54-item Likert-type scale that assessed levels of library anxiety experienced by students enrolled in a doctoral degree-granting program at an urban south-eastern university. It was divided into the following six categories: comfort and confidence when using the library, information search process and general library anxiety, barriers concerning staff, importance of understanding how to use the library, comfort level with technology and how it applies to the library, and comfort level while inside the library building.

Finally, two more cultural content-specific scales combining items from LAS and MLAS have been developed. These are: a) the Polish Library Anxiety Scale (P-LAS), a 46- statement instrument developed by Swigon (2011) comprising six factors and b) the Chinese Library Anxiety Scales (C-LAS), a 36-item scale, grouped into seven factors (Song et al., 2014). Both of these scales expanded the existing instruments to include items measuring the use of electronic resources and remote access to library services.

FACTORS CONTRIBUTING LIBRARY ANXIETY

Library anxiety is being characterized as state anxiety, in which the perceived anxiety is due to external stimuli involved in the academic library. Therefore, some demographic factors including gender, age, native language, year of study, race and cultures (Jiao, Onwuegbuize & Bostic, 2004). Library anxiety is related to certain demographic and individual characteristics, behaviors, and attitudes, which together helps to identify anxious students in the library.

Jiao and Onwuegbuize, the most prolific authors on library anxiety has conducted several research works among the various populations in academic libraries. They identified the following factors contributing to library anxiety:

- Low level of perceived social acceptance
- Socially prescribed perfectionism
- Academic procrastination
- Inappropriate study habits
- Poor reading ability
- Preferred learning style

- Poor computer skills
- Low levels of hope in relation to overcome obstacles to reach desired goals
- Social interdependence

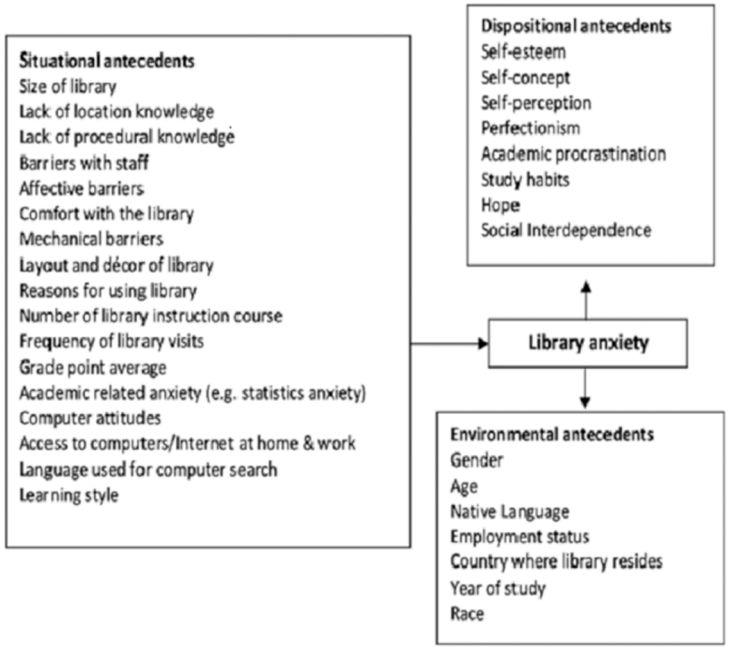
The above stress induced factors are broadly classified and grouped into three categories of antecedents of library anxiety.

ANTECEDENTS OF LIBRARY ANXIETY

Onwuegbuzie, Jiao & Bostick (2004) gathered the stress induced factors into three categories. They are the dispositional antecedents, the situational antecedents, and the environmental antecedents. These are the three classes of antecedents that interact to determine the overall level of library anxiety of an individual.

- Dispositional Antecedents – dispositional antecedents refers to the particular personality traits.
- Situational Antecedents – situational antecedents refers to the environment of the particular stimulus (library).
- Environmental Antecedents – environmental antecedents relates to demographic factors that pace an individual at risk for library anxiety.

Figure 1. Conceptualization of library anxieties



The model of conceptualization of antecedents of library anxiety is presented in figure-1.

The major difference between a dispositional antecedents and environmental antecedents is that the former is internal to the person, whereas the latter is external. The figure illustrates that there are seventeen Situational Antecedents, eight Dispositional Antecedents and seven Environmental Antecedents that influence library anxiety.

Situational Barriers

Size of Library

No research has been done to study the relationship between the size of the library building and library anxiety. However, there are a number of people who feel nervous when visiting new places with imposing buildings. The first-time visitor of a huge library can be overwhelmed by the enormous size of the building, and can feel nervous to visit the library again.

Lack of Location Knowledge

The library users may not be familiar with the usage of catalogues, OPAC or Web OPAC and hence would not be able to locate where the resource he/ she wanted could be located. Perhaps, the user may also be ashamed ask for help from the librarian. This may result in library anxiety.

Lack of Procedural Knowledge

Every library has its own systems and procedure with regard to users and documents. Users who are not familiar with these procedures may experience anxiety and may go to the extent of non-use of the library facilities.

Barriers with Staff

Librarians, when they are not sensitive to the information needs of the users and or are not accessible and unhelpful to them create negative perceptions in the mind of the users about the library and librarians and they would be a source of library anxiety.

Affective Barriers

Affective barriers are the psychological conditions a user may experience when he feels inadequate whether physically, mentally, emotionally or intellectually. This behavior can cause deviance in his information seeking behavior and pattern.

Comfort with the Library

A library user who experiences library anxiety usually undergoes either emotional or physical discomfort when faced with any library or library-related task (Mellon, 1988). On the contrary, if the ambience of the library causes discomfort to the user it may lead to anxiety.

Mechanical barriers

A new library user may feel anxious when too many mechanized systems are being used in the library. Hence it is good if the library functions with minimal mechanics and maximum humane.

Layout and Decor of Library

The layout of the library should be simple so that a user should not feel overwhelmed least causing anxiety. The documents and other resources should be easily accessible. Information retrieval tools such catalogues, OPAC, etc should be made available to the user and also the user should be properly oriented on using them effectively.

Reasons for Using Library

People normally use a library only when there is an information need and when they perceive that the need will be met by visiting the library. Insensitivity to users' need creates a barrier in using a library.

Number of Library Instruction Course

Frequent library instruction courses and library orientations can make the relationship between the library users and library staff smoother and remove the library use barrier.

Frequency of Library Visits

The requirement to visit the library too frequently can cause anxiousness among few library users and can cause non-use of the library.

Grade Point Average

Studies have shown that academic performance is linked to library usage. Though library usage alone cannot make one excel academically, it is definitely a contributing factor for academic excellence, among others. Knowingly or unknowingly this awareness causes anxiety and barrier for few potential library users.

Academic related anxiety (e.g.) Statistics anxiety

Some library user may have aversion towards a particular subject area like mathematics. They may experience anxiety related problems when they are required to access such subjects.

Computer Attitudes

Few people particularly among the elderly people group may experience inability in using the computer and hence to avoid such situation like using OPAC they may become non-user of library facilities.

Access to Computers/ Internet at Home Work

Users with access to computers and the internet at home may feel free to use the computers and internet in a library also and remove an obstacle in using the library service provided through the computers.

Language Used for Computer Search

The search strategies used by a library user is very important in retrieving the relevant information. Hence competency in language is as important as the skill in using a computer.

Learning Style

The learning style may differ from person to person. The library facilities, services and timings should be suitable for every kind of reader.

Dispositional Barriers

Self Esteem

People with low self-esteem may not interact easily with others and may feel anxious to meet people in the library, a public place and this may be a barrier in library use.

Self-Concepts

Some people may have pre-conceived notions and hence hinder their information seeking behavior.

Self-Perception

Those who perceive things by themselves and do not respond to the reality can experience anxiety as well as library user barrier.

Perfectionism

Expecting perfection in everything including the library services can become a barrier from seeking library services for the perfectionists.

Academic Procrastination

Some people have the habit of procrastinating things especially learning related ones like assignment writing and such people delay visiting the library and this is a barrier for library usage.

Study Habits

This may sound similar to learning style. However, there is a subtle difference. While study habit is a state of mind learning style is due to the external factors. Study habits are hard to change.

Hope

Those with the hope that everything will go on well tend to become lazy and may not use the library as it ought to be.

Social Interdependence

Some users may always be dependent on others to do complete the task given to them. This dependence can cause anxiety and also a barrier to library use because they tend to make others do their information searching work too.

Environmental Barriers

Gender

Studies have revealed that women are more anxious towards library staff, and the library and information resources factors.

Age

The younger age group library users experienced more anxiety than the older age user group, may be, because of less library experience. The older age group library users are familiar with the working of the system and also likely to be more mature and more understanding.

Native Language

Everybody would feel more comfortable with their own mother tongue than other languages. When the library, library staff and other library users use a language which one is not conversant, it creates a barrier.

Employment Status

A library user with a low employment status or unemployed may feel uncomfortable to use the library in the company of a user with higher employment status, though there is no discrimination on the part of library authorities of library staff.

Country Where Library Resides

The location of the library can make or mar a initial library visitor into a regular library user.

Year of Study

The young and new potential users who are in the initial years of study may feel library anxiety and this will be a barrier to library use.

Race

Race-consciousness, particularly of the oppressed people group living among the other race dominated geographical location, may feel intimidating to use library.

NEGATIVE EFFECTS OF LIBRARY ANXIETY

Library anxiety is an uncomfortable feeling experienced by the users when confronted with libraries for their information requirements. Library anxiety is an impediment to using the library efficiently and effectively. Even though, no causal relationship has been established, library anxiety has been linked to usage behavior of users in academic libraries. The perceived prolonged library anxieties reflected among them in the following (Carlile, 2007).

- Unwillingness to attend library tours and information literacy classes
- Poor study habits
- Inability to approach library – related tasks in a logical and effective manner
- Search avoidance, lack of persistence and focus in searching for information or resources
- Reduced effectiveness of library instruction and information literacy
- Library avoidance
- Reluctance to ask librarians for help

In addition to this, rare visits or no visits to the library, negative attitude towards library and library professionals, non-use of library services, and poor life-long learning skills. Studies have also shown that library anxiety negatively impacts academic performance, through its influence on other academic performance predictors and outcomes such as learning style, academic procrastination (Onwuegbuize & Jiao, 2000), library use and research performance (Onwuegbuize & Jiao, 2004).

STRATEGIES TO OVERCOME LIBRARY ANXIETY

Academic libraries should frame strategies to reduce library anxiety among its users by making its effort to feel comfortable in using library by giving necessary skills and facilities to access library resources. Generally, academic libraries are providing library instruction and user education to the beginners; provide training and creating awareness on latest development in library science particularly in ICT based services. Libraries engage in many proactive strategies to help, educate their users and bring new ones. The library professionals may not consciously be seeking specific mechanism for reducing library anxiety, but with enough careful thought and planning, each individual effort can make a difference.

Onwuegbuize, Jiao, & Bostick (2004) categorized the procedure to overcome library anxiety into three types of approaches:

1. Library facilities and Resource Management;
2. Library Instruction; and
3. Mediated Informational Services

Within these categories there are numerous mechanism intervention strategies to overcome library anxiety.

Library Facilities and Resource Management

This includes all the strategies that librarians and library managers employ to make the available library facilities and resources as user friendly and welcoming as possible, ensuring a pleasant environment in the library that will encourage the users to visits the library more frequently, seek help from library professionals without any hesitation and make use of all the available library services. Strategies in this category include proper library signage and graphics, logical space and furniture arrangements, user feasible library hours, library tours, facilities for virtual tour, in-library computing and allied services, Wi-Fi facility in the library premises, discussion room, cafeteria for refreshment, fully automated library, efficient document delivery system and fully functioning library consortia.

Effective co-ordination of existing library facilities and resource management helps to reduce the anxiety caused by the factors namely ‘comfort with the library’; ‘knowledge of the library’ and ‘mechanical barriers’ of library anxiety.

Library Instruction

This category includes all types of information literacy instruction, teaching users how to identify an information need, locate, evaluate, and use information effectively and ethically. Most instructional strategies involve professional staff, and user librarian interactions can also help to alleviate barriers caused by the staff in the library. The academic libraries play a major role in providing user education programmes. The strategies include classroom instruction, online tutorials, print and online help guides. Library user education can occur through any service but it primarily refers to formal instruction by librarians to help the user to use resources effectively.

User education is offered to students and other category of users in the following areas:

- Library orientation and users' education
- Information search skills
- Literature search
- Citation styles for term paper and projects
- Online search strategies
- Internet resources and search skills

Mediated Informational Services

This category includes not only the traditional reference services such as: mediated references assistance at the reference, active reference roving, and individualized information consultation, and e-mail-based services.

CONCLUSION

Library anxiety is a common phenomenon among the users in academic library and it is more prevalent among the beginners in their educational programme than in the later stage in the higher education system. The psychological fear experienced by them may lead to avoidance of library throughout their programme and the library services may be underutilized which goes against the objectives of self-paced life-long learning process. Significant correlation exists in library anxiety based on gender, discipline, parents' education level, and membership in public libraries. Library anxiety also has correlation with computer literacy and computer phobia. The perceived library anxiety among the undergraduate students can be reduced by providing library instruction regularly to the users, providing positive library experiences, user friendly technology, value added library services, and fulfilling the information requirements of the users. Since, positive relation exists between library anxiety and information literacy, library professionals should come forward to provide information literacy programmes to imbibe good learning skills and regular reading habits.

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DEFINITION OF KEY TERMS

Anxiety: A mental state of uneasiness experienced while exposed to new environment or people.
Barrier: Barrier is a hindrance affecting the access to place or in achieving a goal or destination.

Chapter 5
Promoting Information Services Among the Non-Users of Academic Libraries

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ABSTRACT

Academic libraries have for centuries played critically important roles in supporting the education system. A statistically significant correlation between library use and academic productivity has been found. Recently, libraries have not been used at the optimum level. To design library services, user studies are being conducted by many researchers. However, non-users, who have legal rights, are left-out from these studies. This chapter defines the users and non-users, and the reasons for non-use, and suggests methods to promote the library services among the non-users.

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INTRODUCTION

The political climate change throughout the world has made democracy to thrive. The emergence of democracy envisages that every citizen has the right to education. In a democracy, education is given primacy, for it is pre-requisite for the survival and success of the former. Similarly, education fosters a democratic temper in the minds of people. Democratic values like liberty, equality, fraternity, justice, dignity of individual, co-operation, sharing of responsibility, etc. are applied to education to make it more effective, meaningful, relevant and useful to society. The paradigm shift in the democratization of education promoted the concept of equal opportunity to all, irrespective of race, age, status, and ability. Continuous life-long educational avenues must be provided in order to achieve this objective.

An Academic library is an integral part of the institution complimenting classroom teaching and also non-formal mode of education. Therefore, a library as an indispensable repository of knowledge supports the academic system of the country. The libraries are to be nurtured and utilized to the optimum level, so the benefits are reaped in the educational institutions. The students must be encouraged to use the library for their enlightenment and entertainment equally.

Ranganathan's five laws of library science paved way for new revolution about the purpose of the libraries and the librarians. The first law of library science "Books are for use" and the second law "Every reader his / her book" has given an entirely new outlook to the functioning of the libraries. From books being a precious thing to be preserved, these laws made them to be used as a tool to obtain knowledge. Libraries have become a public institution rather than an institution for the benefit of a privileged few. Lot of public monies is being spent on developing the library resources, amenities, and infrastructure. A librarian has to persuade people to benefit by the knowledge treasured up in books (Ranganathan, 1988). This is absolutely true in a knowledge-driven society where knowledge is considered as an individual as-well-as institutional asset.

Though library is a relatively small organization, it operates in a complex, dynamic and uncertain environment. A library being a social organization has to take care of increasing government regulations, union activities and increasing community interest. Ranganathan's fifth law states that "A library is a growing organism" and with passage of time some libraries grow into large and complex organizations. They evolve according to the passage of time with updated technology to make the use of library more efficient one to the readers.

Government agencies, universities, colleges, and schools are non-profit making organizations and they have certain social responsibilities. As libraries attached to these organizations exist to serve their parent bodies, therefore, their libraries should support them to accomplish the objectives. However, it is essential that the parent bodies should clearly lay down their social responsibilities.

ACADEMIC LIBRARIES

Jennifer Wells (1995) states that, "the effectiveness of libraries has often been measured by the volume of library materials available to clients, the amount of use of services and resources, and the apparent or quantified satisfaction of clients". Academic libraries provide wide variety of information that students

seek for their work. They also contribute to their knowledge acquisition academically and personally. Libraries in educational possess large collection of books that are suitable for the students irrespective of their area of interest and genre. This allows them to explore new range of genres without any restrictions.

The library is the most appropriate agency in an academic institution to collect, organize and disseminate knowledge for use. In library, books are not only collected but conceived and comprehended as well – here, books become modules and integrated circuits, helping academic community at the university to interpret and advance knowledge and skill (Sahai, 1990).

A statistically significant correlation between library use and academic productivity has been found by several researchers. Barkey (1965) has found in his study conducted among college students' correlation between library use and grade point average. Kramer and Kramer (1968) found strong and statistically significant correlation between library use and student persistence. Mann (1974) studied the book borrowing records of university library and states "considerable difference between students in their use of university library facilities, and that a fair-sized minority seems to be able to pursue its studies quite happily with little help from libraries". Another study also leads the researcher to conclude that undergraduate students who use the library also do well in their examinations (de Jager, 2002).

Recently our culture has undergone a transformation as a knowledge society. However, the saddening fact is the use of library and its rich modern resources by the academic community has become very thin. The Carnegie Foundation Report has raised concerns on the deteriorating reading habit of the pupils. The report says that "the quality of a college is measured by the resources for learning on the campus and the extent to which students become independent, self-directed learners. And yet we find that today, about one out of every four undergraduates spends no time in the library during a normal week, and 65 percent use the library four hours or less each week. The gap between the classroom and the library, reported almost a half-century ago, still exists today" (ALA, 1989). Though the libraries are integral, important and core component of academic and research institutions they are not used to the optimum level. The major reasons for non-use of college libraries by the undergraduate students are lack of innovative assignments, use of internet, lack of co-operation from the library staff and inconvenient library hours (Jaikumar & Saravanan, 2019). Hence library services should be marketed in such a way the potential users identified and their information need is also found out. The library ambience, library services, resource sharing modes, electronic networks, and customer relationship should be made attractive for the library user to visit the library and make use of its resources effectively.

Impact of Information Literacy on Academic Libraries

Remarkable changes are taking place in the higher education system of our Nation. A great shift from 'Education for All' to 'Information for All', and then to 'Information Literacy for All' is seen now-a-days (Bruce, 2004). The main contributing factors for these changes are the societal needs, growth of technology particularly the Information and Communication Technology (ICT), cross and multidisciplinary research and the library centered learning. These changes are inevitable. Further, with advent of ICT various other consequential changes are taking place. One such is the Information Literacy.

Information literacy is a natural extension of the concept of literacy in our information society, and information literacy education is the catalyst required to transform the information society of today into the learning society of tomorrow" (Bruce, 2004). "The quality of a college is measured by the resources for learning on the campus and the extent to which students become independent, self-directed learners. And yet we found that today, about one out of every four undergraduates spends no time in the library during a normal week, and 65 percent use the library four hours or less each week. The gap between the classroom and the library, reported on almost a half-century ago, still exists today" (ALA, 1989). Bruce (2004) defines "Information literacy is a natural extension of the concept of literacy in our information society, and information literacy education is the catalyst required to transform the information society of today into the learning society of tomorrow

Electronic information resources in the form of audio and visual materials, CD-ROMs, Online Journals, e-books, institutional repositories, etc. are being added to the academic libraries. The growth of such e-resources has great impact on the environment of institutions. The libraries have to adopt new services based on these resources. Libraries as the temple of knowledge have to acquire and create a good collection of these resources. The vast array of these heterogeneous resources is to be provided to the potential users. Further the librarian has to educate the potential users to make optimal utilization of all these resources. Therefore, to solve the problem of e-information overload, information literacy is needed. Information literacy can be defined as fluency or set of skills that are required to make use of the electronic information resources effectively. The librarian should motivate the users, students, researchers and staff, of the parent institution by educating them of impact of the e-resources on the learning process. The librarian should take a proactive role as a teacher librarian and educator and also take the responsibility of designing and delivering the Information Literacy Programmes.

TYPES OF LIBRARY USERS

Whittaker defines a user as, "a person who uses one or more library's services at least once in a year". Users are individuals who can be divided into different categories on the basis of tasks assigned to them in a library organization (Devarajan, 1989). According to Kumar and Phil (2009) users can be categorized mainly into four types based on their approach to information services of a library. They are the Potential Users, the Expected users, the Actual Users and the Beneficiary Users. They further classify the users as General Readers, Subject Readers, Special Readers and Non- Reader User. Based on the use and non use of library or its services, Sridhar (1994) classifies the users / non users into (i) the Absolute Non-User and (ii) the Marginal User. In the same study he states about the delegated or spillover user, the malnourished user, the under privileged user, the un-served user, the undeserved user, and also the deprived user.

Slater (1984) states that involuntary non users as those who unfortunately do not have a library. Those who have access to library resources but do not use them are called voluntary or willful non users. Deprived users usually are considered as involuntary non users.

Potential User

Potential Users are the ones who need information which can be provided by a specific service. They can be very active users of the library services when a need arises and passive when they do not need any specific information. However, this type of readers can be made a regular library user by providing innovative library services.

Expected User

Expected User is known to have the intention of using a certain information service. User, his / her information needs and information seeking behavior are well known to the library staff. The librarian in this case merely acts as an information service provider and not as a catalyst.

Actual User

Actual user is who has actually used an information service regardless of whether he derived advantages from it or not. An actual user is not much influenced by external factors other than the information services provided by the library. Hence a librarian has no role or limited role in designing the information services for this type of reader.

Beneficiary User

These are the ones who derive measurable advantages from an information service. The information retrieved and used by the user can be quantified. These users and their information behavior can however be studied in-order-to repackage and market the information products to the benefit of the end user and to make the non-user into either an actual user or beneficiary user.

General Readers

This type of user group is generally associated with the public libraries. This user seeks light reading materials not with scholarly content, may be, to pass time or escape from boredom. This group may comprise of old aged people, unemployed, homemakers, and small children. The information behavior of this user group would be in total contrast with that of subject readers.

Subject Readers

Subject readers are the ones with specific need. They visit the library with a specific query or specific reading material or subject area in mind. This type of users concentrates their use of library materials on the subject field they are working-on or specializing.

Special Readers

The users placed in this group are those with special needs. They may have disabilities of one kind or other, may be a physical challenge or a mental challenge. The library collection needs to be a special one to cater to the needs of this group and also the librarian should be sensitive to their needs.

Non-Reader Users

These are made up of sub groups who make use of library materials, but not reading materials. A user coming into the library just to borrow a video or audio cassette is the best example of non-reading user.

Absolute Non Users

Those who do not use the library or its collection or services at all are called absolute non users. They have the right to make use of the library resources. They may have also paid the cost of the services. Nevertheless, they are neither interested nor intend to use them. In an academic all the students are required to pay the library fees but very few students make use of the library and its resources. Similarly in the public library system, house property owners are required to pay the library taxes to the local administrative bodies. But many are not aware of the library facilities in their vicinity, resulting in wastage public monies.

Marginal Users

A substantial number of users make use of a library marginally or occasionally and hence they are called marginal users. The librarian plays a vital role as a catalyst in transforming the marginal user into an absolute user.

USER STUDIES

An equipment cannot be designed unless the need for the equipment is well known. Similarly, a library which serves as the heart of the higher education system cannot provide cost-effective services unless the needs are assessed. The higher education system is undergoing remarkable changes at a rapid pace. The economically downtrodden, underprivileged and the challenged people are being encouraged to enroll and acquire higher educational degrees. Advances in technology have made possible virtual classrooms, online courses, and distance learning. This coupled with the growth in society's access to information via ICT has altered student perceptions of what the library has to offer. If libraries are to maintain their relevance in the cycle of student needs, then they must adopt and change. Listening to the needs of those who choose not use our services is one way of being responsive to that change (Toner, 2008).

Critically evaluating and assessing the library services on how they impact the library user are imperative to introduce new services and also improvise the already existing ones. Library staffs are effectively trained to survey the needs of their clientele. Various methodologies have been in use to conduct these

studies; the most commonly used ones are exit survey and questionnaire method. They are used primarily to establish student satisfaction levels and to determine improvements they would like to see to services and facilities (Toner, 2008).

User studies are being conducted all over the world to assess the needs and information seeking behaviour of the library users. However, a single and unified measure to study this need is lacking and hampering the evaluation of library services. The librarian is posed with the challenge to take decisions on evolving new and innovative services to the readers. These decisions are to be in consonance and consistent with the user needs.

NON-USER STUDIES

Most of the user studies conducted so far has neglected the non-users. The so called user research has totally ignored the study of non-users leading to unbalanced ratio of user to non-user research due to extremely difficult nature of non-user studies (Slater, 1984). A study by Huddersfield University library staff found that some student groups do not use library facilities and resources as much as could be expected and they are named as non/low users. In the forty seventh ASLIB Annual Conference, Line (1974) stated the need for "exploration of the un-served and underserved". Grose (1974) highlighted the needs of these deprived users and called this phenomenon as information malnutrition.

The epistemology of scientific metadata has several facets including the communication of science. The invention of modern printing system had transformed the mode of scholarly communication. Further, with the availability of new electronic resources such as World Wide Web and web 2.0 tools the entire dimension of this system has been revolutionized. Information is freely available anywhere and anyone with access to internet and a computer system or hand-held electronic communication device can access it, albeit with the inherent dangers (Jeyasekar & Saravanan, 2018). Current research suggests that the surging volume of available information and its interruption of people's work can adversely affect not only personal well-being but also decision making, innovation, and productivity (Hemp, 2006).

In-spite-of the deluge of information, a section of the society / academic community is still starved of information. In the absence of information people will create their own because nature abhors vacuum (Lopp, 2012). These information malnutrition or information malnourishment and misinformation may cause severe imbalances in the education system, unless the process is studied and immediate corrective measures are taken.

Sridhar (1994) attempted to define and classify the terms 'non-use' and 'non-user'. He defines "a non-user of a library is one who has a right to use the library but he does not do so over a specific period and/or for a specific sample of collection are transactions". According to Slater (1984) non-users are not the ones who do not have a library to use, but the ones who are voluntary and willful non-user of the library facilities. Grose (1974) defines "non-users are the group of people in an affluent society who are never given the means to satisfy their needs, or are geographically cut-off from centres of provision which are theoretically open to them or are so occupied that even while surrounded by all the need never stop to enjoy it and suffer a form of information malnutrition. These non-users live in an information-rich society and yet voluntarily suffer from information malnutrition.

Low use is defined as less than five visits to the library or borrowing less than five books, or logging in to the University's electronic resources collection less than five times (Goodall & Pattern, 2011). A study conducted among the students of St. Martin's College, UK revealed that twenty one percent of total student's numbers as low are non-users (Toner, 2008).

A library can have some non-user who do not use library or its collection or services at all and such non-users are called absolute non-users. However, a substantial number of users who make marginal use of a library can be called marginal users (Sridhar, 1994).

The result of some absolute non-users and many marginal users make a library under-used. Under –usage of library is equally important in the study of non-use and non- users of libraries because from the angle of the library there is no measure or standard to say how much can be called fair usage.

Non use or information malnutrition in an academic library is a complex issue, which needs the attention of governmental agencies, academicians, institutional authorities, teaching faculty, library staff and students to be resolved. Unless fire-fighting measures are taken educational standards are set to fall and the productivity of the nation reduces drastically.

RELATED LITERATURE

User studies are being conducted all over the world to assess the needs and information seeking behaviour of the library users. Most of the user studies conducted so far has neglected the non-users. User research has totally ignored the study of non-users leading to unbalanced ratio of user to non-user research due to extremely difficult nature of non-user studies (Slater, 1984).

Academic libraries are established with intention to fulfill the information requirements of user community consisting of both students as well as staff. All facilities and services in academic libraries are targeted towards the developments of its users. Studies on the extent of usage of academic library services are conducted periodically to evaluate the utility of its services. But, the actual usage of library services is far below the expectations, and under-utilized. Majority of the studies revealed that only about 60-76 per cent of users are the actual users and the remaining are either not utilising or unaware of library.

Borteye; Kojo; and Asare-Kyire (2018) carried out a study to identify the non-use of library services by the faculty in the Kwame Nkrumah University of Science and Technology, Ghana. The study revealed that Fifty-six (56) out of 1018 faculty respondents were identified as non users. It also revealed that the sources mostly used include their own textbooks; Internet; electronic journals and e-books etc. The major reasons for non use of library services includes: no time to visit the library; no need for the library; the library is uninviting; buying own books; and difficulty to find books in the library. It was recommended that to stem the tide of non use, the academic libraries must reinvent themselves and create room for user-driven services and resources, redesign floor spaces, bridge communication gap between the library and prospective users.

Lateef, Omotoso, and Fagbola (2016) on Students' Use and Evaluation of College Libraries in Crawford University revealed that students use their libraries sparingly; they use the libraries less for references and other academic purposes but more for relaxation in between lectures and to discuss with mates and friends. However, the respondents rate the information resources, services and facilities of the libraries as fair. The study concluded that the resources and services of the college libraries are poorly used and used less for academic purposes.

Fernandes and Cendon (2015) investigated the non-users of the CAPES Portal of E-Journals, a governmental initiative to offer free access to e-journals to consortiated federal educational and research institutions in Brazil. The research used a, mostly, quantitative research methodology, which collected some qualitative data through a Web Survey. The results showed 16.1% of survey respondents declared that they did not use the Portal. The results show that the non-use of the Portal is caused mainly because respondents lack information about its existence (24.5% of responses), use other information resources (22.3% of responses) and prefer printed journals (11.6% of responses). Another important finding is that 82.1% of the non-users would become users if the barriers indicated by them as the cause of non-use were solved.

Mary, Stephen and Saravanan(2011) conducted a case study on non-users of TDMNS college library by collecting response from 120 students. They describe the negligence of libraries by non-users and less fortunate users. It also analysed the reasons and barriers in non-use of college libraries by the undergraduate students. The study identified lack of time, location, library rigid rules, inconvenient library timings, ignorance and unawareness of library sources and services are the major reasons for non-use of college libraries.

BARRIERS TO LIBRARY USE

While library aims to facilitate information access to all, only a portion of the library of the public uses its collections and reference services. All the books are not being used and also every reader has not got an opportunity to have his / her book. There are several barriers hindering the library being used effectively.

- The library of any institution ought to be located in a central place easily accessible to all the users. Unless easy physical access is not available, the physically challenged may not get an equal opportunity.
- Though many countries have enacted laws, popularly known as 'Persons With Disabilities Act' (PWD Act) to give equal rights and opportunities to the challenged which requires the authorities to provide for ramps for easy access, special rest rooms, etc., very few libraries offer these facilities.
- The appearance of library building itself can be pleasing and appealing to attract readers or may dispel them from visiting the library.
- Inconvenient library hours also contribute to the non use of libraries. The library can be made to function 24x7 by making use of modern technology. Technology has also enabled the library to transcend the physical barrier.
- If the collection is outdated and does not satisfy the information need of the user, he or she may not visit the library again. In many institutions the library exists because of the traditional reputation and concept that it is the heart of the institution.
- Library must adopt itself to the changing technological innovations in information and communication. They must have collections relevant for all age groups.
- The library staff should be sensitive to the needs of the user and also be helpful in locating the right resource at the right time.

- Unhelpful library staff, difficulty in finding the right information resource, user's perception about the library, library anxiety, etc too causes low or non-use of libraries.
- "The main reasons for infrequent or non-use of resources is lack of awareness and perceived lack of relevance. Lack of time is also a barrier" (Millar, 2004)
- Education is the most significant factor affecting the use of libraries. Library users were more likely to be young, educated and middle class (Berelson, 1949).
- Awareness of the availability of the library services is also another reason. People are unaware of the information that library provides information to the general public.
- The rapidly changing information environment has added to the need for an up-to-date library user or non-user study.
- Income is indeed highly correlated with education. Households with middle income level are more to be library users than households with very low or very high income.

REACHING THE UNREACHED

The unreached people with regard to their information need, availability and access can belong to the following four categories.

1. Geographically Unreached
2. Socially Unreached
3. Physically Unreached
4. Circumstantially Unreached

The library must adopt innovative services to effectively market the information of the library. This would enhance the non-users to use the library beneficially along with the other users. Since, library is a growing organism it should evolve according to the technological advances in the modern time and make the library experience more comfortable for the users.

User- Friendliness

Time flexibility is one major aspect in making the library user-friendly. The library services can be made available 24/7 if proper security system, right technology like self check-in and check-out are adapted. This can reduce the workload of staff and user's time can also be saved. The time barrier for the non-user can also be mended in this way.

Attitude of Staff

The attitude of staffs towards the patrons should also be friendly. Users must feel comfortable while communicating with the staff about queries and suggestions. The staff must be patient with the users as it can also influence their perception about the libraries and make them use the library. An angry library staff can also be a reason for the non-use of the libraries. The attitude of the library staff plays a crucial role in reaching the socially unreached.

Ambience

The library should be a place where the user can spend their time learning and reading comfortably without any queries. Ambience also plays a major factor that influence the user in effective usage. Proper lighting and ventilation should not be compromised along with cleanliness. Comfortable furniture is also needed for a user to use the library at its optimal level. They expect a suitable environment where they can read books or journals without any disturbances. Providing ramps and disabled friendly rest rooms, special library collection, and providing user friendly computer systems for the visually challenged are some of the ways to reach the physically unreached.

Digitizing the Resources / Contents

Libraries should adapt according to the digital era with technological advancements. Digitizing the documents of the library would enable the user to access them more effectively without any competitor to get hold of the limited copies. Proxy access allows the users to use the library documents without actually being present in the library. Discovery service provides single access point to all the information needs of the library users in the home page of the library. These advanced techniques make the non-users to use the library with its new features.

Technological Upgrades

Touch screen KIOSK for library information and discussion tables enabling the users to discuss texts using touch screen and easy access to the library catalogue. They can discuss the same text at the same time without sharing one for the whole group. Video conferencing facility and video courses for the students would boost the usage of library. RFID-enabled self check-in, book drop, and check-out KIOSKs would enable the self-service of the users without expecting the service of the staffs.

Mobile Libraries

About a hundred years ago mobile library just meant a cart or van carrying books to the locality of the potential users. Presently with the advent of mobile technology and smart phones, technology has invaded everywhere without any barrier. Mobile technology utilization can result in mobile resources being used, shrinking the physical barrier between the non-user and the library. The geographically unreached can be provided with library services through the mobile libraries and other technological upgrades.

ROLE OF LIBRARY PROFESSIONALS

1. The very demeanor of the library professionals should be pleasing and polite. They should treat the users of the libraries with empathy. They should provide all necessary assistance to the users for information search process.
2. Library professionals should provide library orientations and user education programmes periodically to familiarize the fresher's with the library resources.

3. Proper awareness should be created among the users especially among the beginners on various information sources; scope of services and facilities available in the libraries like automated systems and ICT based information services.
4. Library professionals should provide positive library experiences to the users, which helps to motivate them to visits library more frequently for their information requirements.
5. Library professionals should equip themselves to cope with latest trends in library and information science at the national and global level.
6. User friendly technology should be adopted in the libraries so that user can access the library resources without any barriers.
7. Proper signage, bay guides and self explanatory symbols and abbreviations should be used inside the library so that users can approach the information system without any hindrances.
8. Physical atmosphere of the college libraries should be more attractive and ambience should be inviting the users to utilize the libraries for their information requirements.
9. Layout of the library building should provide for easy access to the all types of users including the challenged ones. Provisions for proper ventilations and light, seating arrangements and internal arrangements are more attractive and pleasant way to attract more students to the college libraries.

CONCLUSION

Library users are of different types and the information need of each user group should be respected. This chapter enumerates the different types of users and also non-users. The information needs of the non-users of library services need to be studied carefully and be met so that democratization of education happens. This chapter also discusses reasons for non-use of libraries and the various methodologies to be adopted to reach the unreached.

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Chapter 6
Attitude of Library and Information Science Professionals Towards Resource Sharing and Networking of Academic Libraries

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ABSTRACT

Information explosion is the common phenomenon in the modern era in which no library can stand alone in fulfilling the information needs and requirements of its users. Resource sharing provides the means to maximize the usage of library collection irrespective of its type. Networking of libraries facilitates resource sharing among the participating libraries in an effective manner and it indirectly facilitates marketing of library sources among a group of libraries. Technology alone is not sufficient to bring together the sources. The attitudes of the people involved in the information dissemination are also a decisive factor in determining the success of resource sharing through networking of libraries. This chapter presents the attitude of information professionals for effective resource sharing and networking of academic libraries in the southern districts of Tamil Nadu, India. The study revealed that library and information science professionals have a positive attitude towards resource sharing and networking of libraries.

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INTRODUCTION

Information explosion is the common phenomenon in the modern era in which no library can stand alone in fulfilling the information needs and requirements of its users. Influence of ICT in information processing and dissemination, nature and types of collections, namely print and electronic form, scope of individual libraries, disparity in funding, limited budget allocation by parent institution, space and lack of expertise force the libraries for a mechanism to share their resources. Resource sharing provides the means to maximise the usage of library collection irrespective of its type. Networking of libraries facilitate resource sharing among the participating the libraries in an effective manner and it indirectly facilitate marketing of library sources among a group of libraries. Networking of libraries in a region ensures the accessibility of information sources to its users beyond the physical boundaries. Technology alone is not sufficient to bring together the sources. The attitude of the people involved in the information dissemination is also a decisive factor in determining the success of resource sharing through network of libraries. This chapter presents the attitude of information professionals for effective resource sharing and networking of academic libraries in the southern districts of Tamilnadu.

Knowledge Sharing

Knowledge sharing is a platform for the students, faculty and researchers to share their expertise, unique deployments, best practices or any relevant topic of their interest. Knowledge sharing is the distribution of knowledge or what has been learned and it is this concept which is at the heart of the learning organization (Senge, 1990). Knowledge sharing requires a sharing mindset which entails: a sharing of vision, a sharing of values, a sharing of knowledge, a sharing of communication and information, openness and trust (Ipe, 2003).

In the changing scenario of information explosion, "no library can effectively satisfy its users within its walls" (Song, 2000). This statement clearly depicts that no academic library, however large, could be completely self-sufficient to fulfill the expectations of its users. Library co-operation, resource sharing and networking are used interchangeably as synonymous terms for collaborative efforts taken by the libraries for information exchange among libraries with the intention to satisfy the information needs of its users.

RESOURCE SHARING AND NETWORKING

Resource sharing is the process of inter library co-operation for exchange of information or resources with other libraries. Group of libraries work together in co-operation for a common purpose of mutual benefits can be termed as resource sharing system (Sangal, 1984). Thus, the term 'library co-operation' has been replaced by a new coinage "Resource Sharing'. Resource sharing is more attractive and makes better sense in this age of inflation, budgetary reduction and use of ICT in libraries and information centres.

Networking is resource sharing through computers and telecommunication link which transmit information or data from one library to another. According to Zhang (1990), "Networking is more structured type of co-operation in which definite regions or areas or definite organizations are connected by

electronic or other means to promote inter-library learning materials, in-service training and sharing of other resources. Thus, library co-operation and resource sharing have been replaced by term networking of libraries for information sharing. The principle behind resource sharing is ensuring the availability of maximum service at the minimum cost.

OBJECTIVES OF RESOURCE SHARING AND NETWORKING

The main objectives of resource sharing and networking are:

- Increase the availability of resources
- Extend the accessibility of resources
- Diminishing cost, and
- Promote full utilization of resources (Kaula, 1986).

Allen, Kent, and Bhargava (1986) stated the objectives of resource sharing as "Library users should have access to more materials or services providing level service at less cost, increased service at level cost, or much more service at less cost.

Factors Affecting Resource Sharing

The major factors that affect the networking of libraries and resource sharing are

- Availability of computerized databases;
- Availability of communication facilities
- Standardization of library organizational practice;
- Availability of financial resources;
- Efficiency in the governance of network; and
- Basic agreement.

Other factors influence resource sharing and networking of Libraries are:

- Willingness of libraries
- Policies of libraries
- Competition between the libraries
- Negative attitude of library professionals;
- Lack of technical skills
- Lack of standardization procedure and
- Type of database

By analysing the factors that influence resource sharing and networking of libraries, the success of information sharing and network of libraries depend on human factors such as willingness and their attitude determine the success of resource sharing and networking of academic libraries.

ATTITUDES

An attitude is a predisposition or tendency to think, feel, react or act in a particular way. The attitudes have certain characteristics:

- They are not innate; they are acquired by learning through contact with persons, objects and situations
- They relate with values and give direction to behaviour
- They develop from experience
- They are general; this means that the same attitude is manifested in different situations
- They imply acceptance or rejection, a positive or negative thinking, and they predispose to act against or for something.

