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Use of New Technologies in College Libraries in Maharashtra

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1.1 Introduction:

As a result, several businesses began utilising computers in the last 1960s. In the 1970s, publications for libraries included Index Medicus, Chemical Abstracts, Biological Abstracts, and other indexing and abstracting magazines. In the middle of the 1970s, a number of organisations, including the American National Library of Medicine (NLM) and System Development Corporation (SDC), started providing online searches. From distant terminals to a variety of databases that can be automatically indexed and abstracted. Computers can now deliver information, which contributes to a reduction in the volume of printed content. Computers have made society and libraries paperless. Communication technologies have made it less certain that traditional libraries will continue to exist. Anyone can now use the library's records to conduct an electronic search and print. Today, anyone may conduct a computerised search of the library's materials and print out the desired information without physically visiting. Thus, a paperless society is becoming more and more of a reality. Libraries today are used for many different things, from data analysis to teaching beginners how to code and use 3-D printers. They are much more than just a selection of publications. Today's libraries are changing to fit the needs of society and users. Despite the fact that there are many different types of society, the modern library is responding to its users in an innovative and topical way (demography). Librarians are changing their roles to become information scientists or digital librarians in order to offer new services for their clients by utilising new technology. Innovative libraries make use of online tools like Digital Maker Labs.

Modern technology is being used by some libraries, including 3D printers, drones, RFID systems, mobile apps, various library software, and virtual and digital libraries. Maker spaces with computer-controlled CNC (Computer Numerical Control) routers, T-shirt hot presses, laser cutter-engravers, and other tools are becoming more and more common in libraries around the UK.

1.2 Technology

New tools are created using technology to increase human comfort, simplicity, and safety. Technology is employed for productive and secure work in many industries. Technology has evolved over time as a result of the techniques and procedures used in scientific study and industrial production. Technology is used to run all machinery and technological devices. (Wikimedia Foundation, Inc, 2020)[1]

Merriam-Webster says technology is: “Application of knowledge to the practical aims of human life or to changing and manipulating the human environment. Technology includes the use of materials, tools, techniques and sources of power to make life easier or more pleasant and work more productive. Whereas science is concerned with how and why things happen, technology focuses on making things happen.” (Waddel, 2013)[2]

Over the past 200 years, there have been substantial changes in how the word "technology" is used. The phrase was not commonly used in English prior to the 20th century, and it referred to either the study or description of the practical arts.

During the Second Industrial Revolution in the 20th century, the word "technology" gained popularity. Early in the 20th century, American social scientists, starting with Thorstein Veblen, interpreted the German concept of Technik into the English word "technology," changing the meaning of the term. English typically translates both terms as "technology," but there is a distinction between Technik and technologies in German and other European languages. By the 1930s, "technology" referred to both the industrial arts itself and the study of them. (Schatzberg, 2006) According to Hughes, "Technology is a creative process involving human ingenuity". (Mesh, 2020)[3]

1.3 Emerging trends in library

The way that users and librarians access material in the contemporary digital era has changed as a result of new technological breakthroughs in libraries. 77% of Americans aged 16 and over believe that the public library should offer free internet and computer access, according to a recent poll. Creating libraries is a librarian's main responsibility. If there are readily available resources, cutting-edge technologies, and a vibrant community, a library can expand.

Numerous new technologies are used in libraries today, including RFID, QR Codes, Drones, Artificial Intelligence, Big Data, The Request for Proposal (RFP), Baggage Carousel, Virtual Library Tour, Digital, Virtual Library, Library Software, Nimble Technology, Robots, Open Libraries, Mobile Apps, Digital Storytelling, Coding Clubs, Digital Maker Labs, and Makerspaces. A detailed study has been completed in Chapter 3.

1.3.1 Makerspaces

Between 2006 and 2016, the number of makerspaces worldwide surged by 14 times. Think about how it will affect education in 2019—three years from now. Librarians are currently making space available for makerspaces.

The advantages of makerspaces are evident in the 21st-century skills that kids acquire. If your library offers a makerspace programme, students can apply concepts they've learned in the classroom to circumstances that actually exist. Makerspaces promote all academic disciplines in addition to teaching STEM ideas.

Makerspaces combine various academic fields with technology to enhance learning. Students can be motivated to learn by using many tools, such as 3D printers, coding software, computer science, video creation, podcast development, and video game design. (Alexandria, 2021)[5]

1.3.2 Digital maker labs

Internationally, educational libraries are now utilising digital maker laboratories, a new technology in libraries that enables users to use 3D printers, T-shirt hot presses, robotics, and other equipment. As a result, more people are using libraries.

