NCPEDP - Javed Abidi Fellowship on Disability

Supported by Azim Premji Foundation

Baseline Report

Masoom Reza

ryder.masoom@gmail.com
Pan India

Accessible E-database

Contents

1 Executive Summary

This study casts a spotlight on the accessibility landscape of e-database resources for persons with disabilities in India. It's well-known that in this information-driven digital era, E-database are immensely useful and beneficial for students, researchers, professionals, academicians, and educators worldwide, as they are repositories of knowledge. Despite their significance, accessibility and usability concerns of these E-database resources persist for persons with disabilities.

The study aims to shed light on the challenges, emphasizing the obstacles that hinder accessibility and usability of e-databases for persons with disabilities in general, with specific focus on person with visual disabilities. Highlighting a research gap in existing literature, it emphasizes the lack of comprehensive data focusing on the usage of e-databases by persons with disabilities in India. It aims to fill this void by providing insights into the specific challenges faced by persons with disabilities when interacting with e-databases.

The primary objective of this research is to provide an insight and perspective on the prevalent

situation of E-database accessibility. The study aims to bridge existing gaps in understanding the specific challenges faced, contributing valuable insights to the discourse on inclusive and accessible e-databases in India.

To achieve a comprehensive understanding, the study adopts a structured methodological approach. It involves surveying 103 persons with disabilities and conducting in-depth interviews with 20 participants across diverse regions.

Finally, this study serves as a crucial starting point for focused advocacy and awareness initiatives to address the accessibility challenges of e-databases for persons with disabilities in India. the study seeks to provide a comprehensive understanding of the barriers faced by persons with disabilities and contribute valuable insights to the discourse on inclusive and accessible e-databases. The findings and insights garnered through this research pave the way for future endeavours aimed at fostering a more inclusive digital environment, ensuring equal opportunities for persons with disabilities in accessing academic resources and contributing to their educational and professional development.

2 Introduction

Electronic Database is fundamentally a computer-maintained collection of data such as peer-reviewed articles, journal, dissertation, books, and others related things with searchable functionalities i.e., Jstor, SCCONLINE, Manupatra etc. In the digital era, academic e-databases have transformed the knowledge and information collection process. These databases are repositories of knowledge for students, researchers, academician and educators worldwide.

They have revolutionized the landscape of academic research and information dissemination, offering a myriad of benefits to users across diverse disciplines. E-database resources enable users to access these resources remotely from any location with an internet connection, thereby breaking down geographical barriers and promoting global collaboration in research. Additionally, they feature powerful search functionalities, including advanced search options, filters, and sorting capabilities, ensuring quick retrieval of relevant information. Moreover, the timeliness of e-databases ensures that users have access to the latest research and publications, keeping them informed of current developments in their respective fields. Another key advantage is the cost-effectiveness of e-databases, as they often prove to be more economical than purchasing individual print materials, given the fact that many academic institutions provide access as part of their library resources. Furthermore, e-databases facilitate collaboration among researchers through features such as citation management tools, collaborative annotation, and sharing functionalities. They also support remote learning initiatives by providing essential resources for online courses, ensuring continuity in education despite physical restrictions. Additionally, e-databases offer built-in data analysis tools and visualization capabilities, enabling researchers to analyse large datasets more effectively and uncover meaningful insights and trends in their research. Cross-referencing features, link related articles, journals, or research studies facilitate interdisciplinary research and provide users with a comprehensive understanding of their chosen topic. These benefits, among others, underscore the indispensable role of e-database resources in modern academic research, learning, and knowledge dissemination.

Despite the substantial benefits these databases offer to diverse users, concerns persist regarding their accessibility and usability for individuals with disabilities. Inaccessible e-databases hinder equal access to educational materials for persons with disabilities, denying them the opportunity to fully engage with scholarly content and restrict their academic progress. Inaccessible interfaces and search functionalities make it difficult for persons with disabilities to navigate through databases, retrieve relevant information, and access scholarly materials; it limits their ability to conduct research effectively. Moreover, the absence of proper accessibility features such as screen reader compatibility or alternative navigation mechanisms excludes persons with disabilities from fully benefiting from e-database resources, exacerbating existing barriers. For individuals pursuing higher studies or engaged in research-oriented work, inaccessible e-databases pose even greater challenges, as they rely heavily on access to such resources. They inhibit them to conduct comprehensive literature reviews, access up-to-date

research findings, or contribute to scholarly discourse, thereby impeding their academic and career advancement. Furthermore, inaccessible e-databases hinder persons with disabilities' participation in collaborative research projects, limiting their opportunities for interdisciplinary collaboration and knowledge exchange. Beyond academia, inaccessible e-database resources also impact persons with disabilities in various other aspects of life, such as accessing government information, legal documents, or healthcare resources, thereby perpetuating systemic inequalities and hindering their full participation in society. Additionally, inaccessible e-databases contribute to the digital divide, reinforcing disparities in access to information and exacerbating social exclusion for persons with disabilities. Therefore, addressing the inaccessibility of e-database resources is essential to ensure equitable access to education, employment, and information for all.

Notwithstanding such issues, there exists a notable gap in research concerning the accessibility of e-databases for persons with disabilities, highlighting the need for comprehensive investigation in this area. This study endeavours to address this gap by examining the accessibility challenges faced by persons with disabilities when accessing e-database resources. By identifying barriers and proposing solutions to enhance accessibility, this research aims to contribute to the advancement of inclusive practices in the domain of E-database resources.

3 Statement of Problem

Despite the widespread recognition of the importance of web accessibility for persons with disabilities, significant gaps persist in ensuring equal access to digital resources, particularly in the realm of e-databases. Recent 2024 WebAIM Million Report revealed 56,791,260 distinct accessibility errors across one million home pages of prominent websites across the globe, with an average of 56.8 errors per page, marking a 13.6% increase from 2023.

While various international standards and legislative frameworks mandate the accessibility of online platforms, including websites and applications, there remains a notable neglect of e-databases in these efforts. E-databases, comprising a vast array of scholarly materials and resources, play a crucial role in academic research, education, and professional development. However, the accessibility and usability of these platforms for persons with disabilities have long been overlooked, resulting in significant challenges and barriers to access.

The existing legislation and regulations, both at the international and national levels, underscore the importance of ensuring equal access to digital resources for persons with disabilities. Measures such as the Web Content Accessibility Guidelines (WCAG), the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), and various national legislations and guidelines aim to promote accessibility and inclusion in the digital realm. Despite these legal mandates, the actual implementation and enforcement of accessibility standards for e-databases remain inadequate.

