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RESEARCH ARTICLE

ACCESSIBILITY FOR PERSONS WITH DISABILITIES IN LIBRARIES: A SURVEY OF UNIVERSITY LIBRARIES IN MUMBAI

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Abstract

Purpose: Disabled population is also a part of our society. Libraries, being public spaces, have a responsibility to ensure that all patrons may utilize their services without encountering any barriers, as required by integrated and inclusive special education policies. The university library serves a diverse population of readers and researchers, making it an essential resource for the dissemination of information and the dissemination of knowledge. Patrons of academic libraries span a wide range of ages, socioeconomic statuses, and degrees of education. The present article assesses and evaluates the provision of universal access in university libraries in Mumbai through a survey of university librarians in Mumbai.

Design/methodology/approach: A survey was conducted using Google Forms as well as printed questionnaire for the university librarians in Mumbai.

Findings: According to librarian responses, university libraries in Mumbai do not have enough of the necessary access tools, alternative information sources, and learning aids to meet the demands of their students. It has a detrimental effect on the quantity of special users enrolling at universities and their libraries.

Originality value: This paper utilizes a survey of Mumbai academic librarians to examine and evaluate the extent to which universal access is provided in Mumbai academic libraries. This study is an integral aspect of a larger investigation of human orientation at Mumbai, India's university libraries.

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Introduction:-

There are 2.68 Cr handicapped people in India, or 2.21 percent of the country's overall population of 121 Cr ("Disabled Population in India as per Census 2011 (2016 Updated)"). Every kind of patron should be able to find something of interest in a bookstore. Therefore, libraries should make their resources available to everyone, so that everyone may live in peace and dignity. Every person, regardless of their socioeconomic background, needs access to quality education. There are people in our society who are disabled. It is crucial that libraries provide the services needed by persons with disabilities so that they can access information. There is a wide variety in the design and layout of university libraries. This study is an integral aspect of a larger investigation of human orientation at Mumbai, India's university libraries. (Rakshikar, 2022). The present article assesses and evaluates the provision of universal access in university libraries in Mumbai.

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Review of Literature:-

Recommendations for Design of Library Buildings, IS 1553 (1989). Relating to its Primary Elements was a publication by the Bureau of Indian Standards for librarians, municipal planners, and architects in charge of building libraries. Indian Standard (IS) 2672: 1966 for the Design of Library Buildings Indian Standard (IS) 11460: 1985 and the Code of Practice for Library Lighting The Bureau of Indian Standards (1989) advocated using a code of practice for fire safety in libraries and archives while constructing or renovating libraries.

The Ministry of Urban Affairs and Employment of India's Central Public Works Department (1998) developed Guidelines and Space Standards for Barrier Free Environment for Disabled and Elderly Persons to achieve compliance with the provisions of the Persons with Disabilities Act of 1996 (PWD). When creating these criteria, consideration was given to the opinions of the National Federation of the Blind, the Handicapped Welfare Federation, and the Central Building Research Institute (CBRI). These standards address a wide range of impairments, including those of the non-ambulatory, the semi-ambulatory, the blind, and the hearing impaired, and they provide advice on how to design buildings so that people who rely on mobility aids may get about with little difficulty.

Accessibility and mobility obstacles faced by people with disabilities in low-income countries inspired research begun by Venter et al (2002). The study's primary objective was to identify feasible interventions for addressing these problems. This project analysed the mobility requirements of people with disabilities in five case study countries with the aim of providing governments, advocacy groups, donors, and lenders with a set of guidelines for making cities more accessible to people with disabilities.

South Africa, Mozambique, India, Malawi, and Mexico were the five nations examined in depth. The requirements assessment identified three main categories of impediments to access and mobility: social obstacles, psychological obstacles, and physical obstacles. The parallels between the problems in every country examined were startling. In 2002, Venter et al. started researching the access and mobility challenges faced by people with disabilities in developing countries, with the goal of better understanding these challenges and identifying specific steps that could begin resolving them. The project's primary goal was to develop a set of recommendations for governments, advocacy organisations, and donor and lending institutions to employ in making metropolitan areas more accessible to individuals with disabilities by analysing their mobility needs in five case study countries. In order to achieve their shared objectives for accessibility, disability advocacy organizations, government agencies, and transportation service providers may benefit from the project's compiled recommendations.

According to Abdullahi, "vision must be used to guide systematically," so that LIS programs may include cross-cultural understanding and information sharing. The knowledge available to us today reflects the increasing diversity of our cultures (Abdullahi, 2007, p. 453).