1.3.3. Coding clubs

There has been a significant revolution as a result of the rising use of IT and digital technology. Because they teach kids (and adults) how to create and use technology in ways that benefit us all, coding clubs are beneficial. Libraries all throughout the UK are now using or lending out Microbits, a tiny programmable computer

manufactured by the BBC, Arduino, and Raspberry Pi, to teach children how to code and how to recognise problems and come up with solutions.

1.3.4 Digital storytelling

Libraries are working more frequently with authors and programmers to create unique interactive stories that invite readers to get lost and attempt to modify the plot. Libraries have always had a soft spot in their hearts for the written word, whether it be on paper, microfilm, CDROM, or the internet. People generally have a natural inclination to continue telling stories while they do so. Over the first ten years of the twenty-first century, storytelling grew in popularity. Digital storytelling is the newest innovation in the literary genre. It requires telling tales, trading stories, and fusing text, visuals, and sound into coherent wholes in order to transmit narratives.

1.3.5 Mobile apps

Mobile applications are a huge trend right now since consumers use them frequently. The library's services can be made available outside of its physical location and user interaction can be made easier with the help of a mobile app. An app with features like a library catalogue, interactive library guides, an interactive calendar of all the library's events, the ability to borrow and read electronic books and articles, the ability to reserve library resources or pay for some services, the possibility of electronically reserving books and articles, the ability to reserve computers or other resources, all of which represent real benefits for the users, easily, is a good investment.

1.3.6 Open Libraries

The idea of a more open library is very novel and divisive, particularly outside of Scandinavia. This mix of human and unmanned library services benefits the neighbourhood, especially in smaller locations, and guarantees that the need for libraries is met. As a result, open libraries are being used to increase opening hours rather than cutting back on staff.

1.3.7. RFID technologies

New self-service options in the form of hardware or software have evolved as libraries have increased their hours of operation for a variety of functions. Equipment like inventory readers, fines payment systems, and returned item receiving desks are simpler to use for both library patrons and staff employees.

1.3.8 Cloud printing, copying, and scanning

The digital era has already had an impact on home printing. Instead of being limited to working in an office environment, people may now work anywhere there is a library by using cloud printing. It might also attract people who have never visited a library. Due to the fact that it allows users to print from their smartphones, tablets, and laptops, cloud printing is commonly employed in libraries.

1.3.9 Cloud Technologies

In comparison to cloud hosting, on-premises installation is slower, less secure, and less reliable. It can assist school libraries in preparing for expansion and the use of other accessible technology. The main advantage of librarians is their convenience.

Switching to cloud hosting has several benefits, some of which include the flexibility to work from any location, the usability of any device, and automated software upgrades. Utilizing cloud computing instead of traditional IT allows you to devote more time to your students and programmes.

1.3.10 Robots

A number of libraries have already used automated technology with success. For instance, Vincent and Nancy, two robots, have just been added to the Westport Library in Connecticut to help with the teaching of coding and computer programming abilities. It is true that this type of social connection is entirely novel, but it is also a highly powerful tool for attracting attention. This is only a small selection of the incredible digital initiatives happening across the world. Sharing knowledge, culture, and skills has always been a priority for libraries, and these new digital services are only one way to participate.

1.3.11 Nimble Technology

Nimble is a cutting-edge concept for an augmented reality tool. The turn-by-turn library guide concept from earlier in the essay is also included in Nimble, an interactive book enhancing tool created by London-based interaction designer and Google engineer Suresh Kumar. The smart library card provides access to all of these functions, allowing users to use digital books to interact with whatever type of literature they desire.

1.3.12 Library software

A software library typically includes pre-written code, classes, processes, scripts, configuration information, and more. Typically, a developer will manually add a software library to a programme to increase functionality or automate a process without creating code for it. For instance, to avoid having to write difficult functions when creating a mathematical programme or application, a developer might use a mathematics software library. A software library's available functions can all be invoked or utilised within the programme body without having to define them explicitly. Like this, a compiler may automatically include a relevant software library in a programme at runtime. Without some software, instructions, or programmes, the computer is powerless. Software, as contrast to hardware, cannot be touched, yet it tells the computer what to perform in a certain circumstance. Library software includes any type of computer application created to carry out specific tasks related to libraries. The task of acquisition or cataloguing may be carried out by a straightforward programme, or it may be completed by integrated library administration software that also handles circulation, serial control, and other tasks. For managing the library's digital resources or other types, it might also be digital library management software. SOUL, SLIM, Libsis, KOHA, LIBRARIAN, NEWGENLIB and many other library software programmes are available for college libraries to help.