Attitude construction is a very important phase in the education process of every professional. The attitude is the profile that the librarian must adopt in his or her professional performance. Martin (2005) has listed out the following for the library professional for effective information service to the clients.

1. **Service Attitude:** Towards users, trying to satisfy their needs and offering an efficient and professional service.
2. **Change, Development and Growing Attitude:** Adapting, contributing and being prepared for the change process
3. Predisposition to attitude change
4. **Creativity and Curiosity Attitude:** Creating new ideas and discovering new challenges. Creativity implies innovation.
5. **Commitment Attitude:** Assuming the organization objectives as own, accomplishing with institutional duties and contributing to the achievement of goals.
6. **Prospective Attitude:** Anticipating tendencies and certain things.
7. **Active Attitude:** Dynamic
8. **Proactive Attitude:** Reacting in a very active way, when facing different situations and anticipating place problems.
9. **Listening Attitude:** Learn to listen to other people.
10. **Ethical Attitude:** Acting according to moral values and good professional practices.
11. **Respectful Attitude:** To be respectful to the institution, persons, users, professional colleagues, other persons' knowledge, the author's rights and protection of data.
12. **Evaluating Attitude:** To evaluate own performance and to accept constant and permanent improvements.

13. **Sharing Merits Attitude:** Rewarding achievements
14. **Apologizing Attitude:** To learn from mistakes
15. **Permanent Learning Attitude:** Through the permanent learning of format and self-education.

Thus attitude refers to action or behaviour someone displays in relation to something or in the process of doing something. Attitudes of librarians' play a vital role in ensuring the effectiveness of day-to-day operations and utilization of resources and services available in libraries.

REVIEW OF LITERATURE

Several studies were conducted among the library and information science professionals in different context. They are reviewed and the latest and most relevant to attitude of library professionals towards resource sharing and networking are presented under this heading.

Kumar (2012) observed that in library and information science literature lot of discussions are found on librarians' attitudes and resistance to change, such as the change brought about by the use of Information Communication technology facilities. In this clash between the people's tendency to maintain the status quo and changes forced by technology, the librarians' role becomes central in resource sharing activities related to decision making.

Dhanavandan (2016) conducted a study to determine the perception of library professionals of engineering colleges towards ICT applications. The study was conducted among the library professionals in the self-financing engineering colleges situated in Kanchipuram and Thiruvallur districts of Tamil Nadu, India. A total of 625 questionnaires were distributed, 504 replied with a response rate of 80.64%. The study revealed that the respondents with experience 'Below 5 years' gave 'Lack of infrastructure' as the first priority. 'Lack of interest on the part of users' and 'No support from administration in training library professionals' were the second and third preferences indicated by the respondents. The least preferences were given for 'Fear of ICT application'. Similarly, respondents with experience '6-10 years' indicated 'No support from administration in training library professionals' as the first priority. The least preference was given for 'Inadequate training in ICT applications'. The study also revealed that the professionals accepted the fact that there is a need for training in ICT applications.

Santhosh (2017) carried out a study to explore the use of Web 2.0 tools and technologies among the library professionals in academic libraries in India. Data were collected through a structured questionnaire mailed to respondents from 46 central university libraries in India. The findings suggest that there exists a fair level of awareness and familiarity with the Web 2.0 tools and technologies among the library professionals. The mean attitude score for the sample (n=76) was calculated as 4.32 indicating that the majority of the library professionals had a strong positive attitude towards the items tested. The study further revealed that there exists a fair level of understanding among the library professionals; however, they lack proper in-depth knowledge about the Web 2.0 tools and technologies.

Johncy Rose and Saravanan (2018) analysed the awareness of research scholar towards ICT products and application and the extent of usage of e-resources among the research scholars in relation to their ICT awareness. The study was conducted among 220 research scholars of Kanyakumari District of

Manonmaniam Sundaranar University (India) jurisdiction. The study revealed that research scholars are familiar with ICT products and applications and their ICT awareness is high. Research scholars prefer ICT products and applications mainly for the preparation of presentations, manuscripts and proposals by 78.6 percent. Among different type of e-resources, e-theses and dissertations, e-journals and technical reports are more frequently used by the respondents than e-books and other databases. The study also revealed that research scholars do not differ in ICT awareness based on gender, locality and nature of research.

Ibrahim and Yahaya (2018) investigated the attitude and readiness towards resource sharing among academic libraries in the federal universities in Nigeria using descriptive survey method. Cluster sampling technique was employed to select 480 library staff from 18 universities for the study. The instruments used for data collection was 20 items five point rating scale structured questionnaire. The questionnaire is standardised after conducting pilot study using the Cronbach's alpha coefficient 0.92. Collected data were analyzed using Statistical Package for Social Sciences (v20). The study revealed that the attitude and interest of federal universities in Nigeria is positive with regard to partnership and resource sharing. It was therefore concluded that resource sharing among academic libraries through consortium or engage into partnership activities have benefited library users to have access to information and education needed to satisfy the teaching, learning and research of the patron community. The study recommended that in order to have partnership for effective resources sharing activities in the academic libraries under study, there must be a need for the library staff under study to increase their commitment and willingness on their attitude to partnership activities with clear vision and mission towards partnership for effective resources sharing activities in the academic libraries of the federal universities in Nigeria.

Igbo and Imo (2019) analysed the state of electronic information resource sharing among university libraries in Southern part of Nigeria, highlighting the prospects and the challenges. They followed an empirical research approach with descriptive survey as the design. The questionnaire was used to collect data from the population comprising university librarians of the 37 public universities in Southern Nigeria. The study revealed that the university libraries had diverse kinds of electronic information resources and some ICT facilities but lacked web-based OPAC and library management software, which are fundamental for e-resource sharing. They could not engage in any meaningful form of structured resource sharing initiative as a result of lack of institutional policies and standards. This implies that access to information is endangered where the libraries are unable to collaborate to bridge the gap between the information-rich and information–poor libraries -a scenario which conversely would affect the relevance and image of the poor libraries. The study recommended that the management of the universities and the Nigerian Library Association should advocate for government support in formulating standard policies and development of standard software that would drive effective consortium formation among libraries for a more effective resource sharing.

Review of related studies shows library professionals have positive attitude towards resource sharing and their degree of acceptance is varying depend on the context.

NEED AND SIGNIFICANCE OF THE STUDY

The problems such as costs of information resources, inadequate allocations for collection development in libraries, expensive foreign document delivery services, and the ability of information technology are seen as important reasons for developing partnership, interlibrary loan or resources sharing among

academic libraries. Through networking and resource sharing, academic libraries engage on library co-operation, Inter-library loan, library collaboration and library consortium. The end use of resource sharing and networking of libraries ensures partnership activities among libraries include increasing availability of resources and services, avoiding duplication in the process of subscription to resources and services, extend greater accessibility to resources and services, reduce cost of subscription to resources and services, promote utilization of resources and services at the users satisfaction level. As such, partnership activities could be seen as important component that could be used in developing library resources and services which enhance users' greater accessibilities to those resources and services among the academic libraries. Since no library no matter the size of its collection can stand alone in supporting their users with satisfaction, resources and services, it is also the attitude of those library and information science professionals will make resource sharing activities very successful indeed. Attitudes and perception of librarians towards resource sharing activities play a fundamental role in determining their response towards it implementation. The success or failure of the resource sharing activities among libraries greatly depends on the attitudes of the library and information science professionals because they are the key responsible for planning resources sharing.

STATEMENT OF THE PROBLEM

The present study is intended to measure the attitude of academic library professionals towards information/resource sharing and marketing of academic libraries especially at higher education level. Hence, the problem for the present study is entitled as "**Attitude of Library and Information Science Professionals towards Resource sharing and Networking of Academic Libraries"**

OBJECTIVES OF THE STUDY

The study is based on the following objectives

1. To determine the level of computer literacy among library and information professionals.
2. To determine the attitude of library professionals towards resource sharing and networking among libraries.
3. To compare the attitude of library and information science professionals towards resource sharing and networking with respect to selected demographic variables such as age, gender, locality, experience, and type of institution.
4. To identify the problems faced by the library professionals in resource sharing and networking of libraries.

HYPOTHESES OF THE STUDY

The investigators of the study have framed the following hypotheses:

1. Library and information science professionals have computer literacy at average level.
2. Library and information science professionals have negative attitude towards resource sharing and networking of libraries.
3. There is no significant difference in attitude of library professionals towards resource sharing and networking among libraries on selected demographic variables such as age, gender, locality, experience and type of institution.

SCOPE AND LIMITATIONS OF THE STUDY

The scope of the present study is limited to the library professionals working in academic institutions. The delimitations of the study are:

1. Library and information science professionals working at school level are excluded from the study.
2. Library professionals namely librarians working in Arts and Science Colleges and Engineering colleges alone are considered from this study. Library professionals working in other higher educational institutions namely Education Colleges, Polytechnic colleges, and universities are also excluded from the study.
3. The geographical area covered by the present study is only the southern districts of Tamil Nadu in India.

METHODOLOGY

The present study is intended to determine the attitude of library professionals towards resource sharing and networking of libraries. Hence, investigators have followed survey method. The study was conducted among the library professionals namely librarians working in Arts and Science Colleges and Engineering Colleges in the three southern districts of Tamil Nadu namely Thoothukudi, Tirunelvei and Kanniyakumari District. A well-structured questionnaire prepared by the investigators is used for the collection of data from the sample respondents. The attitude scale consists of ten items covering various aspects of information sharing and networking of academic libraries, responses are measured based on their agreement with the statements on a five-point scale of Likert five point scales ranging from strongly disagree to strongly agree. It has both positive statements and negative statements; the scoring procedure is reversed for negative statements. Initially, the questionnaire was administered among 147 library professionals working as librarians in the study area by giving due consideration to various categories of variables under study. Among these 147 respondents, 126 questionnaires were returned, of which 122 were complete in every aspects. By omitting the incomplete one, 122 questionnaires were considered for the analysis. The overall response rate of the questionnaires is 82.9 per cent. The collected data are analysed using SPSS (Software Package for Social Science) software version v22 and interpreted according to the objectives of the study.

ANALYSIS AND INTERPRETATION OF DATA

Data collected from the respondents of the study are analysed and presented under various headings as follows:

Demographic Variables of the Study

The respondents of the study belong to three southern districts of Tamil Nadu namely Thoothukudi District, Tirunelveli District and Kanyakumari District. Out of 122 respondents, 37 belongs to Thoothukudi District, 43 belongs to Tirunelveli District and the remaining 42 of Kanniyakumari District. Gender wise classification of respondents shows that 63 are males and the remaining 59 are females. Respondents of the study belongs to different age group from 31-58, they are classified into three age groups namely 31- 40 (46 respondents), 41-50 (42 respondents) and 51-60 (34 respondents). Similarly, work experiences of the academic librarians are between 4 and 30 years. Moreover, out of 122 respondents, 60 belong to rural and the remaining 62 of urban locality; and 55 out of 122 respondents of Arts and Science colleges and the remaining belongs to Engineering colleges.

Computer Literacy of Library Professionals

Library professionals are expected to be competent enough to handle ICT based applications in day-to-day operations of information centres. It includes, Micro Soft Word or other Micro Soft Office Package for typing and formatting, information retrieval from internet sources and other databases, library automation software and so on. Computer literacy of the respondents are summarised in table-1.

Table – 1 discloses that 100 per cent of the respondents are familiar with word operations and information retrieval, 97.5 per cent of the respondents are familiar with printout and scanning, and 87.7 per cent of them are with windows operating system. The table also reveals that respondents are not familiar with open source operating system (46.7 per cent) and library software installation (40.2 per cent). Thus, it is concluded that library professionals' belonging to the geographical location of the study have more computer literacy on basic skills and moderate on other aspects. Computer literacy of the library professionals informs that they are executing their service as best of the expectations of the users.

Table 1. Computer literacy of library professionals

S.No	Items	No. of Respondents	Per cent
1	Word Operation	122	100
2	Information Retrieval	122	100
3	Windows Basics	107	87.7
4	Open Source Operating System	57	46.7
5	Library Software Installation	49	40.2
6	Printout, and Scanning	119	97.5

Attitude of Library Professionals Towards Resource Sharing and Networking

Respondents of the study are asked to rate their agreement or disagreement with the statements associated with resource sharing and networking of libraries on a five point scale. Various statistic calculated from the respondents of the study are given in table-2.

Table -2 reveals that the mean and standard deviation of attitude score of library professionals towards resource sharing and networking are respectively 34.3 and 1.83. The maximum and minimum attitude score of the respondents are 12 and 50. The average score 34.3 (>30) discloses that library professionals have positive attitude towards resource sharing and networking of academic libraries. Moreover, 48.36 per cent of the respondents have medium level attitude, 27.9 per cent have high level attitude and 23.8 per cent have low level attitude towards resource sharing and networking of academic libraries.

Comparison of Attitude Based on Gender

Gender of the library and information science professionals' influences their attitude towards resource sharing and networking. The attitude score of the respondents towards resource sharing and networking is compared with respect to gender using 't' test. The details are provided in table-3.

It is clear from table-3 that the mean and standard deviation of male and female respondents are respectively 36.2; 32.4 and 2.01; 1.65. Male respondents have more average score than female respondents. The calculated value of 't' is 11.3, which is significant at 0.05 level.

Table 2. Statistic of Attitude Score

S.No	Statistic	Values
1	Total number of Respondents	122
2	Minimum Attitude Score	16
3	Maximum Attitude Score	50
4	Mean Score	34.3
5	Standard Deviation	1.83
6	Low Attitude	29 respondents
7	Medium Attitude	59 respondents
8	High Attitude	34 respondents

Table 3. Comparison of attitude based on gender

S.No	Gender	N	Mean	Std. Dev.	t value	Remarks
1	Male	63	36.2	2.01	11.3* p=0.000	Significant
2	Female	59	32.4	1.65		
Total		122	34.3	1.83		

Source: Computed Value * significant at 0.05 level

Table 4. Comparison of attitude based on locality

S.No	Locality	N	Mean	Std. Dev.	t value	Remarks
1	Rural	60	33.17	1.6	3.67* p=0.000	Significant at 0.05 level
2	Urban	62	34.9	2.06		
Total		122	34.3	1.83		

Source: Computed Value * indicates the value is significant at 0.05 level

Table 3. Comparison of attitude based on type of institution

S.No	Type of Institution	N	Mean	Std. Dev.	t value	Remarks
1	Arts & Science Colleges	55	32.7	1.67	9.7* p = 0.000	Significant at 0.05 level
2	Engineering Colleges	67	35.9	1.99		
Total		122	34.3	1.83		

Source: Computed Value * indicates the value is significant at 0.05 level

Testing of Hypothesis

Hypothesis: There is no significant difference in attitude of library professionals towards resource sharing and networking of libraries based on gender.

Table-3 also reveals that the calculated value 't' is significant at 0.05 level (t=11.3, $p<0.05$). Therefore, the null hypothesis is rejected at 0.05 level. Gender influences the attitude of library professionals towards resource sharing and network of libraries.

Comparison of Attitude Based on Locality

Respondents of the study are classified into two categories such as rural and urban based on their locality. The attitude score of the respondents on attitude towards resource sharing and networking of libraries are compared based on locality. The details are summarized in Table 4.

Table-4 discloses that mean attitude score of the sub-samples of rural and urban categories are respectively 33.17 and 34.9. Attitude score is more among the urban category than from the rural category.

Testing of Hypothesis

Hypothesis: There is no significant difference in attitude of library professionals towards resource sharing and networking of libraries based on locality.

Table-4 also discloses that the calculated value of t is 3.67 with p value less than 0.05, which is significant at 0.05 level. The hypothesis that there is no significant difference in attitude of library professional towards resource sharing and network of libraries based on locality is rejected at 0.05 level.

Locality of the library professional influences on attitude towards

resource sharing and network of libraries and it is interpreted that library professionals differ significantly on attitude towards resource sharing and network of libraries based on locality. Library professionals hailing from urban area have more positive attitude than rural.

Comparison of Attitude Based on Type of Institution

Attitude score of the respondents towards resource sharing and networking of libraries is compared in order to determine the significant difference among them based on type of institution. The significant difference is determined using 't' test of significant. The details of analysis are given in table - 5.

The mean attitude score of respondents from Arts & Science Colleges and Engineering Colleges are respectively 32.7 and 35.9 with standard deviation 1.67 and 1.99. Respondents from Engineering Colleges have more attitude score than the respondents of Arts and Science Colleges.

Testing of Hypothesis

Hypothesis: There is no significant difference in attitude of library professionals towards resource sharing and networking of libraries based on type of Institution.

The calculated value of *t* is 9.7 with *p* value 0.000, which is significant at 0.05 level. Hence, the hypothesis is rejected at 0.05 level. So, significant difference exists among the library professionals on attitude towards resource sharing and network of libraries based on type of institution.

Hence, it is interpreted that library professionals differ significantly on attitude towards resource sharing and network of libraries based on type of institution.

Comparison of Attitude Based on District

The respondents of the study belong to three southern districts of Tamil Nadu namely Thoothukudi, Tirunelveli and Kanyakumari Districts. The difference in attitude score among the respondents based on district is carried out using ANOVA. The details are in table-6.

Table - 6 depicts the mean and standard deviation of respondents based on three district.

Testing of Hypothesis

Hypothesis: There is no significant difference in attitude of library professionals towards resource sharing and networking of libraries based on district.

Table 6. Comparison of attitude based on district

S.No	District	N	Mean	S. D	Source of Variation	df	Mean Square	F Value
1	Thoothukudi	37	31.3	1.63	Between Groups	2	272.3	79.7*
2	Tirunelveli	43	36.3	2.05	Within Groups	119	3.4	*p=0.000*
3	Kanyakumari	42	35.3	1.81				
Total		122	34.3	1.83				

* indicates the value is significant at 0.05 level

Table 6 also depicts that the calculated value of F is 79.7 with *p=0.000* at (2, 119) degrees of freedom, which is significant at 0.05 level. Therefore, the hypothesis is rejected.

Hence, it is interpreted that library and information professionals do differ significantly on attitude towards resource sharing and networking of libraries based on district. Geographical location, may be due to the developments in their educational system, influences their attitude.

Comparison of Attitude Based on Age

Age of the library professionals is also one of the factors determining their attitude towards resource sharing and networking of libraries. The respondents of the study are classified into three groups based on their age. Difference in attitude among the library professionals towards resource sharing and networking of libraries based on age is compared using one-way analysis of variance. The details of ANOVA are given in Table 7.

Testing of Hypothesis

Hypothesis: There is no significant difference in attitude of library professionals towards resource sharing and networking of libraries based on age.

Table 7 also discloses that F value is 79.74 with *p* value 0.000 (*p<0.05*) at (2, 119) degree of freedom, which is significant at 0.05 level. Therefore, the hypothesis is rejected at 0.05 level.

Hence, it is interpreted that library professionals differ significantly on attitude towards resource sharing and network of libraries based on age. Library professionals of age group 31-40 have more positive attitudes towards resource sharing and networks of libraries than other groups.

Comparison of Attitude Based on Experience

The respondents of the study are classified into three categories based on their work experience in academic libraries, namely, 4-13 years, 14-23 years and 24-33 years. The difference in attitude score among the respondents based on experience is carried out using ANOVA. The details are given in table 8.

Table 8 depicts the mean and standard deviation of respondents based experience.

Table 7. Comparison of attitude based on age

S.No	Age	N	Mean	S. D	Source of Variation	df	Mean Square	F Value
1	31-40	46	37.1	1.67	Between Groups	2	272.3	79.74*
2	41-50	42	35.9	1.72				
3	51-60	34	29.9	2.1	Within Groups	119	3.41	*p=0.000*
Total		122	34.3	1.83				

Source: Computed Value * significant at 0.05 level

Testing of Hypothesis

Hypothesis: There is no significant difference in attitude of library professionals towards resource sharing and networking of libraries based on experience.

Table 8 also depicts that the calculated value of F is 137.5 with *p=0.00* at (2, 119) degrees of freedom, which is significant at 0.05 level. Therefore, the hypothesis is rejected at 0.05 level. Work experience of the library professionals have influence on their attitude towards resource sharing and network of libraries.

Hence, it is interpreted that library professionals do differ significantly on attitude towards resource sharing and networking of libraries based on experience.

Problems Faced by the Library Professionals on Resource Sharing and Network of Libraries

Library professionals working in Arts and Science Colleges and Engineering Colleges have witnessed several problems in resource sharing and networking of libraries. The opinion of the respondents on problems of resource sharing and networks of libraries are given in table-9.

Table 9 reveals that 71.3 per cent of the respondents (87 out of 122) opined that lack of standardization of library database is the major problem faced by them while resource sharing among libraries. It is followed by policies of the institution (58.2 per cent); lack of infrastructure (54.9 per cent); unhealthy competition between policies (51.6 per cent); not willing to share (48.36 per cent) and technologically

Table 8. Comparison of attitude towards e-resources based on experience

S.No	Experience	N	Mean	S. D	Source of Variation	df	Mean Square	F Value
1	4-13 Years	43	36.9	1.77	Between Groups	2	446.71	137.5* *p=0.000*
2	14-23 Years	48	35.8	1.61	Within Groups	119	3.2	
3	24-33 Years	31	30.2	2.11				
Total		122	34.3	1.83				

* indicates the value is significant at 0.05 level

Table 9. Problems faced by the library professionals on resource sharing

S.No	Problems	Respondents	Per cent
1	Not willing to share	59	48.36
2	Policies of the institution are rigid	71	58.2
3	Unhealthy Competition between the institution	63	51.6
4	Technologically not sound	49	40.1
5	Lack of standardization of library database	87	71.3
6	Lack of infrastructure	67	54.9

not sound (40.1 per cent). Hence, it is concluded that lack of standardization of library database, rigid policies and unhealthy competition between the institutions are the problems faced by the library professionals on resource sharing.

FINDINGS

Based on the analysis, the following findings are made:

1. Library professionals of the study area have more computer literacy on basic skills and moderate on other aspects.
2. Library and information science professionals working in Arts and Science Colleges and Engineering Colleges have positive attitude towards resource sharing and networking of academic libraries.
3. Library professionals do differ significantly on attitude towards resource sharing and networking of libraries based on gender, locality, type of institution, district, age and work experience.
4. Male library professionals have more positive attitude than their female counterparts. Similarly, library professionals of urban and Engineering Colleges have more positive attitude towards resource sharing and networking of libraries than their rural and Arts and Science College counterparts.
5. Library professionals of age group between 31 and 40 years and work experience between 4 and 13 years have more favourable attitude than their counterparts.
6. Lack of standardization of library database, rigid policies and unhealthy competition between the institutions are the problems faced by the library professionals on resource sharing.

CONCLUSION

Resource sharing and networking among academic libraries are very essential for effective utilization of library resources at maximum. It provides wide scope for endless demand of its users for accessing information, resources and services effectively. Attitude of library and information science professionals has much influence on the success of resource sharing among the libraries. Positive approach towards resource sharing and networking of libraries and standardisation of library databases facilitate resource sharing for optimum utilization of library resources in a geographical region. Similar situations are prevailing in academic libraries of other parts of the state and hence the findings are applicable to academic libraries irrespective of the region.

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Chapter 7
User-Friendly Information Accessibility and Deschooling Among Teenagers

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ABSTRACT

Information explosion has reached its zenith and provides the accessibility in a user-friendly manner. Time, space, situation, assistance, facilitation, tutor, conventional, traditional; all these types of information acquisition modes had been reduced to user-friendly pattern of interaction. Deschooling among teenagers has become an inevitable topic of discussion due to the user-friendly information accessibility. Deschooling is the escapism of teenagers from normal, traditional, and systematic style of information as well as knowledge acquisition. This chapter provides the misuse as well as the negative thinking aspects of teenagers in marketing of information services. The chapter ultimately enhances the quality of designing and realistic ethical norms and values in marketing of information services.

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INTRODUCTION

Humans have been storing, retrieving, manipulating, and communicating information since the Sumerians in Mesopotamia developed writing in about 3000 BC but the term information technology in its modern sense first appeared in a 1958 article published in the Harvard Business Review; authors Harold J. Leavitt and Thomas L. Whisler (1958) commented that "the new technology does not yet have a single established name. We shall call it information technology (IT)." Their definition consists of three categories: techniques for processing, the application of statistical and mathematical methods to decision-making, and the simulation of higher-order thinking through computer programs. Several products or services within an economy are associated with information technology, including computer hardware, software, electronics, semiconductors, internet, telecom equipment, and e-commerce.

Devices have been used to aid computation for thousands of years, probably initially in the form of a tally stick. Comparable geared devices did not emerge in Europe until the 16th century, and it was not until 1645 that the first mechanical calculator capable of performing the four basic arithmetical operations was developed. As the IT industry evolved from the mid-20th century, computing capability advanced while device cost and energy consumption fell lower, a cycle that continues today when new technologies emerge.

Business applications include databases like SQL Server, transactional systems such as real-time order entry, e-mail servers like Exchange, Web servers like Apache, customer relationship management and enterprise resource planning systems. These applications execute programmed instructions to manipulate, consolidate, disperse or otherwise affect data for a business purpose. Computer servers run business applications. Servers interact with client users and other servers across one or more business networks. Storage is any kind of technology that holds information as data. Information can take any form including file data, multimedia, telephony data and Web data, data from sensors or future formats. Storage includes volatile random-access memory (RAM) as well as non-volatile tape, hard disk and solid-state flash drives. The information technology profession is extremely diverse. Information Technology workers can specialize in fields like software development, application management, hardware components such as desktop support, server or storage administrator and network architecture. Information is the crux of Information Technology

INFORMATION

Information is stimuli that have meaning in some context for its receiver. When information is entered into and stored in a computer, it is generally referred to as data. After processing (such as formatting and printing), output data can again be perceived as information. When information is packaged or used for understanding or doing something, it is known as knowledge. Information is any type of pattern that influences the formation or transformation of other patterns. Information is the resolution of uncertainty; it is that which answers the question of "what an entity is" and is thus that which specifies the nature of that entity, as well as the essentiality of its properties. Information is associated with data and knowledge, as data is meaningful information and represents the values attributed to parameters,

and knowledge signifies understanding of an abstract or concrete concept. The existence of information could be uncoupled from an observer, which refers to that which accesses information to discern that which it specifies; information exists beyond an event horizon for example. In the case of knowledge, the information itself requires a cognitive observer to be accessed. In terms of communication, information is expressed either as the content of a message or through direct or indirect observation. That which is perceived can be construed as a message in its own right, and in that sense, information is always conveyed as the content of a message.

Information can be encoded into various forms for transmission and interpretation. It can also be encrypted for safe storage and communication. Information reduces uncertainty. The uncertainty of an event is measured by its probability of occurrence and is inversely proportional to that. The more uncertain an event, the more information is required to resolve uncertainty of that event. The concept of information has different meanings in different contexts. Thus, the concept becomes related to notions of constraint, communication, control, data, form, education, knowledge, meaning, understanding, mental stimuli, pattern, perception, representation, and entropy. From mid to late 20th century information processing and transmission transformed dramatically to mark it as separate age attainment phenomenon.

INFORMATION AGE

The Information Age which is also known as the Computer Age, Digital Age, or New Media Age is a historic period in the late 20th and 21st century characterized by the rapid shift from traditional industry that the Industrial Revolution brought through industrialization, to an economy based on information technology. The onset of the Information Age is associated with the Digital Revolution, just as the Industrial Revolution marked the onset of the Industrial Age. The definition of what information means continues to change over time as new technologies, user devices, methods of interaction with other humans and devices enter the domain of research, development and market launch.

During the Information Age, digital industry shapes a knowledge-based society surrounded by a high-tech global economy that exerts influence on how the manufacturing and service sectors operate in an efficient and convenient way. In a commercialized society, the information industry can allow individuals to explore their personalized needs, therefore simplifying the procedure of making decisions for transactions and significantly lowering costs both for producers and for buyers. The Information Age formed by capitalizing on computer microminiaturization advances. This evolution of technology in daily life and social organization has led to the modernization of information and communication processes becoming the driving force of social evolution.

Industry is becoming more information-intensive and less labor and capital-intensive. This trend has important implications for the workforce; workers are becoming increasingly productive as the value of their labor decreases. Information accessibility had now became the hard work of workers in the present social scenario

INFORMATION ACCESSIBILITY

The Information Age was enabled by technology developed in the Digital Revolution, which was itself enabled by building on the developments in the Technological Revolution. Before the advent of electronics, mechanical computers, like the Analytical Engine in 1837, were designed to provide routine mathematical calculation and simple decision-making capabilities. Military needs during World War II drove development of the first electronic computers, based on vacuum tubes, including the Z3, the Atanasoff–Berry Computer, Colossus computer, and ENIAC. The first developments for storing data were initially based on photographs, starting with microphotography in 1851 and then microform in the 1920s, with the ability to store documents on film, making them much more compact. In the 1970s, electronic paper allowed digital information to appear as paper documents (Wilkie, 2011).

Early information theory and Hamming codes were developed about 1950, but awaited technical innovations in data transmission and storage to be put to full use. While cables transmitting digital data connected computer terminals and peripherals to mainframes were common, and special message-sharing systems leading to email were first developed in the 1960s, independent computer-to-computer networking began with ARPANET in 1969. This expanded to become the Internet (coined in 1974), and then the World Wide Web in 1989. Public digital data transmission first utilized existing phone lines using dial-up, starting in the 1950s, and this was the mainstay of the Internet until broadband in the 2000s. The introduction of wireless networking in the 1990s combined with the proliferation of communications satellites in the 2000s allowed for public digital transmission without the need for cables. This technology led to digital television, GPS, and satellite radio through the 1990s and 2000s.

Computers continued to become smaller and more powerful, to the point where they could be carried. In the 1980s and 1990s, laptops were developed as a form of portable computers, and PDAs could be used while standing or walking. Pagers existing since the 1950s were largely replaced by mobile phones beginning in the late 1990s, providing mobile networking features to some computers. Now commonplace, this technology is extended to digital cameras and other wearable devices. Starting in the late 1990s, tablets and then smart phones combined and extended these abilities of computing, mobility, and information sharing. Optical communication has played an important role in communication networks. Optical communication provided the hardware basis for internet technology, laying the foundations for the Digital Revolution and Information Age.

The information explosion is the rapid increase in the amount of published information or data and the effects of this abundance as the amount of available data grows the problem of managing the information becomes more difficult, which can lead to information overload. The Online Oxford English Dictionary indicates use of the phrase in a March 1964 New Statesman article. Techniques to gather knowledge from an overabundance of electronic information in data fusion may help in data mining that have existed since the 1970s. Another common technique to deal with such amount of information is qualitative research in real society

An information society is a society where the creations, distribution, use, integration and manipulation of information is a significant economic, political, and cultural activity. Its main drivers are digital information and communication technologies, which have resulted in an information explosion and are profoundly changing all aspects of social organization, including the economy, education, health, war-

fare, government and democracy. The people who have the means to partake in this form of society are sometimes called digital citizens; this is one of many dozen labels that have been identified to suggest that humans are entering a new phase of society.

The markers of this rapid change may be technological, economic, occupational, spatial, cultural, or some combination of all of these. Information society is seen as the successor to industrial society. Now a days in information society the eye-catching thought is user the aspects of user friendly technology.

USER FRIENDLY TECHNOLOGY

User-friendly describes a hardware device or software interface that is easy to use. It is "friendly" to the user, meaning it is not difficult to learn or understand. While "user-friendly" is a subjective term. A user-friendly interface is not overly complex, but instead is straightforward, providing quick access to common features or commands. A good user interface is well-organized, making it easy to locate different tools and options. In order to be user-friendly, an interface must make sense to the average user and should require minimal explanation for how to use it. An unreliable product is not user-friendly, since it will cause undue frustration for the user. A user-friendly product is reliable and does not malfunction or crash.

The goal of a user-friendly product is to provide a good user experience. This may look different depending on the end user for whom the product is designed. Even if a program has many advanced features, it is still possible to make it user-friendly by designing a simple, clean, and intuitive interface. User-friendly products are typically more successful than those with complex, convoluted interfaces that are difficult to use. Additionally, customers often avoid unreliable products, such as software programs that are full of bugs. In order to ensure a good user experience, companies often thoroughly test their products before releasing them to the public.

The mobile revolution brought the user experience front and center for consumers. And now that they've caught the bug, business technology is coming along for the ride. As they look for simpler, faster ways to accomplish more with less, people may prefer to work on the job with the same easy-to-use apps they turn to as consumers in and outside the workplace. People can accomplish more when armed with the tools they love. End users are often the ones with the best feel for which tools will help them be productive. The more the evaluation and selection process takes into account their preferences, the likeness they are to use the implemented solution, which translates into less time for them to feel disempowered and more time spent on accomplishing work. These socio-educational changes already in progress, academics should have access to the most optimal educational development activities possible. The roles of educationist have changed in like manner to make the classrooms into user friendly information accessibility encounters.

USER FRIENDLY INFORMATION ACCESSIBILITY

Accessibility, usability, and inclusion are closely related aspects in creating a web that works for everyone. Their goals, approaches, and guidelines overlap significantly. It is most effective to address them together when designing and developing websites and applications. Web accessibility means that people

with disabilities can equally perceive, understand, navigate, and interact with websites and tools. It also means that they can contribute equally without barriers. To have accessibility it is all about having designed products with effective, efficient, and satisfying information accessibility possibilities many accessibility requirements improve usability for everyone, especially in limiting situations.

Requirements that are technical should relate to the underlying code rather than to the visual appearance. Inadequate design can cause significant barriers for people with information accessibility disabilities. However, accessibility focuses on disability and does not try to address broader issues. Other efforts, such as internationalization, address other inclusion issues. Keeping accessibility focused on disabilities encourages research and development on the specific needs of people with disabilities, and solutions that are optimized for these specific needs.

There are guidelines, standards, and techniques for web accessibility, such as the Web Content Accessibility Guidelines (WCAG), which is the international standard ISO/IEC 40500. Yet when designers, developers, and project managers approach accessibility as a checklist to meet these standards, the focus is only on the technical aspects of accessibility. As a result, the human interaction aspect is often lost, and accessibility is not achieved. Combining accessibility standards and usability processes with real people ensures that web design is technically and functionally usable by people to overcome information accessibility disabilities.

Accessibility practitioners and researchers can incorporate usability techniques to improve user friendly information accessibility to its extremes. User experience designers and researchers can incorporate accessibility to make their designs work better for more people in more situations. Addressing accessibility, usability, and inclusion together can more effectively lead to a more accessible, usable, and inclusive web for everyone. The Internet is just as helpful to them as it does to able-bodied persons, so having a website be accessible to them is very important. In order to make a website accessible to a wide audience, the design must be done in a way that makes it readable and usable to anyone. Other than that, screen readers and other accessibility tools may be used for those who may not be able to see well. The Internet is worth making accessible to everyone, which is why the website's accessibility must never be overlooked. By accommodating those who may not be as capable in viewing the website as ordinary folks would, it shows as empathic and thoughtful, not to mention that it gets more views as an immediate result.

With the evolution of how the distribution of electronic data through numerous platforms, compliance is oftentimes an issue. On the other hand, there are varying degrees of disabilities, making it somewhat difficult for web designers and developers alike to cross implement it into different platforms. Various individuals and organizations around the globe, has come up with a list of standards that web developers and designers alike can understand more clearly when it comes to making a website accessible. The Web Content Accessibility Guidelines is currently on version 2.0, updated to help various individuals in the field of web development and design to implement certain accessibility points that can help disabled users of the Internet in accessing useful information through websites. An information accessibility design is only useful if it's accessible to use should be to any user, anywhere, anytime, hence marketing strategies of user-friendly information accessibility is more important

MARKETING STRATEGIES OF USER FRIENDLY INFORMATION ACCESSIBILITY

Now-a-days most of the world populations are accessing the Internet for information from multi-functional mobile devices, making mobile marketing a must. Business executives rely on mobile devices to access information just as much, if not more, than consumers. The fact of the matter is, the world is more likely to have a multi-functional mobile device in their hand instead of a computer and catering to trends and demand results in larger profits and brand stability.

Mobile-friendly version of mobile brand's website a mobile-friendly customer review section is ideal to make these available in chronological order from newest to oldest. Allow visibility of positive, negative and neutral reviews as all aspects of a company matter to consumers when it comes to making buying decisions. Access to reviews on a mobile device is an indirect way to market the brand. Make reviews of the multi-functional mobile brand available on multiple channels including on mobile applications and mobile-accessible websites is the need of the hour. E - mail marketing is still relevant. With 99% of mobile brands using email marketing for promotions, adaptations to traditional practices is prevailed. Consumers should have mobile-friendly versions of the same content that is displayed on any user-friendly information accessibility gadgets brand's website with clickable links. Those links should redirect quickly to access brand websites to convert advertisements to sales.

Brands consistently change their landing pages to reflect a new product or service launch. These can be made more appealing with the use of photos and video clips that are also mobile-friendly. The landing pages should be identical for both mobile web users and traditional web users. Many brands and small businesses include calls-to-action in mobile-friendly web content. On a computer, these are not clickable. The difference is, on a mobile device, the ability to click a phone number and make an immediate call or click an email to contact the brand immediately. What this shows consumers is a brand's ability to adapt and evolve with technology and society's demands. It also creates a more pleasant and interactive total mobile user consumer experience. Digital platforms are increasingly getting associated with marketing schemes and everyday life. Marketing of any commodity can mean working with market to actualize potential exchange for the purpose of satisfying human needs and wants of that commodity. Mobile a strong user-friendly information accessibility device had now become the lifeline of teenagers in any society.

TEENAGERS

A teenager, or teen, is a person who falls within the ages of 13 to 19 years old. The word "teenager" is another word for an adolescent. When a teenager turns 20, they are no longer a teenager: they are no longer in that developmental stage. The way the word is used varies. Most societies traditionally had a formal ceremony to mark the change from childhood to adulthood. These ceremonies were often quite elaborate. During puberty, rapid mental and physical development occurs. Adolescence is the name for this transition period from childhood to adulthood.

The teenage years can be difficult for parents and kids alike. The firestorm of hormonal changes, new academic and social challenges, emotional volatility and shifting family dynamics can feel overwhelming. Young people going through the process of adolescence need what they have always needed from their

parents. The difference for teenagers is that while children need their parents to be in the lead, pulling them along, directing their steps and making the important decisions, teenagers need to be side by side. Teenagers need helpful attention rather than protective attention. Always teens can struggle with anxiety, depression, or other forms of distress that are developmentally appropriate but will not necessarily endure. Parents can help by learning how to identify worrying signs and taking a balanced approach to dealing with increasingly independent young people. In the modern world teenagers are forced to have information accessibility than to their needs and deeds.

TEENAGERS AND INFORMATION ACCESSIBILITY

Teenagers today seem overloaded by things to do and information to absorb. It's not unusual for a young person to come home late from school because of an after-school activity, turn on the TV and computer and be messaging friends while watching a programme with one eye, texting on the mobile with the other, somehow managing to play a computer game as well while eating a hasty meal. All before dashing out to another club or meeting friends where they'll text friends who aren't there at the same time as listening to music, chatting and maybe watching one screen or other and playing computer games.

Watching programmes on TV can be an excellent way of acquiring information. It is also a form of social networking in that teenagers by watching the same programme not only have something to talk about with friends, but reinforce the bonds they have with each other by doing so. Using the internet and mobile phones keeps teenagers connected, not only to their friends but to a broader range of people which widens their horizons. So on the surface of it, stimulation doesn't seem to be a problem. Except, as with anything, too much of the same can get you in a rut. Some young people become stuck in repetitive actions. Rather than learning new things from their access, they're simply repeating the same thing over and over. And if internet access and TV is available in bedrooms, what actually happens is that although the teenager may be connecting with people outside the home, they are not doing so with their family in the home.

Recognizing the value of what they are doing on technology, whether computer or mobile phone, raises their self-esteem. Teenagers are often unaware of their skill in this area, and it's important that you give them positive feedback. However, parents need to be the ones to make some rules and boundaries about sensible use. Normally teenagers may moan and groan, huff and puff but they need you to set some guidelines about physical activity and to lead the way in making regular exercise something you all do, together. Education for the teens makes them stratify and categories the information accessibility skills to a meaningful and positive, useful fruit bearing life skills to themselves, their family and to the society as such.

EDUCATION

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Education frequently takes place under the guidance of educators and also learners may also educate themselves. Education can take place in formal or informal settings and any experience that has

a formative effect on the way one thinks, feels, or acts may be considered educational. The methodology of teaching is called pedagogy. Formal education is commonly divided formally into such stages as preschool or kindergarten, primary school, secondary school and then college, university, or apprenticeship.