Humanity's overall social and economic well-being depends on people having access to quality education. Disabled people are just like everyone else, they belong in our society. A well-educated populace makes for a happier, healthier society, and its graduates become a nation's most valuable asset. Those with disabilities must have equal access to education as people without disabilities, according to the UNCRPD (WHO, 2015).

In industrialized and developing nations, the educational services provided to persons with disabilities differ noticeably, according to a 2016 literature analysis by Bhalerao, S. et al. The purpose of this article is to assist libraries in becoming more inclusive places where those with disabilities may study alongside others who do not have such impairments. This study's goal is to clarify the meaning of "universal design" in libraries and determine how it relates to the UN Conventions on the Rights of Persons with Disabilities (UNCRPD). The writers discuss universal design, which is the process of creating settings and products that are usable by everyone, disability or no handicap. Assistive technology, the development of a new tool to enable the completion of a task that would be impossible without it, and adaptive technology, the adaptation of existing tools and techniques, are cited as the two fundamental tenets of universal design. They also pay attention to the libraries' physical accessibility and the availability of its resources. In addition, they offer guidance on how to increase the libraries' physical accessibility for people with disabilities, what resources libraries should have on hand to accommodate people with disabilities, and how to establish a regular feedback mechanism to improve the quality of services for people with disabilities.

The issue of whether or whether the library at Aligarh Muslim University (AMU) in India makes its materials and services accessible to people with disabilities was examined by Mohammad Nazim, Areeba Beg, and Mayukh Sarkar in 2021. According to the results of the research, AMU's library was designed specifically with disabled patrons in mind. Findings showed that while some specialized services are available, there are still many challenges for people with disabilities when using libraries. These include a lack of accessible materials, inconvenient formats, unhelpful library staff, and inadequate training for people with disabilities. As the research comes to a conclusion, suggestions are given for adhering to IFLA and UNESCO criteria while offering library services to individuals with disabilities.

Making library materials and services accessible to individuals with impairments has received little scholarly attention in Indian university libraries. Due to a lack of data, this investigation was launched to better understand how people with disabilities can have equitable access to and benefit from library resources and services.

Objectives:-

1. To discover how university libraries in Mumbai have made access to information accessible to everyone.
2. Examining the accessibility features (such as ramps and Braille) made available to people with disabilities in Mumbai's academic libraries.
3. To study how accessible university libraries in Mumbai are for people with mobility issues so that they may more easily access and utilize library resources

Demographic Information about libraries

Total ten universities fall under the Mumbai region. In this research, we surveyed the libraries at all 10 of our participating universities. Table 1 lists the different sorts of colleges and universities in Mumbai; the information was gathered in order to conduct this inquiry. Deemed universities made up the bulk of the institutions (50%) while state universities made up the second-largest segment (40%) (including two branch libraries). Since there is a wide variety of library types found in Mumbai's universities, the administrative structures, funding mechanisms, and space allocations of each library are uniquely designed to meet the needs of its particular user base.

Table 1: Types of Universities

Particulars	Frequency	Percent	Cumulative Percent
Central University	1	10.0	10.0
Deemed University	5	50.0	60.0
State University	4	40.0	100.0
Total	10	100.0	

Yearly Enrolment of special users

The library's physical area is made more accessible for people with impairments via the use of universal design principles. If universal access is guaranteed, students with disabilities will have the option to enroll in any accredited college or institution. Every year, librarians were polled on the number of special users enrolled at their libraries.

Table 2: Special Users' Yearly Enrolments

Particulars	Frequency	Percent
0	3	30.0
1-5	4	40.0
5-10	3	30.0
Total	10	100.0

Only a quarter of university libraries (30%) had ever registered a special user; four university librarians (40%) reported enrolling between one and five special users annually; a further third (30%) reported enrolling between five and ten special users annually.

Accessibility Measures

Building Construction Norms

In order to make sure that the community's built environment is safe and long-lasting, standards are made to codify standards, processes, and technical requirements in the building and construction industry. A few of the resources available for the construction of library buildings include IS 1553 (1989): Design of Library Buildings (Indian Standards), the National Building Code of India (2005), "Harmonised Guidelines and Space Standards on Barrier Free Built Environment for Persons with Disability and Elderly Persons, 2016," and the ALA Standards and Guidelines from 2003. Thus, the question of whether building construction standards were followed in the construction of the library building was put to the librarians.

Table 3: Building Construction Norms

Particulars	Frequency	Percent	Cumulative Percent
Yes	3	30	30.0
No	7	70	100.0
Total	10	100	

Only 30% of library facilities were built according to building construction standards, however librarians did not explain which criteria were employed during design and construction. Seventy percent of library buildings were not built according to code. When asked if the library was built according to any particular set of standards, not a single librarian who participated in the study mentioned any such standards.