Moreover, the lack of comprehensive research focusing specifically on the accessibility of e-databases for persons with disabilities exacerbates the problem. While studies have highlighted broader challenges in digital accessibility, including web platforms and applications, there is a dearth of data and insights into the specific accessibility issues faced by users of e-databases. Existing research often overlooks the nuances of e-database usage and fails to provide a comprehensive understanding of the barriers encountered by persons with disabilities when accessing these resources.

The limited available research on this subject indicates significant accessibility challenges, including the lack of support for assistive technologies, inaccessible content formats, and complex search interfaces. These barriers hinder persons with disabilities from effectively navigating e-databases, retrieving relevant information, and accessing scholarly materials essential for academic and professional pursuits. Furthermore, the absence of accessible e-databases perpetuates educational and employment inequalities, hindering their full participation and integration in academic and research-oriented environments.

In this backdrop, this study endeavours to examine the prevailing scenario of E-database accessibility and provides some recommendations to improve their usability and accessibility for everyone.

4 Research Objective

- To analyse the legal and policy frameworks related to web accessibility to understand the obligations and responsibilities of E-database resource providers.
- To conduct a comprehensive assessment of the existing accessibility levels and the existing challenges of E-database resources for users with disabilities.
- To identify the specific accessibility barriers that persons with disabilities encounter when accessing E-database resources, including interface, technical and usability challenges.
- To analyse the experiences and specific needs of users with disabilities when accessing E-database resources to gain insights into their unique challenges and requirements.
- To evaluate the impact and effectiveness of accessibility enhancements implemented in E-database resources, including user feedback and performance metrics, to determine the success of accessibility initiatives.
- To examine how the accessibility of E-database resources affects the academic and professional inclusion of individuals with disabilities, including their participation in research, study, and employment opportunities.
- To analyse the efforts made by academic institutions and database providers in ensuring the accessibility of e-databases.
- To investigate and propose strategies for incorporating inclusive design principles into the development and maintenance of E-database resources to enhance accessibility for users with disabilities.

- To propose best practices for making e-databases more accessible to users with disabilities.
- To recommend strategies and interventions for improving the accessibility of e-databases, considering the collaborative efforts of various stakeholders.

5 Research Question

The following are the research questions for this study:

- What is the need and significance of accessible E-database resources?
- What are the experiences and perspectives of individuals with disabilities regarding the usability and accessibility of e-databases?
- What are the specific barriers faced by persons with disabilities in accessing e-databases?
- What is the compliance level of web accessibility guidelines by E-database resources?
- What legal frameworks and regulations mandate accessibility features in e-database resources?
- What are the most effective strategies for raising awareness about accessibility features and training users on how to utilize them effectively?
- What strategies can be adopted to make E-database resources accessible for persons with disabilities?
- How can user feedback and input be effectively incorporated into the design and development of accessible e-databases?

6 Research Methodology

This section delineates the research design, sampling techniques, data collection methods, data analysis techniques, and ethical considerations involved in the study. The upcoming chapters will present and analyze the findings derived from this methodological framework.

To complete this study, mixed method research design has been adopted, aiming to provide a comprehensive understanding of the accessibility challenges faced by persons with disabilities in accessing e-database resources. Fundamentally, a mixed methods research design includes both qualitative and quantitative methods to triangulate data to provide a deeper insight into the complexities of the issue an in-depth analysis of the data collected.

In the study, a doctrinal approach to review and synthesize existing literature on accessibility issues of E-database resources has been used. Besides, data collection methods encompassed both surveys and interviews. The survey instrument was designed to gather quantitative data on the accessibility experiences of participants, while interviews provided qualitative insights into the challenges and perspectives of individuals with disabilities. The survey questionnaire was meticulously crafted to gauge the level of awareness regarding web accessibility and e-database

resources, as well as to identify potential prevalent inaccessibility issues. Drawing upon established accessibility guidelines, the survey was tailored to capture pertinent insights into participants' interactions with e-database resources. Besides, semi-structured interview has been used to guide discussions with participants, allowing for a nuanced exploration of their perceptions and suggestions for improving e-database accessibility.

The sampling techniques employed for this study involved a combination of Snowball Sampling, Convenience Sampling, and Random Sampling. These techniques were chosen to ensure the representation of diverse perspectives and experiences among persons with disabilities in accessing e-database resources within the Indian context.

To analyze the gathered data, both quantitative and qualitative approaches have been used. Quantitative data obtained from surveys were analyzed using Descriptive Statistics, Inferential Statistics, and Correlation Analysis. Whereas qualitative data from interviews were subjected to thematic analysis to identify patterns, themes, and emerging insights.

It must be highlighted that ethical considerations were paramount throughout the research process.

Informed consent was obtained from all participants prior to their involvement in the study. Measures were implemented to ensure the confidentiality and anonymity of participants' responses.

7 Limitation of the Study

The findings and recommendations of this research work may be specific to the selected E-database resources and the context of this research. The results might not be easily generalized to all E-databases or different user populations. The focuss of this research is persons with visual disabilities.

The survey questionnaire and telephonic interviews rely on a mixed approach of snowball and random sampling method, which may limit the representativeness of the sample. The perspectives and experiences of participants may not fully reflect the diversity and range of users with disabilities accessing E-database resources.

Collecting data through surveys and interviews introduces the possibility of self-reporting biases. Participants may provide socially desirable responses or unintentionally misinterpret certain questions, affecting the accuracy and reliability of the data.

Additionally, access to certain E-database resources, necessary tools for usability testing, or specialized software for analysis may be restricted due to financial or logistical limitations.

8 Introduction to Electronic Database Resources: A Knowledge Reservoir

"An electronic database is a computer-based accumulation or directory of materials, such as research papers, review articles, theses, books, and chapters in books, among others, that are structured logically with searchable features or sections."[1] They are a systematically organized repository of information focused on a singular or multidisciplinary subject. Accessible through the Internet, it encompasses electronic resources such as e-journals and e-books provided by publishers representing various fields and disciplines.[2] They are basically a digital system that organizes data to make searching fast and easy. It's essentially a computer-based collection of information, often sorted into searchable categories. For example, think of a library database that lists articles from magazines and newspapers. When you search for something, the computer matches your query with the stored data. Online platforms and CD-ROMs also offer valuable electronic resources, with features like flexibility, portability, and easy access to information.