Educators attempt to integrate the findings of developmental psychology and behavioral science into successful curricula, but every generation grapples with questions such as how much to tailor information to individual students and, increasingly, how to integrate technology into classrooms. Some relevant factors for students, parents, and teachers to consider in evaluating these questions may include students' age, culture, individual strengths and weaknesses, and personal background, as well as any learning disabilities they may have. Despite advancements over the decades, formal educational institutions still attract their share of critics, especially when they are pressured into "teaching to the test," instead of making sure that students genuinely learn and retain their new knowledge. Schooling is a formal system that is criticized a lot from its beginning for retaining and performing regular test and periodical examination.

SCHOOLING

A school is an educational institution designed to provide learning spaces and learning environments for the teaching of students under the direction of teachers. Most countries have systems of formal education, which is commonly compulsory. In these systems, students progress through a series of schools. The names for these schools vary by country but generally include primary school for young children and secondary school for teenagers who have completed primary education. An institution where higher education is taught is commonly called a university college or university, but these higher education institutions are usually not compulsory. Due to various reasons, especially teenagers have the tendency to deschool.

DESCHOOLING

Deschooling is mainly accredited to Ivan Illich (1973), who felt that the traditional schooling children received needed to be reconstructed. He believed that schools contained a "hidden curriculum" that caused learning to align with grades and accreditation rather than important skills. Illich believed that the modern school is grounded on a foundation that is focused on growing schools as an industrialized system. Rather than focusing on the needs of the children, it is more heavily focused on the aggrandizement of the school system. Illich communicated that the school system has formed a toxic industry that specializes in what families should be capable of forming themselves, namely education. According to Illich, schools align success on paper with academic excellence. He presumed that schools, grades, and diplomas gave false assumptions that the students have become knowledgeable in a certain educational concept.

John Holt (1923-1985: American author and educator) was an educator who also believed in deschooling. His thoughts were closely aligned with Illich because neither was convinced that school was the place that taught students everything they needed to know. Instead, they communicated that school

was not the sole avenue for learning because students learn consistently through other facets, such as exposure to the natural world. As a result, Illich and Holt saw schools as being insufficient because of their focus on strictly doing "skill drill" instead of other methods of learning. Additionally, theorist of deschooling saw education as maintaining the social order. Therefore, they wanted to "denounce the monopoly that traditional education institutions held on education and learning." Learning is effective and become efficient only through proper information accessibility. Merits and demerits of information accessibility in and user-friendly manner enhance the tendency to deschooling than schooling.

MERITS OF USER-FRIENDLY INFORMATION ACCESSIBILITY

User friendly information accessibility in the information age means creating an online environment in which all users are able to easily navigate, interact with and understands the web world. Having user friendly information accessibility that features intuitive, consistent navigation, properly labeled links and images and user-friendly design will result in users spending more time and consuming content rapidly. Many of Google's search priorities favor universal design and a great user experience. Universal design evolved from accessible design. Universal design goes further by recognizing that there is a wide spectrum of human abilities. Universal design benefits all ages and abilities. It recognizes the diversity and different requirements of users. Breadcrumbs are especially useful for those pages hidden deep within the website. Google uses different elements to understand the subject and relevance of a web page. In many cases it is the same elements as for technical web accessibility.

Managing information means taking care of it so that it works for everyone and is useful for the tasks one performs. Managing information using a database allows us to become strategic users of the data we have. A database system is referred to as self-describing because it not only contains the database itself, but also metadata which defines and describes the data and relationships between tables in the database. This separation of data and information about the data makes a database system totally different from the traditional file-based system in which the data definition is part of the application programs. Current database systems are designed for multiple users. That is, they allow many users to access the same database at the same time. The design of modern multiuser database systems is a great improvement from those in the past which restricted usage to one person at a time. In the database approach, ideally, each data item is stored in only one place in the database. In some cases, data redundancy still exists to improve system performance, but such redundancy is controlled by application programming and kept to minimum by introducing as little redundancy as possible when designing the database. Another advantage of a database management system is how it allows for data independence. In other words, the system data descriptions or data describing metadata are separated from the application programs. This is possible because changes to the data structure are handled by the database management system and are not embedded in the program itself.

MS-Access gives data managers a fully functional, relational database management system within minutes. Like many other Microsoft applications, Access contains Wizards that walk through each step of the way. The user interface is intuitive; accelerating data information retrieval. Access works well

with many of the developing software programs based in Windows. Access is a go-to choice for users who plan to develop software using .NET; linking to Access database. Its graphical user interface also offers easy functionality and set up. There's no need to panic since there's a wide range of options in the market, so a person only have to browse through them and pick one those that match your requirements and specifications.

DEMERITS OF USER-FRIENDLY INFORMATION ACCESSIBILITY

User friendly information accessibility especially Microsoft Access is useful for individual departments or small-to-medium business sectors. Any sector whose usage goes beyond 2 GB will hit a wall and discover limitations. All the information from a database is saved into one file. This limits options and how a person chooses utilize data; slowing down reports, queries, and forms. Its performance becomes slow as the user scales data size. Multimedia data can use up MS Access limited space quickly. It's difficult to publish files a part from static files.

User friendly information accessibility gadgets especially – "Computers" have put millions of people out of work. Book stores are closing all across the country because it is so much more convenient to buy books online and so much easier to find the books you want. But in many cases, it is possible to read books on the monitor or to print them. Computers have created jobs but not as many as they have displaced. They are only in their infancy, too. More and more shopping is being done online. Even the supermarkets are being affected. It looks as though the cities are going to be transformed in coming years, and many small towns are already being wiped out of existence. Another disadvantage of personal computers is that they are addictive. Everywhere people staring into their laptops, and one may wonder, what they are thinking and what they find so hypnotic.

Many people have access to the source code of open source software, but not all of them have good intentions. While a lot of people utilize their access to spot defects and make improvements to the program, others use this privilege to exploit the product's vulnerabilities and create bugs that can infect hardware, steal identities or just annoy other users. These rarely happen with commercially produced software since the companies who make them have stringent quality control processes and ensure that the program is almost perfect when released to the market. Those who favor commercially produced programs say that this software gives them peace of mind. After all, since they know exactly who designed, created and distributed the product, they have a clear idea of who they can hold liable if the program doesn't function properly or causes damage to their hardware. This isn't exactly the case for open source software. Since it's developed by numerous people, users exactly don't have a specific person or company they can point a finger to. User friendly information accessibility leads to deschooling tendency among teenagers due to the availability of information at the fingertips at the time when the teenagers need it; reducing and avoiding to the maximum the presence of educators in reality of their life as such.

CONCLUSION

Right to Information (RTI) is act of the Parliament of India to provide for setting out the practical regime of the right to information for citizens and replaces the erstwhile Freedom of information Act, 2002. Under the provisions of the Act, any citizen of India may request information from a "public authority" - a body of Government which is required to reply expeditiously or within thirty days. The Act also requires every public authority to computerize their records for wide dissemination and to proactively certain categories of information so that the citizens need minimum recourse to request for information formally. This law was passed by Indian Parliament on 15 June 2005 and came fully into force on 12 October 2005. Every day, over 4800 RTI applications are filed. In the first 10 years of the commencement of the act over 17,500,000 applications have been filed (Ben, 2014).s

As Bill Gates says: "When you revolutionize education, you're taking the very mechanism of how people be smarter and do new things, and you're priming the pump for so many incredible things" (Brainy Quote, n.d.). Technology had grown so far that all the advancements and life itself of human beings had been revolving around it neglecting its demerits and disadvantages. Deschooling is the watch word among teenagers related with technology friendly educational scenario. Technology had made the sophistication to skip the regular schooling and to keep up pace with the knowledge acquisition or information accessibility from traditional and conventional educational structure. Above all the best way to make user friendly information accessibility is through education in school than only through technological gadgets, because the teachers know what is coming better in any field than almost anybody and anything.

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Chapter 8
Extent of Information Literacy in the Higher Education Scenario: A Comparative Study

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ABSTRACT

Higher education system has witnessed tremendous changes this decade at a global level due to the invasion of information technology in every aspect. The information centers and information services are no exceptions. The concept of self-learning and acquisition of life-long learning skills are necessary to be information-literate and information-empowered. Day-to-day need of information, competency, and familiarity is using ICT-based information sources, enhancing usage of library resources. Thus, directly or indirectly, information literacy skills or competencies influence the use of library resources. This chapter makes a comparative analysis on information literacy skills possessed by research scholars and their information literacy skills based on the demographic variables. The study revealed a moderate level of information literacy skills among the research scholars, and demographic variables and ICT awareness influences their information literacy skills.

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INTRODUCTION

Higher education system has witnessed tremendous changes in the present decade at global level due to the invasion of information technology in every aspect. The information centres and information services are no exception. The concept of self-learning and acquisition of life-long learning skills are necessary to be information-literate and information-empowered one. Awareness of users towards the format of information sources, retrieval techniques, familiarity of internet access, knowledge of search engines, ability to frame search strategies and ability to handle different electronic gadgets determine the information literacy skills of an individual. The present chapter intends to compare the information literacy skills of users in higher education especially among the research scholars.

LIBRARIES IN HIGHER EDUCATION SYSTEM

The role of library in higher education system is very important since library and information centres are considered as a prime requirement in higher education system. The entire academic and research process are centred on libraries. Really, it is a hub centre, in which the remaining activities namely teaching, learning and research are carried out. Due to the impact of information and communication technologies (ICT), the perception, techniques and approaches in teaching-learning are in dynamics. To keep pace with changes, information centres of higher education system should be well equipped with sufficient information sources in electronic form along with the traditional forms of documents.

Advancement in digital technologies in library and information centres forced the users to be competent enough to access the digital resources otherwise they are deprived in information. Scholarly search of information leads to innovation in ideas and concepts, which leads to creativity and academic productivity. The modern concept of open access to information and open educational resources shows the necessity of information literacy. The concept of information literacy is a wider term which includes several competencies or skills like computer literacy, digital literacy, media literacy and so on.

INFORMATION LITERACY

The concept of Information literacy (IL) has been formally articulated in the United States in early 1990s. It was due to a result of the tremendous progress in information technology (IT) and its dramatic impact on information accessibility.

Information literacy is the ability of the individual to recognise when information is required and have the ability to locate, evaluate and use the needed information effectively. American Library Association (ALA) Presidential Committee on Information Literacy defines it as, "to be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information". More comprehensive definition on information literacy is proposed by ACRL framework for Information Literacy for Higher Education 2015, stated that "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." This definition has clearly pointed out the reflective discovery of information, the skill on evaluating the information, and the ethical issues in information generation or knowledge productivity. Ethical issues in using information with proper acknowledgement are also a typical information literacy skill, which is more important in studying information literacy.

Shapiro and Hughes (1996) defined seven aspects of information literacy as:

In its narrowest sense information literacy includes the practical skills involved in effective use of information technology and information resources, either print or electronic.

- Information literacy is a new liberal art which extends beyond technical skills and is conceived as the critical reflection on the nature of information itself, its technical infrastructure and its social, cultural and even philosophical context and impact.
- The information literacy includes:
  - **Tool Literacy:** The ability to use print and electronic resources including software.
  - **Resource Literacy:** The ability to understand the form, format, location and access methods of information resources.
  - **Social-Structural Literacy:** Knowledge of how information is socially situated and produced. It includes understanding the scholarly publishing process.
  - **Research Literacy:** The ability to understand and use information technology tools to carry our research including discipline-related software.
  - **Publishing Literacy:** The ability to produce a text or multimedia report of the results of research.

Thus, we conclude with the definition proposed by Eisenberg et al (2004), "Information literacy is a set of skills and knowledge that not only allows us to find, evaluate, and use the information we need, but also perhaps more important, allows us to filter out information we don't need. Information skills are the necessary tools that help us successfully navigate the present and future landscape of information".

REVIEW OF LITERATURE

Studies were conducted on information literacy, and its relationship with usage of library resources of different user groups. A very few relevant studies are given as follows:

Ali and Richardson (2018) investigated the level of information literacy skills competency among university library professionals in Karachi, Pakistan using online questionnaire. Data were collected from 77 academic librarians working in 25 universities in Karachi. The study discloses that the librarians who were surveyed had good IL skills in information searching and locating information service. However, the average of all survey response was 54.17 per cent.

Chanchinmawia and Verma (2018) have conducted a study to make an assessment of Information Literacy skills among the research scholars of Mizoram University. A structured questionnaire was used for the collection of data from 232 research scholars, of which 175 respondents' questionnaire. Their

study revealed that research scholar had adequate skills in handling information for their basics needs. Majority of the scholars were aware with the basic background information of library that enabled to access information through print and electronic forms, but improvements are required in handling information especially in evaluation of electronic sources. This study proposed that the inclusion of an information literacy program in the course curriculum and more awareness is required among students that will make the students more information literate.

Saravanan (2018) analysed information literacy skills of the members of the faculty of Engineering and Arts & Science Colleges in Tamil Nadu and the relationship between information literacy and growth of scientific literature. The survey revealed that majority of the members of the faculty has average level information literacy. Academic productivity and information literacy are related and directly relates with growth of information literature in respective field. Members of the faculty differ significantly on information literacy based on age, type of institution and familiarity of computers and do not differ significantly based on gender, locality, experience, discipline and familiarity of computers.

Mishra and Upadhyay (2015) studied the information literacy among the research scholars and the post graduate students of Jamia Millia Islamia University. Survey method was adopted using questionnaire. The study revealed that majority of the users are aware of various types of information sources, and the library orientation programmes offered by the library enabled the users in searching and referring the needed books and information with ease, most of the users are aware of copy right and copy right infringement. The study also revealed that effectiveness of information literacy instruction has to be integrated into course curriculum.

Omeluzor; Banidele; Onuoha and Alarape (2013) investigated information literacy skills of postgraduate students of Babcock University. The study was conducted among the population of 253 post graduate students using complete enumeration technique and structured questionnaire is used for collection of data. The study revealed that most of the respondents had their IL skills through seminar, user education (library instruction), orientation, one-on-one discussion and tutorial. The study also revealed that majority (90%) of the respondents could identify information in their study area; 55.6%, 50% and 50% of the respondents respectively agreed that orientation, tutorial and seminar did not significantly help them to select and use wide range of sources in their discipline from the library. The study further revealed that information literacy skill programme (briefing by librarian) organized by PG school was not well attended where 209 (86%) of the respondents were absent. The study concluded that postgraduate students should be mandated to attend information literacy skill programmes organized by library such as briefing by librarian, computer-aided instruction, online courses, and workshops to enhance students' research ability in the emerging information age.

NEED AND SIGNIFICANCE OF THE STUDY

The present age is information age, and the pedagogic implications of this age are that people should learn new skills to use information stored on computers. The information that are available in library and information centres, community resources, special interest organizations, media and Internet comes to individuals in unfiltered formats, posing questions about its authenticity, validity and reliability. More-

over, information available through multimedia poses new challenges for individuals in understanding the landscape of information and to acquire knowledge of how to gather, evaluate and use information in today's world. Information literacy therefore, is increasingly important in the contemporary environment of rapid technological change and proliferating information resources. It enables learners to master content and extend their investigations, become more self-directed and assume greater control over their own learning. So the LIS professionals working in the environment have to face challenges for providing the right information to the right user at the right time.

Extent of information literacy skills among the academic community of different categories of users influences the use and non-use of library and other information sources and services. Day-to-day need of information, competency and familiarity is using ICT based information sources have enhanced the usage of library resources. Thus, directly or indirectly, information literacy skills or competencies influence the use of library resources. In this context, information literacy competencies of different user group in higher education system provide a new insight to the concerned. The major stack holders in the higher education system are faculty members of universities, faculty of Arts, Science and Engineering Colleges. Similar to faculty, research scholars are also frequent information users in higher education scenario. Even though, the present study is based on the opinion of sample respondents of research scholars from the three southern districts of Tamilnadu, its findings are applicable to the universe since similar situations are prevailed in other higher educational institutions at various level.

STATEMENT OF THE PROBLEM

The present study is intended to determine the information literacy of users in the higher education system namely research scholars and compare their information literacy based on demographic variables. Hence the problem for the present study is entitled as "**Extent of Information Literacy in the Higher Education Scenario: a Comparative Study**".

OBJECTIVES OF THE STUDY

Objectives framed for the study are

1. To determine the information literacy skills of research scholars in the higher education system.
2. To determine the level of information literacy of research scholars.
3. To identify the association between information literacy of research scholars and ICT awareness, frequency of using internet and time spent for access internet.
4. To compare information literacy skills of research scholars based on discipline and other demographic variables.

HYPOTHESES OF THE STUDY

The hypotheses of the study are

1. Research scholars have more information literacy skills.
2. There is no significant association between information literacy and frequency of using internet, time spent for access internet, and ICT awareness of research scholars.
3. There is no significant difference in information literacy among the research scholars based on demographic variables namely sex, age, type of institution, nature of research, and discipline.

LIMITATIONS OF THE STUDY

Limitations of the study are:

1. Stack holders in higher education system are faculty, research scholars of pre-research programme, research programme, post-research programme and PG scholars, the present study is based on the responses collected from the research scholars only.
2. The geographical area of the present study is confined only to three southern districts of Tamil Nadu. These three districts representing the universe.

METHODOLOGY

The present study is intended to measure the extent of information literacy of research scholars in relation to ICT awareness, and computer literacy. The geographical area of the present study is spread over the jurisdictional area of Manonmaniam Sundaranar University, spread over the southern districts of Tamil Nadu namely Tirunelveli, Thoothukudi and Kanyakumari and hence investigators selected survey method. The conceptual framework of the study is that ICT awareness and information literacy positively influence the usage of e-resources among the research scholars. The standardized tool is used to assess the information literacy of the research scholars along with demographic profile and computer literacy of the respondents. The tool consists of 12 statements covering various aspects of information literacy on a five-point scale ranging from 'do not know at all' to 'excellent'. The statements for assessing information literacy skills are adopted from big six information literacy skills of Eisenberg; Lowe and Spitzer (2004). The questionnaire is administered among 800 research scholars under different strata based stratified random sampling techniques. Out of 800 respondents, only 626 questionnaires are complete in every aspect and hence selected for analysis and the overall response rate of the questionnaire is 78.3 per cent. The collected data are analysed using Software Package for Social Sciences (SPSS) version 22.0 and interpreted accordingly, both descriptive and inferential statistics like 't test', 'F test' and Chi-square test are used for analysis.

Table 1. Information literacy of research scholars

S.No	Statistic – Information Literacy	Value
1	N	626
2	Mean	39.37
3	Standard Deviation	10.76
4	Minimum	12
5	Maximum	60
6	Percentile 33.33	36
7	Percentile 66.66	44

Source: Computed Value

ANALYSIS AND INTERPRETATION OF DATA

Information Literacy of Research Scholars

Information literacy scores of the research scholars are measured using information literacy tool. It consists of 12 statements covering the salient aspects of information literacy. Each of these statements are rated on a five-point scale of 'do not know at all', 'poor', 'average', 'good' and 'excellent'. The respondents are asked to rate themselves against each of these 12 statements. Based on the responses of the respondents, various statistics are calculated from the information literacy of respondents and the details are summarized in Table 1.

Table 1 reveals that the mean information literacy score of the respondents is 39.37 and standard deviation (SD) 10.76. The minimum and maximum value of the information literacy score are 12 and 60 respectively. Similarly, the 33.33 percentile and 66.66 percentiles are 36 and 44 respectively. The mean score shows that moderate level information literacy skills exist among the research scholars. More awareness and training are to be provided to them to use effectively the varied information sources.

Level of Information Literacy

Further, the research scholars are to be divided into three groups namely low, moderate and high in information literacy skills based on their information literacy scores. Those respondents whose information literacy scores fall below 34 are rated as low category in information literacy (mean score – 0.5 SD), the scores between 34 and 44 as moderate (between mean – 0.5SD & mean + 0.5 SD) and score above 44 as high in information literacy. Distribution of respondents based on level of information literacy is presented in Table 2.

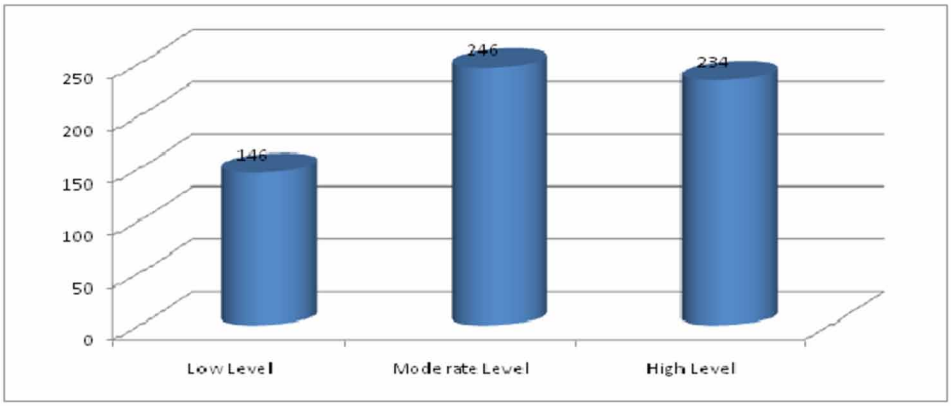
Table 2 indicates that 23.3 per cent (146 out of 626) of respondents have information literacy at low level, whereas, 37.4 per cent (234 out of 626) have high level of information literacy and 39.3 per cent (246 out of 626) have moderate level of information literacy. The same is presented in the bar diagram as in figure -1.

Table 2. Level of information literacy

Sl.No	Level of Information Literacy	Frequency	Percent
1	Low Level	146	23.3
2	Moderate Level	246	39.3
3	High Level	234	37.4
Total		100	100

Source: Computed Value

Figure - 1: Level of Information Literacy of Research Scholars



It is interpreted that the majority of the research scholars have moderate information literacy skills or high information literacy skills. This shows that e-resources are being effectively used by the research scholars.

Association Between Frequency Of Using Internet And Information Literacy

Frequency of using internet by the users depends on their information literacy skills. Hence, the association, if any, between frequency of using internet and information literacy of the research scholars is studied using Chi-square analysis. The details of Chi-square analysis are summarized in Table 3

Testing of Hypothesis

Hypothesis: There is no significant association between frequency of using internet and information literacy of the research scholars.

Table 3 discloses that the calculated value of Chi-square is 37.31 at eight degrees of freedom, which is not significant at any level ($\chi^2 = 37.31; p < 0.05$). Therefore, the null hypothesis is rejected at 0.05 level.

Hence, it is interpreted that significant association exists between frequency of using internet and information literacy of the research scholars. Information literacy of the research scholars influences the frequency of using among the research scholars.

Association Between Time Spent for Internet Access and Information Literacy

Similarly, the association between time spent for accessing internet and information literacy of the research scholars is determined using Chi-square analysis. The details of analysis are given in Table 4.

Testing of Hypothesis

Hypothesis: There is no significant association between time spent for accessing internet and information literacy among the research scholars.

Table 3. Association between frequency of using internet and information literacy

S.No	Frequency of using Internet	Level of Information Literacy			Total	Chi-square Value
		Low	Moderate	High		
1	Daily	83	107	140	330	37.31* df=8 *p=0.00*
2	Two to three times	33	75	64	172	
3	Weekly once	7	27	23	57	
4	Monthly	16	19	2	37	
5	Rarely	7	18	5	30	
Total		146	246	234	626	

Source: Computed Value * indicates the value is significant at 0.05 level

Table 4. Association between time spent for internet access and information literacy

S.No	Time Spent for Internet Access	Level of Information Literacy			Total	Chi-square value
		Low	Moderate	High		
1	Less than 1 Hour	52	63	66	181	18.5* df=6 *p=0.005*
2	Between 1-2 Hours	39	57	40	136	
3	Between 2-4 Hours	31	59	48	138	
4	More than 4 Hours	24	67	80	171	
Total		146	246	234	626	

Source: Computed Value * indicates the value is significant at 0.05 level

Table 4 informs that the calculated value of Chi-square between the variables time spent for access to internet and information literacy is 18.5 with six degrees of freedom with p value 0.005, which is significant at 0.05 level. Therefore, the hypothesis is rejected at 0.05 level.

Hence, it is interpreted that significant association exists between times spent for accessing internet and information literacy of the research scholars.

Association Between ICT Awareness and Information Literacy

The concept of information literacy and related information competency skills are dynamic in nature. The ICT awareness and familiarity with ICT applications positively hinders the information accessing behaviour of user community. The level of ICT awareness influences the level of information literacy among the research scholars. Therefore, the association between ICT awareness and information is determined using Chi-square analysis. The details of Chi-square analysis are summarized in Table 5.

Testing of Hypothesis

Hypothesis: There is no significant association between ICT awareness and Information Literacy of the research scholars.

Table 5 shows that the calculated value of Chi-square is 54.57 at 4 degree of freedom with *p* value 0.00, which is significant at 0.05 level. Therefore, the null hypothesis is rejected at 0.05 level.

Hence, it is interpreted that ICT awareness and familiarity of research scholars with ICT products and applications positively influences their information literacy level and therefore there is significant association exists between ICT awareness and information literacy of the research scholars.

Comparison of Information Literacy based on Type of Institution

The respondents for the study consist of research scholars from recognized research centers of the affiliated colleges as well as departments of the University. Facilities and services for the research scholars would vary from college to college as well as department to department in the university. The information literacy of the respondents is compared based on type of institution they belong to. The details of analysis are given in Table 6.

Table 5. Association between ICT awareness and Information literacy

S.No	ICT Awareness Level	Level of Information Literacy			Total	Chi-square value
		Low	Moderate	High		
1	Low	67	88	41	196	54.57* df=4 *p=0.000*
2	Moderate	55	72	78	205	
3	High	24	86	115	225	
Total		146	246	234	626	

Source: Computed Value * indicates the value is significant at 0.05 level

Table 6. Comparison of information literacy of research scholars based on type of institution

S.No	Type of Institution	N	Mean	Std. Dev.	t value	Remarks
1	College	324	39.33	11.09	-0.104 $p = 0.917$	Not Significant
2	University - Departments	302	39.42	10.43		
Total		626	39.37	10.76		

Source: Computed Value

Testing of Hypothesis

Hypothesis: There is no significant difference in information literacy of research scholars based on type of institution.

Table 6 discloses that the calculated value of t is – 0.104, which is not significant at any level (*p=0.917*). Thus, the null hypothesis is accepted. Mean information literacy scores of the research scholars from affiliated colleges are more than their counterparts in the university departments but the difference is not significant. Hence, it is interpreted that research scholars do not differ significantly based on type of institution.

Comparison of Information Literacy based on Gender

Information literacy scores of the respondents are further compared based on gender using t test of analysis for independent sub-groups. The details of analysis are given in Table 7.

Testing of Hypothesis

Hypothesis: There is no significant difference in information literacy of research scholars based on gender.

It is clear from the Table 7 that the calculated value of t is 2.15 with *p* value 0.031, which is significant at 0.05 level. Therefore, the null hypothesis is rejected at 0.05 level.

Hence, it is interpreted that research scholars differ significantly on information literacy based on gender. The gender of research scholars influences their information literacy level. Research scholars of male category have more information literacy score than female category.

Table 7. Comparison of information literacy of research scholars based on gender

S.No	Gender	N	Mean	Std. Dev.	t value	Remarks
1	Male	294	40.35	11.19	2.15* p=0.031	Significant at 0.05 level
2	Female	332	38.5	10.31		
Total		626	39.37	10.76		

Source: Computed Value * indicates the value is significant at 0.05 level

Table 9. Comparison of information literacy of research scholars based on qualification

S.No	Qualification	N	Mean	Std. Dev.	t value	Remarks
1	M.Phil	451	39.72	10.55	1.29 p=0.198	Not Significant
2	PG	175	39.48	11.28		
Total		626	39.37	10.76		

Source: Computed Value

Comparison of Information Literacy of Research Scholars Based on Locality

Based on the locality, respondents of the study are classified into two groups, namely rural and urban area. Significant difference in information literacy level, if any, exists among the respondents is analyzed and details are given in Table 8.

Testing of Hypothesis

Hypothesis: There is no significant difference in information literacy of research scholars based on locality.

Table 8 shows the mean and standard deviation of respondents belongs to rural and urban category and the calculated value of t is – 1.16 with *p* value 0.244, which is not significant at any level. Therefore the null hypothesis is accepted.

Hence, it is interpreted that research scholars do not differ significantly on information literacy based on locality has no influence on information literacy of the research scholars.

Comparison of Information Literacy Based on Qualification

Research works leading to doctoral degree may be carried out either after the completion of M.Phil or after the post-graduation (PG). Research experience gained in M.Phil helps the scholars to acquaint more skills in information literacy too. Comparison of information literacy based on their educational background is given in Table 9.

Testing of Hypothesis

Hypothesis: There is no significant difference in information literacy of research scholars based on qualifications.

Table 9 discloses that the calculated value of t is 1.29 with $p>0.05$, which is not significant at any level. This indicates that research scholars do not differ significantly on information literacy based on educational background of the research scholars and hence, the corresponding null hypothesis is accepted.

Comparison of Information Literacy based on Nature of Research

Now-a-days, universities permit the scholars to undertake research either on full time or part time basis. The difference in information literacy among the research scholars based on nature of research namely full time and part time is analysed using students t test. The details of analysis are summarized in Table 10.

Table 10. Comparison of information literacy of research scholars based on nature of research

S.No	Nature of Research	N	Mean	Std. Dev.	t value	Remarks
1	Part Time	275	39.69	10.52	0.651 p=0.515	Not Significant
2	Full Time	351	39.12	10.96		
Total		626	39.37	10.76		

Source: Computed Value

Testing of Hypothesis

Hypothesis: There is no significant difference in information literacy of research scholars based on nature of research.

Table 10 shows the mean and standard deviation of information literacy scores of scholars of both part time and full time category. The table also shows that the calculated value of t is 0.651 with $p>0.05$, which is not significant at any level. Therefore the null hypothesis is accepted. Hence, it is interpreted that research scholars do not differ significantly in information literacy-based nature of research.

Comparison of Information Literacy based on Age

Respondents of the study are classified into different age groups based on their age. The age-wise comparison of information literacy score of the respondents is carried out using one-way analysis of variance. The details of F statistic are given in Table 11.

Testing of Hypothesis

Hypothesis: There is no significant difference in information literacy of research scholars based on age.

Table 11 indicates that the calculated value of F is 2.78 at (2, 622) degrees of freedom with p value 0.040, which is significant at 0.05 level. Thus, the null hypothesis is rejected at 0.05 level. Respondents of age group below 30 have high literacy when compared to other age groups.

Table 11. Comparison of information literacy based on age

S.No	Age	N	Mean	S. D	Source of Variation	df	Mean Square	F Value
1	Below 30	354	38.32	9.45	Between Groups	3 622	320.41 114.96	2.78* p =0.040
2	31-41	188	41.01	10.33				
3	41-50	45	40.53	11.03	Within Groups			
4	Above 50	39	39.67	11.03				
Total		626	39.37	10.76				

Source: Computed Value * indicates the value is significant at 0.05 level

Hence, it is interpreted that age influences the information literacy of the respondents. Research scholars differ significantly in information literacy based on age.

Comparison of Information Literacy based on Discipline

Respondents of the study are classified into three groups based on the discipline namely Arts, Humanities and Science. The information literacy score of the respondents are compared using ANOVA to determine the significant difference, if any, among them. The details of ANOVA are given in Table 12.

Testing of Hypothesis

Hypothesis: There is no significant difference in information literacy of research scholars based on discipline.

Table 12 discloses that mean information literacy scores of Arts, Humanities and Science disciplines are respectively 38.29, 38.71 an 40.99 and standard deviation are respectively 11.53, 10.8 and 9.55. Moreover, the calculated value of F is 4.23 with *p* value 0.015, which is significant at 0.05 level. Therefore, the null hypothesis is rejected at 0.05 level. Mean and standard deviation shows that research scholars of science discipline have more information literacy than other disciplines.

Hence, it is interpreted that research scholars differ significantly in information literacy based on discipline.

The comparative analysis on information literacy revealed that research scholars do not differ significantly on information literacy based on type of institution, locality, educational background and nature of research but differ significantly in information literacy based on gender, age and discipline.

FINDINGS OF THE STUDY

Findings on information literacy skills of research scholars are summarized as follows:

1. The majority of the research scholars have moderate information literacy skills or high information literacy skills.

Table 12. Comparison of information literacy based on discipline

s.no	discipline	n	mean	s. d	source of variation	df	mean square	f value
1	Arts	268	38.29	11.53	Between Groups	2	485.77	4.23*
2	Humanities	127	38.71	10.8	Within Groups	623	114.76	*p =0.015*
3	Science	231	40.99	9.55				
Total		626	39.37	10.76				

Source: Computed Value * indicates the value is significant at 0.05 level

2. Significant association exists between frequency of using internet and information literacy of the research scholars ($\chi^2 = 37.31; p < 0.05$).
3. Significant association exists between times spent on accessing internet and information literacy of the research scholars ($\chi^2 = 18.5; p < 0.05$).
4. Research scholars do not differ significantly on information literacy based on type of institution (t = -0.104; p>0.05).
5. Mean information literacy scores of the research scholars from affiliated colleges are more than their counterparts in the university departments.
6. Research scholars differ significantly on information literacy based on gender. Male scholars have more information literacy score than female scholars.
7. Research scholars do not differ significantly on information literacy based on locality, educational qualifications, and nature of research.
8. Research scholars differ significantly in information literacy based on age
9. (F = 2.78; p<0.05). Research scholars of the age group below 30 have high literacy when compared to other age groups.
10. Research scholars differ significantly in information literacy based on discipline (F = 2.78; p<0.05). Scholars of science discipline have more information literacy than other disciplines.

CONCLUSION

Information literacy is the ability of the individual to recognise when information is required and have the ability to locate, evaluate and use the needed information effectively. The present study reveals that majority of the research scholars have moderate information literacy skills or high information literacy skills, significant association exists between information literacy of the research scholars and frequency of using internet and time spent for access internet. The study also revealed that significant difference exists among the research scholars on information literacy skills based on gender, age and discipline. Thus, systematic information literacy skills are to be imparted to the research scholars through library professionals for optimum utilisation of library resources. The findings of the study are applicable to all regions of similar situations.

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Chapter 9
User Perception Towards ICT Services and Facilities in Maulana Azad Library, Aligarh Muslim University

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ABSTRACT

This chapter examines users' opinion regarding various aspects of ICT-based services and facilities provided by the Maulana Azad Library, Aligarh Muslim University, India. The authors used a quantitative study based on the survey method along with the questionnaire as a tool for data collection. Statistical Package for Social Sciences (SPSS) was used for analysis and interpretation of 278 selected questionnaires. Findings of the study reveal a majority of respondents are satisfied with ICT-based services and facilities offered by the library. However, most of the respondents have reported that it is essential to improve the quality of ICT facilities like the speed of Internet connection, scanner facility, and photocopy facility. They also cited a need to increase the number of printing machines. The findings also show that users have a positive attitude towards ICT tools which are used by the library such as various Social Networking Sites (SNSs), e-mail, blogs, etc. for spreading quick information.

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INTRODUCTION

Since the phase of the development, libraries and information centres are playing a crucial role in the growth and development of society. The fundamental objective of a library is to fulfil the information needs of the members of society irrespective of caste, creed, colour, gender and geographical boundaries (IFLA, 2010). The academic libraries, particularly university libraries, play an important role in meeting the information needs of the users, such as students, research scholars, faculty members and other members of the academic community (Namaganda and Sekikome, 2013). It also supports learning, teaching, research activities and sharing their preserved information to the researchers to achieve the goals of the parent institutions.

Technological advancement in ICT led to enhancement in accessing, storing and disseminating the information. The earlier library was considered a storehouse of knowledge. But these days ICT reshaped the functioning and services of the library. Not only this, it also brought drastic changes in organisation and management of library and information system. Today in most of the academic libraries, the information seeking behaviour of users changed from traditional to modern. For example: from catalogue card to OPAC, print collection to digital collection, etc. At present, many libraries provide 24/7 services in a digitized manner, support Web 2.0, facilitates access to using search engines, portals, gateways and web tools (Cholin, 2005; Mohsenzadeh and Isfandyari-Moghaddam, 2009).

In India, ICT has a greater impact on library and information services. The academic libraries in India are adopting this technology and some are at various stages of development in the application and implementation of ICT in their respective activities (Husain and Nazim, 2015). Libraries in India, with the help of ICT tools it becomes more upgraded and provides computerised services to users. Through remote access, the services of the library are not confined to geographical boundaries. A user can access the information globally. Therefore, ICT plays a crucial role in the growth and development of libraries and is the best technology in fulfilling or satisfying the needs of users (Peyala, 2011). At present, many academic libraries in India have already started using modern technologies such as a computer, Internet, e-mail, Web 2.0 tools, Social Networking Sites, to interact with users and to share information within the university campus and outside. A number of scholars have identified Blog, Micro-blogs, RSS (Really Simple Syndication), Wikis, IM (Instant Massaging), Social Networking Sites, Podcasts, and Vodcasts, etc. were the most popular and prominent Web 2.0 tools which are accepted worldwide for academic libraries for knowledge sharing purposes (Hanson and Cervone, 2007; Arif and Mahmood, 2010; Tripathi and Kumar, 2010; Mahmood and Richardson, 2011). Notably, these sophisticated technologies bring several up-to-date information to a user's fingertip at anytime, anywhere by using various electronic devices having internet connectivity. However, the present study has attempted to examine the user's perception regarding various aspects of ICT based services and facilities offered by the Maulana Azad Library, Aligarh Muslim University.

ALIGARH MUSLIM UNIVERSITY

Aligarh Muslim University has a pivotal role in the making of Indian history as we know it today. Sir Syed Ahmad Khan, who was a great social reformer and felt the need for modern education founded the Madarsatul Uloom in 1875 in a small city named Aligarh, Uttar Pradesh in India. The establishment of

this institution which later became as Mohammedan Anglo-Oriental (MAO) College. The institution is considered as one the most important in the educational and social history of modern India. The MAO College turned into Aligarh Muslim University (AMU) by an act of Indian Legislative Council in 1920 and get the status of Central University. AMU among Indian Universities occupies a great position and its contribution to nation building is in no way inferior to the best universities in India. It offers more than 300 courses with various educational fields, along with 12 faculties comprising 98 teaching departments, 3 academies, 15 centers and institutes. With more than 30,000 students, about 1342 teachers and 5610 non-teaching staff on its rolls (Annual Report, 2017-2018). It is now well-known premier Central University and having international repute which draws students from all the corners of the nation as well as international.

MAULANA AZAD LIBRARY

The Maulana Azad Library (MAL) is the central library of the Aligarh Muslim University. Its foundation was laid in 1877 by Lord Lytton who was to the Viceroy of India and named after him as Lytton Library. After the Independence, the library was renamed as Maulana Azad Library in the name of first education minister of Independent India Maulana Abul Kalam Azad. MAL is the central hub for information in the Aligarh Muslim University, which is rich in term of document collection about 1800000 volumes of books, 60000 current and bound journals. The Library has sound e-resources collection which provides links to subscription quality based and peer-reviewed journals, ETDs, Repositories, etc. Not only this, but the library also possesses about 16000 rare and priceless manuscripts and paintings. Maulana Azad Library is fully automated with LIBSYS Software which connects almost 5000 computers and departmental seminar libraries (Sister Libraries) within the university and its centers (MAL, 2019). It is also a contributor in National Digital Library of India and Shodhganga, INFLIBNET. On account of these services, it has been declared best University library of India by NAAC in 2015.

REVIEW OF RELATED LITERATURE

An enormous number of studies have been conducted by many scholars throughout the world concerning the implementation and utilization of IT applications in the information centres and academic libraries. Though it is not possible to review all the studies, therefore a few numbers of literature have been reviewed in the present study.

A Study by Ahmad and Fatima (2009) examined the research scholar's perception regarding ICT products and services offered by Maulana Azad Library, AMU. The study explored that researchers faced a number of problems while using ICT-based products and services such as lack of technical knowledge about computer and Internet, a limited number of computers, lack of proper assistance from the library staff, etc. Authors have also suggested that the library should organize orientation programmes/workshops/training for the researchers on the use of ICT-based services so that they can utilize these modern technologies to the maximum level. Notably, this study is limited to only the research scholars

of the Faculty of Social Science. Ali, Khan and Iqbal (2016) examined the level of awareness and use of ICT-based library services offered by the Maulana Azad Library, AMU. The study revealed that majority of the research scholars has regularly used online journal lab and digital resource centre for research purposes. According to the study, perception of the users regarding ICT-based library services provided by MAL is good. The scope of the study is limited to research scholars only. In addition, this study has not covered ICT facilities like printing facility, photocopy and scanning facility, and the quality of Internet connection offered by the M.A. Library. The present study will cover all the areas thoroughly.

Saikia and Gohain (2013) examined the user's satisfaction level towards the library resources and services provided by the Tezpur University Central Library. The study revealed that a majority of respondents are highly satisfied with the ICT-based library services and facilities such as circulation section, online book reservation, OPAC /Web OPAC service, e-resource retrieval facility, content page alert service on current journals, and online renewal facility. However, many respondents suggested that 'university library should build digital library to support research activities of the research scholars'. Dar, Jeelani and Mir (2017) conducted a study on the "use of ICT in IIT and IIM libraries of India". Researchers stated that ICT has deeply embedded in the management of information in these libraries. The finding shows that the use of IT applications in the said libraries is increasing steadily and significantly. Libraries of both the institution provided IT-based services among their users. The present study discusses various ICT facilities which are provided by the libraries.