User survey for Hindrances Face by special users

The requirements of marginalized patrons must be included into the design of any library orientation and assistance system. It was important to understand the difficulties experienced by special users in university libraries since these facilities, along with the departments and services they house, are designed and constructed with the needs of the average person in mind.

After questioning university librarians about whether or not any previous study had been undertaken to identify barriers experienced by special users, it was discovered that no such survey had ever been conducted by university libraries in Mumbai.

User survey for Conveniences of special users

Design that takes into account the unique requirements of customers with disabilities is likely to be successful, even for the general population. Signs, corridors, and walkways should all have traits like large-size font, high-color contrast, and uniformity in design and location. The added cost may be kept to a minimum by integrating the specialized features of the design for the specialized applications with the characteristics of the standard system. On the other hand, it's important to design for accessibility features like elevators, audio signals, and Braille signs simultaneously.

It was found through questioning university librarians in Mumbai that the city's university libraries have never carried out user surveys on the needs of special users regarding the convenience amenities needed by special users.

Convenience and access facilities for special users

People with disabilities need accessible library services and auxiliary aids to use the library's materials and programmes on their own terms. Each subset of customers has unique requirements for ease of use and access. University librarians were given a series of multiple-choice questions aimed at gathering information on special-user policies.

Table 4: Convenience and Access Facilities for Special Users

Particulars	Responses	
	N	Percent
Wheelchair	3	27.3%
Alarm system that combines visual and audio	1	9.1%
Brochure in Braille form	1	9.1%
Handrails on both sides of stairways	1	9.1%
Handrails in long corridors	1	9.1%
Large font signs	1	9.1%
Ramps at the accessible entrances	1	9.1%
Restrooms for disables	1	9.1%
Other facility for special users	1	9.1%
Tactile	0	0.0%
Touch maps	0	0.0%
Total	11	100.0%