Electronic database resources offer a myriad of benefits to users across various fields and disciplines. They host a wide range of materials, including peer-reviewed articles, books, journals, and more. This breadth of content gives an option to users to access a diverse array of information relevant to their research, studies, or professional interests. In addition to text-based materials, e-databases often include multimedia resources such as videos, images, and audio files. It provides users with diverse learning modalities. With e-databases, users have access to a global repository of academic content. Additionally, unlike traditional print materials, e-databases provide instant access to information from anywhere with an internet connection. The remote access functionalities break geographical boundaries and eliminates the need for physical visits to libraries. E-databases generally offer comprehensive search functionalities, advanced search filters and indexing systems, allowing users to easily locate desired content within vast collections of data. Advanced segregation options, filters, and sorting capabilities enhance the user experience, enabling researchers to locate specific articles or topics quickly. Many e-databases offer features such as collaborative tools, citation management, and social networking functionalities. These features allow users to connect with peers, share resources, and collaborate on projects seamlessly. Some e-databases provide tools for data analysis and visualization. It enables researchers to analyze large datasets, identify patterns, and draw

[1] Valentine Joseph Owan and Daniel Clement Agurokpon, 'A Digital Library for Researchers, Scientists, and Scholars: Mendeley Desktop Application' in Tlou Maggie Masenya (ed), Advances in Knowledge Acquisition, Transfer, and Management (IGI Global 2022) <https://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-6684-3364-5.ch006> accessed 18 March 2024.

[2] Mohammed Suleiman Abubakar, Availability and utilization of electronic information databases for research by agricultural scientists in federal university libraries in north central Nigeria, November 2017, Library Philosophy and Practice (e-journal) https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4614&context=libphilprac accessed 10 march 2024.

insights from complex information. These analytical capabilities enhance the research process, facilitating data-driven decision-making and advancing scientific inquiry. Some e-databases allow users to customize their search preferences, save search queries, set up alerts for new publications in their field of interest, and personalize their user experience. These customization options enhance efficiency and tailor the database to individual research needs. Moreover, they often feature updates and continuous additions of new content. The objective is to ensure that users have access to the latest research findings, developments, and publications in their respective fields. Furthermore, they cover a wide range of disciplines and subject areas, facilitating interdisciplinary research and exploration. Besides, owing to Subscription models and institutional licenses, accessing electronic databases often proves more cost-effective for institutions and individuals than compared to purchasing individual print publications or journal subscriptions. Basically, they represent indispensable tools for modern academic research and information dissemination. Their accessibility, searchability, timeliness, cost-effectiveness, and collaborative features make them invaluable resources for individuals across various disciplines and geographical locations. As the digital landscape continues to evolve, e-databases will remain essential pillars of scholarly communication, fostering innovation, collaboration, and knowledge dissemination on a global scale.

Despite being so important, all electronic database resources are not accessible for all users. Dresselhaus, the present head of Electronic Resources at East Carolina University, eloquently defines accessible library resources as the "ability [of persons with visual, perceptual, or physical disabilities] to obtain the same information at the same time, for the same price, and at the same quality [as persons with no disability]."[3] This definition stresses the importance of persons with disabilities being able to acquire the same information as those without disabilities. For instance, the content and data available should be accessible in various formats to accommodate diverse needs. The expression "at the same time" emphasizes the need for simultaneous access, ensuring that persons with disabilities can get information concurrently without any delays or hindrances. Additionally, "for the same price" underscores the principle of economic equality, highlighting that persons with disabilities should not incur additional financial burdens when accessing library resources. Lastly, "at the same quality" suggests the importance of maintaining consistent and high-quality access to information for persons with disabilities, equivalent to the standard experienced by those without disabilities. This captures the essence that the information is presented in a manner that preserves its usefulness for all users. In essence, this definition meaningfully underscores the importance of ensuring equal and universal access to information, implying that everyone should have the same opportunities to obtain knowledge without disparities in terms of timing, cost, or quality.

Notably, there are several inaccessible E-database resources, which pose significant challenges for users with specific needs. Many databases fail to adequately support screen readers, speech

[3] Angela Dresselhaus. "The Americans with Disabilities Act compliance and library acquisitions" *Acquisitions Institute at Timberline Lodge* (2013)
Available at: http://works.bepress.com/angela_dresselhaus/24/ Accessed 4th March 2024.

recognition software, or alternative mechanisms, making it difficult for persons with disabilities to navigate interfaces, search results, retrieve relevant articles, and access content. Frequently, downloaded content remains inaccessible for students with visual impairments via screen readers, exacerbating accessibility issues. The absence of properly structured and tagged content within documents further compounds these problems. Moreover, e-databases often feature complex search interfaces and filters, presenting difficulties for individuals with cognitive disabilities or learning difficulties.

Given that E-database resources are web-based facilities and services, they are covered under web accessibility laws and guidelines. However, in practice, many of these resources fail to adhere to these standards, resulting in accessibility issues. In the next chapter, a brief overview of the broader legal framework pertaining to web accessibility has been provided.

9 Navigating the Landscape of Accessibility Legislation and Standards: A Comprehensive Overview

International Framework

Although assistive devices based on information and communication technology (ICT) have existed since the twentieth century, the notion of "universal design" – the integration of accessibility and usability features into products and services to accommodate a broader demographic – has garnered increased attention in the twenty-first century.

Following the inception of the Internet and the World Wide Web (W3C) in the early nineties, the Web Accessibility Initiative (WAI) was established at the onset of the twenty-first century. With extensive global participation from experts, its focus has also been on developing technical solutions to enhance web accessibility, resulting in the formulation of the Web Content Accessibility Guidelines (WCAG).

WCAG 1.0 was introduced in 1999, succeeded by WCAG 2.0 in 2008. Later, the WCAG 2.0 series was further updated in 2018 with the release of WCAG 2.1. While the primary emphasis of the WAI has been on web accessibility, endeavors have been made to extend guidelines to non-web ICT domains through the WCAG2ICT Task Force, established by W3C/WAI. As per the Web Content Accessibility Guidelines, accessibility guidelines and techniques are rooted in four core principles: Perceivable, Operable, Understandable, and Robust (POUR), which address the varied accessibility needs causing from aging, limited learning abilities, and temporary disabilities.

In 1993, the General Assembly of the United Nations adopted the Standard Rules on the Equalization of Opportunities for Persons with Disabilities via resolution 48/96 annex.[4] Although not legally binding, the Standard Rules signify a robust political commitment by governments to adopt equal opportunity measures for persons with disabilities. They serve as a framework for policy formulation. Rule 5 pertaining to accessibility mentions that states should recognize the overall importance of accessibility by undertaking measures to provide access to information and communication. Sub-rule 5(b) provides:

“6. States should develop strategies to make information services and documentation accessible for different groups of persons with disabilities. Braille, tape services, large print and other appropriate technologies should be used to provide access to written information and documentation for persons with visual impairments. Similarly, appropriate technologies should be used to provide access to spoken information for persons with auditory impairments or comprehension difficulties.

[4] ‘Standard Rules on the Equalization of Opportunities for Persons with Disabilities | United Nations Enable’ <https://www.un.org/development/desa/disabilities/standard-rules-on-the-equalization-of-opportunities-for-persons-with-disabilities.html> accessed 3 March 2024.