1.3.13. Digital, Virtual Library

An online database that includes text, still photos, audio, video, digital documents, or other digital media formats is known as a digital library, digital repository, or digital collection. The advantages of using digital libraries to swiftly and readily access different kinds of books, archives, and photos are now generally acknowledged by both private and public sectors.

Digital libraries, on the other hand, have the ability to hold considerably more information because digital information requires very little physical room to be held, whereas traditional libraries are limited by storage capacity. As a result, maintaining a digital library can be considerably less expensive than maintaining a

traditional library. A physical library must spend a sizable sum of money on staff, book maintenance, rent, and other expenses.

1.3.14 Virtual library tour

A virtual library tour is a representation of an actual site that is typically made up of a series of films or still photos. Other multimedia components like sound effects, music, narration, and text may also be used. It differs from using live television to influence tele tourism.

The virtual tours create a brand-new category of library information products that are inspired by the practises of tourists and museums. Its fundamental elements, available tour options, and technology. Qualitative characteristics that predict their rapid adoption in various fields, particularly libraries, are made clear. The definition and categorization of library virtual tours is based on research into various library kinds.

1.3.15 Baggage Carousel

A baggage carousel is a machine that delivers checked bags to travellers at the baggage claim area at their destination, usually at an airport. Not all airports employ these devices. Luggage is frequently placed on the ground or slipped through a wall opening in airports without carousels. In a secure area that is off-limits to passengers, bags are set up on some kind of conveyor belt. Bags will be brought to the terminal in a single-level system through a belt through a wall opening. The belt often curves into the terminal to form a large oval that may accommodate many passengers before running briefly along the wall. The belt returns to the loading area by passing through a second wall opening. The bags are often moved onto an oval spinning carousel in a tiered system and loaded from above or below. In this type of system, two delivery belts are typically employed to expedite the delivery of luggage to the passenger level. The same luggage carousel method is employed in libraries. At S.G.B. Amravati University, a luggage carousel has been erected, and books are used there instead of bags. For delivery, they either place the books on the floor or slither them through a wall opening.

1.3.16 The request for proposal (RFP)

The request for bids (RFP), which serves as the basis for a library system purchase, is the outcome of coordinated staff efforts to formulate a precise statement of the library's objectives, specifications, and expectations. Organizations employ this approach to procure goods and services by promoting vendor competition. This use, however, goes beyond a facility's purchasing policy. Along with the winning vendor's response, it serves as the foundation for the institution and vendor's working relationship. This framework makes it possible for both parties to work within the parameters of the requirements, timelines, and solutions specified in the request and proposal.

1.3.17 Big data

Along with all the advancements in technology, routine activities are now producing more data than ever before. The fact that librarians possess the knowledge and skills necessary to make the best use of these massive amounts of data is a crucial advantage in the preservation and analysis of large datasets. Big data can merely enhance library usage overall by providing better access to user insights.

1.3.18. Artificial Intelligence

As Siri and Alexa are already available on all devices and are becoming more and more interwoven into our daily lives, artificial intelligence is no longer a technology that will just be used in the future. Every library

programme could utilise an intelligent component to better understand user behaviour patterns and meet their needs.

1.3.19. Drones

The use of remote controls to operate tiny flying devices is another current scientific trend. By introducing new technology or by holding workshops where users can learn how to construct and operate a drone, the libraries may benefit greatly from its use.

1.3.20 QR Codes

One of the most popular marketing strategies for library websites in the digital age is the QR Code, which is quickly rising to prominence. The QR Code, a contemporary AIDC technology, is gaining popularity in Indian libraries. With the help of this technology, users can access electronic resources while on the go. This cutting-edge technology provides quick, very helpful information. (Garland, 2020)[6]

There are many new technologies use in libraries a detailed study has been completed in Chapter 3.

1.3.21 Use of social media in Libraries:

Introduction

In the digital era, librarians oversee a vast range of resources and services that go well beyond the normal eight-hour workday. His functions are essential for maintaining the required control over information resources in both physical and virtual domains. Notably, the emergence of new information sources like the internet, World Wide Web, and even social media has presented librarians with a new challenge to satisfy the fast-evolving information demands and expectations of users in the twenty-first century.

In order to increase user satisfaction through promotion, librarians who want to stay in regular contact with their customers must establish a social media presence using platforms like Facebook, microblogging sites like Twitter, blogs and WhatsApp etc.