Firdaus and Haridasan (2015) highlighted that web-based resources fulfil the information desire of the engineering students of Zakir Hussain College of Engineering and Technology, AMU. Most of the students reported that web resources are easy to access, more comprehensible and it played a significant role in raising the quality of their academic work. Haneefa (2007) revealed that a large number of users were not satisfied with the ICT-based services and facilities provided by the selected special libraries in Kerala. The author has also suggested that these libraries should organize various orientation programmes for users to aware them towards Several ICT-based services. Besides, it also suggested that libraries have to improve their services and facilities which are offered.

A study of Han and Liu (2009) investigated the use of Web 2.0 applications in the top university libraries in China. The study revealed that still, academic libraries did not use Web 2.0 applications for library services. The researchers suggested that Web 2.0 applications are imperative tools which are more important to provide instant information to users. A study conducted by Munshi, Mostafa and Alam (2018) on the use of Social Networking Sites (SMSs) among the postgraduate students at the University of Rajshahi, Bangladesh. The result of the study shows that around 90 percent of students are strongly believed that SNS 'is an effective media which helps to make a platform where they can study collaboratively'. Many students also believed that SNSs helps to increase e-reading habits.

NEED AND OBJECTIVES OF THE STUDY

M.A. Library plays a pivotal role in fulfilling the objectives of AMU by satisfying their academic needs i.e. teaching, research, extramural services through various ICT application provided to the user community in terms of qualitative and quantitative services at the best utilization of resources. M.A. Library has

implemented several ICT based applications for functioning and managing the library system, services and facilities. Significantly, Haneefa (2007) stated that academic libraries procure more expensive ICT tools, but they fail in their optimal utilization and this is the main problem of libraries across the world. Therefore, evaluation is necessary to identify the real practices and utilization of the ICT based library services by their users. According to Hernon and McClure (1990), evaluation is "the process of identifying and collecting data about specific services or activities, establishing criteria by which their success can be assessed, and determining both the quality of the service or activity and the degree to which the service or activity accomplishes stated goals and objectives". It helps to know what users actually want and what type of services being offered by the library. In view of these facts, an endeavour has been made to examine the user perceptions towards ICT-based services and facilities offered by the M.A. Library.

Notably, investigators have prepared some major objectives which fulfil the goal of the study. These are:

- To examine the users' perception regarding the ICT-based services and facilities which are provided by the Maulana Azad Library.
- To know the users' opinion about various ICT-based tools and techniques used by the M.A. Library for spreading instant information.
- To know the users' suggestion related to the improvement of ICT-based services and facilities.

METHODOLOGY

For the present study, investigators used a quantitative study based on the survey method. However, as a supplement, the observation method has also been applied along with interviews. The researchers used a questionnaire as a tool for the survey instrument. This questionnaire was designed, based on the points derived from the related literature. Some answers were also taken from face-to-face by Interview method. The questionnaire included closed-ended questions as well as one open-ended question. The questionnaire was divided into three sections. The first section consists of the demographic characteristics of respondents along with the frequency of visiting the library. The second section contained the users' perception about ICT-based library services that included 8 statements, library facilities comprised 4 statements and ICT tools used by the library for sharing quick information consists of 4 statements. The third section was to collect the user suggestions for improvement and development of the existing ICT-based services and facilities.

M.A. Library has six major reading halls namely Research Division (RD), Post Graduate Reading Hall (PG), Under Graduate Reading Hall (UG), Girls Reading Hall, Professional Reading Section and Faculty Reading Hall. Investigators have selected the sample population according to the Stratified Random Sampling technique for the aforementioned reading halls. The total 310 questionnaires were administrated among the students, research scholars and a very few numbers of faculty members in the above reading halls. Among them, 286 questionnaires were returned back. During the scrutiny of all the collected sample, it was observed that only 8 respondents have given back incomplete information and thus these questionnaires were excluded from the final analysis. Therefore, 278 questionnaires were finally selected for analysis and interpretation as shown in Table 1. Later on, Statistical Package for Social Science (SPSS), version 16 was used to analyse final selected 278 questionnaires to determine frequencies, percentages, tabulations, etc.

Table 1. Response rate

Category	Item	No. of respondents	Percentage
Questionnaires Administered	Distributed Questionnaires	310	100
Questionnaires Received	Received Questionnaires from Participants	286	92.2
Questionnaires Selected for Study	Selected Participants	278	97.2
Gender	Male	176	63.3
	Female	102	36.7
Course	Undergraduate Student	94	33.8
	Postgraduate Student	68	24.5
	Research Scholar	89	32
	Faculty Member and Professional	27	9.7
Faculty Wise Response	Faculty of Social Science	114	41.1
	Faculty of Arts	83	29.8
	Faculty of Science	47	16.9
	Others	34	12.2

DATA ANALYSIS AND INTERPRETATIONS

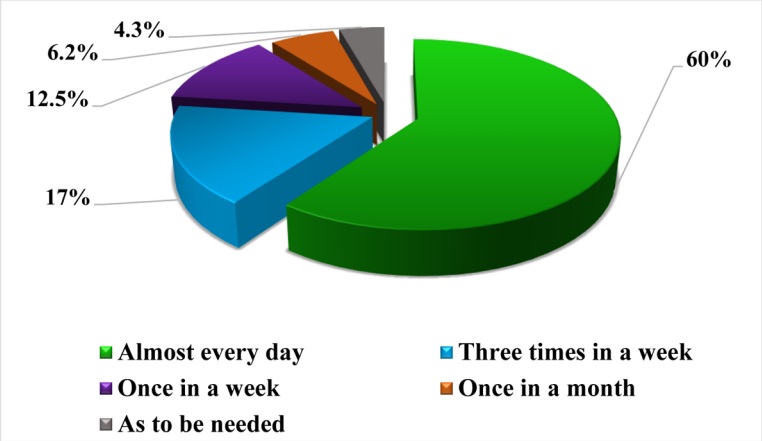
Demographic Characteristics of Library Users

The result of the study shows that out of 278 respondents, 176 (63.3%) were male and 102 (36.7%) respondents were female. The number of male respondents is high because most of the female students prefer to use seminar library instead of central library. Out of 100% participants, 89 (32%) were research scholars, 68 (24.5%) of them were postgraduate students, 94 (33.8%) were undergraduate students and 27 (9.7%) were faculty members and professional students. Table 1 also shows that a majority of respondents (N=114, 41.1%) belonged to the Faculty of Social Science followed by the Faculty of Arts 83 (29.8%) and 47(16.9%) of them from the Faculty of Science.

Frequency of Visiting the Library

After analysing the data (Figure 1), the result shows that majority of respondents (N=167, 60%) visit the library almost every day, where 47 (17%) of them have indicates that they visit the library around three to four times in every week. The study reveals that 35 (12.5%) participants have visits to the library once in a month while a very few of them remarked as to be needed. In addition to these, investigators have observed that the library usages rate of postgraduate students and faculty members are less in comparison to the research scholars and undergraduate students because they prefer to use seminar library which is attached to their departments.

Figure 1. Frequency of visiting the library



USERS' PERCEPTION REGARDING ICT-BASED LIBRARY SERVICES

Library Databases/OPAC/Web OPAC

Around 10 computers are available for users to browse the library databases through the Online Public Access Catalogue (OPAC) in M.A. Library. Users can also search the information through Web OPAC within the campus network. The investigators have tried to find out the users' opinion about library databases/OPAC/Web OPAC service. After analysing the data, it reveals that 154 (55.4%) respondents are extremely satisfied with OPAC service, while 29 (10.4%) of them are satisfied, and 24 (8.6%) participants are moderately satisfied. The result also illustrates that 51 (18.3%) respondents are dissatisfied while 20 (7.1%) of them are very dissatisfied with this service. These respondents have reported that sometimes computers are not working properly due to which they encountered many problems while using OPAC, very crowded all the time, unavailability of staff to assist users, etc.

Book Lending Service

Table 2 shows that a majority of respondents (N=162, 58.3%) are extremely satisfied with ICT-based book lending service provided by the library followed by 58 (20.8%) of them are highly satisfied and 31 (11.2%) respondents are moderately satisfied. A few respondents are dissatisfied with the book lending service. Respondents have reported that most of the time the circulation section is overcrowded.

Online Journal Lab

M.A. Library offers campus-wide open access online resources through a well-equipped online journal lab having 100 nodes based on Windows and Ubuntu operating systems. The library has subscribed a large number of online journals such as American Institute of Physics, American Chemical Society, An-

Table 2. Users' Perception of ICT-based library services

S. No.	ICT based Information Services	Extremely Satisfied	Satisfied	Moderately Satisfied	Dissatisfied	Very Dissatisfied	Total Response in %
1.	Library Databases/OPAC/ Web OPAC	154 (55.4%)	29 (10.4%)	24 (8.6%)	51 (18.3%)	20 (7.1%)	100
2.	Book Lending Service	58 (20.8%)	162 (58.3%)	31 (11.2%)	16 (5.7%)	11 (3.9%)	100
3.	Online Journal Lab	101 (36.3%)	26 (9.3%)	13 (4.6%)	-	-	50.3
4.	Current Awareness Service (CAS)	78 (28%)	132 (47.5%)	46 (16.6%)	22 (7.9%)	-	100
5.	Inter-Library Loan Service (ILL)	53 (19%)	33 (11.8%)	162 (58.4%)	-	-	89.2
6.	Institutional Repository	28 (10%)	113 (40.6%)	9 (3.2%)	-	-	53.9
7.	Computer Applications Division	95 (34.2%)	78 (28%)	68 (24.5%)	24 (8.6%)	13 (4.6%)	100
8.	Reference Desk	63 (22.7%)	152 (54.6%)	24 (8.6%)	39 (14.1%)	-	100

nual Reviews, American Physical Society, Cambridge University Press, Economic & Political Weekly, Emerald University Collection, Institute of Physics, J-STOR, Springer Nature link, Project Muse, Oxford University Press, Taylor and Francis, Royal Society of Chemistry, Wiley Blackwell Publishing, Science Direct e-books, Springer Nature e-Books, e-Books (Subscribed) for Social Science Digital Library, Cambridge University Press, Taylor & Francis, Clinical Learning, DELNET, Library & Information Science Source (LISS) Database, IndianJournals.com, ProQuest, IndiaStat.com, Dissertations and Theses Global Database, ProQuest Historical Newspapers: The Times of India, Web of Science, Scopus, etc. (Maulana Azad Library, 2018).

The result shows that 101 (36.3%) participants are extremely satisfied with the online journal lab while 26 (9.3%) of them are satisfied and 13 (4.6%) respondents are moderately satisfied. Notably, above fifty percent respondents (Undergraduate and Postgraduate students) have not answered in this statement because they do not avail this service.

Current Awareness Service (CAS)

The finding of the study shows that a majority of participants (N=132, 47.5%) are satisfied with current awareness service followed by 78 (28%) of them are extremely satisfied and 46 (16.6%) respondents are moderately satisfied. A few numbers of participants are dissatisfied with the current awareness service provided by the library.

Inter-Library Loan Services (ILL)

From Table 2, it is clear that a large number of respondents (N=162, 58.4%) are moderately satisfied with inter-library-loan service while 53 (19%) of them are extremely satisfied and 33 (11.8%) respondents are satisfied only. Around 30 (10.8%) respondents have remarked that they have no idea about this service.

Institutional Repository

The study demonstrates that 113 (40.6%) respondents are satisfied with the contents of Institutional Repository (IR) which is design and develop by M.A. Library. The result also sketches that around 53.9 percent of participants have no idea about IR and thus they left this statement blank. Some of the research scholars have also reported that the library must organize orientation programme on Institutional Repository which will help them to use it better.

Computer Applications Division

Maulana Azad Library has created the Computer Applications Division for research scholars, faculty members and students, where more than 200 computers with LAN Internet connectivity are available. After evaluating the users' perception, the result shows that 95 (34.2%) respondents are extremely satisfied with Computer Applications Division followed by 78 (28%) of them are satisfied, 68 (24.5%) respondents are moderately satisfied and 24 (8.6%) of them are dissatisfied.

Reference Desk

The finding reveals that 152 (54.6%) participants are satisfied with the reference desk, while 63 (22.7%) of them extremely satisfied. Around 39 (14.1%) respondents are not satisfied with this service. Participants have also reported that they do not get the proper service because there is no permanent reference desk staff is available.

USERS' OPINION ABOUT ICT FACILITIES

Internet Connectivity

Aligarh Muslim University provides campus-wide Wi-Fi Internet connectivity for all the students, research scholars and faculty members. As shown in Table 3, a majority of respondents (N=138, 49.6%) have stated that the Internet connectivity (Wi-Fi) is good, while 82 (29.5%) of them indicated average and 36 (13%) respondents have remarked that very good. The findings also indicate that 22 (7.9%) respondents remarked it poor.

Table 3. Users' opinion regarding ICT facilities

S. No.	ICT Facilities	Very Good	Good	Average	Poor	Very Poor	Total Response in %
1.	Availability of Internet connection (Wi-Fi)	36 (13%)	138 (49.6%)	82 (29.5%)	22 (7.9%)	-	100
2.	Photocopy Facility	113 (40.6%)	98 (35.2%)	37 (13.4%)	18 (6.4%)	12 (4.3%)	100
3.	Printing Facility	151 (54.3%)	72 (25.9%)	32 (11.5%)	14 (5.0%)	9 (3.2%)	100
4.	Scanning Facility	46 (16.6%)	54 (19.4%)	92 (33%)	60 (21.5%)	26 (9.3%)	100

Photocopy Facility

The library has provided a photocopy facility with a nominal charge. The study reveals that a majority of (N=113, 40.6%) respondents have stated that the photocopy facility is very good followed by 98 (35.2%) of them remarked good, 37 (13.4%) respondents have indicated as average and 18 (6.4%) of them rated poor. Only a few numbers of respondents have rated it as very poor. It is also observed that many users are not satisfied with the quality of photocopy within the library.

Printing Facility

M.A. Library has also offer printing facility for users with a nominal charge. The study demonstrates that majority of respondents (N=151, 54.3%) have rated that the printing facility is very good while 72 (25.9%) of them have indicated good, 32 (11.5%) participants have stated average and 14 (5.0%) of them stated poor. A very few numbers of respondents have remarked it very poor. During the survey, many respondents have reported that only one printing machine is available for users which is not working properly most of the time.

Scanning Facility

The study also reveals that 92 (33%) respondents have rated that the scanning facility is average while 54 (19.4%) of them have stated good and 46 (16.6%) respondents have indicated very good. Notably, 60 (21.5%) respondents have stated poor and 26 (9.3%) of them remarked very poor. However, it can be concluded that most of the respondents are satisfied with ICT facilities provided by the M.A. Library but apparently, there is a need for improvement in some areas.

USERS' PERCEPTION ABOUT ICT TOOLS AND TECHNIQUES

Social Networking Sites (SNSs)

There are various types of ICT applications are available which are popularly known as web 2.0 tools, social media as well as online communication tools. It's a kind of a new trend that these days' librarians are using these innovative online tools and techniques for quick communication among their professional groups and library users. Significantly, Munshi, (2018) demonstrated on his study that M.A. Library uses a number of Social Networking Sites (SNS) like Facebook, YouTube, Twitter, LinkedIn, Google Talk, Delicious, Wikipedia, LibraryThing, Dropbox, LIS forum, etc. for disseminating various up-to-date information to their users. According to 120 (43.2%) respondents, sharing information through SNSs is good while 104 (37.4%) of them indicated average and 38 (13.6%) participates remarked very good. Most of the respondents have also reported that they receive various information through SNSs from the library SNS pages and channels such as the list of the new arrival of books and periodicals, newspaper clipping services, information about national and international conferences, job notifications, user awareness programmes which are organized by the library, etc.

E-mail Service

As shown in Table 4, a majority of respondents (N=112, 40.4%) have rated that information sharing through e-mail is good, while 94 (33.8%) of them stated very good, 44 (15.8%) participants remarked average and 17 (6.1%) of them indicated poor. A very few numbers of respondents have remarked very poor because they did not receive up-to-date information regularly through e-mail from the library.

Plagiarism Detection

Currently, M.A. Library using 'Urkund Plagiarism Software' for checking PhD, MPhil theses and 'Turnitin Plagiarism Software' for research papers of the research scholars and faculty members. After analysing the data, it observed that out of 278 respondents, 105 (37.7%) of them rated that as very good, while

Table 4. Users' Perception OF ICT tools

S. No.	ICT based tools	Very Good	Good	Average	Poor	Very Poor	Total Response in %
1.	Social Networking Sites (SNSs)	38 (13.6%)	120 (43.2%)	104 (37.4%)	16 (5.8%)	-	100
2.	E-mail	94 (33.8%)	112 (40.4%)	44 (15.8%)	17 (6.1%)	11 (3.9%)	100
3.	Plagiarism Detection	105 (37.7%)	21 (7.3%)	-	-	-	45.3
4.	Blog	21 (7.6%)	25 (9%)	85 (30.6%)	96 (34.5%)	51 (18.3%)	100

21 (7.3%) participants stated good. Above 45 percent of respondents have not answered this statement. The study found that only research scholars, faculty members and a few professional students are using this service while Undergraduate and PG students are not using this service.

Blog

A blog is a website which is maintained by an individual or institution for spreading messages to others through the Internet with the various multimedia format, e.g. personal opinion, feelings, images, video clips, articles, etc. (Harinarayana and Raju, 2010). The special features of a blog is that users are allowed to write their comments on posting. However, the finding also highlights a large number of respondents indicated that sharing the current news through a blog is poor. They reported that the library has not updates the blog regularly. Only a few of them have rated good as shown in Table 4.

SUGGESTIONS FOR IMPROVEMENT

The investigators asked an open-ended question to the respondents to gather the valuable suggestions for the improvement of ICT-based services and facilities provided by the M. A. library. After analysing the data, it revealed that many respondents have given their suggestions for the development of ICT-based services and facilities. The suggestions are given below:

- There is an urgent need to appointment information scientists or experts who will assist the users to search the information from library OPAC. Besides these, the library should organize a work-shop or training programme for new students on the use of OPAC/ Web OPAC.
- Above 56 percent of participants have reported that Internet connection (Wi-Fi) offered by the library is very slow. Thus, library authority should take action about this particular problem.
- Currently, only one counter is available for issuing books. Respondents have reported that most of the time the circulation section is overcrowded, therefore it is necessary to appoint more staff in the circulation section.
- Most of the respondents have stated that there should be the provision of online renewal facility so that they can renew the books online from their hostels/homes.
- Around 54 percent of respondents have reported that the seating arrangement in the Computer Applications Division is inadequate. Therefore, library authority should increase the number of seats in the Computer Applications Division.
- Many students have also suggested that the library should provide colour printing facilities.
- Some research scholars suggested that there should be mobile alert service, it would greatly help them in getting their discipline wise relevant information about new arrivals.
- More than 18 percent of respondents have also suggested that the library should provide online tutorials through social media on how to use the information resources/services in the library.

DISCUSSION AND CONCLUSION

The fundamental objective of the present study was to evaluate the ICT-based services and facilities which are provided by the M.A. Library from a users' point of view. The finding of the study shows that M.A. Library has implemented several ICT-based applications for the management of library functions and services such as computerisation of library catalogues, circulation section, acquisition and budget, serial control, access to electronic resources as well as web-based reference services. Although after analysing the data, the study revealed that the majority of respondents are satisfied with ICT-based services. Especially, most of the undergraduate students are not aware of many services. Therefore, it is necessary to organize such kind of orientation programmes for UG students to spread awareness regarding library services, search technique on OPAC/Web OPAC, and rules and regulations. Similar findings also revealed by Ahmad and Fatima (2009) that research scholars cannot properly use ICT-based products and services because they do not have extensive knowledge about search techniques and various ICT tools and thus, the library should organize training programmes related to ICT services and facilities. The results reflect that the ICT-based facilities provided by the library is good. However, most of the respondents have reported that it is essential to improve the quality of ICT facilities like speed of Internet connection, scanning facility, photocopy facility, and also need to increase the printing machines for users. Although Husain and Nazim (2015) have suggested that all the academic libraries in India should modernise their existing library services and facilities and provide quality information services to their users.

The study also demonstrated that users have a positive attitude towards ICT-based tools which are used by the library for spreading quick information. A large number of participants have reported that they received various up-to-date information through library SNS pages and channels such as a list of the new arrival of books and periodicals, newspaper clipping services, information about national and international conferences, job notifications, user awareness programmes which are organized by the library, etc.

The presents study is significant because it evaluates the overall ICT-based services and facilities provided by the Maulana Azad Library. Many users have given their suggestions for the improvement and development of existing ICT-based services and facilities. Hence, the findings of the study shall help the librarian for further necessary development. Authors have also recommended for a similar study in other prominent academic university libraries such as Jawaharlal Nehru University, Jamia Millia Islamia, University of Delhi, University of Madras, etc. so that an assessment regarding on ICT-based services and facilities can be examined to known the real practice.

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Chapter 10
Perception of Prospective Teachers on Academic Integrity

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ABSTRACT

This chapter examines the levels of academic integrity of prospective teachers and determines any significant differences in their mean scores of academic integrity with respect to background variables, gender, locale, academic stream, and type of family. Normative Survey Method is used to study 400 prospective teachers from Kanyakumari district, Tamil Nadu, India. Results reveal the teachers have a moderate level of academic integrity and gender, locale of the school, and type of family influence their academic integrity.

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INTRODUCTION

Academic integrity is the moral code or ethical policy of the academic world. The term academic integrity was coined by Don McCabe who is regarded as the "grandfather of academic integrity". Academic integrity includes ethical values such as anti-plagiarism, maintenance of academic standards by adopting honesty in research and academic publishing. Academic dishonesty can be defined as "students attempt to present others' academic work as their own" (Jensen, Arnett, Feldman, & Cauffman, 2006). It is the set of ethics by which academic world moves on--the standards by which institutions ensure that quality in publications, research, teaching, and other academic efforts in an honest manner. It also provides value to the academic work. Maintaining academic integrity is a highly sought-after phenomenon these days as the importance of original research and the question of academic integrity grew among faculty members these days. Academic integrity is the foundation for original quality academic products or outputs. It is learning or skill or knowledge to express original ideas and cite sources to report results accurately and honestly. It is the search for truth and knowledge by one's own intellectual and personal honesty in his area of involvement – be it in learning, teaching, research or any other services. It creates an academic culture whereby motivating academia to create originality in academic writings.

Academic integrity can also mean refraining from plagiarism or avoidance of cheating. By being to academic integrity it is making sure as to give credit to other persons as theirs rather than claiming that work as one's own. Academic integrity means refraining from cheating or otherwise violating the rules that have been set down for any particular assignment. The International Center for Academic Integrity defines academic integrity as assuring of five fundamental values, such as, (i) honesty, (ii) trust, (iii) fairness, (iv) respect, and (v) responsibility. These five values along with the nerve to act on the above-mentioned fundamental values even in the face of harsh conditions are truly foundational to the academy integrity.

The commitment to and expression of honest and moral behavior in an academic setting can also be reasons as academic integrity. This is most relevant at the higher level of academic learning as it relates to providing credit to other people when using their ideas. In other words it is acknowledging the contributions of other people. Failure to provide such acknowledgement leads to academic dishonesty.

Academic integrity is not only a key element in maintaining the quality of the academic writing but also it reflects the personality of an academician. Hence any type of academic misconduct not only gives bad reputation to the academia but also undermines the credibility of the academic. Academic integrity is a way and means to prove that one is honest and responsible in his academic study. Therefore, it is vital to complete a work without cheating or being dishonest in any academic work. Honesty is the foundation for solid academic work. Hence academicians may take extra care in avoiding cheating, unauthorized collaboration, plagiarism, or any academic dishonesty.

Academic integrity is fundamental to scholarly work. Since it is the case an academician should trust himself and produce all his academic work honestly and with integrity to ensure individuality and uniqueness. Tendencies of academic dishonesty such as copying, cheating and the like are is growing among today's world of academia.

Academic dishonesty is a kind of academic misconduct. It is a tendency to compromise valuable learning experiences. Academically dishonest behavior demoralizes learning and the credibility of one's own knowledge. The consequences for cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty can be very serious, possibly including suspension or expulsion from the concerned Institution. But high standards of academic integrity protect one's personal integrity and reputation and positively and productively contribute to the wellbeing of society.

REVIEW OF RELATED STUDIES

Review of literature in research refers to extensive, exhaustive and systematic survey of publications relevant to the selected field of investigation. The process of literature review begins even before the stage of defining the research topic of problem and continues till the publication of the research report. Hence it is one of the important aspects of any study is the review of literature.

The review of related literature enables the researcher to define the limits of his field. It helps the researcher to acquire up-to-date information about what has been thought and done on the particular area from which he intends to make up a problem for research. It provides ideas, theories, explanations, hypotheses or methods of research valuable in formulating the study. Survey of related literature provides valuable help in the development of knowledge or research project. It helps the investigator to gain insight into various aspects of the problem area that are in formulating a framework for the study by developing the methodology, constructing the tool for data collection and planning the analysis of data.

Survey of related literature implies "locating, reading and evaluating reports of research as well as reports of casual observations and, opinions that are related to the individual's planned research project" (Agarwal, 2008).

Joyce (2007) examined how the reviewed items were selected, how the dates and types of publication are analysed, how key concepts and terms are listed, in what ways perspectives and themes are identified, and the how referenced literature is reviewed by theme by analyzing nearly 80 published items concerned with promoting academic integrity and reducing plagiarism.

Nadelson (2007) carried out a study on academic misconduct by university students, faculty perceptions' and responses and academic misbehavior faculty member's suspect occur in their classrooms, methods they use to prevent such misconduct, and the factors that influence instructor's decisions to act on suspected inappropriate behavior. Data were collected using survey from faculty members at a public university; a seven-point likert scale questionnaire is used. Information was collected about 300 full-time graduate and undergraduate faculty members. For relationship between variables correlation analysis is performed and t-test analysis is performed for mean comparison. Faculty members indicate that they use a variety of measures to improve students' behavior. However some teachers did not act on suspected academic dishonesty due in part to their anxiety about the process.

Eastman; Iyer and Reisenwitz (2008) measured the reason of unethical behavior. Data were collected from 421 students by using convenience sampling from state universities in the southern region. Five-point likert scale questionnaire was used as survey tool. There was significant evidence links between those students who feel they had stronger reasons for committing unethical academic behaviors. Reporting that they are more involve in academic dishonesty in the area of cheating, seeking outside help, plagiarism and electronic cheating than those students with weaker reasons for unethical behaviors through a series of t-test.

The study conducted by Ledesma (2008) was to examine the determinants of alternative forms of academic misconduct among undergraduate students in a Korean university. The study identified that presence of a native English-speaking foreign instructor in class, English-taught classes, and class levels are significant predictors of in-class cheating and such types of academic misconduct as seeking outside help and plagiarism. GPA, class size, cheating tolerance, and study-abroad experience are significant in some types of illicit academic behavior.

Munir, Ahmad and Shahzadi (2011) conducted a study on academic dishonesty of university students with the objective to classify the cases into three groups of free-riders (never, sometimes, always) on the basis of different factors of academic dishonesty by using discriminant analysis. Two Hundred samples were selected for the study from the population of 6749 students of University of Gujarat. The results show that the most important academic dishonesties are Sabotage, Electronic Cheating and Outside Help.

Texas Tech University's in connection with Arbor Day Celebration (2012), with the Texas Tech University Ethics Center administered a written assessment of students' understanding of academic integrity. To keep students from answering in a way they think might be expected, the survey was anonymous. Completed surveys were analyzed by the Texas Tech University Ethics Center. The result showed that the students have good comprehension of academic integrity and plagiarism' and 'collusion' are the areas that students wanted to learn more.

David (2015) conducted a study to find the relation among personal values, self-esteem and mastery in academic cheating. It was found that self-esteem and mastery feeling is negative associated with cheating. Small, negative correlations were obtained between cheating and values placed on honesty and academic achievement. Students with a more optimistic view on human nature cheat less, but there was no relation between the cynic ones and cheating.

Moris (2018) through her commentary paper studies the grave issue of contract cheating in higher education. The paper also examined significant concerns about students' use of academic writing services, along with sector and national calls for action that would lead to making writing illegal. This paper also focuses on how universities and colleges can react to such type of alarming situations .The paper also recommends that the universities and institutions may also propose, extend and establish strategies to embed the values, principles and practices associated to academic integrity. As part of this endeavour, the author proposes five areas of consideration for higher education institutions that relate to: determining academic integrity strategy; reviewing institutional policy; understanding students; re-visiting assessment practices; and implications for staff professional development.

NEED AND SIGNIFICANCE

Honesty is the basis of good academic work. By considering honesty as the basis, the authors, the publishers and the like maintains academic integrity. Here measures are undertaken in preserving the academic standards by strictly adhering to honesty, fairness and rigor in research and academic writing and publishing. Moreover, it is significantly important because of the reason that it can always offer peace of mind.

The students have a tendency to acclaim to academic dishonesty for the following reasons

- They are not getting adequate assistance, attention or help from their teachers regarding their work.
- They have a notion that teachers do not bother about cheating.
- They are not confident about themselves.
- They have least understanding or sometimes no understanding of the subject matter.
- They have a feeling that every others are also cheating.
- They are unaware of the consequences of academic misconduct.
- They feel that it is easy to do.
- They do it because of peer pressure.

Acting with integrity can reduce a lot of unnecessary stress in life making one happier, healthier, contended and more productive. Here are given some of the ways to encourage Academic Integrity and prevent academic dishonesty.

- Build a supportive teaching environment.
- Teachers shall take more time in explaining the contents clearly.
- Do not hurriedly teach the portions instead lavishly deal the portions.
- Avoid giving more stress on marks or grades.
- Encourage originality.
- Give awareness on the ethics of academic writing including plagiarism.
- Encourage self-integrity.
- Pronounce the consequences and penalties before every work.
- Openly expose cheaters.
- Mandatory seminars on academic integrity and plagiarism shall be conducted.
- Teach students how to quote references.
- Elucidate the significance of academic integrity.

Academic integrity demonstrates quality and integrity of research publications and writings. Academic integrity shall also enhance the quality of an individual also. The person who firmly sticks on to the maintenance of academic integrity shall be well regarded as a value oriented human being who is always trustworthy, reliable and honest – the most sought after compliment a real man wants to be get appreciated. Hence the researchers identified the importance of the concept of academic integrity and by considering the seriousness of the concept, decided to study more on it and framed their objectives of the study as to study the level of academic integrity of prospective teachers and to find out whether there exists any significant difference in the mean scores of academic integrity of prospective teachers with respect to the background variables such as, Gender, Locale, Academic stream and Type of family. Normative Survey Method has been used for this study. The sample for the study will be of 400 prospective teachers from Colleges of Education, of Kanniyakumari District, Tamil Nadu, India. The researcher expects that the study would be an eye opener for the prospective teachers on to the significance of relying to academic integrity and to produce original academic outputs.

STATEMENT OF THE PROBLEM

The present study is intended to measure the perception of prospective teachers on academic integrity and hence titled as "Perception of Prospective Teachers on Academic Integrity".

OBJECTIVES OF THE STUDY

The objectives framed for the present study are as follows

1. To study the level of academic integrity of prospective teachers.
2. To study whether there exists any significant difference in the mean scores of academic integrity of prospective teachers with respect to the background variables Gender, Locale, Academic stream, Type of family

HYPOTHESES

1. There exists significant difference in the mean scores of academic integrity of male and female prospective teachers.
2. There exists significant difference in the mean scores of academic integrity of rural and urban prospective teachers.
3. There exists significant difference in the mean scores of academic integrity of prospective teachers based on their academic stream.
4. There exists significant difference in the mean scores academic integrity of prospective teachers from nuclear and joint family.

LIMITATIONS OF THE STUDY

The present study is limited to the prospective teachers, i.e. students of teacher education institutions. The researchers have delimited to the geographic location of the study to Kanyakumari District, the southernmost district of Tamil Nadu state, India, since similar situations are prevailed in almost all teacher education institutions of the region.

METHOD

Normative survey method was adopted for the study.

SAMPLE

The sample for the study consisted of 400 prospective teachers from different colleges of education in Kanniyakumari District. Random sampling technique was used to select the sample.

TOOL USED

The tool used for this study was Academic Integrity Questionnaire (constructed and validated by the investigators).

STATISTICAL TECHNIQUES USED

For analysis of data the following statistical techniques were used

1. Percentage Analysis
2. t-test

RESULTS AND DISCUSSION

Level of Academic Integrity of Prospective Teachers

The percentage wise distribution of different levels of Academic Integrity of prospective teachers are given in Table 1.

Table 1. Percentage wise distributions of different levels of academic integrity

Academic Integrity	Count	Percentage
Low	69	17.25
Medium	260	65.00
High	71	17.75
Total	400	100

From Table 1, it is clear that the numbers of samples according to low, medium and high levels of Academic Integrity were 69, 260 and 71 and the corresponding percentages were 17.25, 65.00 and 17.75 respectively. This indicates that most of the prospective teachers have medium level of academic integrity.

Gender Wise Comparison of Academic Integrity of Prospective Teachers

Null Hypothesis

There exists no significant difference in the mean scores of academic integrity of male and female prospective teachers.

Two groups of prospective teachers namely male and female have been subjected for study as per the analysis given in Table 2.

The calculated t value ($t = 3.199$; $p < 0.01$) is significant at 0.01 level. Hence the null hypothesis is rejected. It shows that there exists significant difference between male and female prospective teachers in their academic integrity. That is academic integrity of prospective teachers statistically differ with their gender. The mean value shows that female prospective teachers have more academic integrity when compared to male prospective teachers.

Comparison of Academic Integrity Based on locale

Null Hypothesis

There exists no significant difference in the mean scores of academic integrity of rural and urban prospective teachers.

Two groups of rural and urban prospective teachers have been subjected for study as per the analysis given in Table 3.

The calculated t value (t- 2.432; $p < 0.05$) is significant at 0.05 level. Hence the null hypothesis is rejected. It shows that there exists significant difference between rural and urban prospective teachers

Table 2. Comparison of academic integrity of male and female prospective teachers

Gender	Mean	SD	N	t	P	Remark
Male	82.00	8.61	38	3.199	0.001	Significant at 0.01 level
Female	86.73	9.22	362			

Table 3. Comparison of academic integrity of rural and urban prospective teachers

Locale	Mean	SD	N	t	P	Remark
Rural	85.45	8.53	270	2.432	0.015	Significant at 0.05 level
Urban	88.01	10.44	130			

in their academic integrity. That is academic integrity of prospective teachers statistically differ with their locale. The mean value shows that urban prospective teachers possess more academic integrity perception when compared to rural prospective teachers.

Comparison of Academic Integrity Based on Their Academic Stream

Null Hypothesis

There exists no significant difference in the mean scores of academic integrity of prospective teachers based on their academic stream.

Two groups of prospective teachers belonging to arts and science faculties have been subjected for study as per the analysis given in Table 4.

The calculated t value (t- 0.735; $p > 0.05$) is not significant at any level. Hence the null hypothesis is accepted. It shows that there exists no significant difference between prospective teachers in their different academic stream. Academic stream has no influence in the Academic Integrity of prospective teachers.

Comparison of Academic Integrity based on type of family

Null Hypothesis

There exists no significant difference in the mean scores of academic integrity of prospective teachers from nuclear and joint family.

Two groups of prospective teachers from nuclear and joint family have been subjected for study as per the analysis given in Table 5.

The calculated t value (t- 3.312; $p < 0.01$) is significant at 0.01 level. Hence the null hypothesis is rejected. It shows that there exists significant difference between the prospective teachers from nuclear and joint family in their academic integrity. That is academic integrity of prospective teachers statistically differ with their type of family. The mean value shows that prospective teachers from nuclear family possess more academic integrity perception when compared to prospective teachers from joint family.

Table 4. Comparison of academic integrity based on academic stream

Locale	Mean	SD	N	T	P	Remark
Arts	86.62	9.77	201	0.735	0.463	Not Significant
Science	85.94	8.72	199			

Table 5. Comparison of academic integrity of prospective teachers from nuclear and joint family

Type of family	Mean	SD	N	T	P	Remark
Nuclear	87.26	8.52	299	3.312	0.001	Significant at 0.01 level
Joint	83.38	10.68	101			

FINDINGS OF THE STUDY

1. Majority of prospective teachers have medium level of academic integrity. This is supported by the following result (65% of prospective teachers possess medium level of academic integrity).
2. Gender has influence on academic integrity of prospective teachers. Female prospective teachers possess high academic integrity when compared to their male counterparts. It may be because of the reason that they are more aware of the nuances of academic dishonesty. It is also supposed that females are confident enough to express their ideas in their own original words rather than simply copying from various outsources. Thus, it could be assumed that females are better in maintaining academic integrity.
3. Locale has influence on academic integrity of prospective teachers. Urban prospective teachers possess more academic integrity when compared to rural prospective teachers. It may be because of the reason that urban students get more exposure in the affairs of academic integrity including the ethics of academic integrity. Thus paving the way to advance in maintaining academic integrity competency.
4. Academic Stream has no influence on academic integrity of prospective teachers.
5. Type of family has influence on academic integrity of prospective teachers. Prospective teachers from nuclear family possess more academic integrity when compared to prospective teachers from joint family. It may be because of the reason that most of the parents are educated in the current nuclear family system. They encourage their children to read and write more especially by preserving originality. That may the reason why children from nuclear family have more awareness on academic integrity than the students from joint family.

DISCUSSION ON FINDINGS

Academic integrity determines the quality of academic writings thereby establishes quality integration. The present study concentrated on identifying the perception of student teachers on academic integrity, it is a decisive factor in maintaining academic quality in present era. Moris (2018) through her commentary paper studies also discussed the grave issue of contract cheating in higher education and examined the significant concerns about students' use of academic writing services for ensuring academic eminence. The present study revealed that the majority of student teachers' (65%) perception of academic integrity was medium. Moreover, significant difference was also observed with regard to the background variables gender, locale and type of management. Hence it was interpreted that people are slowly recognizing the significance of having academic integrity for quality academic output especially in scholarly communication and work. The same view is presented in the findings of the studies conducted by Munir; Ahmad and Shahzadi (2011); Joyce(2007), and David(2015) on academic integrity and its significance in scholarly output. Therefore after analyzing the findings of the present study with the critical reviews of other related studies, investigators concluded that academic integrity is a major issue of concern and necessary initiatives may be taken by the authorities concerned in promoting academic integrity and reducing plagiarism.

IMPLICATIONS OF THE STUDY

The study revealed that the majority of the prospective teachers in Kanyakumari district possessed moderate level of academic integrity. Prospective teachers should be encouraged to inculcate in them the spirit and necessity of upholding academic integrity. The authors with qualitative articles shall be respected. They are also encouraged to write self-made, plagiarism-free writing and effective guidance shall be extended in academic writing. Hence it is concluded that academic integrity is the necessary ingredient which would increase the opportunities to succeed in academic life. Even though, the present study is limited to Kanniyakumari District of Tamilnadu, and similar situations or academic environment are prevailed in other parts of the region in particular and hence the outcome of the present study is useful and applicable to all prospective teachers.

CONCLUSION

Academic integrity is thus committed to the academic honesty and personal integrity individual beings. Academic integrity is grounded in fundamental values like honesty, respect and fairness. It is the completion of all academic activities as the representative of one's own individual efforts. Hence the teachers and students are anticipated to maintain standards of academic integrity by producing original work in the academic arena.

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Chapter 11
Plagiarism: The Role of Librarian and Teachers in Combating It

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ABSTRACT

Plagiarism is using other's writing without properly crediting the author. The act itself may involve a violation of copyright. It definitely violates academic ethics. In the age of the internet, proliferation of information available online has made it extremely easy to plagiarize. There are various types of plagiarism and academic misconduct, though scholars often disagree as to exactly what constitutes a proper definition of plagiarism. Very often teachers, as well as students, practice it in some form or other due to sheer ignorance. It is the responsibility of the teachers and the librarians to devise strategies to combat plagiarism within the academia by raising awareness within both the teaching and student communities.

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INTRODUCTION

All serious students of literature are aware of the fact that no plays by William Shakespeare are "original" in the modern sense of the term. So much so, that there is a separate branch of Shakespearean criticism called "source studies" entirely devoted to finding and tracing the relationship between the "originals" and the end-products. Not only Shakespeare, but the same is true for the fables and myths of ancient cultures which have been worked and reworked by later poets and authors. The basic argument used in such cases is that the originality of these authors and their creations lies not in their subject matter, but their treatment of it. However, with time, the concept of originality has undergone a massive transformation. In the contemporary world, to "borrow" or to "lift" someone else's ideas would constitute an infringement of copyright and would be categorized as an act of "plagiarism".