7. Consideration should be given to the use of sign language in the education of deaf children, in their families and communities. Sign language interpretation services should also be provided to facilitate the communication between deaf persons and others.

10. States should ensure that new computerized information and service systems offered to the public are either made initially accessible or are adapted to be made accessible to persons with disabilities.

11. Organizations of persons with disabilities should be consulted when measures to make information services accessible are being developed." Additionally, Rule 6 makes provisions for education. It states that states should ensure the principle of equal primary, secondary and tertiary educational opportunities for children, youth and adults with disabilities.

The United Nations Conventions on the Rights of Persons with Disabilities (2006) also recognizes that web accessibility is one of the fundamental aspects of ensuring equal rights and opportunities for persons with disabilities. The principle of universal design, characterized by its inclusive approach deeply entrenched in the principles of non-discrimination and equal participation, has been categorically mentioned under the principles of the Convention and Article 2. Regarding web accessibility, Article 9 of the UNCRPD specifically mandates that States Parties guarantee equal access to "information and communications, including information and communications technologies and systems" for persons with disabilities to live independently and participate fully in all spheres of life.[5] This includes measures aimed at removing barriers and ensuring accessibility across various arenas, including information dissemination, communications channels, and electronic services. Moreover, States Parties are obliged to implement appropriate measures to facilitate assistance and support mechanisms for persons with disabilities, ensuring their access to information and promoting their utilization

of emerging ICTs and systems, including the Internet.[6] Such initiatives are vital for fostering inclusivity and empowering individuals with disabilities to navigate the digital landscape independently and effectively.

The UNCRPD Committee also issued General Comment 2 on Accessibility in 2014, emphasizing the imperative for State parties to prioritize accessibility concerns.[7]

In 2015, the 2030 Agenda for Sustainable Development was launched by the United Nations.[8] Sustainable Development Goal (SDG) 4 aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Within this overarching objective, Target 4.3 specifically emphasizes the importance of achieving equal access to quality education for all

[5] 'Article 9.1 – Accessibility | United Nations Enable' <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-9-accessibility.html> accessed 30 May 2023.

[6] 'Article 9.2(f) and (g) – Accessibility | United Nations Enable' <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-9-accessibility.html> accessed 31 May 2023.

[7] General comment no. 2 (2014), Article 9, Accessibility, https://digitallibrary.un.org/record/812025?ln=en accessed 30 May 2023.

[8] 'THE 17 GOALS | Sustainable Development' <https://sdgs.un.org/goals> accessed 3 March 2024.

individuals, irrespective of their backgrounds or abilities. This target underscores the significance of providing inclusive educational opportunities, including technical, vocational, and tertiary education, to foster the development of skills and knowledge necessary for personal growth and societal advancement.

Additionally, SDG 9 underscores the significance of universal access to information and communication technology (ICT), as outlined in Target 9.8. This target emphasizes the importance of ensuring that all individuals, including those with disabilities, have equal opportunities to participate in the digital world, access information, and utilize online services. Access to ICT is recognized as a catalyst for economic growth, innovation, and social inclusion, with the potential to empower marginalized populations and bridge digital divides. Needless to say, in the context of educational accessibility, information and communication technology (ICT) plays a crucial role in democratizing access to learning resources and facilitating educational attainment. In alignment with SDG Target 4.3, efforts to promote equal access to quality education through ICT contribute to advancing the broader agenda of sustainable development by fostering inclusive societies, empowering individuals, and promoting lifelong learning opportunities for all.

It must be noticed that across the world, several countries follow digital accessibility standards to make web services accessible for persons with disabilities. Section 508 of the U.S. Rehabilitation Act of 1973 (access to information for disabled persons), the 21st Century Telecommunications and Video Accessibility Act (accessible telecommunication and video programming services) and the Equality Act, 2010 are few examples of legislations enforced in different countries. Additionally, Courts have also occasionally interpreted human rights and disability laws in support of website and online service accessibility for persons with disabilities. They have stressed the importance of creating universally accessible websites and apps. The Australian Human Rights and Equal Opportunity Commission decided that the exclusion of individuals with blindness from accessing the Olympic Games website constituted discrimination, thus requiring the website's accessibility to be ensured.[9] In the case of National Federation of the Blind, et al. v. Scribd, Inc (USA), the issue was related to the website and application inaccessibility of Scribd for persons with visual disabilities which basically provides service to access to a large library of eBooks, audiobooks and other published content for a flat monthly fee. The court ruled against the Scribd and emphasized on making accessible internet for persons with visual disabilities.[10] The Canadian court, in the issue pertaining to inaccessibility of government websites, held that accessibility of government websites is highly necessary for independence and ease of access to Government facilities.[11]

[9] 'Bruce Lindsay Maguire v Sydney Organising Committee for the Olympic Games | Australian Human Rights Commission' <https://humanrights.gov.au/our-work/disability-rights/bruce-lindsay-maguire-v-sydney-organising-committee-olympic-games> accessed 31 May 2023.

[10] NATIONAL FEDERATION OF THE BLIND V. SCRIBD, INC., 97 F.Supp.3d 565 (D. Vermont 2015).

[11] Donna Jodhan v. Attorney General of Canada, 2010 FC 1197.

Indian Framework

In 2009, India formulated web accessibility guidelines mandating that government agencies meet the WCAG 2.0 Level A standards (it implies that websites should meet the minimum accessibility standards as outlined in WCAG). The objective of this guideline is to ensure the Indian Government Websites should conform to the essential pre-requisites of UUU trilogy i.e. Usable, User-Centric and Universally Accessible. These guidelines are later revised with the passage of time.

In 2013, the National Policy on Universal Electronic Accessibility was introduced in India, marking a significant step towards ensuring equitable access to Electronics and Information and Communication Technologies for persons with disabilities.[12] This policy underscores the imperative of eliminating discrimination based on disabilities and fostering universal access by recognizing the pivotal role of Electronics and ICTs as facilitators of equal opportunities.

Clause 6.5.1 related to “accessible Format for content: reads as “Content in electronics format including publications, periodicals, journals, multi-media, etc. and educational material including textbooks etc. be produced in accessible format including local language support.”. Furthermore, clause 6.4 of the policy outlines Accessibility Standards, which includes the formulation or adaptation of guidelines from existing standards in the domain. This encompasses internationally recognized standards such as the W3C accessibility standards and guidelines, including but not limited to:

ATAG (Authoring Tools Accessibility Guidelines)

WCAG 2.0 (Web Content Accessibility Guidelines) UAAG (User Agent Accessibility Guidelines).