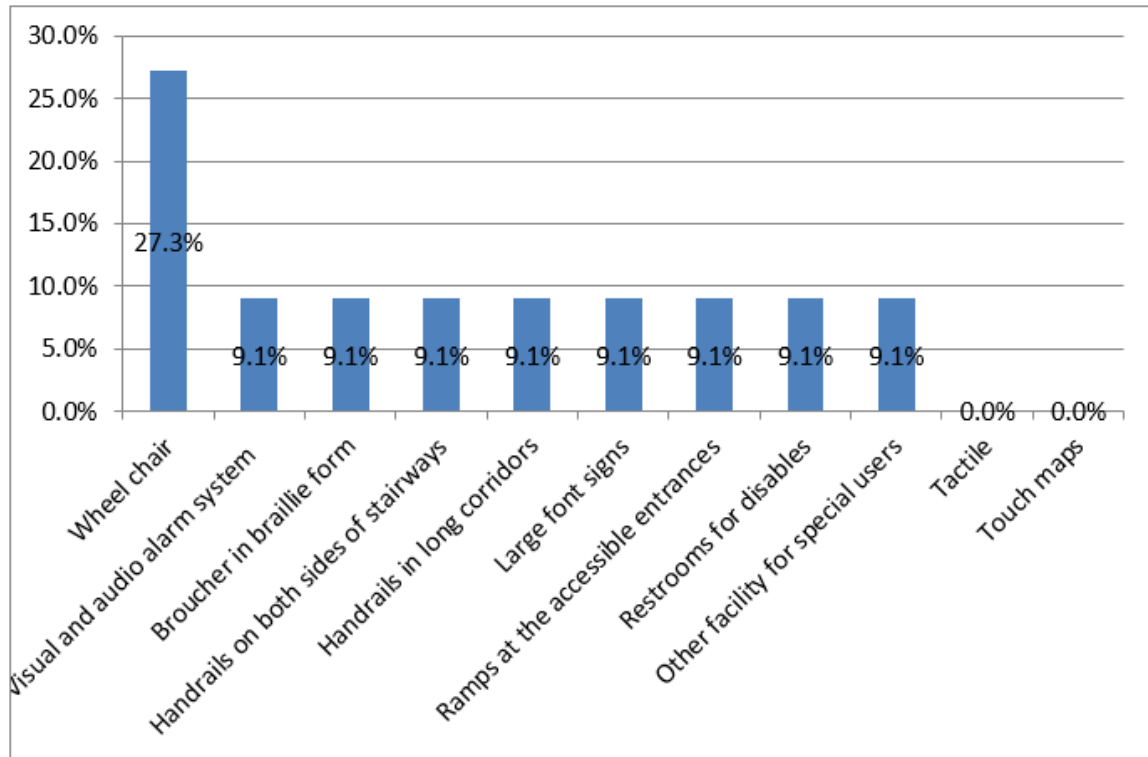


Figure 1: Convenience Facilities for Special Users

Only 27.3% (3) of libraries have wheelchair access, and only 9.1% (1) of university libraries have anything specialized like a disabled visitor's bathroom, ramps at accessible entrances, a Braille brochure, handrails on both sides of stairs, handrails in long corridors, large font signs, or a Braille brochure. One library has the most resources for special users on the ground floor. Users with special needs have specific library preferences, which are interpreted as a positive or negative reception. Universal access is facilitated by the provision of basic services and an atmosphere suited for all types of users, such as wheelchair-accessible restrooms. Among Mumbai's academic libraries, only TISS Library has accessible restrooms. Additionally, welcoming signs for special users is crucial to draw them to the libraries and provide for their comfort. There were no libraries that provided Braille signs for restrooms, nevertheless (Table 3).

Compared to other facilities, the bottom level of a single university library offers the most services. Unfortunately, no Mumbai university library provided tactile or touch maps. The findings demonstrate that university libraries in Mumbai fall short of facilitating universal access by failing to provide sufficient allowances for all users, including those who are physically impaired, in terms of navigational indications and physical access to the library.

Provision of information sources in alternative formats and assistive devices

Alternative information formats and the accompanying assistive technology are critical for libraries to achieve their goals of universal access and the promotion of education and learning for users with special needs. In light of this, the question of the many alternative information source formats and learning aids that were available to university librarians for special users was raised.

Table 5: Assistive Devices

Particulars	Responses	
	N	Percent
Book reading software	1	14.3%
Braille embosser	1	14.3%
CD player	1	14.3%
OCR scanner	1	14.3%
Refreshable Braille display	1	14.3%
Screen reading software	1	14.3%
Tape recorder	1	14.3%
Total	7	100.0%

Data showed that due to its status as a designated space for people with disabilities and visual impairments, Library 2 was equipped with a wide variety of assistive technologies, such as software for reading books, Braille embossers, optical character recognition scanners, a Refreshable Braille Display, and other similar devices (14.3%). In the sixth library, a CD player and a tape recorder were provided. Every wheelchair and other piece of accessible equipment was in good working order at the time of the inspection. All of Mumbai's university libraries (Table 4) lacked screen magnification software, voice synthesizers, digital talking books, huge screens, magnifying glasses, big print keyboards, pocket-accessible Daisy players, Braille keyboards, or Braille interpreters.

For those with special needs, a number of technological tools have been found to be helpful, including Braille embossers, Braille keyboards, Braille translators, CD players, Digital talking books, large monitors, magnifying glasses, modified large print keyboards, recognition of optical characters scanners, pocket accessible daisy players/recorders, oversize keys, refreshable braille displays, screen magnification software, screen reading software, speech synthesizers, and taps. According to this research, university libraries in Mumbai are not doing enough to provide universal access by making assistive learning tools and information sources accessible to users with disabilities.

Summary of Findings:-

Access to libraries, and the availability of materials in alternate forms and technological aids for students with disabilities, are both crucial to their enrollment. Currently enrolled special users will lead to a more compassionate attitude, which will be made possible by the provision of easy facilities for special users' access as well as assistive.

According to responses from librarians, universities in Mumbai lack the various access utilities needed to make libraries accessible to people with disabilities, which has a negative impact on the number of students with disabilities who enroll at those universities and use the libraries there. It demonstrates the inadequacy of navigational markers in Mumbai's university libraries for all users, including those with mobility impairments.

According to comments from librarians, the lack of alternate information sources and learning aids in university libraries in Mumbai has a detrimental influence on the number of special users enrolling in universities and using their libraries. It demonstrates that university libraries in Mumbai did not make adequate provisions to guarantee that all users, including those with physical limitations, could quickly locate and obtain the materials they need.

Recommendations:-

Each building must have a wheelchair accessible entrance that is clearly marked with a ramp and railings. Short ramp with a maximum grade of 1:12 and a minimum grade of 1 in 20; the ramp's head railing is extended. If the incline of the ramp is more than 1 in 12, a stepped approach with a minimum level platform of 1800 x 1800 millimeters and a maximum riser height of 150 millimeters should be made accessible. (National Building Code of India, 2005).