Etymologically, the word has derived from Latin "plagiarius", meaning "a kidnapper", in the broadest sense, it implies the unethical appropriation of someone else's intellectual property. It is both a legal and ethical issue as it often involves infringement of copyright, and always involves infringement of intellectual property rights. The concept of plagiarism is inalienable from the act of writing. It is while writing that people reproduce, intentionally or otherwise, the sentences, syntactical structures, and ideas of other people. Thus, in order to understand the motivation that drives plagiarism in academia, it is important to understand the incentives for writing that are prevalent within it.

Within the academic structure, students write due to compulsion for getting grades while academicians have to write either for their promotion or to create an impact in their field of specialisation. There may be several other motives of writings in other fields, for instance, a politician writes to promote his political agenda, and journalists write according to the motivation of his profession; bloggers write as per the specification of their blog and their predilection, while doctors write on diseases and treatments in order to advance the knowledge in their field. Plagiarism may occur in all these cases as well, but the researchers in this instance will restrict the discussion to the menace of plagiarism exclusively within academia.

We live in a civilised society, and this society sets down certain rules and codes of conduct for all its members. Among several such regulations, one that we all unanimously agree on is that cheating and the act of stealing are immoral and unethical acts. For instance, stealing a tangible object like a laptop is a heinous crime and none of us who wishes to be considered as a civilised person will agree to do it. But it is surprising to see that the people in the higher education sector--both learners and instructors—either in possession of degrees on which civilized society sets high value or in pursuit of such degrees, often engage in the unethical practice of plagiarism.

There are several instances in the not-so distant past when many famous personalities including several influential political persons as well as writers and academicians were caught plagiarising and had to lose their positions as a fallout of the act, and it has also led to the rescindment of the research degrees of scholars found guilty of the act.

The present article will focus on the concept of plagiarism, types of plagiarism, tools available to check plagiarism and the role of teachers and librarians to combat the same. On the one hand, the article will be useful to the readers to understand the concept of plagiarism and may help them to save themselves from the tag of a plagiarist and on the other, it may show a way to the teaching and librarian community how they can play a significant and vital role to fight the evil of plagiarism within academia.

ABOUT PLAGIARISM

The University of Oxford in its website provides guidelines to the students regarding plagiarism. According to these guidelines--

Plagiarism is presenting someone else's work or ideas as your own, with or without their consent, by incorporating it into your work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition. Plagiarism may be intentional or reckless, or unintentional.("Plagiarism | University of Oxford," n.d.)

Merriam-Webster's Online Dictionary explains that to plagiarize is—

[T]o steal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source [… or] to commit literary theft: present as new and original an idea or product derived from an existing source.("Plagiarism | Definition of Plagiarism by Merriam-Webster," n.d.)

In our academic culture, plagiarism is considered to be a form of cheating and therefore, unethical. (Hansen, Stith, & Tesdell, 2011)

There are several reasons for plagiarising, sometimes it is a lack of knowledge that makes a person a plagiarist and to tackle this aspect of the problem, one should increase the level of awareness among both teachers and students.

Several cases of intentional plagiarism are also seen and this is one sphere where the teacher can successfully intervene to stem the problem. These cases may be due to--

1. **A Habit of Cheating:** it has been seen that many persons cheat because they are in the habit of cheating. This problem may be handled by creating what is known as "fair tests", that is, strictly following the syllabi prescribed for the test and giving the students enough time to prepare for and complete the test. Periodical use of plagiarism detecting tools in class may also act as a deterrent. Personal mentoring of students who have shown a tendency to plagiarise and teaching them academic ethics may also be of help.
2. **Peer Pressure:** plagiarism also occurs due to peer pressure, as a student who has to write an assignment is forced to copy-paste it from other sources as all their peers may or may not plagiarise, but will submit the assignment. Sensitizing the students to the detrimental effects of peer pressure and emphasizing the fact that every learner is unique and therefore, there may be more than one standard response to a question or a test may help the student overcome this problem.
3. **Lack of Time:** Many people have a natural tendency to procrastinate their assignments till the deadline is almost due, and hence they are left with no choice except copying it from other sources. Teachers may play a positive role in such cases by teaching students time –management techniques as well as by asking them to submit periodical progress reports of their work.
4. **Intellectual Laziness:** There are people, who are beset by the problem of intellectual laziness, and they always try to take benefit from the work of others and hence they plagiarise. In such cases, the value of original thinking needs to be inculcated in the students. Alternative modes of instruction

which may involve role-play, group discussion or group assignments can help recalcitrant students to think on their own and avoid the easy solution to lift the works of others.

5. **Thought of Not Been Caught:** People plagiarise as they think it does not matter whether they write by themselves or they copy it from the other sources ultimately they will not be caught and never be punished for it. Again, periodical use of plagiarism detection software even in the case of routine tests may go a long way to solve this problem.
6. **Confidential Peer Review:** Professor A R D Prasad of DRTC Bangalore in his video lecture offered in the 'SWAYAM' portal, says that the confidential peer review may also be a route to plagiarism(*Promotion of Integrity and Prevention of Plagiarism*, n.d.). As many reviewers imbibe the original idea of the author and delay the reviewing process and in between, he/she produces an article on the same topic. Thus ironically, an academic practice meant to enhance the standard of research output is abused in an unethical manner. However, this particular form of plagiarism may be tackled as the many journals have the policy of noting the date of receiving of the article.

DEFINITIONS OF PLAGIARISM OFFERED BY SCHOLARS

The following paragraphs will try to shed light on some of the definitions of plagiarism offered by various scholars.

Fishman (2009) says Plagiarism occurs when someone--

1. Uses words, ideas, or work products
2. Attributable to another identifiable person or source
3. Without attributing the work to the source from which it was obtained
4. In a situation in which there is a legitimate expectation of original authorship
5. *In order to obtain some benefit, credit, or gain which need not be monetary*.(Fishman, 2009)

Pecorari (2013) in his book *Teaching to avoid plagiarism: how to promote good source use* says textual ownership means 'These thoughts and phrasings are mine, not yours, and if you use them without attributing them to me, you have committed the worst academic sin of all, plagiarism'(Pecorari, 2013).

Hawley (1984) views plagiarism as being a continuum ranging from sloppy para- phrasing to verbatim transcription with no crediting of sources: indeed, 'definitional precision constitutes one of the most salient problems in any discussion of acceptable versus unacceptable documentation' (Hawley, 1984).

"Taking over the ideas, methods, or written words of another, without acknowledgment and with the intention that they be taken as the work of the deceiver" is how the American Association of University Professors define the problem of plagiarism. (September/October, 1989). ("Statement on Plagiarism," 1989)

As with the definition provided by Hawley quoted above, Liddell also points out that plagiarism is a somewhat ambiguous concept, and the exact definition of what plagiarism is remains vague in many areas (Liddell, 2003).

TYPES OF PLAGIARISM AND OTHER TYPES OF ACADEMIC MISCONDUCTS

The types of plagiarism discussed in this paper will revolve around the typology of plagiarism provided by Debora Weber-Wulff (Weber-Wulff, 2014) in her book *False Feathers: A Perspective on Academic Plagiarism.* Weber-Wulff identifies nine types of plagiarism and academic misconduct, a brief account of which follows—

1. **Copy and Paste:** In the age of the internet, this is probably the most common type of plagiarism where a set of simple commands i.e. ctrl+c and ctrl+v, make it possible to plagiarise whole texts. Many plagiarists intentionally or unintentionally engage in this form of plagiarism, the absence of "intention" stem from their lack of awareness of what constitutes plagiarism.
2. **Translations:** Several plagiarists translate the original writing in another language and claim it to be their idea or thought content. The plagiarist who uses the translation tools available on internet can easily be caught because none of the translation tools available in the cyberspace is smart enough to translate the written content in the style of the native speaker of the language, while those doing it manually may sometimes go undetected, it will constitute plagiarism nonetheless.
3. **Disguised Plagiarism:** Several plagiarists change or edit the words used in the original write-up and without acknowledging the original author, claim to be the original author of the paper or the article. This type of plagiarism is called disguised plagiarism.
4. **Shake and Paste Collections:** Some plagiarist takes paragraphs from several authors' original work, cut them, and paste it to their work to form a whole. In this type of writings, it can be seen that the writer, i.e. the plagiarist seems to be unable to keep stylistic uniformity in the paper, as is obvious that the pasted material has been taken from several other authors whose wring style can naturally never be identical, even if the content is similar.
5. **Clause Quilts:** Like shake and paste, this is also a form of eclectic collection of material from different sources, but this time at the level of the sentence and the clause. Minor changes are done here and there, and half-sentences and clauses from different texts are combined to make a new text.
6. **Structural Plagiarism:** Structural Plagiarism is the plagiarism in which the author paraphrases the content and claims it to be own without giving proper credit to the original author of the content.
7. **Pawn Sacrifice:** In this type of plagiarism though writer gives the source citation either in the footnote or in the bibliography, but in writing it is not clear as to which part is written by the author and which part is borrowed from the other source, which is indicated in the footnote.
8. **Self Plagiarism:** Authors who do not cite their own previously published work come into the purview of self-plagiarism. It is known to all that many a time the author transfers the copyright of his writings to the publisher, and while doing this the author loses the ownership of the article and hence when they are not the owners of the text, it is imperative to cite their paper while writing. Conscientious scholars should not rehash their ideas in a different form.
9. **Other Types of Academic Misconducts:** Weber-Wulff mentions several other types of academic misconducts such as--
    a. **Ghostwriting:** In this type of writing, another person writes for the person claiming to be the author on the title page. The ghostwriter's name do not appear anywhere in the text.

b. **Contract Cheating:** Several websites and companies take a contract for writing for others as a standard business practice, this is called contract cheating.
c. **Honorary Authorship:** Many a time a researcher appends the name of his/her research supervisor as co-author of a research paper without the supervisor having played any role in the writing. This type of authorship as of the research supervisor in the above case is called as honorary authorship.

TOOLS TO DETECT PLAGIARISM AND THE ROLES OF LIBRARIANS AND TEACHERS IN USING THEM

Though there are several tools available to detect plagiarism, the best way to fight plagiarism is honesty and awareness regarding plagiarism on the part of the author. Both honesty and awareness will come after the right role played by teachers and librarians in combating plagiarism which is our point of discussion in the coming paragraphs. Tools cannot be the ultimate solution, as we know, prevention is always better than cure.

The Information Technology based tools which can be used to check plagiarism to some level can be accessed from the links given below; some of them are free to some extent, while other are available based on subscription basis.

1. http://www.ithenticate.com/
2. https://app.grammarly.com/
3. https://www.urkund.com/
4. http://plagiarism-detect.com/
5. http://www.plagium.com/
6. http://www.plagscan.com/seesources/
7. http://plagiarisma.net/
8. http://www.scanmyessay.com/
9. http://smallseotools.com/plagiarism-checker/
10. http://plagiarism-detector.com/

However, there are several points of concern about the effectiveness and ultimate penetration of these tools. Among these some are--the lack of human judgement, for example, these tools can detect when verbatim quotations are used from source texts without acknowledgement, but in case of a clever paraphrase or structural plagiarism as defined earlier, these tools are mostly ineffective. Graphical inputs, like tables and illustration or mathematical formulae, if plagiarised, often go undetected by these tools due to their restricted ability to compare and analyse such inputs. Concerns have also been raised about the infringement of the intellectual property rights of the scholar/student whose work is being submitted in the database of such tools. Last but not the least, these tools suffer from being restricted to the resources available on the internet as source materials to check for plagiarism against, if the plagiarism has been done from an obscure text not available online, or a text which has been long out of print and does not exist in a digitised version, it will be almost impossible to detect it with the help of technology.

CASE STUDY

One particular case of plagiarism that took the literary as well as the publishing industry by a storm may be cited as an instance of how lack of awareness and sloppy editing practices may ruin the carrier of aspiring writers. In April 2006, Kaavya Viswanathan, then a sophomore at the University of Harvard, published a novel titled *How Opal Mehta Got Kissed, Got Wild, and Got a Life*. Published by Little Brown and Company, Ms. Viswanathan's novel had garnered a tremendous amount of interest even before its actual publication due to the fact that the young author had signed a two-book contract for a whopping sum of money("How Kaavya lost it - Society & The Arts News - Issue Date: May 15, 2006," n.d.). Reports suggested that her contract amounted to as much as half a million dollars. However, within three weeks of the publication of the novel, allegation of plagiarism started surfacing against the author. The first novelist to have come forward with such accusation was Megan McCafferty. Parallel passages were also found from Salman Rushdie and Sophie Kinsella's works. In an official statement issued by little Brown as well as later interviews given by Ms. Viswanathan, the author insisted that the similarities found between her work and that of others were "completely unconscious and unintentional. ("Top 10 Literary Hoaxes," n.d.)

Nevertheless, the scandal took such a turn that not only was Ms Viswanathan's contract with the publishers cancelled; all copies of Opal Mehta were recalled and withdrawn from the market. Till date, no one has been able to pinpoint to what extent and proportion it was Ms Viswanathan's ignorance; the irresponsibility of her editors, and the role played by her literary agents were responsible for the fiasco. Since book-contracts of this scale are enormous business ventures, writers are always under obligation to not to show there working manuscript to anyone apart from their immediate editors. A catastrophe of this scale could have been avoided had proper care been taken to check the text for plagiarism. Software like Turnitin in were commercially available in the late '90s, but in this particular case, almost no precaution seems to have been taken to check plagiarism. The book is, as already been pointed out, no longer available in the market, but excerpts comparing passages with other novels points to what has been previously designated as "disguised plagiarism". Even more than a decade after the controversy first made the headlines; it remains one of the most infamous cases of literary plagiarism recorded in recent past ("Getting Inside the Mind of a Plagiarist," 2018).

THE ROLE OF THE TEACHER IN COMBATING PLAGIARISM IN GENERAL

As can be seen from the case study offered above, Many people plagiarise without knowing that they are involved in plagiarising, school and college students often copy things blindly without knowing that their writings are plagiarised, and it is a punishable offence, here comes the role of school and college teachers to teach the students that how the students should save themselves from the crime of plagiarising.

Plagiarism is a side issue for most teachers; an unfortunate by-product of the main focus of their efforts, which is teaching and assessing student learning in their professional areas. (Pecorari, 2013).

- The most important habit to be inculcated in students to avoid the tendency to plagiarise would be to encourage their propensity to think and attempt to write independently, especially in case of the humanities subjects where the menace of plagiarism is also proportionally greater. Here, the

teacher should lead by example and instead of repeating the verbatim whatever has been written in a reference book, should come up with their own interpretation of the text/context. Likewise, students should be encouraged to write their answers and assignments as far as possible in their own words.

- Students in school days cheat from their fellow mates; teachers should be strict and point it out to them that copying is also a form of plagiarism.
- Teachers should teach their students that an assignment written by his fellow mate for him is plagiarism.
- Teachers should teach their students, whenever they copy something from somewhere and incorporate it into their project or assignment, it must be properly acknowledged.
- Teachers should be aware of why students plagiarize-- due to laziness, the pressure to get the higher grade, or due to lack of time and guide them to tackle these problems.
- Students must be taught from their early grades regarding citation and the concept of plagiarism.
- Teachers should teach their students about the concept of intellectual property.
- Teachers should try to play as the role of mentor, not the police, as they should try to teach the ways of citation rather than catching the culprit of plagiarism
- The teachers may ask the students and researchers to submit their written works, and scholarly outputs in open access journals, or institutional repositories which should be open access, and as maximum number of things become available in the public domain, lesser will be the urge to plagiarise due to the fear of being caught publically.
- An extremely pertinent point has been raised in this regard by the MIT guidelines ("Resources for Teachers: How to Prevent Plagiarism – MIT Comparative Media Studies/Writing," n.d.) regarding the instructor's role in combating plagiarism. The guideline states that it is the responsibility of the teacher to point out the often unclear, but extremely important difference between "acceptable collaboration and plagiarism, preferably on the syllabus".

THE ROLE OF THE ACADEMIC LIBRARIAN IN COMBATING PLAGIARISM IN GENERAL

The academic librarians have the opportunity to play the role of guide in respect of combating plagiarism to the people in academia, consisting of teachers as well as students.

- While the teachers are busy teaching the specialised subject, the librarian can train the students as well as sometimes the teachers, too, in the art of citation.
- The school librarians can inculcate the habit of citation among the school children during the library period; they may narrate real-life incidents when people were caught plagiarising and were punished.
- As all colleges and universities make environmental science as a compulsory subject, similarly there must be classes allocated for teaching citation styles and academic ethics, the college or University library professionals may take the said classes.

- The University libraries may run short term courses which may be of a week or a month for teaching the proper art of plagiarism-free writing. The course content may be of about plagiarism, types of plagiarism including self-plagiarism, tools available to check plagiarism, hands-on practice on some plagiarism checker tools, the introduction of several style manuals as APA, MLA, Chicago etc. practising style manuals, i.e. in-text citation and referencing by the help of several reference management tools such as Zotero or Mendeley.

THE URGENT NEED FOR COLLABORATION BETWEEN LIBRARIANS AND TEACHERS IN ORDER TO COMBAT PLAGIARISM

Combating plagiarism in academia is the combined task of the teacher and the library professional. Hence, it is important to maintain liaison between these two branches of the academic family. It has been rightly pointed out that rather than detection of plagiarism and mete out the consequent penalty to the practitioner, it is always preferable to have an institutional mechanism in place whereby plagiarism is prevented, rather than detected and the offender is punished. (Burke, 2004). This is precisely where a collaborative effort is required from the LIS and teaching fraternity. A pyramid model or a trickle-down approach may come in handy in such a situation. If the library professionals take it upon themselves to instruct the teachers about plagiarism and the available detection methods and the teachers, in turn, do the same for the students and scholars, the general level of awareness will definitely increase. In the Indian context, where the apex decision-making body for matters of Higher Education, the University Grants Commission has recently introduced the Choice Based Credit System (CBCS) across colleges and universities, credit courses may be offered in research ethics which will not only deter the prospective plagiarist, but also will help in the production original research.

CONCLUSION

Librarian and teachers both work within the academic framework as facilitators of knowledge for the learners. Thus, it is one of their major responsibilities to save their own as well as the student community from falling prey to the menace of plagiarism by raising their awareness of the ethical issues and penalties involved with the act. They can play a leading role to eradicate this problem from academia by devising strategies and collaborating across platforms to address the challenge.

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KEY TERMS AND DEFINITIONS

Academic Librarian: Librarian attached to the academic institutions as school, college, university etc.
Mendeley: Reference management software produced by Elseiver. It is provided freely by the Elseiver.
Plagiarism: The act of using others thought or intellect and claiming to be the owner of it.
Plagiarist: The person who does the plagiarism.
Reference Management Tools: These are the software used by the scholars to make the in text citations and referencing in their writings.
Self Plagiarism: Non citing of owns earlier work.
Zotero: Open source reference management software.

Chapter 12
Ethics for Knowledge Resource Centers in the Era of Information Overload

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ABSTRACT

Every professional body has a moral code for the conduct of its members. For example, physicians follow the oldest Hippocratic Oath for their professional code of ethics. Every member of the profession should adhere to their ethical code. Eventually, in the era of information overload millions of Terabyte information is found in the web. The e-formats of the information pose challenges to its user. The information service providers have a moral responsibility of providing the right information to the right user, in the right form. The knowledge workers have an added social responsibility in the democratic set-up. The ALA, CILIP, and some other professional bodies have their own ethical code. However, many developing nations do not have such code. This chapter discusses what ethics is, and its relevance to information science professionals. In addition, it gives a glimpse of the various ethical codes available and formulates a set of codes for information producers, re-packers, and seekers.

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INTRODUCTION

The root word 'Ethikos' in Greek means 'moral'. Hence Ethics means related to moral, dealing with good or bad. Ethics is a branch of philosophy that is concerned with morality and behaviors that can be considered right or wrong based on different criteria (Bowen, 2009). It is also defined as a guideline for the behavior of individuals within a specific profession or discipline. It represents the moral code, rules of conduct, moral philosophy, sense of right or wrong, duty, conscience, etc. In every professional organization, members of that group subscribe to a code of ethics which they have to adhere to them while performing their professional duties.

ETHICAL CODE VS MORAL CODE

An ethical code is a set of rules dealing with ethical issues that have been agreed upon by a professional body. Different professional organizations may have different ethical codes, but all are used in order to ensure members avoid unprofessional behaviors and thus maintain the credibility of the profession and professional organization. Each profession has its own ethical codes, which function uniquely in order to promote positive impacts from its practitioners on society.

Moral is defined as leading to a principle of right or wrong in behavior. Morals and moral codes are similar to ethics and ethical codes; however they differ in few ways. Most importantly, morals are not professionalized; they are not typically written down or agreed upon by all parties. Morals often lead to disagreement about their validity or applicability, as each individual may have their own personal interpretation regarding a moral value. Ethical codes draw to some extent on the generally accepted moral values of the culture in which the ethical codes are developed; but moral principles are, in themselves, insufficient to govern action (Barnett, 2001).

THEORY OF ETHICS

The theory of ethics for a discipline is the justification for a set of principles that constitutes the ethical framework of that discipline (Appelbaum, 1997, 2008). Applying the ethics of science, the ethical principles of proper scientific practices and general acceptance of methods by a discipline are represented in the Daubert standard (Passalacque and Nicholas, 2018). The issue of avoiding scientific misconduct is represented in the ethical codes of various professional organizations.

Theories of ethics generally include the following principles

- Follow all types of evidentiary requirements
- Do not misrepresent someone's findings or others' qualifications.
- Treat colleagues, invested parties with professional and cultural respect
- Only perform tasks which one is competent to
- Do not harm

- Maintain scientific integrity in a transparent manner
- Act in an ethical manner avoiding conflicts of interest and misconduct
- Maintain confidentiality
- Avoid intellectual, personal, financial and /or emotional biases
- Maintain stewardship by managing the use and access of evidence, research facilities, collections, and data in a fair and transparent manner

Attfield (2012) proposed three fields of inquiry within the field of ethics. They are

- Metaethics
- Normative ethics (establishing standards and guidelines for behavior)
- Applied ethics

NEED FOR PROFESSIONAL ETHICS

Ethics is an important part of all professional careers. Appelbaum (1997) suggests that without ethics one must tolerate all behaviors equally because there is no neutral principle for accepting some principles and condemning others. There can be no good practices and no bad practices. Creating an ethical code for a particular profession should start from within a group of professionals, typically those on the board of, or tasked by the board of, an organization, choosing which values to the organization and society in general, are most important to promote and uphold. Additionally, those in charge of creating a code of ethics must justify why some practices should be considered ethical and others unethical. They must also rationalize the theory behind their ethical code.

The need for professional ethics is crucial in order to maintain scientific integrity and to avoid professional misconduct. Professional misconduct is a behavior that is contrary to a professional code of conduct. Misconduct can include sexual harassment, plagiarism or misrepresenting one's qualifications. The penalties for misconduct are also typically established in the discipline's professional code of ethics, and can range from warnings, to the loss of organizational membership of certification. Conflicts of interest are violation of practitioner independence and are considered a type of professional misconduct. A classic example of a conflict of interest is tailoring analytical results to support the interest of the agency funding the analyses.

Krimsky (2006) recommends three principles that must exist in the society in order to maintain scientific integrity and avoid conflicts of interest.

1. Develop tools for advancing measurement, validation, information sharing, and proficiency testing and to establish protocols for examinations, methods and practices.
2. Establish a national code of ethics with a mechanism for enforcement
3. Expand efforts for examining method accuracy, reliability and validity; examine intra- and inter-observer error; develop, perform, and maintain performance checking of equipment and laboratory proficiency testing of analysts.

INFORMATION OVERLOAD

Information has become the driving force of most people's lives. During the age of industry, the world was ruled by natural resources and now by information. To survive in the workplace or simply to function in the society, we are obliged to assimilate a huge amount of information. This is true in every aspect of the field; since information is the lifeblood and the scientist are striving to stay up to date in their own fields. In the era of information overload, millions of terabyte of information is found in the web domain. Librarians and informational science professionals work in an information overloaded environment. The e-formats of the information pose challenges to the users. The problem of information overload in society, the feeling of being overwhelmed by large amount of information, is one that has direct relevance for the role of the librarian both now and in the future. The information service providers have a moral responsibility of providing the right information to the right user in the right form. Librarians at present are clearly adept at assisting users in the sources they need. They have to become more adept in the future in developing ways to assist users in narrowing or focusing their information searches to the most essential. Hence the knowledge workers have an added social responsibility in the democratic set-up. Four strategies of coping up with information overload were identified: filtering, avoiding, satisficing and selecting. Some of the attempts that have been made by the library and information professionals to help users to cope with information overload include

- Use the data in the institution's computers to direct students towards improved study outcomes
- Generate personalized book recommendations
- Help identify reliable sources of information among the fake news
- Help solve the problem faced in Open Access environment
- Visualize knowledge space

KNOWLEDGE WORKERS

A librarian is one who seeks to answer a patron's questions by referring to an information source or sources, to find a solution to the patron's problem. It is not used in the narrow sense of a librarian who sits behind an information desk in the middle of a reference collection.

According to Mills, there are three basic qualities for a librarian:

- Ascertaining the precise nature of the information required
- Determining the quantity and type of material needed to provide the information
- Locating the specific information in relevant sources (Mills, 1992)

The librarian belongs to a profession that has an obligation to the intellectual freedom through the provision of free access to information. They have a social obligation to support arts and sciences, taking into account their responsibilities, both public and educational. The core of library philosophy, according to the Canadian Library Association is the principle of free access to information by all people. The association in its intellectual freedom statement reiterates that it is an integral part of library ethics. Further, the libraries have a responsibility of guaranteeing the right to free expression and also making the library facility and services public, irrespective of individuals and groups

Most patrons do not approach the reference librarian with well-defined and well-expressed needs. Typically the librarian must reverse roles with the patron and ask the questions (Mills, 1992). Much of the success depends on the librarian's ability to ascertain the patron's information needs during the initial interview. The librarian must be prepared to listen and must know when to use open questions and when to use closed questions (Mills, 1992). Mills also suggests that sixty five percent of the social meaning in a two-person communication is carried out non-verbally. Study of the nonverbal component includes para-linguistics, which studies non-lexical vocal components of speech such as tone of voice; kinesics, or the study of so-called body language; and proxemics, which is the study of time and space.

The holdings of the library, at present are predominantly in electronic format. Hence the delivery of information services in a library has also undergone a virtual transformation. In order to provide information and also to entertain the general public, the library should function without any censorship. The Librarians should be able to understand the information need of the different groups of people without curtailing their freedom of expression and access to ideas. They should be able to maintain a perfect balance between legal issues and also the freedom of expression and national security. Promoting national security interest should not be a deterrent to promote the freedom of expression. The librarian should be able to appreciate the rights of the patrons to gain unrestricted access to library resources. Librarians are on the cutting edge of academia. They educate and practice both applied and original scholarship. They facilitate access to information and seek better understanding of information in relation to its users. However, the academic librarians have not been provided yet with the necessary status to realize their professional potential.

A person's right to use a library's resources should not be denied or abridged because of their racial background, age, sex, or political and social views. The Librarian's responsibilities depend on benefiting library users to meet their needs. This includes the selection, cataloging and arrangement of books and other documents and information resources in all media and format; the provision of services to answer the queries of users, including giving access to information resources that are not held in the library; and the management and administration of these processes and of the library itself. Librarians spend a great deal of time on continuing their education and improving their supervisory skills. They are the explorers of new technologies, sharing what they learn with their patrons. Librarians are also teachers, not just in the area of their specialization but in the new domain of information literacy. This role also encompasses instruction on the dangers of copyright infringement, intellectual property rights, and academic integrity and plagiarism.

Librarians from public, corporate, and other educational venues share common goals in ensuring that patrons have access to information as well as privacy protections. In some cases, this involves fighting bans on books, websites, or unmonitored web access. National librarians' Associations are needed to take up the cause of librarians. These associations can provide moral support in dealing with legal and ethical issues. The International Federation of Library Association (IFLA) strives towards strengthening the different national library associations, so that they can provide support to the librarians. The Librarians need to equip themselves in promoting and marketing their skills. They should make use of all media from the local press to the social networks. They should also be able to get support from local as well as national leaders in order to promote their agenda.

FUNCTION OF KNOWLEDGE WORKERS

Role of the librarian will historically be one of advocating freedom of thought and freedom of access. Clearly a library is more than a storehouse of knowledge or books, and a librarian is more than a mere keeper of books or knowledge. The word *mere* here is to illustrate that it is often the case that the librarian's role as advocate is undermined, not merely by society but by librarian themselves. The delivery format rather than the reason for delivering in the first place is so embedded in popular culture that it leads to cries that the Internet has replaced the librarian. The professional knowledge of the librarian must be informed with a sense of purpose that overarches the collection. The librarian ought virtually to vanish as an individual person, except in so far as his personality sheds light on the working of the library. He must be the reader's *alter ego,* immersed in his politics, his religion, and his morals. He must have the ability to participate in the reader's enthusiasms and to devote himself wholly and wholeheartedly, to whatever cause the reader has at the time of the enquiry. He must put himself in the reader's shoes (Weckert and Ferguson, 1993).

A librarian who can remove his own politics, religion and morals from the equation will stand an excellent chance of providing the kind of service the reader requires.

1. Librarians must understand themselves and they should serve as agents for the advancement of universal Learning.
2. Support the educational and research requirements of the faculties and students and engage in both education and original research.
3. Administering the entity of the library.
4. As information scientists practice as scholars and educators in a dynamic laboratory.
5. Contribute significantly to learning and scholarship.

Hill (1994) notes that the profession of librarianship is a distinct academic discipline, where they (i) engage in intellectual work, (ii) serve the community, (iii) engage in applied research, (iv) collaborate in scholarship, (v) cooperate in developing disciplinary standards, and (vi) administer the library.

ETHICS FOR KNOWLEDGE WORKERS

Ethical principles are needed for libraries than any other institutions, because their services are human-oriented. Most national ethical principles for librarians are represented as professional ethic codes. Each of them eventually consolidates the ideology, the paradigm of national library services. The comparison of national library ethical codes reveals intellectual freedom as the focal point. With Internet technologies implemented in library services, the principle acquires a new significance and grave problems. Recent information filtering capacities provide a radically new censorship level. This censorship includes anonymous censorship and violation of individual privacy in communication networks. Librarians while following the intellectual freedom principle have a moral responsibility to the patrons, adhering to the value of human life.

An international survey was undertaken by Professor R. Vaagan of Oslo University specialized in library ethics. This project aimed to describe current conditions and identify key issues of library and information ethics in different countries in terms of the information society (Vaagan, 2002). Library profession probably needs ethical principles more than any other profession. Library services as human-targeted institutions have always been subjected to both legal and moral regulation because no society can neglect the library image and its activities content.

Another ethics is that the librarians should attempt to satisfy all patron requests. According to the traditional code of ethics a librarian should try to satisfy a user's request regardless of what it is, even if he has strong moral objections. ALA's 'Statement on professional ethics', which says that librarians and library technicians: must provide the highest level of service through appropriate and usefully organized collections, equitable service policies and skillful, accurate and unbiased responses to all legitimate requests for assistance. ALA's 'Statement on professional ethics' also exhorts librarians to avoid censorship. Librarians and library technicians: should not exercise censorship in the selection or use of material by rejecting on moral, political, racial or religious grounds alone, material which is otherwise relevant to the purpose of the library and meets the standards which are appropriate to the library concerned.

Equity

The view that librarians should supply information without bias reflects a long held and commendable position that they should provide an equal service to all their patrons and avoid differential treatment. Patrons are equal in their role as library users and should be treated as such. Supplying information to some while denying it to others, clearly violates the principle of equity.

Censorship

The second type of reason for ALA's position concerns censorship, which is a form of paternalism. One defense of the ALA stance is that even if some authority has the right to withhold information from library users, the librarian certainly does not. Librarians are responsible for building worthwhile collections by deciding what to include and what to exclude. At the same time that librarians have no right to censor - 'to tell people what they shall not read'. As librarians, they are the guardians - not the owners, but the guardians - of knowledge. The intended sense is that librarians protect information so that others may use it. One can extrapolate that while collection building involves choice and selection of materials, the librarian must use the full resources at his/her disposal to provide the information required by readers.

The 'Code of ethics' says that librarians must provide skillful, accurate, unbiased, and courteous responses to all requests for assistance (ALA, 2008). For example, intellectual freedom is defined as the right of unrestricted access to all information and ideas regardless of the medium of communication used (Stichler, 1992). Librarians have shown commitment to the principles of privacy and promote unrestricted access to all information and ideas. Librarians have to maintain a longstanding tradition of patron service. Professional and ethical responsibilities of a librarian include a broad-spectrum of activities, ranging from critical activity of collecting information, information retrieval to provide right information to the patron. Librarians can provide valuable inputs to research project and collaborate with the project managers meaningfully.

The role of a librarian has undergone changes with the evolution of technology. Many librarians are employed as content developers. These content developers contribute to the collation of information resources and to provide information over the institutional websites. They may also have to setup digital libraries, develop web tutorials and also library related databases. Ethics components are a natural inclusion to the breadth and width of these curricular activities. Librarians should be paying attention not only to developing, partnering, arranging and improving their library-based instructional programming, they should also be improving the user interface to better accommodate the delivery of ethics education (Newins, 1999).

The Values

The literature on ethical issues in librarianship is sparse before the 1970s (Hauptman, 1988). American Library Association (ALA) until the year 1938 had not taken any effort to codify the ethical issues of the librarians. The Library Association (LA), UK had adopted an ethical code only in the year 1983, after hundred years of its functioning. There is a school of thought that suggests the complacency of the profession in this regard. Despite the fact that the majority of library associations around the world have no ethical code (Koehler, 2006) the codes that exist play an important part in holding up standards for professionals to adhere to. They are also important for communicating a set of values to the wider world (McMenemy, et al, 2007).

Professionalism

Within librarianship there is a viewpoint that, an uncertainty about its status as a profession creates a lack of confidence about the importance and value of its role in society. Librarians must encourage all potential users to access information; regardless of creed or color; there is something a library has, that hold value to a user; that librarians ensure the way they organize and store the material is, for the benefit of the user and not their own; and they continue to increase the collections they make available to people.

ETHICAL DILEMMA

Complete and wholesome adherence to the principle of universal access to information is not at all possible. It runs in parallel with improved filtering and blocking information facilities on the Internet. The more we advocate the right of free access to internet resources, the more sophisticated and restricted filters and gateways to information are introduced. These advanced filtering processes offer a different level of censorship. They make it possible of anonymous censorship and also they disclose confidential information of users, and their information using pattern which can be misused for mercenary purposes. Therefore, librarians are legitimate providers of information via the Internet in the public domain. Libraries must respect the principle of intellectual freedom as their institutional mission. Indeed, libraries were established with the aim to preserve and distribute information. Library functions are human oriented, and librarians, like physicians and teachers, are morally responsible to their users. A librarian should adhere to both public morals and human life. Library services are regulated by the library laws, charter and internal rules. Most of them provide a unique framework for each specific situation.

American Library Association (ALA) code of ethics says that: "we protect each library user's right to privacy and confidentiality with respect to information sought, received and resources consulted, borrowed, acquired or transmitted". Librarians have a dilemma – to give a universally free access to new information resource, i.e., the Internet, as is defended by international documents, or to defend readers, making use of filters. Russian public libraries used to install filters for pornography, suppress chatting and use of e-mail. Except for financing shortages, public library attitudes with regard to the Internet cannot be justified. For example, how can a modern librarian refuse a user request for a pornographic book, or a technical journal? Of course, a research library focusing on support of user research is more or less justified in restricting information outside their "profile". Users should be made aware of any such restrictions by the public display of the relevant policy statements".

The rules for use of the Internet established by the A.M. Gorky Primorskaja State Public Library prohibit the following: to visit erotic sites, porno-sites, and sites propagandizing violence; to be in chats, and this despite the fact that the major task of public library is unimpeded universal access to information (Trushina, 2002). The regional Universal Library of Tver city (Russia) prohibits viewing porno-sites, private chats, and all kinds of electronic mail including Hotmail. The stated reason for these restrictions is the universality of the library, though internet is of free of charge. The authority argues that cost of internet in the city is relatively less and patrons can use those facilities (Trushina, 2002). The reason behind using filters, in places of access to Internet in libraries is due to concern about possible traffic congestion. The system administrator of the National Library of Russia follows such arguments, installing filters is common for users and library officials on the proxy-server: "when accessing to porno-resources, traffic can turn out to be so large that it will inevitably impede other officials to carry out their work". Most of libraries consider the prohibition of access to the sites of pornographic character and propagandizing violence as an absolutely evident duty of a library to protect readers from the sphere of Internet resources where it stands as "a dangerous tempter full of vices" (Biblioteka, 2001).

Debates on restricted access to information contribute to a dangerous displacement of emphases, potentially negating the core mission of libraries and information centers. Filtering is least acceptable in public libraries as institutions providing information for the public. Most codes stipulate that the librarian is not responsible for information content provided. However, since the librarian is an individual with specific moral attitudes and values, the latter may come into conflict with corporate morals as embodied in professional codes for their associations.

CODES OF ETHICS AND CONDUCT

The code of ethics and conduct serve as the instrument which convey to the public and the government, the seriousness and responsibilities of the profession. Codes of ethics and conduct are among the most commonly encountered regulation forms to date. When compared to the Hippocratic Oath for medical professional, the ethical codes for librarians are more recent phenomenon. Most such library codes were approved in the late twentieth century.

The code of ethics from America was approved in 1938 and from Canada in 1966. Two other codes were approved in the 1970s and three in the 1980s. Most codes were approved only in the 1990s. So far, four codes of library ethics have been approved since the year 2000. The most recent codes were approved by the Estonia and Italy Library Associations in 2014.

Research on the history of the formation of codes of ethics in different countries of the world, codes of ethics requires a certain extent of professional consolidation and maturity. Each code, however short, is something more than merely standards of professional conduct. In fact, it provides a framework for professional values, a paradigm of national library development in countries. The code describe the aims and goals of library services, principles of relations with patrons and colleagues, library and government authorities, attitudes to cultural heritage and developing information flow, the use of the Internet, and similar things.

The code may therefore:

- Urge members to comply with the rules and regulations of the association;
- Instruct members to comply with the national laws and policies and not to indulge in any activity which would bring the profession into disrepute;
- Urge members to maintain high standards of service, keep abreast of new developments in the field and take responsibility for mention and training new professionals.

Even, after allowing for all the differences in cultural traditions and development trends in different countries, some ethical postulates are present in almost all codes for national library associations. Among the key aspects of library ethics of superior ethical significance were the principle of free access to information and principle of confidentiality of private user's information. National library associations have developed a code of ethics. Many are written and can be found on the IFLA / FAIFE web site. The International Federation of Library Associations and Institutions (IFLA) is the leading international body representing the interests of library and information services and their users. Free Access to Information and Freedom of Expression (FAIFE) is an initiative within IFLA to defend and promote the basic human rights defined in Article 19 of the United Nations Universal Declaration of Human Rights. Formerly thirty four countries published their code of ethics. Now, 62 countries' library associations have developed and approved a national code of ethics for librarians. The countries and the year adopted are tabulated and this information is provided in the Appendix for the benefit of the readers.

A country's code should include the freedom to access information of any kind, and the right of librarians to provide such access. The code should also protect patron privacy, so that no government official can find out what a particular person has been reading or accessing on the Internet.

FAIFE has collected more than sixty codes of ethics for librarians from around the world. These guidelines customarily are adopted by national library or librarians' associations or in some cases implemented by government agencies. Yet, India being the biggest democratic country does not follow any such code, which other countries stated above do.

Most frequently identified principles include confidentiality and privacy, integrity, equal access to information and professional development. Less frequently identified principles include democracy, copyright and intellectual property, and responsibility toward Society. Shachaf, (2005) has formulated the table according to the code of ethics followed in different countries.