Additionally, in clause 6.4.2, the policy states that besides government and disability-focused websites, it is also essential to check if other citizen-centric websites are accessible. Basically, the policy comprehensively addresses accessibility requirements within the realm of Electronics and ICT. It emphasizes the adoption and adherence to accessibility standards, guidelines, and universal design principles. By integrating these measures, the policy seeks to enhance the usability of electronic platforms and ICT solutions for persons with disabilities.

In December 2015, the Department of Empowerment of Persons with Disabilities launched the Accessible India Campaign (Sugamya Bharat Abhiyan).[13] The campaign aims to achieve universal accessibility for Persons with Disabilities and focuses on three key areas: (I) the Built Environment; (II) the Transportation Sector, and (III) the ICT Ecosystem. Notably, Objective 5 of the campaign aims to enhance the proportion of accessible and usable public documents and websites to meet internationally recognized accessibility standards. Fundamentally, this entails converting all public documents published as of a specified year and ensuring that all current

[12] the National Policy on Universal Electronic Accessibility, https://www.meity.gov.in/writereaddata/files/National%20Policy%20on%20Universal%20Electronics%281%29_0.pdf (Accessed 24th February 2024).

[13] ‘Accessible India Campaign | Department of Empowerment of Persons with Disabilities (DEPwD) | India’ <https://depwd.gov.in/accessible-india-campaign/> accessed 3 March 2024.

websites adhere to relevant International Organization for Standardization (ISO) criteria, specifically outlined in ISO/IEC 40500:2012, Information Technology – W3C Web Content Accessibility Guidelines (WCAG) 2.0. By meeting these standards, the Campaign seeks to ensure that information and resources are accessible to everyone.

In 2016, the Rights of Persons with Disabilities Act, 2016 has been enacted in pursuance of the obligation of the UNCRPD.[14] Based on human rights model, this is a sunshine piece of legislation, which replaced the erstwhile the Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995. Under the Act, Sections 40 to 46 deal with accessibility measures. Section 40 provides that "the Central Government shall, in consultation with the Chief Commissioner, formulate rules for persons with disabilities laying down the standards of accessibility for the physical environment, transportation, information and communications, including appropriate technologies and systems, and other facilities and services provided to the public in urban and rural areas."

Section 41 includes provisions for making accessible transport services. Section 42 related to access to information and communication technology provides "The appropriate Government shall take measures to ensure that, —

(i) all contents available in audio, print and electronic media are in accessible format.

(ii) persons with disabilities have access to electronic media by providing audio description, sign language interpretation and close captioning.

(iii) electronic goods and equipment which are meant for everyday use are available in universal design."

Section 43 provides that "The appropriate Government shall take measures to promote development, production and distribution of universally designed consumer products and accessories for general use for persons with disabilities." Section 44 mandates that any establishment shall not be allowed to build any structure in violation of the rules made under Section 40. Section 45 stipulates that all existing public buildings shall be made accessible within 5 years (unless any specific exemption) in aligned with the rules formulated by the Central Government. With such provisions, the RPWD Act underscores the imperative of accessibility, including web accessibility, as an important right, fostering an environment where persons with disabilities can effectively and equally participate in society.

To ensure proper implementation of the RPwD Act, the Rights of Persons with Disabilities Rules, 2017 was enacted.[15] Chapter VI of the Rule deals with accessibility.

[14] The Rights of Persons with Disabilities Act, 2016, https://www.indiacode.nic.in/bitstream/123456789/15939/1/the_rights_of_persons_with_disabilities_act%2C_2016.pdf Accessed 22 February 2024.

[15] The Rights of Persons with Disabilities Rules, 2017, https://upload.indiacode.nic.in/showfile?actid=AC_CEN_25_54_00002_201649_1517807328299&type=rule&filename=Rules_notified_15.06.pdf Accessed 10 February 2024.

Rule 15(1) provides that every establishment shall comply with the certain standards relating to physical environment, transport and information and communication technology. Sub-rule (c) related to information and Communication Technology provides that every establishment shall conform with: -

"(i) website standard as specified in the guidelines for Indian Government websites, as adopted by Department of Administrative Reforms and Public Grievances, Government of India.

(ii) documents to be placed on websites shall be in Electronic Publication (ePUB) or Optical Character Reader (OCR) based pdf format

Provided that the standard of accessibility in respect of other services and facilities shall be specified by the Central Government within a period of six months from the date of notification of these rules."

In 2023, the Ministry of Social Justice and Empowerment issued a notification to amend certain parts of the Rights of Persons with Disabilities Rules, 2017 through the Rights of Persons with Disabilities (Amendment) Rules, 2023. In order to ensure web accessibility, Indian Standard ACCESSIBILITY FOR THE ICT PRODUCTS AND SERVICES (2023) has been formulated. The said standard consolidates and aligns with existing global and Indian standards, taking into account the specific needs of Indian users.[16] It addresses accessibility requirements for a wide range of ICT components, including web and mobile applications, online (non-web) documents, contents and e-books, software, hardware (such as desktops, laptops, and mobile devices), facilities and two-way voice and video communication technologies. Additionally, it encompasses support services like documentation and help desks, as well as emergency and relay services provided by ICT platforms. A key focus of this standard is to ensure accessibility for Indian language users across all categories of ICT products and services. By outlining functional performance requirements derived from various disability categories and detailing technical specifications for each usage scenario, this standard aims to facilitate testing and compliance for both developers and users. Basically, consistent with the Rights of Persons with Disabilities Act of 2016, this standard encompasses a broad spectrum of ICT products and services pertaining to information and communication, spanning telecommunications services, web-based platforms, electronic and print media, as well as digital and virtual services.

Indian Standard ACCESSIBILITY FOR THE ICT PRODUCTS AND SERVICES (2023) has 2 parts. The part 1 is related to "requirements" and Part 2 is about "determination of conformance". Part 1 specifies the requirements applicable to individuals with visual, auditory, speech, physical, and neurological disabilities, as well as those with limited cognition, language, and learning abilities, concerning ICT products and services. It establishes functional performance criteria and subsequently addresses the general technical specifications necessary for various types of ICT to fulfil these criteria. Part 1 of this standard is intended for use within the realms of both web-based and non-web-based technologies, including those that employ a hybrid approach. It

[16] Indian Standard ACCESSIBILITY FOR THE ICT PRODUCTS AND SERVICES (2023) https://cdnbbsr.s3waas.gov.in/s3e58aea67b01fa747687f038dfde066f6/uploads/2023/11/202311291533057741.pdf Accessed 11 February 2024.

encompasses software, hardware, content, and services. The criteria for conformance, test descriptions, and evaluation methodologies are further elaborated upon in Part 2 of the standard. Fundamentally, Part 2 outlines the methodologies and procedures for testing the adherence of ICT products and services to the accessibility standards. Additionally, it offers guidance on compiling accessibility conformity reports for ICT products and services, outlining compliance with each specified requirement.