Wheelchair users should have a minimum clear width of 900 mm to easily open and close doors. The clear width should be at least 900 mm, preferably 1000 mm, if a wheelchair user has to turn in the doorway, if a door closer is

placed, if the door is located at the entrance to a public building, or if the door is located in another high-traffic location. According to the Indian National Building Code (2005).

All university libraries should plan and create signage using consistent colour contrast, forms, and font sizes for both major and secondary signs to help users navigate the building.

Pictorial signs using widely recognized pictograms and symbols should be used wherever possible. This makes the signage more legible and useful for everyone, regardless of their native language. It is possible to clearly and simply mark public amenities like restrooms, drinking fountains, stairways, elevators, exits, and wheelchair accessibility with symbols.

According to the National Archives of India Access Audit Report, elevator call buttons with Braille signs should be situated within reach of 900 to 1000 mm, at least 400 mm from any corner, or on a clear floor space measuring 900 by 1200 mm without any obstructions (2009). (National Archives of India Access Audit Report)

Hue is the perceptual quality that is often linked to the names of primary colors. Blue, green, yellow, red, and purple are only a few of the fundamental color groups that may be distinguished by hue. According to those with normal color vision, there is a predictable progression between colors depending on how they are related to one another. The capacity to make a distinction based on hue is often impaired in those with color vision impairments. According to the Harmonized Guidelines and Space Standards for Barrier-Free Built Environment for People with Disabilities and the Elderly (2016), contrasting or harmonising color schemes are the most common ways to create visual contrast.

The following items should be made available to blind or visually impaired patrons by libraries: CD players, Braille embossers, OCR scanners, refreshable Braille displays, screen reading software, and book reading software. The resources of the university libraries in Mumbai should be accessible to people with visual impairments, including Braille keyboards, Braille translators, digital talking books, large monitors, magnifying lenses, large print keyboards, pocket-accessible Daisy players, screen magnifying software, and speech synthesisers.

Creating a video library tour is economical for libraries and their patrons since it can be used again. The creation of a video library tour will have many advantages, including helping to reduce the number of questions patrons have to ask library staff, helping students who missed the library's orientation program, and helping those with physical disabilities.

Planning for the requirements of people with disabilities is likely to result in a better product for everyone. Signs, corridors, and walkways should all have traits like large-size font, high-color contrast, and uniformity in design and location.

Every university library should feature elevators with Braille buttons on the interior of the elevators and for call buttons, a handicapped restroom, Braille signs for convenience facilities, and audio signs for elevators to guarantee that all students have equitable access to library publications.

The National Archives of India (Annex) Access Audit Report states that elevator call buttons with Braille signs must be located between 900 and 1000 millimeters away, at least 400 millimeters away from any corners, or have a 900 x 1200 millimeter clean floor area without any impediments.

If an elevator isn't available, handicapped patrons of libraries should have access to electric stair-climbing wheelchairs.

It's important to make sure that all patrons, including those with mobility issues, have easy access to the library's reading rooms, reading tables, and computer tables.

To ensure that everyone is able to use their library of choice, they should all have access to features like tactile maps, ramps, handrails, wheelchairs, and adapted bathrooms. Those with visual impairments can benefit from warning tactile pavers installed on the walks close to dining areas, since these pavers will give a change in texture.

When making modifications to the layout and signage in an area with the goal of saving people time, it is important to perform a user survey to see how well the changes have been received.

Conclusion:-

Universities in Mumbai lacked proper signs to aid with orientation and navigation for those with disabilities. While university libraries are not obligated to provide every conceivable piece of specialised equipment for every conceivable disability, they are expected to offer the fundamental assistive devices that special users often need. Additionally, if the budget of the library permits it, the staff should be adaptable in giving users with particular needs access to items as needed.

The Bureau of Indian Standards (1989) published the National Building Code of India (2016), while the Ministry of Urban Development (2016) published the Harmonised Guidelines and Space Standards for Barrier-Free Built Environment for Persons with Disability and Elderly Persons, 2016. Guidelines provided by the American with Disabilities Act (ADA), the Indian Accessibility Standard: Recommendations for Buildings and Facilities for Inclusion of Persons with Disabilities, and the International Federation of Library Associations and Institutions' (2005) Access to Libraries for Persons with Disabilities -CHECKLIST. When planning future renovations or redesigns, university libraries should consider these Standards and Guidelines and how they could use geospatial analysis.

Library patrons at universities come from a wide range of demographics. Printed books also have the advantage of digital libraries in that they allow for more leisurely reading periods. In order to promote their own distinctive atmosphere and turn libraries into vibrant centres for people of all backgrounds and ages, university libraries in Mumbai must modernize the present signage system of their physical library buildings.

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