The definition for various principles is described as follows in the code of ethics (Table 1)

Table 1. Code of Ethics

Integrity	"…obligations for the maintenance of the highest level of personal integrity…"
Accuracy	"Must provide … accurate and unbiased responses to all legitimate requests for assistance…"
Free and equal access to information	"…explicitly committed to … the freedom of access to information…"
Conflict of interest and personal gain	"Must avoid situations in which personal interests might be served or financial benefits gained at the expense of library users, colleagues or the employing institution."
Intellectual freedom	"…explicitly committed to intellectual freedom …"
High level of service	"Must provide the highest level of service"
Cooperation among libraries	"Librarians should make it their aim to develop and maintain understanding and cooperation among libraries of all kinds."
Collection development	"A Librarian should collect, organize, preserve and provide library materials on the basis of professional knowledge and judgment…"
Censorship	"Should not exercise censorship in the selection, use or access to material by rejecting on moral, political, gender, sexual preference, racial or religious grounds alone material which is otherwise relevant to the purpose of the library and meets the standards which are appropriate to the library concerned."
Confidentiality and privacy	"Must protect each user's right to privacy with respect to information sought or received and materials consulted…"
Competency	"…obligations for … competence in the performance of their duties…"
Copyright and intellectual property	"Must recognize and respect intellectual property rights…"
Responsibilities toward the profession	"The librarian should endeavor to build a strong, closely-knit professional association, in which the strength and activity of the group are enhanced by his/her own diligent and considered participation and promotion."
Responsibilities toward other professions (and organizations)	"Librarians should contribute to the development of local culture through close cooperation with educational, social and cultural groups and organizations in the Locality."
Responsibilities toward colleagues	"Must treat fellow workers and other colleagues with respect, fairness…"
Professional development	"Must maintain and enhance their professional knowledge and skills to ensure excellence in the profession…"
Responsibilities toward society	"Librarians should make due efforts, in association with others, to stimulate the development of the cultural environment in society and the community which they serve, by cooperating with local residents and with members of appropriate groups and organizations…"
Administrative responsibilities	"A Librarian should actively participate in the formulation of policy in the operation and service program of his library."

FIVE LAWS OF LIBRARY SCIENCE

Dr. S.R. Ranganathan proposed and published the five laws of library science as a theory in 1931. These laws are a set of norms precepts and guide to good practice in librarianship. These laws have recently found worldwide acceptance. The laws are

1. Books are for use.
2. Every reader his / her book.
3. Every book its reader.

4. Save the time of the reader.
5. The library is a growing organism. (Ranganathan, 1931).

These five laws are considered fundamental laws of library science and can be applied to any problem in library services and practices. Prior to their enunciation, the subject of Library Science had no philosophical base. These laws have provided a scientific approach to the subject of library science and also transformed the outlook and vision of the entire library fraternity. Even though Ranganathan proposed the Five Laws of Library Science before the advent of the digital age, they are still valid and equally relevant today as a code of ethics for librarians.

American Library Association (ALA) Code of Ethics

The ALA Code of Ethics was adopted by ALA Council in 1997. The code was later amended in 2008. It provides guidance for librarians and information specialists to make ethical decisions. It respects intellectual property rights and advocate balance between the interests of information users and rights holders. Library ethics has become a familiar topic in the UK in recent years. A library profession's code typically includes the need to protect the public (Welsh, 1985), the need to be responsible to the profession and to one's employer (Vosper, 1985), the need to support and guide professionals, and the need to express its service orientation.

Chartered Institute of Library and Information Professionals (CILIP) code

The chief association of UK library and information professional is the Chartered Institute of Library and Information Professionals (CILIP). CILIP is the only chartered body in the world dedicated to uniting, supporting and advocating for information professionals and librarians. CILIP's stated mission is to promote the profession's profile and back up the information community's needs with training, services and information.

The recently adapted new Ethical Framework includes seven Ethical Principles and a Code of Professional Conduct for its members to adhere

- Human rights, equalities and diversity, and the equitable treatment of users and colleagues
- The public benefit and the advancement of the wider good of our profession to society
- Preservation and continuity of access to knowledge
- Intellectual freedom, including freedom from censorship
- Impartiality and the avoidance of inappropriate bias
- The confidentiality of information provided by clients or users and the right of all individuals to privacy
- The development of information skills and information literacy

CILIP see its new code primarily as a supporting tool, a 'framework' to help information professionals 'manage the responsibilities and sensitivities which figure prominently in their work' (CILIP, 2003) The CILIP code is enforceable: CILIP warn that where there appears to have been a 'significant breach' of the code, then this 'may be a matter' for the CILIP Disciplinary Committee, which has the capacity to admonish, to suspend, or to expel its members from CILIP (CILIP, 2003).

GORMAN'S ENDURING VALUES

Recently Michael Gorman made an attempt to revisit the guiding principles and values of librarianship. He identified eight themes that he calls *enduring values*. Gorman defined a core set of values for the library profession since Ranganathan's *Five Laws of Library Science.* Gorman reviews many other texts on librarianship and ethics, and find eight common values which he defines as core values in librarianship. However, according to Gorman these values are not absolutes, indeed the values are of more importance if each generation can change, adapt or reinterpret them. In addition the values are, inescapably in conflict and must constantly be weighed one against the other" (Gorman, 2000). The values are:

1. Stewardship
2. Service
3. Intellectual Freedom
4. Rationalism
5. Literacy and Learning
6. Equity of Access to Recorded Knowledge and Information
7. Privacy
8. Democracy (Gorman, 2000)

Stewardship indicates the essential role of libraries in preserving human knowledge for future generations. For few, this is one of the most important responsibilities of libraries. Stewardship has three elements-- firstly preserving knowledge so that it is passed on to future generations, secondly in developing and carrying out librarianship training that passes on core values, and thirdly in building the trust of the communities served (Gorman, 2000). In the value of service there is a commitment in making all elements of a library user-friendly, in being courteous and approachable.

Intellectual freedom is defined as a value to actively protect, as laws are changing over time to restrict free speech on various subjects. Gorman asserts that librarians should hold fast to intellectual freedom and carry out tasks without reference to our own opinions or the opinions of those who want to restrict free access to knowledge. Censorship is an issue that librarians are confronted constantly. Librarians should advocate greater intellectual freedom and fight censorship where it occurs, especially when it is reactionary. For example, in Internet filtering, where a danger is perceived from a new technology that is not actually all bad, and where filtering is also ineffective.

According to Gorman, Rationalism is an approach, not a prescription, but libraries are the children of the enlightenment and of Rationalism. Human beings are improved by the acquisition of knowledge and information and no bar should be placed in their way. Librarians should organize libraries rationally, using bibliographic control sensibly and adopt useful management structures. They should also spread rationalism while instructing library users, as they are to a greater extent able to access catalogues, myriad electronic and other resources directly. Librarians should not only teach basic skills such as searching and retrieving resources, but also teach critical thinking and how to evaluate resources that enable users to select the most appropriate sources.

For Gorman, literacy is about more than reading, it is about being able to 'express oneself fully' (Gorman, 2000) and about empowerment: the ability of anyone to improve themselves and the potential to become a knowledgeable one. In many of these values, there is a clear social element and true value of Equity of Access, which for Gorman is part of a concept of social justice, that "everyone deserves and should be given the recorded knowledge".

Gorman recognizes that privacy has been compromised by technology, often unintentionally. If librarians prevent the erosion of the legal right to privacy, they must constantly be vigilant to the possibilities for snooping and more sinister uses of data about personal use of electronic resources. Democracy is the key, and there underlies all the values of librarianship: intellectual freedom, the common good, service to all, the transmission of the human record to future generations' free access to knowledge and information. For people to be aware of the democratic process they should be given access to the information and thus flourishing democracy is possible in any country. The advantage of using these set of specific values to measure the codes is that, these eight values are independent and provide a yardstick to measure just how different the codes are. Each code is examined to determine if it contains each of Gorman's values. This is one way of establishing, at a glance, any major differences in terms of which values are expressed in the codes.

ANALYSIS OF THE CODES

The various codes were analyzed based on their adherence to Gorman's eight values. Codes were characterized as - adhering to a specific value, partially adhering to a value, or not adhering to a value.

Service

Service is one of the most commonly expressed values. For example, Korean code states that Librarians serve people with devotional attitude; while New Zealand code describe service as a primary duty to their clients and to society. Many codes focus on the need to be unbiased and non-discriminatory in providing information and library services to individuals, but the Indonesian code describes "service to the society" and the need to "upgrade the knowledge and prosperity of society, nation and country." The impression from the Indonesian code is that, librarians are primarily servants of the state and society. The Philippines code is similar in putting the "well-being of the public and interest of the State above the well-being and interest of any individual."

Intellectual Freedom

Intellectual freedom is about both freedom of expression and opposing censorship. A significant majority of codes do not mention intellectual freedom. The Russian, Armenian and Slovenian codes only refer to librarians taking no responsibility for what is done with information given out. This could be interpreted as some sort of intellectual freedom. A number of codes put limits on intellectual freedom, making specific restrictions on material made available.

Rationalism

For Gorman, Rationalism is about the use of reason as opposed to being guided primarily by religion, emotion, faith or spirituality. Within a library context this means, organizing resources to enable access and organizing the institution of the library, having reasonable staffing structures and so on. The term itself only appears in one code, and is one of the least popular values, as it appears in only just under half of the codes.

Literacy and Learning

According to Gorman, literacy is about more than the ability to read, it is also about the critical faculties and an ability to engage critically with information and not to simply accept statements as fact, but to take into account factors such as reliability of sources. The librarian shall treat library users with respect and good judgment: impartially and equally. Many of the codes require librarians to distinguish between their own opinions and their professional decisions.

Privacy

Most of the codes mention user privacy in some way. Many of the codes require librarians to respect user privacy within the bounds of the law. For example, the German code states that,"We respect our clients' privacy. Personal data will be saved only to ensure service delivery and only within the legal framework. Personal data will be shared with other institutions only as required by law."

Although Stewardship and Intellectual freedom also appear in the majority of codes, substantial minorities did not include these values. It seems that Rationalism, Democracy and Literacy and Learning are not part of librarianship's global values, although they do feature in a number of codes. Overall, the ethical codes of library associations from around the world share a small core of values. Literacy and Learning was unpopular across all of the codes. By contrast, some codes referred to self-education and the making available of resources. Privacy was one of the most universal values of the codes. One of the least popular values was Rationalism. The countries which did express rationalism, usually in reference to organization of resources, were geographically and culturally diverse. The omission of this value does have ethical consequences; Rationalism in organizing resources is a core element of information and library sciences. Librarianship scarcely makes sense without rationalism, as resources cannot truly be made available if they are not organized. Rationalism does not seem to be considered an ethical matter by most of the library associations. The value of Democracy was not popular in the codes of ethics. Only one code contained all eight values, while a third of the codes contained half of the values or fewer.

CONCLUSION

This chapter emphasizes the importance of code of ethics and conduct among librarians. The role of a librarian and how a librarian should work to benefit the readers and the society are discussed as such. The various codes available in different countries and their association with Gorman's enduring value are also reviewed. The comparative analysis of the countries that follow the code of ethics is discussed. The chapter stresses the importance of development of ethical code for librarians in the developing countries, for the promotion of scientific integrity.

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APPENDIX

Table 2. The Countries and the Year Adopted

Armenia 2003	Czech Republic 2004	Italy 2014	Nicaragua	South Africa 2013(revised)
Australia 2001	El Salvador	Jamaica 1991(revised)	Nigeria 1995	Spain 2013
Belgium 2009	Estonia 2014	Japan 1980	Panama	USA 1939
Botswana	Finland	Korea 1997	Peru 1997	Sri Lanka 1997
Brazil	France 2003	Latvia	Philippines 2003	Sweden
Bulgaria	Germany 2007 (updated)	Lithuania 1998	Poland 2005	Switzerland 1998
Canada 1976	Hong Kong 1995	Luxembourg 2013	Portugal 1999	Thailand
Chile	Hungary 2006	Malaysia 1989	Puerto Rico	The Netherlands 1990
China 2002	Iceland	Malta	Venezuela	Turkey 1996
Costa Rica	Indonesia	Mauritius 2000	Serbia 1992	Ukraine 1996
Croatia 1992	Ireland 2007	Mexico 1991	Singapore 2007	United Kingdom 1986
Cuba	Israel	New Zealand	Slovenia 1995	Uruguay 2000
Russian Federation 2011			Spain (Catalonia) 2006	

Chapter 13
Innovative Use of Open Educational Resources in the Higher Education Libraries: Cost-Benefit Analysis

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ABSTRACT

Advancement in Science and Technology has made a tremendous impact on library and information centers. It has changed the traditional libraries and information centers into digital libraries, and library services are oriented towards ICT. As an outcome, e-resources are becoming more common among the libraries of higher educational institutions. They have gradually replaced the traditional print resources. Unfortunately, most of the libraries in the higher education sector except reputed institutions are facing a financial crunch situation. These institutions due to the limitation in the budget, find it hard to fulfill the information requirements of its users in the electronic environment. The cost of subscription to electronic resources goes beyond the purchasing capacity of the parent institution. Funding agencies at the institutions adopt consortia-based approach rather than individual institutional funding. In this context, open education resources fulfill the information requirements of the higher education institution. This chapter analyzes these open educational resources.

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INTRODUCTION

Advancement in science and technology has made a tremendous impact on library and information centers. It has changed the traditional libraries and information centers into digital libraries and library services are oriented towards ICT. As an outcome, electronic resources (e-resources) are becoming more common among the libraries of higher educational institutions. They have gradually replaced the traditional print sources. Electronic gadgets to access electronic resources, e-books, e-journals, on-line and off-line databases, ICT based individualized information services to the users are the order of the day. Unfortunately, most of the libraries in the higher education sector except reputed institutions are facing economical problems or financial crunch situation. Institutional subscription prices of academic journals continue to increase more rapidly than library budgets. An open access resource has the potential solution for academic institution.

E- RESOURCES

Any resources that requires the access of computer or any other electronic media or device that delivers a collection of data, be it text referring to full text bases, e-journals, collections of images, other multimedia products which are numerical, graphical or time based, and are available in commercial titles, aiming at marketing it are termed as e-resources. These may be delivered on CD ROM, on tape, via internet and so on.

OPEN ACCESS RESOURCES

Open access resources are electronic resources which are freely available to the end user at free of cost. There is no need to pay either by the institution or the individual for accessing, and downloading articles. Users can read, download, copy, distribute, print, search, or link to full texts of these articles (Prince and Saravanan, 2015). Open access resources are not limited only to open access journal but it also may vary in forms such as open e-book, videos, audios, personal websites, discussion forums, open access databases, institutional websites, personal blogs, open access repositories, and institutional repositories and open source software (Prince, 2018). In the present context, open educational resources can be used to fulfil the information requirements of higher education aspirants. The present chapter analysis the usage of open educational resources in cost – benefit perspectives.

OPEN EDUCATIONAL RESOURCES

Open educational resources are digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research.

COST–BENEFIT ANALYSIS

Cost–benefit analysis is a systematic approach to estimating the strengths and weaknesses of alternatives used to determine options which provide the best approach to achieving benefits while preserving savings (for example, in transactions, activities, and functional business requirements). It may be used to compare completed or potential courses of actions, or to estimate (or evaluate) the value against the cost of a decision, project, or policy. It is commonly used in commercial transactions, business or policy decisions and project investments (https://en.wikipedia.org/wiki/Cost-benefit_analysis).

COST BENEFIT ANALYSIS IN LIBRARIES

In the present scenario, the academic libraries are facing problems such as escalation of journal price, growing demand of users, variant user requirements and shrinking budget etc. To overcome these problems librarians are using different ways and means. In this era of decreasing financial resources and increasing calls for accountability, libraries all over the world face the challenge of representing and quantifying their value to their funders and stakeholders. In the context of academic library, librarians must prove library's value to the institution in order to secure the financial resources necessary to serve the university and research community. As financial authorities weigh competing priorities and allocate limited resources, they need concrete evidence of how the library supports the institution's strategic goals. In addition, they need evidence that helps them weigh the value of new directions. As librarians and administrators make budgeting decisions, librarians may be asked to prioritize their products and services to focus on those that are most effective in serving the institutional mission with increased financial challenges. Due to economic crisis, librarians with the help of management tool such as Cost-benefit analysis can prove the value or worth as well as justify the expenditure of library collections and services (Bano, 2017)

LIBRARY BUDGET

A financial statement that deals with estimation of revenues and expenditure made by an institution for a particular period of time is called budget. A library budget can be termed as a logical, comprehensive and a forward biased financial representation for the coordination of activities of various financial divisions of the library as a whole. In other words budget is an estimation of probable income and expenditure for the ensuring year.

INNOVATIVE INFORMATION SERVICES

Any things that are introduced newly to the betterment of service that are to be provided by providing information's can be termed as innovative information services. A library as a service institution is also liable for giving the innovative information service to benefit its users. Hence open educational resources

can be considered and implemented as an innovative service for the enhancement of the whole functioning of a library. In addition to the traditional services; academic libraries may attract the users towards libraries based innovative information services using open and freely available educational resources.

LIST OF OPEN ACCESS PORTALS

Some of the open and freely available educational resources for the academic community in the higher education system are listed as in 2012 by (Prince & Saravanan).

- Indian Academy of science (https://www.ias.ac.in/)
- Medknow Publications (www.medknow.com/)
- Indian National Science Academy (www.insaindia.res.in/)
- Bioline International (www.bioline.org.br)
- High wire press (https://www.highwirepress.com/)
- DOAR (v2.sherpa.ac.uk/opendoar)
- ROAR (roar.eprints.org)
- DESIDOC (https://www.drdo.gov.in)
- BioMed Central (https://biomedcentral.com/)
- MDPI Journal (https://www.mdpi.com/about/journals)
- Public Library of Science (https://www.plos.org)
- Open Library.Com (https://openlibrary.org)
- Open access library (http://openaccesslibrary.com)
- PDF Drive (https://www.pdfdrive.com/)
- NDLTD.org (http://www.ndltd.org/)
- NISCAIR (www.niscair.res.in/)
- Sankhya (https://sankhya.isical.ac.in/)
- DOAJ (https://doaj.org/)
- OER Commons & Open Education (https://www.oercommons.org/)
- PubMed (https://www.ncbi.nlm.nih.gov/pubmed/)
- Google Books (https://books.google.com)
- Sci-Hub (https://sci-hub.tw/)

Subscription Based E-Resources

Subscription-based e-resources is a payment structure that allows the institutions or individuals to purchase/subscribe the e-resources from the publishers/vendors/agencies for a specific period of time. Subscription databases consist of published journals, magazines, reports, documents, newspapers, books, image collections, etc. Most of these databases are available via internet, and a few are available in DVD/CD form. Most of the higher educational institution libraries subscribe and provide access to these e-resources for their members. Some of the subscription-based e- resources (Databases) are

1. Scopus (https://www.scopus.com/)
2. Web of science *(*https://www.webofknowledge.com/*)*
3. Ebsco (https://www.ebsco.com/)
4. ProQuest (https://www.proquest.com/connect/)
5. Emerald *(*https://www.emerald.com/insight*)*
6. MEDLINE (https://www.nlm.nih.gov/bsd/pmresources.html)

Access to subscription-based e-resources are not similar to the use of open educational resources. Access within the campus is free, but remote access is provided with lot of restrictions. Hence, open educational resources are more user friendly and it leads to innovative use for the scholarly community. The comparisons of open e- resources with Subscription based e-Resources are tabulated as follows.

OPEN EDUCATION RESOURCES VS SUBSCRIPTION BASED E-RESOURCES

An attempt is made to list out the available open educational resources and subscription based resources. The major e-resources are given in Table 1. (Name of the e-resources, Type, Coverage, Archives, Subscription cost).

INITIATION FOR E-RESOURCES ACCESS

NMEICT (National Mission on Education through Information and Communication Technology)

The National Mission on Education through ICT (NMEICT) was launched on 3rd February 2009 at Tirupati, Andhra Pradesh as a centrally sponsored scheme to leverage the potential of ICT, in teaching and learning process for the benefit of all the learners in higher education institutions in anytime anywhere mode. The three cardinal principles of education policy viz., access, equity and quality could be served well by providing connectivity to all colleges and universities, providing low cost and affordable access-cum-computing devices to students and teachers and providing high quality e-content free of cost to all learners in the country. NMEICT encompasses all the three elements. The two major components of NMEICT are content generation and providing connectivity for access to institutions and learners. It seeks to bridge the digital divide, i.e. the gap in the skills to use computing devices for the purpose of teaching and learning among urban and rural teachers/learners in higher education domain and empower those, who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. It plans to focus on appropriate pedagogy for e-learning, providing facility of performing experiments through virtual laboratories, on-line testing and certification, on-line availability of teachers to guide and mentor learners, utilization of available education satellite and Direct to Home platforms, training and empowerment of teachers to effectively use the new method of teaching learning etc. (www.nmeict.ac.in)

Resources available in NMEICT are graphed the major headings as follows.

Table 1. Open education-resources Vs subscription-based e-resources

Sl. No.	Name of the E-Resources	Type	Coverage	Archives	Subscription Cost
1	Indian Academy of science	Open Access	Science & Technology	1980 -2019	-
2	Medknow Publications	Open Access	Medicine	2014-2019	-
3	Indian National Science Academy	Open Access	Science, Mathematics & Social Science	1935-2019	-
4	Bioline International	Open Access	Medicine & Applied Science	1994-2019	-
5	High wire press	Open Access	Medicine & Science	2000-2019	-
6	DESIDOC	Open Access	Science	2002- 2019	-
7	M DPI Journal	Open Access	Agriculture, Science, Mathematics, Technology, Medicine & Social Science	2009-2019	-
8	Public Library of Science	Open Access	Biology & Medicine	2003-2019	-
9	Open Library.Com	Open Access	General & Science e-books	-	-
10	Open access library	Open Access	Science, Technology, Medicine & All Subject	2012-2019	-
11	PDF Drive	Open Access	All Subject e-books		-
12	NISCAIR	Open Access	Science & Technology	1999-2019	-
13	DOAJ	Open Access	All Subject	1900-2019	-
14	IEEE	Paid Access	Engineering	1984-2019	$ 67,000
15	Springer	Paid Access	Medicine, Science & Engineeringe-books and journals	1966-2019	€ 5583.00
16	Wiley	Paid Access	Science & Engineering e-books and e-journals		USD
17	Science Direct	Paid Access	Sciences, Engineering, Social Sciences and Humanities and Health Science		USD
18	ASME	Paid Access	Engineering	2000-2018	USD
19	ASCE	Paid Access	Engineering	1997-2019	USD
20	ACM Digital Library	Paid Access	Computer Science and Engineering	1954-2019	$ 26,004
21	Bentham Science	Paid Access	Science, Technology, and Medicine		USD
22	Oxford University Press e books	Paid Access	All Subject		USD
23	RSC Publishing	Paid Access	Chemical Science Books and Journals		USD
24	Elsevier – e books	Paid Access	All Subject		USD
25	Pearson Education - e books	Paid Access	All Subject		USD
26	Tata McGraw-Hill Education - e books	Paid Access	All subjects		USD
27	S.Chand - e books	Paid Access	All Subject		USD
28	Lippioncott - Wolters Kluwer	Paid Access	Medicine, Nursing and Allied Health		USD

*As on date 30/03/2019 €, $ * Subject to change*

SAKSHAT E-CONTENT REPOSITORIES

SAKSHAT

A one stop education portal to facilitate lifelong learning for students, teachers and those in employment or in pursuit of knowledge free of cost to them. The content development task for SAKSHAT was looked after by the content advisory committee (CAC) for the respective subject, which consisted of representatives from educational institutions like IGNOU, Delhi University, Kendriya Vidyalaya Sangthan, Navodyaya Vidyalaya Sangthan, National Institute of Open Schooling, and National Council for Educational Research and Training and prominent academicians in the field. In addition, some NGOs had also provided the contents developed by them free of cost for this portal (http://media.sakshat.ac.in/nmeict/econtent.html).

CEC

The consortium for educational communication popularly known as CEC is one of the inter university centre set up by the university grants commission of India. It has been established with the goal of addressing the needs of higher education through the use of powerful medium of television along with the appropriate use of emerging information communication technology (ICT). Dissemination of educational programmes through broadcast as well as non-broadcast modes. Production of educational programmes (Audio/Visual and Web Based) and related support material further setting up of appropriate facilities for such production. Research activities related to optimizing the effectiveness of such programmes (http://cec.nic.in/Pages/Home.aspx).

E-PG PATHSHALA

e-PG Pathshala is an initiative of the MHRD under its National Mission on Education through ICT (NME-ICT) being executed by the UGC. The content and its quality being the key component of education system, high quality, curriculum-based, interactive e-content in all disciplines of social sciences, arts, fine arts and humanities, natural & mathematical sciences, linguistics and languages are being developed by the subject experts and other R&D institutes across the country. Every subject has a team of principal investigator, paper coordinators, content writers, content reviewers and multimedia team (https://epgp.inflibnet.ac.in/).

NPTEL

The National Programme on Technology Enhanced Learning (NPTEL) was initiated by seven Indian Institutes of Technology (Bombay, Delhi, Kanpur, Kharagpur, Madras, Guwahati and Roorkee) along with the Indian Institute of Science, Bangalore in 2003. Five core disciplines were identified, namely, civil engineering, computer science and engineering, electrical engineering, electronics and communication engineering and mechanical engineering and 235 courses in web/video format were developed in this

phase. The main goal of NPTEL Phase II (2009-14) was to build on the engineering and core science courses launched previously in NPTEL Phase I. An additional 600 web and video courses were created in all major branches of engineering, physical sciences at the undergraduate and postgraduate levels and management courses at the postgraduate level. Several improvements such as indexing of all video and web courses and keyword search were implemented (https://nptel.ac.in/).

Spoken Tutorial

Spoken Tutorial is a multi-award-winning educational content portal. Here, one can learn various Free and Open Source Software all by oneself. Our self-paced, multi-lingual courses ensure that anybody with a computer and a desire for learning can learn from any place, at any time and in a language of their choice (https://spoken-tutorial.org*/).*

Talk To A Teacher

The spoken tutorial project is the initiative of the 'Talk to a Teacher' activity of the National Mission on Education through Information and Communication Technology (ICT), launched by the Ministry of Human Resources and Development, Government of India (https://co-learn.in/).

Some of the features of talk to a teacher are

RESEARCHOSCOPE

Researchoscope is a series of talks given by Ph.D. students at IIT Bombay regarding their research work. A staggering variety of research work is undertaken by Ph.D. students at Indian institute of technology Bombay. Researchoscope provides a platform for these students to talk about their doctoral work. The objective of this series of talks is to create awareness about the students and the type of research work done at IIT Bombay. Since these students are yet to be placed, companies along with research and educational institutions can see if the valuable expertise of these students could enrich their organizations. Students in other institutes can also ask questions and thus become motivated to pursue research.

COURSES ON VIEW

Courses on view comprises of courses taught by IIT Bombay faculty that have been recorded live in the classroom. The portal provides free access to a few selected graduate and post graduate courses taught at IIT Bombay by distinguished faculty member and scholars. These courses can be viewed absolutely free of charge at lower bandwidths on a personal computer/laptop having a headphone though internet connection. Registration is not required as we do not have any evaluation/certification process. The courses are recorded live in the classrooms of IIT Bombay and may not reflect entire content of the course.

ASK A QUESTION

Ask a question is a Q&A series where a panel of IIT Bombay faculty answers conceptual doubts in Engineering & Science. Through ask a question, you get to ask IIT Bombay professors conceptual doubts that you have in the fields of engineering and science. A panel of instructors from IIT Bombay will be available at a designated time and will try to answer any questions you ask on topics that are previously announced on our website.

A-VIEW CLASSROOM

A-VIEW Classroom is a framework that provides a rich interactive social environment for e-learning. It is simple, user friendly video conferencing software, which provides a great opportunity to a teacher to teach in a live interactive mode to various geographical locations across India. A-VIEW Classroom provides opportunity to connect several universities together and creates virtual world for students. It also acts as a Knowledge Cafe where students can discuss/chat about the lecture after the live class. A-VIEW (Amrita Virtual Interactive e-Learning World) is developed by Amrita University, is part of Talk to a Teacher program led by IIT Bombay and funded by NME-ICT, MHRD (http://aview.i n/aview-classroom.php).

SWAYAM

SWAYAM is an instrument for self-actualization providing opportunities for a life-long learning. Here learner can choose from hundreds of courses, virtually every course that is taught at the university / college / school level and these shall be offered by best of the teachers in India and elsewhere. If a student is studying in any college, he/she can transfer the credits earned by taking these courses into their academic record. If you are, working or not working, in school or out of school, SWAYAM presents a unique educational opportunity to expand the horizons of knowledge. The courses hosted on SWAYAM are in 4 quadrants (1) video lecture (2) specially prepared reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts. Steps have been taken to enrich the learning experience by using audio-video and multi-media and state of the art pedagogy / technology. In order to ensure best quality content are produced and delivered, nine national coordinators have been appointed: They are AICTE for self-paced and international courses, NPTEL for engineering, UGC for non technical post-graduation education, CEC for under-graduate education, NCERT & NIOS for school education, IGNOU for out of the school students, IIMB for management studies and NITTTR for Teacher Training programme (https://swayam.gov.in/).

SWAYAM PRABHA

The SWAYAM PRABHA is a group of 32 DTH channels devoted to telecasting of high-quality educational programmes on 24X7 basis using the GSAT-15 satellite. Every day, there will be new content for at least (4) hours which would be repeated 5 more times in a day, allowing the students to choose the time of their convenience. The channels are uplinked from BISAG, Gandhinagar. The contents are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. The INFLIBNET Centre maintains the web portal (https://swayamprabha.gov.in/).

NATIONAL DIGITAL LIBRARY OF INDIA

NDL is a new initiative from MHRD and IIT Karapur. The objective of the project is to integrate all the existing digitized and digital contents across educational institutions of the nation to provide a single-window access with e-learning facility to different groups of users ranging from primary level to higher education level of our county. NDL will harvest metadata and contents from all the institutional digital repositories (IDR) of Universities and institutions, all other digital library initiatives, and NMEICT projects and index in the national digital library server so that all the e-contents can be searched and accessed in the full-text by the users through a single window. Registered users can access national digital library at free of cost (https://ndl.iitkgp.ac.in/).

SHODHGANGA

The Shodhganga offered by INFLIBNET centre provides a platform for research students to deposit their Ph.D. theses and make it available to the entire scholarly community in open access. The repository has the ability to capture, index, and store, disseminate and preserve ETDs submitted by the researchers. The full texts of all the documents submitted to Shodhganga are available to read and to download in open access to the academic community worldwide. Presently 388 universities are contributing to the shodhganga database and more than 218144 full text theses are available(http://shodhganga.inflibnet.ac.in/).

OTHER INITIATES

MIT Open Course Ware (OCW)

MIT Open Course Ware (OCW) is a web-based publication of virtually all MIT course content. OCW is open and available to the world and is a permanent MIT activity.MIT open course. Ware makes the materials used in the teaching of almost all of MIT's subjects available on the web, free of charge. With more than 2,400 courses available, OCW is delivering on the promise of open sharing of knowledge (https://ocw.mit.edu/index.htm).

INTERNET ARCHIVE

The Internet Archive is a non-profit digital library of internet sites and other cultural artifacts in digital form. Like a paper library, we provide free access to researchers, historians, scholars, the print disabled, and the general public. It consists of millions of free books, movies, software, music, websites, and more. Our mission is to provide universal access to all Knowledge (https://archive.org/).

CONCLUSION

Use of open educational resources in the higher educational institutions is inevitable in this modern era. Many educational resources in the forms of e-books, e-journal database and multimedia database are freely available in the web on various open access platform. It provides more benefits to the academic

community in the higher education system for quality education to the younger generation and projecting their creativity in teaching and learning. Open educational resources are boon to academic libraries in the higher education system for extending e-resource access facility to the user community to fulfill their information requirements. This chapter highlights the importance of Open Educational Resources to fulfill the information requirements of the users, type of open access e-resources, lists e-resources meant for the academic community in the higher education system. Open educational resources plays significant role in generation of new knowledge and creating self interest among the academic community at higher education system through its unique features.

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Chapter 14
Marketing of Library Management Software Products

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ABSTRACT

Marketing is a human activity and it is the process of developing, promoting, and distributing products in order to satisfy customer needs and wants. Products include both goods and services. Goods are also known as tangible products. Services are things which one may not be able to touch, smell, or taste and are called intangible products. The traditional marketing concept focuses on the flow of goods and services from producer to consumer or user. In modern times, marketing is viewed as the anticipation, management, and satisfaction of demand through the exchange process. Product marketing and service marketing are essentially the same. The basic task of marketing remains the same irrespective of the products or services involved in the deal. Service is an activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything.

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INTRODUCTION

The marketing concept is a business philosophy which tells that the purpose of any business is to satisfy the wants and needs of consumers at a profit. A market-oriented organization defines its business in terms of the benefits its customers seek.

The evolution of marketing can be traced to people's earliest use of exchange process. It has really developed since the industrial revolution, as mass production and improved transportation enabled more transactions to occur. Thus, marketing has been expected to emerge as a social and managerial process by which individuals and groups obtain what they need and want through creating and exchanging products *(Kotler, 2000).*

MODERN MARKETING CONCEPT

Modern marketing concept emerged in the 1950's as a new philosophy of business management. The modern marketing concept advocates that a business organization exists to satisfy the wants of its targeted customers *(McDaniel, 2008).* It approaches decision making from systems view of management and seeks to earn a satisfactory return on owner's investment in the business.

The philosophy of modern marketing concept focuses on the integration of all business activities towards a specific goal (customer satisfaction) which can alone lead to effective business management. No longer can the business produce whatever it is capable of producing, and offer the product unmodified to customers. Innovative business organizations found that products and services had to be expressly designed to meet customer needs and their line divisions have accepted marketing as a way of life.

CUSTOMER ORIENTATION

Customers are the focal points for all decision making in the organization and all functional areas are geared to satisfy targeted customer's wants. The marketing concept views customer orientation as the means to end of achieving the organization's goal. In the words of Stanton, marketing consists of all activities designed to generate and facilitate any exchange intended to satisfy human needs or wants. In this view "marketing is a total system of business activities designed to plan, price, promote and distribute want satisfying products, services and ideas to target market in order to achieve organizational objectives"

From the societal point of view, marketing links a society's material requirements and its economic patterns of response to satisfy the needs and wants of the consumers. It requires that marketers strike a balance among;

1. Their targeted customer's wants
2. Their targeted customers long-term best interests
3. The society's long-run best interests and
4. The firms long-run return on investment

The modern marketing concept is even tougher to implement than the traditional marketing concept. It requires marketers to accept their social responsibility. Further, it also makes the marketers to recognize that they exist within a larger social system that includes non-customers also, to whom they have obligations.

Conceptually, marketing may be described as marketing begins with determining customer needs and wants and then producing services and products to satisfy those needs and wants at a profit to the institution providing them. Functionally, it may be stated that, in broadest terms, marketing aims to manage, anticipate and identify the needs of customer and satisfy them through products or services at the right price, time and place. Organizationally, marketing may be described as combining at least the operations of advertising, public relations, sales, sales training, market and social research, service/product development and pricing into a coordinated unit thereby giving a synergistic effect in dealing with virtually all consumer oriented matters of the business.

MARKETING STRATEGY

A strategic marketing plan integrates all business activities and resources logically to meet customers' needs and to generate profit. Marketing strategies for product software assist software firms to determine the type of market analysis that is needed for decision-making. The general strategies that are well known in the marketing discipline are:

- Marketing mix; and
- Relationship marketing.
- Service-based strategy; and
- A different marketing channels strategy.
- Product Positioning and Differentiation

'Marketing mix' is the typical strategy for traditional mass marketers of product software in competitive markets. Structured market research, and agility in reacting to sales, are characteristic of their product development process. An example would be Electronic Arts, with their various home computer software games, which are advertised on television and sold in many electronic stores.

'Relationship marketing', is used by product software companies who focus on long-term customer relationships. Maintaining customer relationships helps sell additional modules and future upgrades. Information about customer preferences, observations of customer reactions, and knowledge of past mistakes are important for the 'service-based strategy'.

'Different marketing channels strategy' tries to discover non-traditional marketing channels to help increase distribution of software products to other target markets that take advantage of positional differences. 'Alliance-based strategies', on the other hand, are helpful at providing knowledge exchanges, opening previously inaccessible markets (such as export markets), and an overall larger market access.

FACTORS INFLUENCING THE SERVICE MARKETING

The rapid expansion of service marketing is illustrated by the adoption of marketing concepts and methods in various professional services such as law, medicine, dentistry, architecture, public accounting and software. Service organizations have generally lagged behind manufacturing organizations in developing and using marketing concepts. This is explained by several factors as follows:

- Many service organizations stress technical expertise.
- Most service organizations are so small that marketing specialists cannot be used.
- Strict licensing provisions sometimes limit competition and the need for marketing.
- Consumers have held a variety of service professionals in such high esteem that marketing has not been needed.
- In the past, a number of associations prohibited advertising by their members.

Service business is more difficult to manage when using only traditional marketing approaches. In a product business, products are fairly standardized and sit on shelves waiting for customers. In a service business the customer interacts with the service provider whose service quality is less certain and variable.

The service outcome is affected not just by the service provider, but the whole supporting production process. Thus, service marketing requires more than just the traditional external marketing using the fours P's i.e., Product, Price, Place and Promotion. This extended service marketing P's involves another 3 P's as People, Process and Physical evidence.

Product

Product is core offering. This is "the thing" that will fulfill the needs of the targeted customer *(Business Line, 2010).* If the product is faulty, everything else fails.

Price

Price has a lot of impact on the service buyer's satisfaction level. Often, paying a higher price makes a customer more satisfied. Price is often considered a proxy for quality.

Place

Place often offers a different side of value (utility) to the customer. Services are often chosen for their place utility. Closer to the customer means higher probability of purchase.

Promotion

Promotion plays a role in creating awareness among the possible target audience. There has to be a fit between the promotion and the positioning.

People

People are crucial in service delivery. The best food may not seem equally palatable if the waitress is in a sour mood.

Process

Processes are important to deliver a quality service. Services being intangible, processes become all the more crucial to ensure standards are met with.

Physical Evidence

Physical evidence affects the customer's satisfaction. Often, services being intangible, customers depend on other cues to judge the offering. This is where physical evidence plays a part.

Marketing of services requires both internal marketing and interactive marketing linkages. Internal marketing means that the service organizations must effectively train and motivate its customer contact employees and all the supporting people to work as a team to provide customer satisfaction. Interactive marketing relates to the perceived service quality through the buyer-seller interaction.

SOFTWARE MARKETING AND LIBRARY AUTOMATION

Software marketing is cost effective and measurable compared to all other marketing. In every business, price plays a major role. But in software which is a non-tangible commodity, a novice buyer is reluctant to pay for an item which he cannot smell, feel, touch, or taste. So, the software vendor needs a marketing strategy to survive, thrive and to remain in the market.

Library automation refers to use of computers, associated peripheral media such as magnetic tapes, disks, optical media etc. and utilization of computer-based products and services in the performance of all type of library functions and operations. Computers are capable of introducing a great degree of automation in operations, functions since they are electronic, programmable and are capable to control over the processes being performed.

The utilization of computer and related techniques make the provision to provide the right information to right reader at the right time in a right form in a right personal way. Automation of library activities provides the services very efficiently, rapidly, effectively, adequately and economically. The modem libraries and information center facilitates free communication because access to information has become a fundamental right of the clientele.

The automation is economically feasible and technologically required in modem libraries to cope up with the requirements of new knowledge, the enormous increase in the collection of materials, problems of their acquisition, storage, processing, dissemination and transmission of information. The capabilities of computer associated peripheral media and its application in library activities and services led to a highly significant quantitative and qualitative improvement especially in online technology.

Information / knowledge itself is of no value. It is the use of information that makes it valuable. The role of computers and their associated peripheral media are being increasingly used in library and information services for acquisition, storage, manipulating, processing and repackaging, dissemination, transmission, an improving the quality of products and services of library and information centers.

MARKETING PRODUCTS FOR LIBRARIES

The products and services in libraries refer to sources of information and knowledge contents that are available in electronic forms such as books, CDs, videos, journals, journal articles, data bases, films, audio digital products, online publishing, public domain and commercial online databases available through Internet and other propriety databases available through various private network providers. A number of libraries have subscribed to Information sources in CD-ROM and gadgets like DVR, Scanner etc. LMSs are now established as an essential tool in the support of effective customer service, stock management and management of services offered by libraries.

SERVICE MARKETING

Product marketing and service marketing are essentially the same. The basic task of marketing remains the same irrespective of the products or services involved in the deal. Service is expressed as "an activity or benefit that one party can offer to another that is, essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to physical product. A more comprehensive approach is that a service is any task performed for another or the provision of any facility, product or activity for another's use and not ownership which arises from an exchange transaction. It is intangible and incapable of being stored or transported. There may be an accompanying sale of a product.

Typically, service organizations have four characteristics that distinguish them from marketing of goods. The higher level of intangibility, the greater degree of perishability, the inseparability of service from the service provider and the greater variability in quality differentiates the marketing efforts.

TYPES OF LIBRARY MANAGEMENT SOFTWARE

There are four major factors in consumer's buying behavior, viz., buying influences, situation, decision and buying process. They are related with the buyer, the seller, the product and the situation. Unlike hardware companies, software companies cannot afford to advertise most widely and consistently. The numbers of vendors dealing in software are few compared to hardware retailers and manufacturers. Buyers only know well advertised products. Apart from marketing, customers believe in their rights in bargaining. Buyer could negotiate for a better offer than the list price offered. In every business, price plays a major role. But in software which is a non-tangible commodity, a novice buyer is reluctant to pay for an item which he cannot smell, feel touch or taste. Of course, when prices are markedly different there are good feathers in the product. There are mainly three types of Library Management software available.