Indian Courts, mirroring the stance of courts in various nations, have also upheld the importance of ensuring accessibility for online services for persons with visual disabilities.[17] The Supreme Court, in the case pertaining to the Covid-19, implicitly re-recognized the right to web accessibility for persons with disabilities and while highlighting the inaccessibility of the CoWIN platform for persons with visual disabilities, it ordered the government to conduct a disability audit for the CoWIN website and the Aarogya Setu app. In Dr. Kalyan C. Kankanala Vs. The Office of CGPDTM, Case No. 10426/1101/2018, Dr. Kalyan C. Kankanala, a blind patent and trademark attorney, filed a complaint with the Chief Commissioner for Persons with Disabilities (CCPD) in 2018. The issue was related to inaccessibility of Indian IP Office (IPO) website for persons with blindness using screen readers. This inaccessibility hindered blind attorneys from fully participating in the patent and trademark processes due to mandatory online filing requirements. After the intervention of CCPD, the CGPDTM worked with the National Informatics Centre (NIC) to enhance accessibility and appointed a disability officer for further accommodations. Though some areas remained inaccessible, CGPDTM agreed to make all aspects accessible.

Despite the mandate of these legislations and regulations requiring all service providers in India to make their services accessible to people with disabilities according to government regulations, the actual situation is far from ideal.

According to the 23rd report (2021) of the Parliamentary Standing Committee on Social Justice and Empowerment, no funds were allocated in the past three years for enhancing website accessibility under the Scheme for Implementation of The RPwD Act. The Committee also observed the absence of guidelines for ensuring accessibility of private websites. The Vidhi Centre for Legal Policy, I-Stem and Mission Accessibility conducted an accessibility audit of ten of the most widely used apps in India, which found that most of the applications have several critical accessible issues.[18] Along with several prevailing inaccessibility issues present on different web domains, E-databases are also one of the domains, which is neglected in the efforts to make web-platforms accessible.

10 Analyzing Survey and Interview Findings: Insights into Accessibility Challenges and User Experiences

[17] Shri Rahul Bajaj Vs. Practo Technologies Private Limited and Others, Case No. 13205/1102/2022.

[18] 'Making the Digital Eco-System Disabled Friendly' (Vidhi Centre for Legal Policy) <https://vidhilegalpolicy.in/research/making-the-digital-eco-system-disabled-friendly/> accessed 31 May 2023.

This chapter provides insight into the data collected through surveys and interviews, offering a glimpse into the experiences and perceptions of participants within the realm of web accessibility. This chapter aims to unravel the complexities of navigating digital resources for individuals with disabilities. Through the amalgamation of quantitative data obtained from surveys and qualitative insights garnered from interviews, a comprehensive understanding of the accessibility landscape is analyzed. Interviews serve as a powerful means to delve into the lived experiences, perspectives, and suggestions of participants, offering invaluable qualitative data to complement the quantitative findings obtained through surveys. Through semi-structured interviews, the interviewer delved beyond the surface-level observations, allowing participants to articulate their unique challenges, aspirations, and recommendations for improving e-database accessibility. By adopting a methodological framework that focusses on open-ended dialogue, interviews seek to uncover the complexities of navigating digital resources for persons with disabilities, shedding light on the barriers they encounter and the strategies they employ in overcoming them. Note: to maintain the privacy and anonymity of few participants, the personal information has been removed/changed.

There was total 103 participants who submitted their responses. 20 participants were interviewed.

Demography of respondents

The survey reflects a diverse participant profile, with a strong representation of students and meaningful contributions from employees and individuals in other roles. The data suggests that the majority of the respondents (63.11%) in the survey are students, followed by employees (24.27%), and a smaller representation from employers (0.97%) and other categories (11.65%). This distribution implies that the survey captures insights from a predominantly student-centric perspective, with significant input from individuals currently in an educational setting. The high percentage of students indicates a keen interest or concern among the student community regarding the accessibility of E-database resources for persons with disabilities. Educational institutions and organizations providing E-database resources should pay attention to this group's needs and preferences to enhance accessibility for students. Additionally, the presence of employed individuals (24.27%) highlights that professionals are also interested in the accessibility aspects of E-database resources, potentially for ongoing learning or research in the workplace. E-database providers need to consider the needs of employed individuals, ensuring that accessibility features cater to both academic and professional contexts.

Moreover, the majority of respondents (79.61%) identified themselves as male. This indicates a significant over-representation of males in the survey. The female representation is comparatively lower at 20.39%, suggesting a gender imbalance in the survey sample. No respondents selected the option for Gender Queer/Non-Binary.

Besides, the majority of respondents (76 out of 103) reported having blindness as their type of disability. This indicates a significant representation of individuals with visual impairments in the survey, emphasizing the importance of addressing accessibility needs for this group. A notable

portion (13 out of 103) of respondents reported low vision as their type of disability. While less prevalent than blindness, it underscores the importance of considering individuals with partial visual impairments in accessibility initiatives. Nine respondents reported having a locomotor disability. This highlights the diversity of disabilities within the survey population, indicating the need for accessibility features that address mobility-related challenges. A small percentage of respondents (2 out of 103) indicated a combination of blindness and locomotor disability. This highlights the intersectionality of disabilities within the surveyed population, emphasizing the need for comprehensive accessibility solutions. Two respondents reported having a hearing impairment (deaf and hard of hearing). While a relatively small number, it signifies the presence of individuals with hearing disabilities, emphasizing the importance of inclusive features such as sign language, captions and transcripts. One respondent reported having cerebral palsy, representing another facet of disability within the survey.

Experience and familiarity with E-database

Almost half of the respondents (48.54%) have used e-databases, indicating a substantial level of familiarity and engagement with digital academic resources. A significant portion of respondents (29.13%) is aware of e-database resources but does not actively use them. This suggests a potential gap between awareness and utilization. A notable percentage (20.39%) of respondents has never used e-databases, indicating a lack of direct experience with digital academic resources. The fact that almost half of the respondents (48.54%) have used e-databases demonstrates a moderate level of engagement with digital academic resources. This suggests a readiness among a significant portion of the surveyed population to benefit from accessible e-databases, emphasizing the need for continued efforts to improve and maintain accessibility features. One-fifth of the respondents (20.39%) have never used e-databases, presenting an untapped audience for exploring the benefits of digital academic resources. So, the data indicates a moderate level of engagement with e-databases, with almost half of the respondents having used them. However, there is a notable percentage that is aware of these resources but does not use them, as well as a segment that has never used them. Addressing barriers to utilization and increasing awareness among those who have not yet used e-databases could enhance accessibility and inclusivity in the digital academic landscape. Additionally, understanding the specifics within the "Other" category responses will offer insights for more targeted interventions.