Types of social media Tools Used by Libraries

Web-based or internet technologies gave birth to social media, and these online and mobile technologies are necessary for it to function. Facebook, Twitter, blogs, WhatsApp, and other microblogging websites are examples of the various social media platforms.

1.3.22 Technology use in College Libraries

Now a days, everyone on a college campus is carrying a smartphone, and the institutions offer free wi-fi to make things easier for their students. The potential for libraries to provide web-based library services for academic/college library users is enormous thanks to the internet. Some librarians worry that the global use of libraries would decline as a result of digital services, however this is untrue. The internet is not a threat to college libraries; rather, it is a vital tool for them to demonstrate their presence in the world of online information. For their online users, college libraries can provide a variety of web-based services.

These services include web-based reference services, a digital library, a repository, referral services by providing links, online document delivery services by mail, electronic content awareness services by alerting them, an electronic research guide by providing literacy videos, an online reference desk, OPAC services, online library book reservations, SMS alert services, FAQ services, and many other web-based services. To draw in new users, we can offer a variety of images and videos of library activities.

To draw in the attention of online information seekers who typically choose to use web resources instead of physically visiting the library, every academic or college library must establish web-based services. It is more important than ever for librarians to learn about web technology and hone their abilities in order to customise online library services for people who access the internet using Android smartphones. Additionally, they have the capacity to meet future consumer demands by utilising the web.

Researcher aim to look into the issues surrounding the adoption of new technologies in college libraries, look for solutions, and look into the technological gap between college libraries in Maharashtra State and libraries across the world.

As per Maharashtra University Act 2016 there are 11 Universities and near about 3480 college libraries plays important role of the use of modern technology. Out of 3480 colleges, the researcher chose 30% of them, and with the aid of offline questionnaires and Google forms, sent questionnaires to 1044 college librarians by email, WhatsApp, postal mail, and other online and offline channels. Researchers receive 402 responses from the 1044 questionnaires. 38.5% of the total responses were given. The researcher also visited numerous libraries, conducted interviews with librarians from various colleges, and complete questionnaires by them.

Universities in Maharashtra State as per Maharashtra University Act 2016.

Sr. No	University Name	Number Of College
1.	University of Mumbai, Mumbai	762
2.	Savitribai Phule Pune University, Pune	618
3.	Shivaji University, Kolhapur	309
4.	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	150
5.	Rashtra Sant Tukdoji Maharaj University, Nagpur	506
6.	Shreemati Nathibai Damodar Thackersey Women's University, Mumbai	162
7.	Sant Gadge Baba University, Amravati	382
8.	Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon	215
9.	Swami Ramanad Teerth Marathwada University, Nanded	52
10.	Solapur University, Solapur	114
11.	Gondwana University, Gadchiroli	210
	Total	3480

(Kunte, 2017)[11]

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Table No. 1.2 Quantum of questionnaire distribution and responses received

Number of Colleges From 11 universities in Maharashtra	Number of Selected (30%) colleges by using lottery method	Number of Response received	Response rate
3480	1044	402	38.5%

Interpretation (conclusion and suggestions)

1. It is seen that out of 402 LIBRARIANS, 358 (89.1%) Librarians use current new technology in library. And only 44 (10.9%) librarians do not use current technology in library which in libraries.

2. It is seen that out of 402 LIBRARIANS, 318 (79.1%) librarians use technology regular, 51(12.7%) librarians use technology in interval, 50 (12.4%) librarians use technology in When requested, 7 (1.7%) librarians use technology Annually, 9 (2.2%) librarians use technology Only for new users and 27 (6.7%) librarians do not use any type of technology.

3. From the table 4.4.6 table it is seen that 70 (17.4 %) Librarian say that Lack of quality products is the barriers in using new technology. 109 (27.1%) Librarian say that Lack of user interest is the barriers in using new technology. 175 (43.5%) Librarian say that Lack of Inadequate staff time is the barriers in using new technology.
4. Hence use of new technology like drones, robots, Book left, Nimble Technology, Artificial Intelligence (Alexa) are very less. The regular technologies like computer, laptop, printers are used in many libraries but it seen that use of new technologies are very less.

Conclusion:

Today there are lot of new technologies are using in every field in all over the world. From the research it conclude that in library file lot of new technologies are using in library field according to research in Maharashtra though new technologies are used in libraries but it is very limited.
Therefore, it is necessary to develop uniform guidelines for college libraries in order to meet user needs and provide efficient services.

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