1. In-house software (Indigenous)
2. Free software (Open source software)
3. Commercial software (Business software)
    1. In house software - Software which are designed and developed by a person or a team within an organization is called indigenous software or in-house software.
    2. Open source or free download software - the source code is open and can be changed as required. Also, software, which are available free of charge, are known as open source software of free download software.
    3. Commercial software - Any software developed to be sold to consumers is known as commercial software.

In-House Software

There are many various software programs available to purchase or even download for free but not many people know how to create software. The world of software has made life so much easier for everyone and it is impossible not to be helped by it. Often we take for granted that everything runs smoothly on our computer and forget that it is actually software behind the scenes that is making that possible for us.

The biggest advantage to being able to make own software is the money savings. Instead of having to go out and purchase someone else's software to run things on own computer, and user would be able to make his own software specifically for his needs and save a lot of money. The idea of creating own software might seem really overwhelming. However, virtually anyone that has access to the Internet can do this as long as they have the time to put into the project. Creating own software is not just for the computer guru people out there and virtually anyone can do this. The users have to begin by writing down ideas and the types of things that he would want the new software to do for fulfilling his expectations. If the user can conceive the idea, then it is possible to get together a software program to do the job for the own use.

Free Software / Open Source Software

The term "open source" refers to software that is free and that includes the original source code used to create it so that users can modify it. It also includes the right of redistribution; therefore, there may be products that are based on other open source products.

While open source software may be free, a developer or distributor may charge for services, including custom programming, installation, training, technical support, and hosting services for those who do not want to implement and maintain the software in- house. Some distributors of open source software are for-profit organizations and may charge prices for their services comparable to those charged by proprietary software vendors.

Not all "free" software is "open source." For example, Google offers a number of applications software products without charge, but it is in complete control of development. Source code is not included and there is no right of distribution. Google covers the cost of development and support by selling on-line advertising.

No Restriction on use

Unlike proprietary software, there are no contractual restrictions on how the software is used. General Public License assures users that they have the right to distribution and those to whom they distribute also have the right to modify and distribute, other developers merely declare that their software is in the public domain. A subsequent user may, therefore, decide to protect the enhancements that it makes by copyrighting them.

Low Cost

There is no charge for the software itself; therefore, the capital outlay required by proprietary software is avoided. The major costs are ongoing development and maintenance. If the number of users is large, and they share their efforts, each user's cost is reduced. However, if the number is small or a user does a lot of tailoring to fit unique local needs that are not shared by other users, the cost can escalate.

The potential **disadvantages** of open source software are:

Lack of Coordination

The decentralized development of open source software means that progress can be chaotic and there may be delays in addressing bugs and in completing planned enhancements. This may increase the burden on a library that decides to proceed on its own. Not only may there be lack of coordination within an open source development project, there may be little attention paid to integration with other applications.

Inadequate training and Technical Support

No training comes with most open source products unless a commercial vendor is retained. Documentation tends to be limited and aimed at developers. There usually is limited technical support, especially for users of the software. However, a few open source products do have training and technical support available commercially for a fee.

Lack of Participation

Too few participants can cause the development effort to become too expensive for one or a handful of committed parties.

Lack of Guarantees and Remedies

Unlike turnkey systems using proprietary software, there are no guarantees of quality or performance for open source software. Vendors that provide support services for open source products do offer some guarantees, but no remedies similar to those offered by vendors of proprietary products. Only purchasers of proprietary products can expect financial and other contractual remedies for poor response times and loss of functionality.

Scalability and Speed

Open source software may not offer the scalability and speed of proprietary software because the easy-to-use and general-purpose programming languages used are not very scalable and are slower than other languages. There are tens of thousands of open source software products, many hundreds of which are in use by libraries.

Commercial Software

Open source and commercial software are not opposites. The advantage of commercial software is that it is supported and maintained by somebody (a company). Open source software has the advantage that the code can be inspected and further developed by anyone wanting to improve it, either for his own (business) purposes or for the general good. Some companies distribute open source software in a commercial way, which has the following advantages.

Predictable Cost and Timeframes

When developing application software using in-house staff, costs tend to vary widely and rarely are accurate or predicable. Unlike in-house development efforts, the cost and time needed to install and implement packaged software can be closely estimated and, in fact, can be fortified through contractual penalties for delays.

Improved Maintenance and Support Cost

Packaged software is backed by a commercial business dedicated to maintenance and viability of the system. In order to remain a commercially viable product, the software must be updated at regular intervals to keep pace with new technology and the functional needs of its clients. Because of this, internally built software tends to become obsolete in a much shorter time frame and, over time, may experience poorer ongoing maintenance and support.

Functionality of the Application

Mature packaged software vendors have functional experts to design develops, test and enhance the application over a period of many years with many clients. Also, these vendors support a wide variety of environments and attempt to put the best practices of the industry into their application to make their software more commercially attractive.

Improved use of limited resources

Purchasing packaged software applications allows limited technology resources to focus on those unique applications and services not readily available through packaged software.

GENERATIONS OF LIBRARY SOFTWARE PRODUCT

Library Management Software may be divided into four generations on the basis of sophistication of their facilities for integration and inter connectivity as shown in Table 1.

Table 1. Generation of library management software

S.No	Features	1st Generation	2nd Generation	3rd Generation	4th Generation
1.	Programming Language	Low level language	COBOL, PASCAL, C	4 GL	OOPS
2.	Operating System	Inhouse	Vendor Specific	UNIX, MSDOS,	UNIX, Windows
3.	DBMS	Non-Standard	Hierarchical and Network model	Entity relation model	Object Oriented Model
4.	Import/Export	None	Limited	Standard	Fully integrated and seamless
5.	Communication	Limited	Some Interface	Standard	Full connectivity across the internet
6.	Portability	Machine dependent and hardware specific	Machine independent but platform dependent	Multi vendors	Multi vendors and platform independent
7.	Reports	Fixed format and limited fields	Fixed format and unlimited fields	Customized report generation	Customized report generation with e-mail interface
8.	Color	None	None	Available	Fully available with multimedia
9.	Capacity of the record holding	Limited	Improved	Unlimited	Unlimited
10.	Module integration	None	Bridges	Seamless	Seamless
11.	Architecture	Stand alone	Shared	Distributed	Clent-sever
12.	Interface	Common driven (CUI)	Menu driven	Icon driven	Icon driven with web and multimedia (GUI)
13.	User support	Single user	Limited number of users	Unlimited number of users	Unlimited number of users
14.	Multi-lingual support/ UNICODE	None	Limited (Through hardware support)	Standard	UNICODE base

Source: https://drtc.isibang.ac.in/bitstream/handle/1849/189/lmss2a.PDF

First Generation LMS

The *first generation LMS were module-based systems* with no or very little integration between modules. Circulation module and cataloguing module was the priority issue for the systems and were developed to run on specific hardware platform and proprietary operating systems.

Second Generation LMS

The second generation LMS become portable between various platforms with the introduction of UNIX and DOS based systems. The LMSs of this generation offers links between systems for specific function and are command driven or menu driven system.

Third Generation LMS

The third generation LMS are fully integrated systems based upon relational database systems. They embodied a range of standards, which were a significant step towards open system interconnection. Color and Geographical User Interface (GUI) features, such as windows, icons, menus and direct manipulation have become standards and norms in this generation.

Fourth Generation LMS

The fourth generation LMS are based on client-server architecture and facilitate access to other servers over the internet. These systems allow accessing multiple sources from one multi media interface *(Mukhopadhyay and Parthasarathi, 2001).*

Thus, the progress of LMS through the generations provides us an effective and straight forward user interface which supports access to multiple sources and services from one multimedia interface. Moreover, the latest LMS allow customized report generation and to manipulate data and investigate various scenarios and therefore they have all the potentials to be a decision support tool.

LIBRARY MANAGEMENT SOFTWARE AVAILABLE IN INDIA

The automation of library activities in India started in India with the introduction of CDS/ISIS is menu driven generalized information storage and retrieval system designed specifically for the structured non-numerical data bases *(Harinarayana and Raghavan, 2008).*

National Information System for Science and Technology (NISSAT) with the help of other professional bodies organized a number of training courses on the application of CDS/ISIS in information activities. As a result, a large pool of trained manpower has been developed all over the country. The LMSs presently available in India may be ranked in 2nd, 3rd and in between 3rd and 4th generation on the basis of their features. As far as the origin and application domain is concerned, the LMS available in India may be grouped into three viz., Large system, Medium range system and Small system (Table 2). There are totally 33 LMSs available in India which comprises of 28 Indian origin LMSs and 5 foreign origin LMSs.

Table 2. Library management software available in India

Application Domain		
Larger system	**Medium range system**	**Small system**
1. LIBYS	9. DLMS	18. ARCHIVES
2. MAITRAYEE	10. GRANTHALAYA	19. CATMAN
3. MECSYS	11. Krvger Library	20. GOLDEN LIBRA
4. SOUL	12. Manager	21. LIBMAN
5. SUCHIKA	13. LIBRA	22. LIBRARY MANAGEMENT
6. TULIPS	14. LIBRARIAN	23. LIBRARY MANAGER
7. ULYSIS	15. LISTPLUS	24. LIBRIS
8. WILISYS	16. NILIS	25. LIBSOFT
-	17. NIRMALS	26. LOAN SOFT
-	-	27. SALIM
-	-	28. SLIM
Foreign Origin LMS available in India		
29. Alice for WINDOWS	32. SANJAY	33. TRISHNA
30. BASISplus & TECHLIBplus TLMS	-	-
31. DELSIS	-	-

Source: https://drtc.isibang.ac.in/bitstream/handle/1849/189/lmss2a.PDF

THRUST FOR THE LIBRARY MANAGEMENT SYSTEM (LIS)

Library users expect to find everything together. Traditionally, the Library Management System (LMS) or Integrated Library System (ILS) was responsible for running libraries efficiently and effectively. Over the last few years, the role of the ILS has been expanding from meeting library needs to delivering user experience. Change has been focused on innovation in user experience. That is a challenge because libraries vary and their online users and physical users are different. There is a move towards federated searching. This gives a Google-type search of all the library's resources.

The vendors should also look at ways to simplify and streamline how they use their LMS product. One way to increase the value of the ILS is to make it more interoperable with other institutional systems such as an institutional portal or student record systems. This can be achieved with service oriented architectures, using technologies such as web services. Libraries can add modules and features to the system such as RFID (radio frequency ID) based self-service systems or vertical search products. Working with other libraries and sharing provision can also help to share the costs. The inadequate funding in the Libraries and the lack of computer and technical skill of the Librarians are one of the main barriers for the Purchase of library management software.

CONCLUSION

The library environment is currently undergoing rapid and dynamic changes. Libraries are not for decorative purposes in academic institutions. The use of computers and the software became inevitable in the information world. To control the information explosion, a number of Library Management Software has been marketed by the software vendors. But, it is always crucial to estimate the aspirations and attitude of customers. As marketing the right product to the right target audience is the key to success in the marketing.

Marketing is the analysis, planning, implementation, and control of carefully formulated programs designed to bring about voluntary exchanges of values with target markets for the purpose of achieving organizational objectives. Libraries will be utilizing the Web to provide services to an increasingly sophisticated and demanding computer user by providing access to the worldwide information that people and organizations need in a timely, convenient, and equitable manner.

This Chapter has highlighted marketing of library management software products, strategies, services marketing, Generations of Library Management Software and Types of Library Management Software.

When the librarians begin to appreciate the new realities and opportunities in the Library Products and Services then the change may be rapid and dramatic in the services provided in the Libraries which produce value added and permanent customer satisfaction.

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Chapter 15
Designing Library Atmospherics for Information Delivery:
Problems and Solutions

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ABSTRACT

Learning environment comprises providing physical environment, cultural context in which students learn, and growth and development of institutions at large. However, learning environment is influenced by multiple factors such as institutional factors, physical infrastructure tools, budget, services, ICT, marketing the services, and evaluation of the services. Given the advent of web 2.0 technologies, there is need to provide active and two-way, student centric learning environment for effective learning and gaining of skill set. The chapter explores the aspects of how a conducive learning environment can be created by designing library atmospherics for information delivery.

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INTRODUCTION

Traditionally the focus of libraries was to provide information to anyone who walks into the Library. However, with passage of time the focus has shifted to using technology for reducing time to retrieve information. A well-stocked Library does not mean a well-used library. The core competence of the Library staff depends on engaging the students to make best use of the well-stocked library. As E. Stewart Saunders pointed out in 2007,‘‘The Internet and Google have changed the information landscape" Recently the Pew Internet & American Life projects found that72% of respondents who have access to the Internet rather than the library for their research needs (Estrabrook and Raine, 2007).

How the increasing dependence on information technology and online sources changed the landscape of librarianship? With internet revolution creating competition in form of YouTube and search engines and Meta search engines. The library is often without users hence, adopting technology has become important for libraries so that they can be utilized.

Any institution of higher learning can be rightly described as a community where teachers and scholars are the head, students are the body and the library its heart. The vital role of libraries in higher education has been well recognized by educationists. The Webster's Dictionary defines library as "a place in which literary, musical, artistic or reference materials are kept for use but not for sale." In the present scenario libraries are identified as storehouses of printed and non-printed information and manage to serve as many as they do.

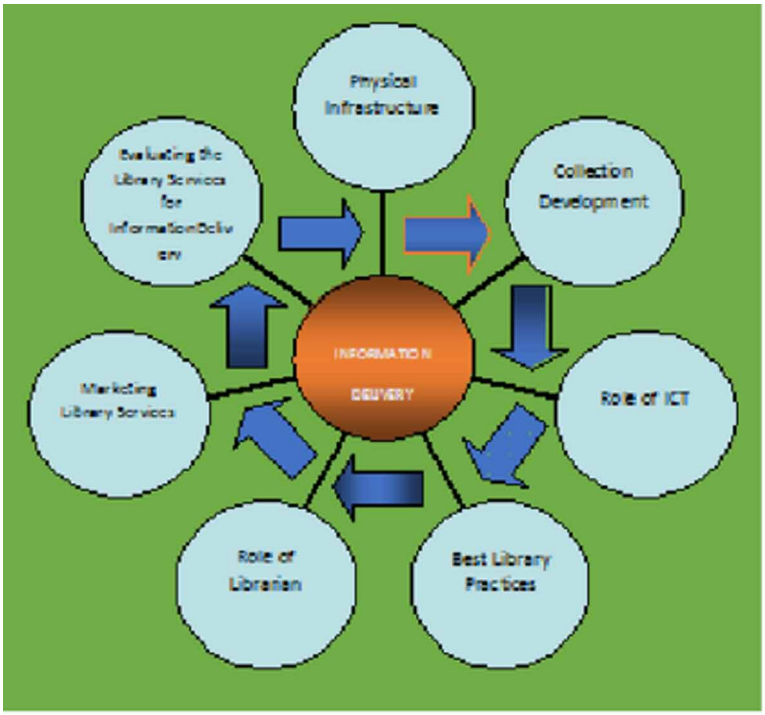
During the twentieth century because of the information explosion, knowledge got published not only in books and serials, but also in technical and scientific reports, standards and patents. In this way, printing technology helped the mass production of books and other printed materials and brought them to the library and became the primary storage media of information in the library.

THE PARADIGM SHIFT TOWARDS IT ENABLED SERVICES

The resources were acquired and organized by means of cataloguing, classifying, indexing and other procedures. Until 1960's all information sources and the bibliographic tools to access them were available only in printed media. It was followed by film and magnetic media and now is the "optical media age", where CD-ROMs and e-journals have entered in the library as a source of information.

At present the electronic gadgets and virtual personal assistants are few examples that are making the users more dependable and making a paradigm shift towards the technology is expediently available in the market. Though the libraries have transformed themselves by automation and establishing digital libraries there is a need for certain change from the user's point of view by providing them a conducive learning environment for information delivery. The ROI of any library is footfalls of users. Information delivery is as important as possession of information. The librarian and his staff should work together to attain 100% satisfaction levels of the users by delivering the information. The number of users visiting the libraries for information has tremendously fallen due to the advent of high-speed internet with affordable prices and other technological aspects. At this juncture to overcome all these incredible transformations there is need for change in libraries starting with physical form of the library. The library atmospherics involves all these components which play role in information delivery to the users. For this there is need for redesigning of the libraries.

Figure 1. Library atmospherics creating information delivery
Source: Author



The following are the important components that play vital role in designing the library atmospherics for information delivery:

1. Designing Library Atmospherics/ Physical Infrastructure.
2. Collection Development & Policy.
3. Role of ICT in Information Delivery.
4. Adopting the Best Library Practices for Information Delivery.
5. Marketing the Library Services for Information Delivery; and
6. Evaluating the Library Services for Information Delivery.

Designing the Physical Infrastructure

According to the Glossary of Education Reform Learning Environment refers to the diverse physical locations, context and cultures in which students learn. There should be an environment that should be conducive for the students to learn and equip them to acquire knowledge without any hurdles.

Good micro-level design of library creates a desired emotional effect in library visitors. The design or architect of the library plays pivotal role for the library in creating learning and conducive environment in the library. As a part physical infrastructure creating spaces, planning and arranging the physi-

cal setup of the library and providing basic amenities like washrooms, drinking water, air-conditioned reading halls, discussion rooms, open air spaces and cafeteria in the premises of the library have great effect and increase of footfall. The ambience in the library creates conducive learning environment for the users to use the library. The following are learning spaces that has been for the conducive learning environment in library:

1. Silent space (Zone): To read and study.
2. Teamwork Space: To discuss, brainstorm and share
3. Exhibition Space: To exhibit, new books by different publishers.
4. Hangout Space: To innovate, create, practice and share, a place where creating, producing and sharing new knowledge.
5. Makerspace: Experiment to play and design place, a place for assessment and inquisitiveness.
6. Creating positive environment in the library.
7. The importance of relation building with the users or the stakeholders.
8. Physical conditions like cleanliness, air-conditioning, display boards and comfortable seating arrangement.
9. Get the users to enhance a sense of belonging and personal identity.
10. Allow the students to discuss by conducting group discussion activities on various occasions.
11. Users can be given a chance to arrange their own type of reading environment.
12. Librarian should initiate one-to-one interaction with users that will help the students to open up about requirements in the library that can be addressed effectively and respect their values.
13. To allow the larger strength of users to participate in the library related activities, by forming the different types of clubs like book club, movie club and library PR club. These clubs will have their autonomy to promote all their clubs using different marketing techniques by designing posters, sending the email notifications, conducting the activity about book reading and make them how to learn from the movies and how it implies to their case study or class learning making learned-unlearned-learn.

Collection Development and Policy

Every college library should have a basic collection comprising reference books, textbooks, light reading materials and materials suitable for various competitive and entrance examinations. All these materials must be updated regularly; to correspond with the changes occurred in syllabus. No library ever has adequate funds to meet all its demands. Therefore, the available funds should be most judiciously utilized. There are certain principles of book selection which are meant to facilitate the judicious utilization of funds and they should supervise the selection and acquisition of books.

The collection development policy is effective and useful, if it is drafted based on sound principles and essential factors; otherwise the main motto of this will not be achieved satisfactorily. The principle, governing the collection policy will help for its successful implementation in the library to achieve the aim and objective of the college. The factors for formulating the collection policy will be summarized below:

1. Collection of documents or resources play vital role in the college library, the faculty and students are the main focus on the syllabus-oriented textbooks and reference books. Hence, collection of documents in the library, the policies so formulated should be adhered to.

2. It must have the quality of flexibility. It may be required by changing conditions of the budget or of community priorities.
3. If the size of the present collection is larger and older, and if library is research oriented, and it influences the present collection development; development policies must be followed.
4. Library must study its community and determine the needs of the community, so also the goal and objective of the institution before finalizing the drafting of collection development policy.
5. A collection development policy must be formulated very carefully with utmost caution and wisdom as it is concerned with delicate and touching issues.

Role of ICT in Information Delivery

The role of the ICT cannot be ignored in information delivery. The present scenario of the ICT is very challenging to the libraries, if used effectively it does not affect the libraries. This is very much need to be addressed adopting the ICT for all the operations and services of the library will enhance in information delivery. For this huge budget is required to maintain the IT Infrastructure and procurement of latest software and storage devices and high-speed Internet connectivity. Budget is an important aspect for such delivery. The governing bodies, regulators, institute managements must think beyond and allocate the needed budget to enhance the library. The stipulations of the regulatory bodies should make a mandatory regarding the apportionment of the library Budget. There is need to see libraries as knowledge service centers which provides and shares the knowledge for the growth of the society where the students are the stakeholders. The Intellectual capital of any academic institute rests in library.

The traditional library services have undergone some drastic changes due to the impact of Information Technology and other new technological Innovations on library resources and services. The change in user's perception in getting the information on the fingertip is also considered as one of the reasons. In the present generation, most of the library services are transformed with the ICT. The usage of the Information communication and technology has an important and wider role in providing the necessary information. Thus, the importance of the ICT in libraries has given the momentum to provide hassle-free services to the end-user. Most of the services are technology dependent. The print media has been undergoing a major change due to the competition from the electronic gazettes and mobile learning APP that allow the user's access to Information on their fingertips.

The user has become smarter with the smart phone in his hand getting all the needed information through multiple apps, social media and networking. Alteration of the Library services through mobility has major role for the increase of the footfalls to the Library. The paradigm shift of few services has increased the usage of the resources in better way. Application of the ICT helps to reduce the time for the users and saves the time in information delivery which is considered as an important factor.

Today's academic libraries are providing numerous services to their clients/users. An academic library is described as the heart of the learning community, providing a place for students and faculty members to do their research and advance their knowledge, and therefore also helping the library to enhance itself with modern technology. Investment on libraries is a continuous process that involves technology upgradation, collection development on print and e-resources collection.

Following are the few advantages in creating conducive learning environment in library for Information Delivery using ICT:

1. It will help and encourage readers to develop a passion for books and reading and become critically capable readers.
2. It will allow library staff, teachers and students to collaborate to find, use, share and create information.
3. This will provide seamless access to information resources, advice and support to the classroom, home and mobile devices 24/7.
4. It will strengthen the connection between home and library.
5. It will be a meeting place for the Institute community.

Adopting Best Library Practices for Information Delivery

According to ODLIS (Online Dictionary of Library Information Science) best practices is defined as the application of theory to real life simulation procedures that, when appropriately applied, unswervingly yield greater results. Hence, they are consequently used as reference points in evaluating the effectiveness of alternative methods of finishing the same task. Best practices are identified by measuring the evidences of success. When the same is applied to the library services the consequence is defined as Best Library Services.

The Best Library Practices have made impact on creating the conducive learning environment in any library formats. The following are the few best practices that are in place.

1. Enabling the library for 100% automation in all levels of operations, services and providing learning resources through offline and online.
2. Library holdings should be enough as per the requirement meeting the regulators agencies standards.
3. Delivering the required learning resources to the Instructional program run by institute at right time and play key role in teaching-learning process.
4. Acquisition of learning materials from globally available Information sources.
5. Enable the computer systems in the library with high-speed Internet and Intranet and improving the robust IT infrastructure with latest innovative technologies.
6. Facilitating Mini Theatre in the library for learning by screening TED talks, Business Movies for the students.
7. Providing print and scanning facility at minimal cost for all the stakeholders.
8. Document Delivery Services that helps in delivering the copies of journals, articles and book chapters owned by users to request these items and have them delivered electronically to their desktop.
9. Associating with National and International Networks and being an active member by participating in various library related conferences, seminars, etc.
10. Customize the mobile apps for library to access the resources.
11. Providing the remote access for the users and make the maximum usage of e-resources.
12. Enabling the Institute website by providing the access to all the E-Resources or by maintaining an exclusive library portal.
13. Extensive use of Social Networking for marketing library products and services.

14. Participating in the local and centralized consortiums
15. Maintaining the copyright law strictly.
16. Maintaining 100% user satisfaction levels.
17. Providing the open access links through online access, maintenance and development of an integrated library information system and database and encouraging the use of OER's (Open Education Resources).
18. Regular feedback and evaluation about user's satisfaction on Library products and services.

Marketing of the Library Services for Information Delivery

Marketing the products and services will help in customer attention. Unless these products and services are marketed effectively the recognition will remain dormant. The same is applied here, by marketing the various library services and products that are provided and delivered to the stake holders by the respective libraries. Different methods are followed or used by the librarian community to communicate the library services to all the stakeholders of the libraries. The primary and basic Information products that a library should hold are Books, DVDs, CDs, journals articles, databases, electronic journals, newspapers and databanks. Followed by the information-based services like access to databases, electronic current-awareness service, business consultancy services, subject gateways and portals, and web-based information services.

They can promote the library services and information products by displaying the customized posters in the library, in and around the institute and hangout places like institute cafeteria and auditorium. Library need to have a portal where you can portrait your services and have few students' testimonials about their views and experiences on library resources and services. Regular e-mailers, SMS notifications about the services and information resources can be sent to the users. A strong digital marketing is very much needed for marketing the library services and information products for Information Delivery. The Terminology "Return on Investment" (ROI) of any library setup depends on Marketing the products and quality of library services provided by the library.

The following are the few useful insights for marketing the library services and products:

1. Student's testimonials on library website about the library services and their experiences about library services and products.
2. Sending Email notifications to student and faculty members the about the services/products and their library status
3. SMS: Regular SMS facility to know the status of their library borrowings.
4. Digital Marketing: Creating Social Media Handles of the libraries like Facebook page, twitter account and Google Scholar account of their respective Institute library
5. Make use ICT tools like Remote connect, Mobile App, Website/library portal, Theatre for Management Learning, E-learning through Kindles.
6. Display the posters in and around about library services and products.

If the following practices are well in place and practiced than it can be ensured that Marketing of Library products and services will help in increasing user satisfaction and brings in an element of competition which results in providing better services and saving the time of the stake holders in information delivery.

Role of Librarian in Information Delivery

In any library, the librarians play an important role in disseminating the information. But fortunately, or unfortunately, technology is keeping a librarian on his toes working on the existing system, thinking beyond and adopting new methods of information transformation to the users as AI (Artificial Intelligence) is making its presence. The virtual libraries are giving the librarian more scope for his/her learning. The librarian should keep in mind that implementing the ICT as a continuous process. The librarian should enhance himself and adopt innovative methods for information delivery to the users by following the five laws of library in place.

The librarian should keep in touch with the students and teachers book needs and must be aware of the largest number at the least cost and the different types of publication brought out in the various parts of the world. The library staff should be familiar with the research done in various branches of knowledge resulting in the publication of several books for building up a balanced collection. Academic institutions have distributed their library book grants among the teaching departments based on formula worked out in the interests of the given institution.

A librarian should be able to increase his/her efficiency, guide the users in using the technologies through different ways, and enhance the infrastructure. He should be a protagonist in serving the users and to adopt the best library practices in providing the seamless library services.

The increasing availability of online access means that information resources are no longer confined within library walls and librarians need to rethink how their constituents' information needs are being met. (Tobie Matava, 2010). The revolution caused by IT was both challenge and an opportunity for libraries across the globe. The foremost important aspect of today's librarian is compared with the speed of Google. The librarian should be cable of for cultivate skills like:

1. **Planning:** There should be proper planning regarding Information products and how best the users can use. The librarian should be proactive and take necessary steps and formulate a contingent plan for optimal utilization of Information products and services.
2. **Organizing:** The librarian should train the staff about the products and services offered by the library. The staff should be well versed with every information need of the users and to give their best to attain 100% user satisfaction levels.
3. **Evaluation:** The librarian be duty-bound to take regular feedback and evaluation in the form of user survey through questionnaire and feedback about user's requirement, library services and information products in regular intervals. It will help in improving the library services time-time and upgrade the resources needed by the users.

Apart from the above description the following are the few points that can be adopted by the librarian:

1. Designing the Library Policy/ Framework
2. Adopting Innovative methods like using or encouraging and transforming the users for e-learning (Ex: Kindle)

3. Adopting the Technology and passionate to make best use of e-resources by maintaining some key performance indicators for the better learning and information delivery.

Evaluating the Library Services for Improving Information Delivery

The evaluation of libraries is considered as one of the important aspects for any academic libraries to improve in-house operations, and for providing the best services to the users with maximum satisfaction levels. It also develops the skill and abilities of the library staff and encourages them to learn more about technology, to impart knowledge to the users. For any form of evaluation to be effective, it will be important to ensure that it is ingrained in the workforce of the library itself.

It can be assumed that libraries, especially those that are academic in nature are continuously attempting to engage in activities with the intention to define newer metrics that might be able to describe better, a variety of their service activities.

Any Institution is evaluated based on certain parameters that make the institute the best. For any library, the evaluation is done based on the information products and services offered to the stake holders. These information products and services are evaluated through different assessment procedures. The information products and services offered by the libraries are measured through quality.

Academic institutions have been encouraged to move toward outcome-based assessment, as opposed to input, output, or even resource metrics. This encouragement has come from different variations or changes that have been implemented in the academic frameworks. Using these outcome-based measures, a library will be better able to evaluate how well it is performing. This will lead to a long-term representation of the libraries effectiveness in its mission to serve its stakeholders.

PROBLEMS AND SOLUTIONS

The rapid technological advancement and transformation has influenced the libraries and information products and services along with the librarianship. The paradigm shift towards the innovation technologies has changed the face of the speed in information delivery. Today users are using high end sophisticated technologies to meet their daily requirements with help of Apps and other applications. Though most of the libraries have adopted ICT there are lot of problems and Issues that are making very remarkable pressure and hurdles in information delivery at much needed pace.

Budget Constraints: Budget is key source of functioning for type of library. The existence of libraries depends on the budget. Budget is like a blood to the library. The strength of the academic library is only the budget. The allocation of the budget should be well planned and estimated keeping in view of the services, collection development and the monetary benefit (salary) of staff. As per the needs of the users, the library should allocate the budget for the procurement of materials. On the whole major part of the budget plays important role for a library.

Escalation of Prices: There is drastic increase in prices for print materials worldwide. The escalation of prices year after year is damaging the acquisition of prominent International Journals. This has become major concern for libraries to procure high quality journals and other documents.

Affordability for E-Resources: The e-resources are often expensive as they deal with a lot of technological aspects the affordability seems to be very low for the institutes/ organizations.

To overcome the above problems in delivering the information certain solutions are recommended.

Forecasting: There should be contingent planning to meet the future requirements. For this, enough financial resources should be mobilized. The librarian and the management of the institute should be proactive in getting the funds from various government regulators, utilizing the allotted funds in time, requesting the alumni to donate or raise the funds for the development of the library.

Consortium Participation: The libraries in the region/state should form a local consortium or to be a part of other consortium and share the resources. There should be consent from all the participative libraries to make this consortium a great success. This help in avoiding complexity in procuring the e-resources as well the financial burden will be less to borne by the libraries.

Robust IT Infrastructure: The libraries should create a robust IT infrastructure to provide quality services to all the stake holders. It should be customer focused and good service initiatives need to be developed. The libraries should focus more on inculcating e-reading culture to the users. This will serve the purpose of the user without coming to the library and also multiple access to readers can be facilitated. Library/ librarian should encourage the students to use more open education resources (OER) that are available freely. Librarian should prepare the list of open sources and make them available to the students regularly and keep them informing through emails and SMS.

Creating Spaces: Librarian should be proactive and see that the certain spaces can be created for the users in the library area. Workstations, silent reading rooms, group discussions area and refreshment area can give a space near or with in the library. This will definitely create a conducive learning environment for the users.

Certain key performance indicators in libraries should be give weightage when it comes to collection development and the services that has more potential. “Service excellence is not necessarily achieved using traditional quality assurance processes but that it is more likely to be attained through strategic planning processes aligned with key performance indicators that provide accountability” (Holmes & Parsons, 2016, p. 25).

CONCLUSION

Rapid technological advancements and the explosion of pedagogical styles and new and emerging learning requirements have necessitated traditional academic library to morph their design and service provision. Academic libraries today have to create variety individual and team learning spaces that can cater to the specific needs of the students and faculty of the institution to which it is attached. In creating conducive learning environments for the new age libraries have to shed traditional ideas of what a library should or should not be. Further it enhances and stretches good results in escalation of foot falls to the library and transforms the productivity of the library. Hence it can be concluded that the Library Atmospherics paly vital role in creating a conducive learning environment for Information Delivery to the users by implementing the mentioned components.

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Chapter 16
Safety and Security of Libraries: Challenges and Opportunities

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ABSTRACT

Library is a trinity of documents, patrons, and staff. The goal of library security systems is to offer a safe and secure environment to this trinity. There are both natural and man-made threats. Trained guards, locks, alarms, turnstiles, safes, security lighting, duress alarms, closed circuit televisions, and RFID are a few well-known security measures. RFID, the latest development, is being used in many libraries. Though some studies state RFID has health hazards, it has a lot of advantages making it popular. Modern library is also a storehouse of digital information and therefore digitized information, too, has to be secured. Information security programmes are also addressed in this chapter.

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INTRODUCTION

Security is a noun derived from the Latin word *secures*, which means 'free from danger'. It also means 'freedom from fear or anxiety' and it is 'a state of being secure'. Fischer and Green (1998) write, "security implies a stable, relatively predictable environment in which an individual or group may pursue its ends without disruption or harm and without fear of such disturbance or injury".

Safety is derived from the Latin word *salvus,* which means 'safe'. It is defined as the state or quality of being safe. It is clear that security is generally focused on ensuring that external factors do not cause trouble or unwelcome situation while safety is the feeling of being protected from the factors that causes harm.

They may sound like synonymous terms but on a closer view they have a subtle difference. The person who inflicts harm on the organisation can feel safe but the security is the precautions we take to prevent the crime or harm from happening.

Eden and Matthews (1996), defines a disaster as an unexpected event that may drastically threaten the lives of humans or damage buildings, destroy the information infrastructure, disrupt services, and render documentary materials inaccessible to patrons. Security threats faced by library are both natural and man-made. Few examples of disasters are fire made by fire accidents, flood, bomb blasts and arson.

RISK AND THREAT

The terms risk and threats are used interchangeably in the security context. Risk is described as 'the chance of something that will have an impact upon the objectives'; and it is measured in terms of consequences and likelihood. The 'risk event' is often described as the threat. The threat is the description of what could happen. The risk identification process comes with an understanding of what is at risk. Security risk management involves protecting people, physical asset, and information. The challenge in initially identifying risk is to accurately describe what can happen, how it can happen, and why it is likely to happen. Once the risks have been clearly described, they may be accurately assessed in terms of both likelihood and consequences.

THREAT TO LIBRARIES

Library is a trinity of documents, readers and staff. One cannot function without the other. So it is essential that they are protected in a way that they function effectively. The harmony lies in the balance of proper safety and security provided to the three components of the library functioning. There are several ways that their protection is threatened by both natural and man-made reasons. The goal of the security system in the libraries is to offer a safe and secure environment for library employees, library resources and equipment, and library patrons.

Libraries can be regular targets for vandalism, graffiti, and willful damages to the property. Burglary is also relatively common, with targets mostly cash, computer hardware and software and other office equipment. Vandalism and arson are often associated with burglary (Draper & Urosevic, 2004).

THREATS TO DOCUMENTS

Documents in the library include books of various genres ranging from ancient to latest collection; journals; newspapers; multimedia collection, digital information and so on. Library resources are to be made use to the optimum level and also to be preserved for posterity.

There are both natural and man-made threats that would destroy them and make them unusable to the future patrons. It is a necessity that proper measures are taken to protect them from all possible damages that may or may not happen. Natural disasters pose great threat to the documents that hold endless value to the patron. Since we cannot stop the natural disaster from happening, the least we could do is, prepare to face it properly with lesser damage.

Some of the events that may pose risks to documentary materials include hurricanes, tornadoes, flash flooding, earthquakes, forest fires, volcanic eruptions, power outages, leaking roofs and pipes, chemical spills, theft, arson, bomb threats, and acts of war and terrorism (Eden & Matthews, 1996). The appropriate measures to prevent these disaster, is to plan the infrastructure of the library accordingly to the region's geographical condition. Ground floors should be avoided when planning to build the library, as it is more prone to get damaged during flooding. Periodic checking of the building must be made mandatory along with the proper maintenance. The choices of materials in which the documents are placed also contribute in preserving them for longer shelf life.

Natural Disaster

Nature's fury, sometimes called as 'act of God', is always a threat to library environment and reading materials. Few historic events of the losses caused due to the natural disasters are listed below.

- An earthquake caused serious damage to the National and University Library of Macedonia (Yugoslavia) in July 1963 (Van der Hoeven & Van Albada, 1996).
- As a result of the Arno flood of November 1966, the basement of the Bibliotheca Nazionale Centrale in Italy 1,200,000 volumes and pamphlets were damaged (Feather, 1991).
- Flash floods hit Mozambique's districts of Xai-Xai, Chokwe and Guija during the year 2000 causing substantial damage to documentary materials (Maúngue, Mahumane & Mangue, 2003).
- In January 2004 Cyclone Heta flattened the Cultural Centre and severely damaged the National Library on the Island of Niue (PABRICA, 2004).
- In August 2005, Hurricane Katrina completely destroyed the Martin Luther King branch of the New Orleans Library, with nothing salvageable.

Fire accidents in the library cause major damage to the documents present in them. Some steps to reduce the damages include, basic knowledge of the use of fire fighting equipment in safeguarding people and documents. Librarians should ensure fire extinguishers are placed at strategically vulnerable points. Equally important, fire extinguishers must be regularly tested and refilled to ensure that they are operable in the event of a fire.

Fire detection alarm should be installed in record rooms/ stack rooms to spot fire in case of fire accidents. Smoke and fire detectors could be wired to a central alarm panel that is continuously monitored and ideally is constructed so that any alarm given is repeated instantly at the nearest fire house. Since the permanent alarm is not possible, an external alarm can be installed to allow people outside the building to be notified and to raise alarm with the emergency services.

Man-Made Destruction

Man-made reasons that would destroy the documents are theft, arson, bomb blasts, acts of war and terrorism. Violence plays a major role where the complete or major destruction of the library along with the patrons and staffs as well can happen. Some of the historical events that destroyed libraries are

- Bombs destroyed many libraries in Europe and Japan during the Second World War (Van der Hoeven & Van Albada, 1996).
- Communal riots in Lahore (Pakistan) in 1948 led to the destruction of two of the largest libraries in India (Van der Hoeven & Van Albada, 1996).
- Public libraries were reduced from 53 in 1975 to 11 in 2001 as a result of the civil war in Angola (Ramos, 2001).
- The burning of the Jaffna Public Library was an important event in the Sri Lankan civil war. An organized mob of Sinhalese origin went on a rampage on the night of May 31 to June 1, 1981, burning the library. It was one of the most violent examples of ethnic biblioclasm of the 20th century. At the time of its destruction, the library was one of the biggest in Asia, containing about one hundred thousand books and manuscripts. Rare and old manuscripts written on palm leaves and stored in fragrant sandalwood boxes, miniature editions of the Ramayana epic from the children's section, yellowing collections of extinct Tamil-language newspapers -- all were consumed in a roaring conflagration (Wikipedia).
- In April 1986, a suspected act of arson destroyed Los Angeles Central Library, the United States's third largest public library (Butler, 1986). Approximately 400,000 volumes out of a total of 2. 1 million were completely destroyed.
- In February 1988, a fire caused what has been called 'the biggest single library disaster' in the 19th Century at the USSR Academy of Sciences Library in Leningrad (Waters, 1990). About 3. 6 million books were seriously damaged and 400,000 newspapers and scientific periodicals were lost.
- On 11 September 2001 terrorists bombed the World Trade Centre and the Pentagon Library in the US, destroying records, books and other documentary materials (Harrison, 2002).
- The National Library and Archives, a priceless treasure of Ottoman historical documents including the royal archives of Iraq, were turned to ashes in 3000 degrees of heat on 14 April 2003 during the United States' invasion of Iraq (Fisk, 2003).

Theft and Damage

Theft is one major cause for the loss of documents where they are stolen by the readers for various purposes. Books are stolen before the exam time by the students and some books are never returned to the library, for example books about parenting and guns. Few books are mutilated by the readers, which is of no use for other patrons. Some books of high value are stolen and sold in market for their value. Prices for rare books and manuscripts have skyrocketed on the auction gallery floor and in booksellers' catalogues, in the same fashion, and incidents of theft have increased. Sometimes the librarians never notice it until they realise it has been missing. People with the intention of stealing take those books hidden inside their shirts and pockets. In academic libraries, exam time is the prime period where major thefts happen.

There are three kinds of patrons - those who never steal, those who always steal and those who steal in certain circumstances. People who never steal are never a threat to the library, people who always steal cannot be stopped unless very strict security system is followed in the library, and the last kind is the one who steal in the favourable occasion.