An interviewee, Mohan, 27 years old, currently pursuing his PHD degree in Hindi at Delhi University, said, “Initially, I was introduced to the concept of E-databases by fellow students who were using them for their academic pursuits. The shift towards digital resources was more of a necessity for me, considering the challenges faced in accessing printed material.” Basically, in the year 2016, Mohan joined Delhi University for pursuing B.A. degree. The curriculum and coursework demanded a substantial reliance on E-content and materials. For Mohan, this increase was particularly pronounced, as he described, “Unlike my sighted peers who could easily access physical copies, I was more dependent on E-journals and websites for academic

purposes as the library does not have the required E-books in soft copy." Additionally, in absence of Hindi OCR scanner, he has to face difficulties in obtaining any books from his library. In this backdrop, he started massively relying on E-database platforms for getting study materials for his education. Similarly, Atique Ansari enrolled at Delhi University's Khalsa College, opting for Hindi as his medium of study. He says, "Despite my preference, obtaining E-content and reading materials in Hindi posed a significant challenge. While some audio recorded materials were available, there was a dearth of E-texts." The absence of a Hindi OCR scanner in the college library further hindered his access to library resources. Atique sought assistance from the enabling unit of Delhi University but found their support lacking. Atique recalled, "My initial encounter with E-books and E-materials arose from the practical necessity of accessing study materials in Hindi. Interestingly, I got to know about E-database resources from my friends who were doing English Honours." He Added, "Basically, faced with challenges obtaining printed resources, I sought alternative solutions, leading me to explore E-databases as a potential source of accessible study materials." Rajat Kumar, a 25-year-old male student, living with visual impairment, is currently enrolled in LLB program at Delhi University, narrated, "Encountering difficulties in obtaining print resources, I sought alternative solutions, leading me to explore E-databases as potential sources of accessible study materials."

The survey findings regarding e-database usage patterns align with insights from research papers on electronic information preferences among persons with disabilities. Research conducted by Junaid Rayini underscores that visually impaired individuals share the same information needs as sighted counterparts, desiring access to relevant information in accessible formats. However, there is a notable scarcity of commercially available books in accessible formats for the visually impaired compared to the print material accessible to the general public. Consequently, developing efficient library services for print-disabled individuals is crucial. While historically, library services for visually impaired individuals have been inadequate, there is a growing recognition of the importance of accessibility across various sectors. Advancements in Information Technology (IT) enable the provision of user-friendly services for visually impaired individuals who have long been neglected.[19] Kumar, Sunil Mitra and Gareema Sanaman studied the electronic information and resource preferences of blind/visually impaired users in the prominent National Capital Region (NCR) libraries of India. Utilizing survey methodology, data collection was conducted through questionnaires, targeting a total of 125 users across all five libraries selected randomly. The research found that information technology has a beneficial impact on the lives of persons with disabilities, facilitating independent work and enhancing confidence levels. Among the majority of blind or visually impaired users, the Internet emerges as the preferred avenue for accessing information.[20]

[19] Junaid Rayini, 'Library and Information Services to the Visually Impaired Persons' (2017) 2017 Library Philosophy and Practice.

[20] Kumar, Sunil Mitra and Gareema Sanaman. "Preference and Use of Electronic Information and Resources by Blind/Visually Impaired in NCR Libraries in India." Journal of Information Science Theory and Practice 1 (2013): 69-83.

Furthermore, with regard to the frequency of the usage of E-database resources by the respondents, the most common response is "Occasionally," with a significant portion (37.86%) of respondents indicating that they use e-databases sporadically rather than on a regular basis. The second most frequent response is "Never," with 29.13% of respondents reporting that they do not use e-databases at all. A moderate percentage (13.59%) of respondents reported using e-databases on a monthly basis, suggesting a more periodic engagement with digital academic resources. Approximately 12.62% of respondents use e-databases on a weekly basis, indicating a more frequent but not daily interaction with these resources. A smaller but noteworthy percentage (6.80%) of respondents reported using e-databases on a daily basis, indicating a consistent and frequent reliance on these resources. A combined 26.21% of respondents reported using e-databases on a monthly (13.59%) or weekly (12.62%) basis, indicating some level of regular engagement. The interviewees have also shared their experiences. Saumya, 26 years old, a schoolteacher with visual disabilities, frequently uses several database resources, such as Jstor, Bookshare, EPW, Google Scholar, academia.edu, Lib Jen, Gutenberg, and Cambridge Books. She narrated, "I started using them more frequently in my second year because I had to read academic papers and write my research projects. I also used them extensively during my B.Ed. program, especially Bookshare." Additionally, Mr. Deepak Gupta, a person with blindness, around 29 years old, currently an assistant professor of English at Motilal Nehru College, actively utilizes various e-database resources, including Bookshare, JSTOR, Sugmaya Pustakalaya, Shodhganga, and Epathshala. He finds Bookshare, Google Scholar, and JSTOR particularly valuable for his academic and professional pursuits. Prathemesh, a resident of Uttar Pradesh and an advocate with visual disability, mentioned, “I am familiar with electronic database resources, such as academic databases and online repositories.” Recalling his first exposure, he continued, “I first used electronic database resources during my undergraduate studies, approximately in 2018 when I needed to access research materials for my project work. I have utilized electronic database resources such as JSTOR, Google Scholar, and ScienceDirect. I use them regularly, incorporating them into my professional and academic routine, and the frequency varies based on the demands.” Another interviewee Pooja, mentioning her usage of E-database resources, stated “I use e-databases regularly, particularly during my academic semesters. The frequency of my usage depends on the requirements of my courses, research projects, and assignments. On average, I access e-databases several times a week to gather information for coursework, research papers, and to stay updated on relevant academic publications. During exam periods or when working on major projects, my usage tends to increase, as I rely on e-databases to access a wide range of scholarly materials.”

Rajat heavily relied on resources like Google scholar, SSRN, Research Gate and Book Share, and insights from visually impaired seniors to acquire essential study materials. Rajat emphasized that he frequently relies on E-database resources to supplement his academic studies and research.

Atique, 27-year-old male student with visual impairment, currently studying M.A. Hindi at Delhi University, highlighted that his interaction with E-databases has been somewhat limited due to the scarcity of Hindi content and accessibility issues. He mentioned, “While I'm aware of some

accessibility features provided by E-databases, my usage is not extensive, primarily because Hindi content is not readily available, and even when it is, the PDFs often lack readability. However, I do utilize E-databases more frequently for accessing English content."