Damage of the documents also poses a threat to the library as they cannot be used properly by the other patron. Mutilation of the books which has pictures and tearing the cover pages also comes under the damage. Library buildings are also prone to damage in the time of violence and graffiti is drawn on the walls of the library. Prevention efforts can include regular patrols of unstaffed floors, surveillance cameras at entrances and at potential problem areas, and outreach to build connections with community members. However, prevention efforts will help reduce risk by decreasing incident frequency.

Prevention of Theft and Damages

If proper steps are taken, those thefts and damages could be narrowed down to a greater extent. Librarians should be aware of the texts that are in high demand among the readers and acquire more copies of those texts. Photo copying can be allowed for people who require it so that they could get the information they need from different texts rather than borrowing one text to the home. The cost of photocopying should also be relatively cheaper so that readers won't be motivated to steal or rip off the pages.

Some ways of reducing thefts and damages in libraries include: installing closed circuit television cameras (CCTV) and intruder alarms, security staffing and security tagging (for example, magnetic strips) (Pybus, 1998). Some of gadgets used to minimise theft rely on electric power to work efficiently. In a study conducted in various libraries about the library checklist established, only 10 (20%) libraries had an alternative source of power such as a generator. This means their library security systems may be rendered ineffective in the event of power cuts, thus exposing library materials to the ever-present danger of theft.

Preservation

Preservation of the documents is a vital part in the library, as they can be destroyed without proper maintenance. The old and ancient texts need utmost attention in preservation unlike other books, as they are rare to replace. For long time preservation of records there has to be an elimination of climatic factors that cause deterioration i.e., temperature, humidity, light and acidic gases (Sundararaj, 1999). Few other steps towards preservation are

- Maintenance of tidy conditions, regular cleaning arrangements, use of chemical preservatives, and constant vigil against damage by insect pests is necessary for safe maintenance.
- Use of insect repellent chemicals like naphthalene, ethylene oxide reduces chances of insect attack.
- Dampness, stagnant air, sunlight, hot and dry climate can bring about the destruction of the records. A dry, well ventilated and suitably lighted room is needed for proper storage of the records. Air-conditioning is also a very good alternative and presently effectively implemented in libraries across the globe irrespective of the economic status.
- Lamination is also an effective method to prevent manuscripts and archival records from damage.
- Fumigation and deacidified paper can help in preservation of documents.
- The modern and efficient way of preservation of the documents is digitisation. This allows several readers to access the material at the same time and they can be stored in the computers and cloud space forever. The future libraries belong to the cloud space for storage of information and records.

STAFF AND PATRON

A key priority in security risk management is the protection of human life, and this must never be overlooked. Staff members play a major role in administering the library along with doing needful help to the patrons in finding the resources they need. Their security can also be under threat like the patrons. Without patrons, the use of library is incomplete, so it is essential to provide proper security to the patrons as well. Murder, manslaughter, robbery, assault, mayhem, sex offenses, and sexual harassment are the security threats faced by the staff and patron.

Mayhem is defined as "the crime of willfully inflicting an injury or another so as to cripple or mutilate. Random or deliberate violence or damage" (Webster, 1994). Physical damage to the staff and patron can be caused by communal riots and assaulting of the civilians during the time of violence is a possible one. A staff or patron can be physically, mentally or sexually harassed by another patron or staff in the library and vice versa. There must be suitable steps to prevent them from happening to anyone.

There are chances that a person can be attacked while working in the library after the prime time or on their way to the parking space. Proper lighting and security should be maintained throughout the hours of working to prevent such incidents from happening. Theft of personal items from the patron and staff is also a potential incident to happen inside the library along with the theft of the library possessions. Arson on book return chutes can cause physical damages to the library and staff as such in general. Deaths inside the premises can be caused due to physical violence or any other reasons. Drug abuse, fire, bomb threats and other emergencies are other few threats that happen to the staff members of the library. Threats through mail and telephone happen to the staff members which are reported as cyber bullying. Hostile behaviour of the patrons can also be added to this category.

PHYSICAL SECURITY

Locks, alarms, turnstiles, safes, security lighting, duress alarms, closed circuit television, trained guard are the few well known physical security systems. One main aspect of physical security system is that they should be cost effective. There is no point in spending $250,000 on electrical article surveillance when the total loss is around less than $10,000 per year. However, this principle cannot be applied libraries holding rare and antique collection where loss of a single piece of documents will be irreplaceable loss.

Locks

There are many kinds of locks used for security in general. There are possible ways that a thief can pick those locks with specific instruments according to the lock the building uses. So the lock that has the highest security potential could be chosen to use for the required institute. Though locks are the basic level of security, one shouldn't compromise security over money.

Lighting

Two major purposes of lighting in a security perspective are to – create a psychological deterrent to intrusion and to enable detection. Good lightning is considered as an effective crime control method that the law, in many locales, requires building to maintain lighting.

Alarms

Intruder alarms are common in most places where they require utmost security. Proper lightning in the places where people use would reduce half the crime from happening. The library should not provide an opportunity for the crime to happen at any cost.

Turnstiles

Turnstiles could be installed in the entrance which would avoid crowding and allows one person to enter at a time. The security can be maintained easily in this system. Duress alarms can be implemented in the library where, the alarm activator (button or switch) should be placed so that it can be used without its use being noticed by others.

Intrusion Detective System

Intrusion Detective System (IDS) inspects network traffic to identify suspicious patterns that may indicate a network or system attack from someone attempting to break into or compromise a computer system (Peltier, Peltier, & Blackley, 2005).

Security Guards

Appointing a guard who is trained for security is the most common physical security. They can go rounds to all the parts of the library and should provide security to the staff and patrons equally. They must be trained to use the fire extinguishers and should be able to tackle the situation when it is critical. They must also be available when the staff signals them for any abnormal situation that requires aid. Smoking should be prohibited inside the premises and no one should be allowed inside the library with things that cause fire.

MODERN SECURITY SYSTEM

CCTV

Closed circuit television (CCTV) is one of the modern day security system widely used in public, private and residential areas, wherever crimes could potentially happen. The security plan is to provide remote eyes for the security operator. Many locations can be observed by a single operator who can take charge controlling the security of the premises. This eliminates the need for physicals guards who go round to the remote places and there are chances that they could miss the intruder activity.

CCTV is an inexpensive investment for preventing accidents and minimising damages when an accident occurs. It should be enabled with the means of recording and storing the data for permanent records of what the camera monitors, on a daily basis. In future, the stored data can be used as an evidence in prosecution. This reduces many crimes from happening and appropriate steps like detection and identification could be taken into account once the crime takes place.

An operator should be appointed to keep a track on CCTV footage of what is happening in and around the library and storing the data on a daily basis appropriately. This facilitates the operator to warn the guard about the place where the incident is going on and the crime would be effectively stopped from happening. Fire accidents and thefts could be reduced in this system. People who intend to do harm to patrons and staff could be brought to justice with proper video footage.

There are few notable disadvantages in CCTV system. It does not provide complete coverage of the premises as they promise only limited access to the area of surveillance. Advanced wide coverage could be installed which could be expensive and requires system upgrade on a regular basis. The staff might have trust issues as they are constantly under the supervision. Nevertheless, places like rest rooms and break rooms should be restrained from surveillance. Intrusion of privacy is another issue where lack of privacy occurs in a working environment. The intruder can damage the camera lens by breaking or covering them with stickers or chewing gums, which would restrain the cameras to function properly. Hacking the system is another drawback where they could delete the data or take them for their purpose and also stop the working of camera as well.

RFID

RFID (Radio Frequency IDentification) was invented in 1969 (Narayanan, et al., 2005). It is the latest addition of technology to be used in the libraries for a combination of automation and security activities in the well maintenance of documents either inside the library or goes out-of library.

The concept of RFID can be simplified to that of an electronic barcode and can be used to identify, track, sort or detect library holdings at the circulation desk and in the daily stock maintenance. This system, consist of smart RFID labels, hardware and software, provides libraries with more effective way of managing their collections while providing greater customer service to their patrons (Narayanan, et al., 2005).

It can be used as a data carrier, with information being written and updated to the tag on the fly. RFID systems carry data in suitable transponders, generally known as tags, and retrieve data, by machine-readable means, at a suitable time and place to satisfy particular application needs. RFID is a combination of radio-frequency and microchip. RFID chips are of particular interest, because they have become smaller and smarter to the point where they can be added to every kind of document and can be read and updated from a distance. They are flexible and can be placed in the cover of the book or in the middle.

Advantages

There are many advantages that attribute to the usage of RFID. Some of them are

- Rapid and simplified charging and discharging of the books which would save time for the patrons. They are much faster than barcodes and many books can be read at a same time unlike barcodes reading one at a time.
- It is a time saving and assist free technology where the patrons themselves can drop and take the books themselves through this wireless technology.
- With the updated information, the staff is able to identify when a document goes missing. This speeds up the process of replacing the text.
- It also helps in arranging the books in order if they are out of place just by scanning them across the shelf.
- They have longer tag life guaranteed up to 10 years. Information can be updated according the type of chip used by the library.

Disadvantages

- The cost of implementing RFID is the major disadvantage when it comes its installation and working. Peripheral equipment and applications will be burden in the budget.
- Uninterrupted power supply is another problem where they do not function without power supply. So it cannot be reliable at all time. The sensor/reader has to be maintained properly so that they are always in a trim condition and their power supply is always intact.
- Privacy is also a subject of debate in the application of RFID technology. All the patron activities such as reading, browsing, and action behaviour will be detected by readers which are installed in libraries. This could be a privacy problem for the patron (Yu, 2007).

- It is also possible to compromise an RFID system by placing two items against one another so that one tag overlays another. That may cancel out the signals. This requires knowledge of the technology and careful alignment (Rama, et al., 2007).
- Tag clash occurs when more than one chip reflects back a signal at the same time, confusing the reader. Different systems having the tags respond to the reader one at a time. As they can be read in milliseconds, it appears that all the tags are being read simultaneously (Singh, 2007).

Health Hazards of RFID

- High amount of RF energy consumption have health hazards and may interfere with the operation of other devices (Sorrells, 2000).
- At present, the only established effects that can result from excessive exposure to RF energy are related to tissue heating. Although RF energy can be absorbed by living organisms to some degree at any frequency, available data do not demonstrate adverse health consequences at exposure levels below international accepted limits, which do not allow significant heating (Valberg, et al, 2007).
- It is also recognised that main direct effect of exposure to high frequency Electro Magnetic Field (EMF), which creates health hazards because of possible thermal damage to tissues in the case of intentional or unintentional overexposure. It may also be among the components of health hazards associated with long-term unintentional side exposure to Radio Frequency (RF) at the workplace.

INFORMATION SECURITY

A modern library is incomplete without the digitized information storage and retrieval systems. Hence ensuring the safety and security of the data/ information stored in the digital format or cloud space is very important for the Librarian. He/ She should be well versed in the security threats and the techniques of securing the digitized information too.

Information systems comprises of hardware, software, live ware, data, algorithms and networks. Any compromise made on these components can breach the security of the information stored in the system or network. Information Security is not only the art and science of securing information from unauthorized access but also the prevention of use, disclosure, disruption, modification, inspection, recording or destruction of information. Information can be anything like personal details, profile on social media, mobile phone data, etc. Hence Information Security spans vast areas of research ranging from Cryptography to Mobile Computing. The objectives of Information Security are commonly known as CIA triangle – Confidentiality, Integrity, and Availability (Whitman & Mattord, 2016).

Types of Information Security Threats

Compromises to Intellectual Property: Piracy, copyright infringement, are examples of threats to intellectual property.

Deviations in Quality of Service: Internet service provider (ISP), power, or WAN service problems affect the quality of services provided.

Espionage or Trespass: Unauthorized access of data and unauthorized data collection form information trespass.

Forces of Nature: Fire, floods, earthquakes, and lightning are some of forces of nature or acts of God that interfere with the information systems.

Human Error or Omissions: Accidents, and mistakes committed by employees can also pose threats to the information stored in digital format.

Information Extortion: The examples of information extortion are blackmail and disclosure of information to mercenaries.

Sabotage: Destruction of information systems, data and information services by vandals constitute sabotage (Bottom, 2004).

Software Attacks: Viruses, worms, macros, denial of service, etc. affect the computer software which in turn affects the information systems. Technical hardware / software failures, bugs, code problems and unknown loopholes can cause equipment failure.

Technological Obsolescence: Antiquated or outdated technologies are the some of the reasons for information system failure.

Fraud and Theft: Illegal confiscation of information or information systems or equipments are also some the information security threats.

Techniques of Information Theft

The following are some of the most commonly used techniques to steal information.

Domain Name Service (DNS) Poisoning

Communication between the computer systems on the Internet is through the DNS. DNS translates the domain names we use into the IP addresses that computer systems and routers can understand. DNS poisoning is a technique which interrupt that process and redirect the traffic to an unwanted or illicit site and this site in turn steals users' personal information.

Denial of Service (DoS)

Denial of service aims to prevent legitimate patrons from accessing the system. DoS attack is easy to execute and it does not require any technical skill (Peltier, Peltier, & Blackley, 2005).

Malware

A malicious code or malicious software is called malware. These software programs are designed to damage, destroy, or deny service to targeted systems. Hence malware can be defined as a computer software specifically designed to perform malicious or unwanted actions.

Malware used to create undesired marketing and advertising popup and banners on a user's screens is called an adware. Spyware is a computer program that enables to gather information about people and organizations without their knowledge.

Virus

Virus is a type of malware that can attach itself to other executable programs. It replicates and propagates itself to multiple computer systems, when activated. It spreads through multiple communication networks rapidly. It can send copies of itself to all users in the infected system's e-mail program.

Worm is a type of malware that can activate and replicate itself without being attached to an existing program. Bot also known as zombie is an automated software program that executes certain commands when it receives a specific input. Trojan horse is a malware program that hides its true nature and reveals its designed behaviouronly when activated (Whitman & Mattord, 2016).

Hacking and Cracking

Hacking means illegally accessing systems and information without authorization. Hacking interferes and disrupts systems causing havoc, sometimes in protest to some operations, policies, or actions of an organization or government agency. Cracking intentionally reverse-engineer, remove, or bypass a password or other access control protection, such as the copyright protection on software.

Phishing

Phishing is a form of social engineering in which the attacker provides what appears to be a legitimate communication, usually e-mail. These communications contain hidden or embedded code that redirects the reply to a third-party site in an effort to extract personal or confidential information.

Information Security Programs

Information security is ensured through proper use of access controls and administrative controls. Following are some of these controls (Nelson, 2004).

Firewall

It is a combination of hardware and software that filters or prevents specific information from moving between the outside network and the inside network. It forms a barrier between a secure and an open environment.

Encipher

Enciphering is the process of encryption, encoding, or converting plaintext into the equivalent ciphertext (Whitman &Mattord, 2016).

Cryptography

It is the process of making and using codes to secure the transmission of information from one end to another.

Digital Signature

Digital signature is created using the sender's private key. It is a digitized form of signature, i.e., a piece of information that gives the sender authenticity, message integrity, and non-repudiation (Peltier, Peltier, & Blackley, 2005).

Digital Certificate

It is a certificate identifying a public key to its subscriber, corresponding to a private key held by the subscriber. It is a unique code that typically is used to allow the authenticity and integrity of communications to be verified (Peltier, Peltier, & Blackley, 2005).

Fail-Safe Lock

It is an electromechanical device that automatically releases the lock protecting a control point if a power outage occurs. This type of lock is used for fire safety locations.

Fail-Secure Lock

It is an electromechanical device that stays locked and maintains the security of the control point if a power outage occurs (Whitman & Mattord, 2016).

CONCLUSION

Library is a public institution used by all types of people. Hence the library documents, patrons and staff are under constant threat. The various risks and threats faced along with the security measures to be taken are discussed in this chapter. The role of the librarian with regard to security measures is limited to awareness of the various risks and threat and also in implementing the right solutions to the risks. The librarian should be conversant in providing a safe and secure reading experience to the patrons without compromising the safety and security of the documents and the library staff. He or she should adapt the library security systems based on the local conditions and requirements. The appendix provided to this chapter helps the librarian and library authorities in providing a safe and secure ambience to the user community.

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APPENDIX

Building and Document Security Checklist

1. Inspect the strength of doors, windows and grille.
2. Whether the required number of locks, chains, latches and bolts are provided at the required places and keys issued only to authorized personnel.
3. Sufficient illumination inside and outside the building with provision for automotive protective / emergency lighting system and auxiliary power system.
4. Provision of elevators with enough space for moving books, book trolley, stack, etc.
5. Property counters and space for security personnel.
6. Access and easy exit points for physically challenged persons.
7. All electrical switches and plug points to be placed at vantage and safe position.
8. Check all electrical and electronic equipments for any defects to avoid electrical short circuiting.
9. Water taps and closets to be placed in such a way so as to avoid internal flooding.
10. Check all water taps periodically for any leakage.
11. Fire, burglar and distress alarms in reading and stack area.
12. Fire extinguishers at easily reachable places.
13. Refill fire extinguishers at regular interval.
14. Provision of emergency exit.
15. Is the CCTV kept at the strategically important places, working properly and monitored.

Staff Security Checklist

1. Review the credentials of the staff while recruiting and also periodically during employment.
2. Periodical physical and mental medical check-ups.
3. Proper training in handling the patrons and exigencies.
4. Periodical shuffling of staff dealing with acquisition and reference sections.
5. Personnel records to be reviewed at proper intervals.
6. Audits and verifications by the supervisors.
7. Secure all devices such as computers and photocopiers with password and firewall.

Patron Security Checklist

1. Check the antecedents of the patrons without offending them.
2. Intimidating behavior, bullying, sexual harassment, lewd behavior, incidents of flashing and exhibitionism, vandalism, etc should be reported immediately.
3. Take note of unusual sounds, and noises.
4. Notify the law enforcement authorities of any suspicious behaviour.

Chapter 17
Information Security: A Scientometric Study

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ABSTRACT

Scientometrics is the quantitative and qualitative evaluation of scientific literature. Information security is the art, science, and technique of securing the computer's systems, the data and information stored in computer systems, computer networks, and also the information security management. Information security is critical while designing an information system or an information service. Data related to information security research are downloaded from the Web of Science and analyzed for literature growth, top productive country, institution, and author, top funding agency, top contributing source title, and the area of research. This chapter reveals USA is the top contributing country while China is also making rapid strides in this field. Chinese funding agencies fund most of the research. However, English is the preferred language of communication.

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INTRODUCTION

With the advent of computers, a need arose to physically secure them from outside threats. This was called computer security. Later, the concept of computer security underwent an evolution and has been transformed into information security. Information security originally meant the process of physically securing the computer systems and the various documents and files stored in them. However, in modern terms due to the developments in the Information and Communication Technology (ICT) and World Wide Web, Local Area Networks, Wide Area Networks, etc., it means more than the mere security of the computers. Information security includes the information security management, data security, and the network security. The Committee on National Security Systems (CNSS) defines information security as the protection of information and its critical elements, including the systems and hardware that use, store, and transmit the information (National Security Telecommunications and Information Systems Security, 1994).

SCIENTOMETRICS

The metrology of scientific literature varies from the librametrics to webometrics. In between, there are bibliometrics, scientometrics, informetrics, cybermetrics, altmetrics, etc. However, a closer observation of this metrology reveals a significant overlap which has been illustrated by Björneborn and Ingwersen (2004). Scientometrics is the quantitative study of scientific literature (Chen, Dubin & Schultz, 2014); scientific and technological progress (Nalimov & Mulchenko, 1969); science of science, communication in science, and science policy (Wilson, 2001).

Scientometrics is one of the measuring and evaluating techniques used by the Library and Information Science professionals. Scientometricians use various mathematical and statistical techniques for the evaluation of scientific research. Scientometrics is a quantitative and qualitative measuring technique for evaluation and interpretation of science and its different activities such as productivity, progress, organization and management (Jeyasekar, 2018).

REVIEW OF LITERATURE

G. F. Khan et al. (2011) studied the growth pattern of e-government literature. The study showed that e-government studies pertaining to developing countries issues/ topics have rapidly increased during the last decade; covering a range of topics/ issues studied from socio-technical aspects. Frank Stech (2011) analyzed the concepts of deception, counter-deception, and deception detection in the cyber-space domain. Their objective was to conduct scientometric analyses of these concepts in the cyber-space domain. They observed that although various deceptive tactics are addressed in the cyber-security literature, it appears they are characterized more from the standpoint of technology than from their social, behavioral, or cognitive elements.

Paul Benjamin Lowry, et al (2013) conducted a scientometric study to make significant strides toward correcting the limitations in the ranking of mainstream Information System (IS) journals. Robert E. Crossler (2013) purpose of study is to highlight future directions for Behavioral Information Security

research, which is a newer, growing area of research. The study presents information about challenges currently faced and future directions that Behavioral Information Security researchers should explore. These areas include separating insider deviant behavior from insider misbehavior, approaches to understanding hackers, improving information security compliance, cross-cultural Behavioral Information Security research, and data collection and measurement issues in Behavioral Information Security research.

Marvin Fleischmann et al (2014) in their scientometric analysis provided the first review of cognitive bias-related research in Information Systems (IS). Their systematic literature review of 12 top Information System outlets covering the previous 20 years identifies 84 publications related to cognitive bias. Posey, et al (2014) assessed the mindset of insiders regarding their relationship with information security efforts and compared it against the mindset of the information security professionals and concluded that security is both technical behavioral matters. Jeyasekar and Saravanan (2014) conducted a single journal scientometric study of the journal *Digital Investigation* published by *Elsevier* for the period 2001 to 2013 using data obtained from Google Scholar. Publish or Perish Software was used for the retrieval and analysis of the data and VOSviewer software was used for cluster analysis and visualization. The growth pattern of literature, authorship pattern and citations were studied.

OBJECTIVES OF THE STUDY

The review of literature shows that not of much scientometric study has been done on information security though information security is an important aspect in designing and promoting the information products. Hence this study is conducted with the following objectives.

- To analyze the growth of the information security research literature.
- To find the country-wise and the institution-wise contributions towards information security.
- To trace the source of research funding on information security.
- To examine the top source titles and the language.
- To analyze the growth in the areas of research.

METHODOLOGY

The data for the study was retrieved from the Web of Science (WoS) platform. WoS is an online subscription-based scientific citation indexing service started by Eugene Garfield. It was originally produced by Garfield's Institute for Scientific Information (ISI), and later by Thomson Reuters. At present it is maintained by Clarivate Analytics.

The WoS Core Collection consists of six online databases (https://en.wikipedia.org/wiki/Web_of_Science). They are

1. Science Citation Index Expanded that covers more than 8,500 journals belonging to 150 disciplines.
2. Social Sciences Citation Index that covers about 3,000 journals in social science disciplines.
3. Arts & Humanities Citation Index that includes about 1,700 arts and humanities journals and about 250 major scientific and social sciences journals.

4. Emerging Sources Citation Index that includes about 5,000 journals in science, social sciences, and humanities.
5. Book Citation Index that covers about 60,000 select books.
6. Conference Proceedings Citation Index that covers about 160,000 conference titles.

The data for study was retrieved from the Web of Science platform using the Boolean search string (TS=informat* AND security) AND (Year=1989 to 2018). The total number of bibliographic records retrieved was 30,318. These data were found distributed among the various indices as shown in Table 1. The retrieved data were further analyzed using Microsoft Excel™ tools.

Table 1 reveals that the maximum number of records is covered in Science Citation Index – Expanded (SCI-E) and the minimum number in Index Chemicus. It is also observed that there is an overlap of about twenty two percent of records among these indices.

RESULTS AND DISCUSSION

Growth of Literature

The year-wise literature output (primary data retrieved from WoS), its growth trend and also its cumulative growth (both secondary data computed from the primary data) have been presented in Table 2.

The growth trend of 'information security' literature is illustrated in Figure 1 and its cumulative growth over the thirty years (1989 to 2018) period is illustrated in Figure 2. It can be inferred from the illustration in Figure 1 that the growth trend of 'information security' research has not been smooth. Sharp appreciations and depreciations can be observed the figure. Sharp decline in the growth trend could be observed in the years 1995, 2007 and 2010. In contrast, sharp appreciations are observed in the years 2008-2009, and 2011 and also very sharp appreciation in the year 2018. Negative growth rates are observed in the years 1995, 1997 and 2007. Though conclusions could not be drawn from these data, from the inference it can be stated that the growth trend in 'information security' research has been haphazard during the period of study.

Table 1. Number of records covered from WoS indices

Index	Records	Percentage
Science Citation Index – Expanded	23871	78.74
Social Science Citation Index	9992	32.96
Conference Proceedings Citation Index – Science	2488	8.21
Conference Proceedings Citation Index – Social Sciences & Humanities	288	0.85
Arts & Humanities Citation Index	204	0.67
Book Citation Index – Science	33	0.11
Book Citation Index – Social Sciences & Humanities	30	0.10
Index Chemicus	2	0.01
Total	36908	121.65

Table 2. Growth of literature

Year	Records	Growth Trend	Cumulative Growth
1989	19	0	19
1990	19	0	38
1991	100	0.81	138
1992	154	0.54	292
1993	192	0.38	484
1994	264	0.72	748
1995	210	-0.54	958
1996	272	0.62	1230
1997	263	-0.09	1493
1998	287	0.24	1780
1999	326	0.39	2106
2000	385	0.59	2491
2001	403	0.18	2894
2002	510	1.07	3404
2003	642	1.32	4046
2004	810	1.68	4856
2005	973	1.63	5829
2006	1117	1.44	6946
2007	930	-1.87	7876
2008	997	0.67	8873
2009	1190	1.93	10063
2010	1238	0.48	11301
2011	1491	2.53	12792
2012	1629	1.38	14421
2013	1864	2.35	16285
2014	2110	2.46	18395
2015	2413	3.03	20808
2016	2695	2.82	23503
2017	3043	3.48	26546
2018	3772	7.29	30318
Total	30318		

The cumulative growth rate of the ‘information security’ research output during the period 1989 to 2018, which has been plotted as a graph in Figure 2 shows an exponential growth rate marginally till 2008 and thereafter rather a very steep growth. However, it does not fit into the exponential trend line drawn on the graph.

Figure 1. Growth trend of information security literature

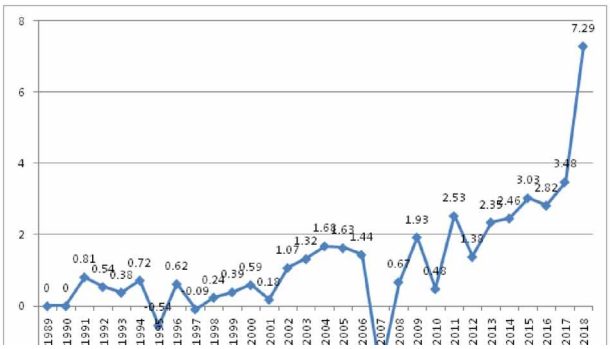
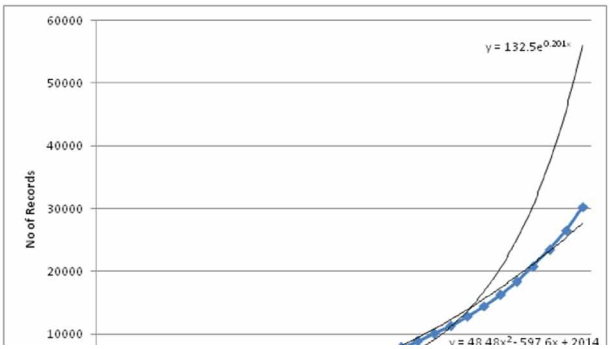


Figure 2. Cumulative growth of information security literature



Top Contributing Countries

The primary data (number of records) related to the top ten contributing countries have been retrieved and presented in Table 3. Percentage analysis was also done and these countries are ranked according to their productivity and these secondary data are presented in the same table.

It is observed that the USA with about thirty three percent contribution is ranked as number one country. The second most productive country is China with about 19 percent contribution. Rest of the countries has only single digit contributions. It can be inferred that though USA dominates 'information security' research alike every other field, China is also moving forward. Similarly, smaller countries like South Korea and Taiwan also figure in the top ten productive countries. This can be due to the reason these countries are leading producers of electronic goods such as computer, laptops and smart phones. The facts and figures related to the top ten productive countries are presented as pie diagram in Figure 3 for better visualization.

Top Contributing Institutions

The top ten countries in terms of 'information security' literature output and there are output (primary data) are presented in Table 4. The percentage of their contribution was also calculated and ranked and these secondary data are also presented in the same table.

Table 3. Most productive countries

Country	Records	Percentage	Rank
USA	9928	32.75	1
Peoples Republic of China	5595	18.45	2
England	2193	7.23	3
South Korea	1502	4.95	4
Canada	1465	4.83	5
Australia	1396	4.60	6
Germany	1256	4.14	7
India	1193	3.93	8
Taiwan	1179	3.89	9
Italy	1021	3.37	10
Total	26728	88.14	

Figure 3. Top 10 countries

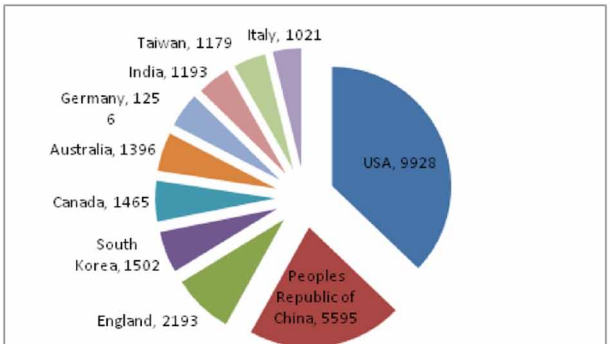


Table 4. Top productive Institutions

Institution	Records	Percentage	Rank
Chinese Academy of Sciences	727	2.40	1
University of California	687	2.27	2
University of Texas	433	1.43	3
University of London	405	1.34	4
State University of Florida	371	1.22	5
Beijing University of Posts Telecommunications	334	1.10	6
Pennsylvania Commonwealth System of Higher Education	307	1.01	7
University of Georgia	306	1.01	8
Xidian University	293	0.97	9
State University of New York	275	0.91	10
Total	4138	13.66	

Visual representation helps the reader with better comprehension. Hence, the data are presented as bar diagram in Figure 4. It is inferred from Table 4 and Figure 4 that the Chinese Academy of Sciences with 2.4 percent contribution leads the top productive institutions, closely followed by the University of California with 2.27 percent. Among the top ten countries, six are from the US, three institutions are from China, and one is the UK. This is in consonance with the top contributing countries were the United States of America leads, followed by the Peoples Republic of China and England in that order.

Top Funding Agencies

The top 10 funding agencies and their contribution (primary data) and the computed percentage analysis are tabulated in Table 5. The same are visualized in Figure 5.

The National Natural Science Foundation of China has been ranked number one in terms of research funding with a contribution of two thousand four hundred and thirty records, which is approximately eight percent of the total records. The National Science Foundation (NSF) is the distant second with 645 records, which is just about two percent of the total.

Figure 4. Top contributing countries

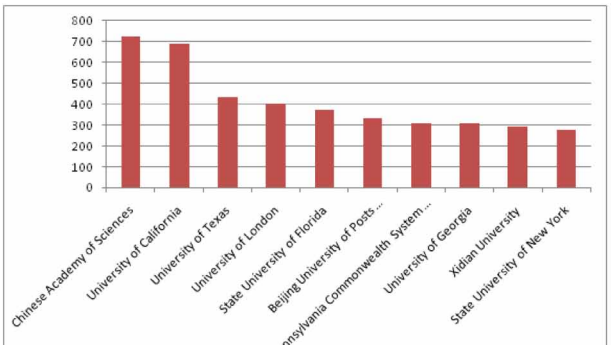
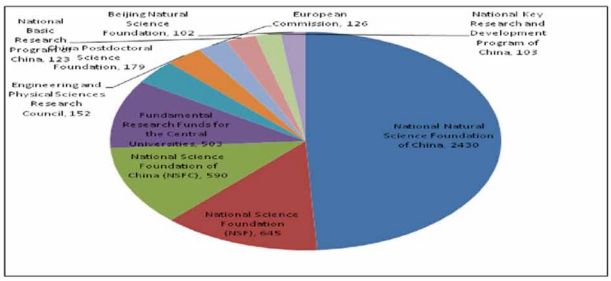


Table 5. Top ten funding agencies

Funding Agency	Records	Percentage	Rank
National Natural Science Foundation of China	2430	8.02	1
National Science Foundation (NSF), US	645	2.13	2
National Science Foundation of China (NSFC)	590	1.95	3
Fundamental Research Funds for the Central Universities, China	503	1.66	4
China Postdoctoral Science Foundation	179	0.59	5
Engineering and Physical Sciences Research Council, UK	152	0.50	6
European Commission	126	0.42	7
National Basic Research Program of China	123	0.41	8
National Key Research and Development Program of China	103	0.34	9
Beijing Natural Science Foundation	102	0.34	10
Total	4953	16.36	

Figure 5. Top ten funding agencies



Seven of the top 10 funding agencies belong to China. These seven agencies together have funded in 3,927 research papers. One among the top 10 agencies belongs to the US; one belongs to the UK and one to the European Commission. This explains the growth of research output on 'information security' from China.

Top Contributing Authors

The author-wise records were collected and tabulated in the descending order of their contribution. Percentage analysis was also done. The ranked list of top 20 authors and these details are presented in Table 6 and pictorially represented in Figure 6.

It is found that Wang J has contributed 129 papers on information security that has been indexed in WoS and is ranked number one. Wang Y and Zhang Y are ranked number two and three respectively and their contributions are 99 and 96 respectively.

Top Source Titles

The top 10 contributing source documents and their contributions are ranked and given in Table 7. The percentage of their contribution to 'information security' literature is also calculated and provided in the table.

The table reveals that the 'Lecture Notes in Computer Science' has 1,136 records as its contribution and is ranked first. Its contributions are 3.75 percent of the total. 'Computers Security' and 'IEEE Access' are ranked second and third respectively. Their contributions are 1.72% and 1.29% respectively. All these ten source documents together have contributed 12.52% of the total research output. These facts and figures are illustrated in Figure 7 for better visual comprehension.

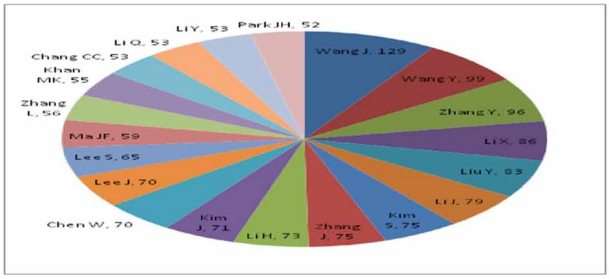
Top Contributing Languages

The language-wise distribution of records is presented in Table 8. The percentage of the language-wise contribution is also presented in the same table.

Table 6. Top productive authors

Author	Records	Percentage	Rank
Wang J	129	0.43	1
Wang Y	99	0.33	2
Zhang Y	96	0.32	3
Li X	86	0.28	4
Liu Y	83	0.27	5
Li J	79	0.26	6
Kim S	75	0.25	7
Zhang J	75	0.25	8
Li H	73	0.24	9
Kim J	71	0.23	10
Chen W	70	0.23	11
Lee J	70	0.23	11
Lee S	65	0.21	13
Ma JF	59	0.19	14
Zhang L	56	0.18	15
Khan MK	55	0.18	16
Chang CC	53	0.17	17
Li Q	53	0.17	17
Li Y	53	0.17	17
Park JH	52	0.17	20
Total	1452	4.76	

Figure 6. Top productive authors

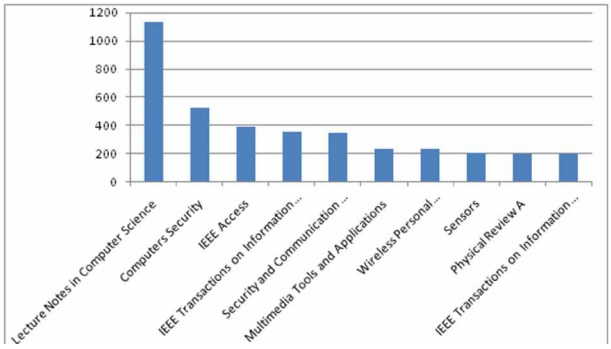


As in every other area of research, in ‘information security’ research too English dominates. The publication output on ‘information security’ indexed in WoS is twenty nine thousand four hundred and fifty seven, which is about ninety seven percent of the total contributions. Spanish is in the very distant

Table 7. Top ten source titles

Source	Records	Percentage	Rank
Lecture Notes in Computer Science	1136	3.75	1
Computers Security	520	1.72	2
IEEE Access	390	1.29	3
IEEE Transactions on Information Forensics and Security	347	1.14	4
Security and Communication Networks	344	1.13	5
Multimedia Tools and Applications	233	0.77	6
Wireless Personal Communications	229	0.76	7
Sensors	202	0.67	8
Physical Review A	197	0.65	9
IEEE Transactions on Information Theory	195	0.64	10
Total	3793	12.52	

Figure 7. Top 10 source documents



position with less than one percent. The contributions in Chines is just 0.32% though Chinese funding agencies are funding most number of research projects, and Chinese institutions are next only to the USA in productivity. Hence it can be concluded every researcher including the Chinese are interested in publishing there works in English. Since the visibility of the journals published in English are more, this phenomena is quite natural.

Top Research Areas

The top research areas according to the subject classification of WoS, which have contributed a minimum of one percent and above are tabulated in Table 9. Twenty two research areas qualify to be in this ranked list. Percentage analysis is also done and presented in the table.

The table reveals that computer science with about thirty eight percent contributions is ranked number one. Engineering ranked number two has about twenty two percent contributions; and telecommunications ranked number three has about thirteen percent contributions. The first two research areas, i.e.,

Table 8. Language-wise contributions

S. No	*Language*	*Records*	*Percentage*	*Rank*
1	English	29,457	97.16	1
2	Spanish	207	0.68	2
3	German	155	0.51	3
4	French	149	0.49	4
5	Chinese	97	0.32	5
6	Portuguese	86	0.28	6
7	Russian	38	0.13	7
8	Turkish	26	0.09	8
9	Polish	16	0.05	9
10	Slovenian	16	0.05	9
11	Estonian	10	0.03	11
12	Japanese	10	0.03	11
13	Hungarian	9	0.03	13
14	Czech	8	0.03	14
15	Slovak	8	0.03	14
16	Italian	7	0.02	16
17	Croatian	4	0.01	17
18	Norwegian	4	0.01	17
19	Afrikaans	2	0.01	19
20	Arabic	2	0.01	19
21	Dutch	2	0.01	19
22	Lithuanian	2	0.01	19
23	Romanian	2	0.01	19
24	Danish	1	0.00	24
25	Icelandic	1	0.00	24
26	Serbo Croatian	1	0.00	24
27	Swedish	1	0.00	24
	Total	30,321	100	

computer science, and engineering core areas which are naturally closely associated with ‘information security’. However, it is found the ‘information security’ research communications are seen distributed in a variety of areas, from arts, science and humanities.

The third ranked area is telecommunications. In the present networked information and communication age, this too is natural as securing the communication networks is very vital. Nevertheless, the fourth ranked area is business economics with about thirteen percent contributions. With e-commerce

Table 9. Top research areas

Area	Records	Percentage	Rank
Computer Science	11,446	37.75	1
Engineering	6,794	22.41	2
Telecommunications	4,088	13.48	3
Business Economics	3,899	12.86	4
Physics	1,581	5.21	5
Optics	1,041	3.43	6
Environmental Sciences Ecology	1,019	3.36	7
Information Science Library Science	1,001	3.30	8
Science Technology Other Topics	949	3.13	9
Health Care Sciences Services	927	3.06	10
Government Law	893	2.95	11
Medical Informatics	876	2.89	12
Mathematics	843	2.78	13
Public Environmental Occupational Health	758	2.50	14
Psychology	601	1.98	15
Operations Research Management Science	594	1.96	16
Agriculture	513	1.69	17
Chemistry	481	1.59	18
Instruments Instrumentation	402	1.33	19
International Relations	354	1.17	20
Social Sciences Other Topics	345	1.14	21
Transportation	320	1.06	22
Total	39,725	131.03	

thriving, research on securing these systems is essential and hence the growth in this area. 'Information security' research literature is seen distributed among optics, ecology, library science, law, mathematics, psychology, agriculture and international relations, etc. too. Hence it can be concluded information security has invaded every aspect of life.

CONCLUSION

'Information security' research literature shows an exponential growth rate. The USA and China are the most productive countries. The Chinese Academy of Sciences with 2.4 percent contribution leads the top productive institutions. The Chinese Academy of Sciences with 2.4 percent contribution leads the top

productive institution. The National Natural Science Foundation of China has been ranked number one in terms of research funding. Wang J has contributed one hundred and twenty nine papers on information security and is ranked number one productive author. The ‘Lecture Notes in Computer Science’ is ranked first among the source titles. Every researcher including the Chinese are interested in publishing there works in English. It is found the ‘information security’ research communications are seen distributed in a variety of areas, from arts, science and humanities.

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