Orientation training or guidance for using E-database resources

A significant majority (90.29%) of respondents have not received any guidance or training on effectively using e-databases with accessible devices/tools. There is a small percentage (4.85%) of respondents who have received such training, indicating that some individuals in the surveyed population have been provided with guidance. A small proportion (3.88%) have received guidance but consider that was inadequate, suggesting a potential gap in the effectiveness or quality of the training provided to this subset. The data indicates a need for increased efforts in providing guidance and training on how to effectively use e-databases with accessible devices/tools, as the majority of respondents have not received such support. Moreover, addressing concerns about the quality of training for those who have received it but not found it proper may improve the overall accessibility of e-database resources for persons with disabilities. Participants in the interviews also recounted their initial experiences of using e-databases. They described relying on their own strategies and initiative to explore accessible features and adapt to available technologies in order to access e-database resources. Prathamesh said that "I took the initiative to explore electronic database resources independently, relying on my own research skills and using assistive technologies. While librarians were available for general assistance, I sought specific guidance from online tutorials, forums, and discussions within academic communities." Azharuddin Shaikh, a seasoned accessibility testor and currently working in Bank of Maharashtra, also mentioned "I have not received any formal orientation, training, or instruction on accessing and utilizing E-data base resources." His university also did not provide any orientation session or training regarding E-data base resources. Saumya shared similar experience, "I did not get any accessible orientation or training to use E-database resources and explored several of them on my own. Given the scenario, I myself explored and learned to use several E-data base resources to some extent." Her college did not provide any training on using e-databases. She said, "I had to take help of my friends to access many E-data base resources. I did not ask the librarian for training, as we were aware that they are not familiar with guiding a person who uses assistive devices, and even our enabling unit staff don't have the necessary knowledge to guide in this regard. Though, the librarians were very helpful otherwise. Given the scenario, I myself explored and learned to use several E-data base resources to some extent." Mr. Deepak Gupta remarked, "Library staff members are often ill-equipped to assist screen reader users effectively. Generally, they would mention that XYZ E-resources are available at the university, but they did not guide on conducting searches or how to download them."

Another interviewee Atique recalled that while his peers played a significant role in introducing him to E-databases, formal training on effectively using E-databases with accessible devices or tools has been minimal. Atique mentioned, "Though librarians were polite, their assistance lacked

specific direction on utilizing E-databases with accessible devices or tools. In this situation, my learning has been primarily experiential, involving trial and error, self-directed exploration." Pooja recalled that "while the university's formal training was somewhat limited, the informal support from friends and online resources proved to be instrumental in enhancing my skills in utilizing e-databases with accessible devices and tools. My friends, who were familiar with accessible technologies, introduced me to screen readers, text-to-speech software, and other assistive tools that made it easier for me to access and comprehend digital content. They provided hands-on demonstrations, explaining how these tools could be integrated into my workflow for efficient use of e-databases. Their assistance and shared knowledge played a major role in enhancing my ability to utilize digital resources for academic purposes. Over time, as I gained more experience, I became more independent in exploring and utilizing e-databases." These responses highlight the lack of formal training or orientation on accessing e-databases is a biggest huddle in effective learning and utilization of E-database resources. While some participants managed to explore resources through online tutorials and peer discussions, others faced significant challenges due to the absence of trained staff and accessible guidance within their educational institutions. This scenario underscores importance of implementing inclusive training programs to empower individuals with disabilities to effectively utilize e-databases.

Adherence to accessibility guidelines by E-database resources

Additionally, the data reflects a varied perception among respondents regarding the adherence of E-database resources to accessibility guidelines. While some respondents recognize efforts made by many e-database resources, a substantial portion believes that only a few or a very negligible number of E-database resources follow accessibility guidelines, and a notable percentage thinks that E-databases do not follow accessibility guidelines at all. small percentage of respondents 7.77% believe that many E-database resources follow accessibility guidelines. A significant portion of respondents 38.83%believe that only a few E-database resources follow accessibility guidelines. This indicates a perception that there is room for improvement in the accessibility practices of a majority of E-databases. An equal percentage of respondents 38.83% feel that a very negligible number of E-database resources follow accessibility guidelines. This emphasizes a prevailing belief that accessibility implementation is lacking across a considerable portion of E-databases. A notable percentage of respondents 14.56% express the opinion that E-database resources do not follow accessibility guidelines at all. This suggests a significant concern about the overall state of accessibility in E-databases. The varying perceptions among respondents regarding e-database accessibility in the survey data align with several other findings. In Horwath's (2002) study, the accessibility of four web-based proprietary databases was evaluated by users with blindness or visually impaired and proficient in internet navigation. The findings indicated that none of the assessed databases demonstrated complete accessibility across all dimensions. However, Encyclopaedia Britannica Online and EBSCOhost MasterFile Elite emerged as the most accessible options among the databases examined. Notably, the primary factor influencing ease of use and accessibility was identified as the intrinsic design of the

resources themselves. This research underscores the critical importance of user-friendly design principles in enhancing accessibility for individuals with visual impairments when accessing web-based databases.[21] Furthermore, in their study, Rebecca Power and Chris LeBeau focussed on website accessibility for individuals with disabilities. They examined 33 academic library websites to determine if they offered access to text-only versions of databases, particularly prioritizing support for visually impaired users. The researchers evaluated how well these websites guided visually impaired individuals in navigating eight prominent databases, including EBSCO, JSTOR, Ovid, and ProQuest, using popular screen reading programs like JAWS (version 7.0) and WindowEyes (version 5.5). The results demonstrated that only five out of the 33 libraries made any mention of database accessibility on their websites. This highlights a significant gap in awareness and provision of accessibility features on academic library websites, posing challenges for visually impaired individuals in accessing and utilizing online databases effectively.[22]

It must also be noted that a little over a quarter of the respondents (26.21%) are aware of accessibility features or reasonable accommodations provided by the e-databases. The majority of respondents (72.82%) are not aware of any accessibility features or reasonable accommodations offered by the e-databases, indicating a potential gap in communication or awareness. The data highlights a need for improved communication or education regarding the accessibility features or reasonable accommodations provided by e-databases. Increasing awareness among users could enhance their ability to leverage these features and ensure a more inclusive experience for persons with disabilities accessing e-database resources. An interview participant, Pooja, currently pursuing bachelor's degree at Delhi University, mentioned, "While some e- database resources strive to be accessible, not all may explicitly list or highlight specific accessibility features. However, it's worth noting that some platforms may have accessibility built into their design without explicitly stating these features. I recommend users with disabilities to explore the platforms and assess the compatibility of any website or E-database resource. The commitment to accessibility can vary among different platforms, and ongoing improvements may occur over time." Rajat acknowledges that some E-databases offer reasonable accessibility features, including screen reader compatibility, OCR text and keyboard shortcuts. These features enable him to navigate and engage with educational materials effectively, enhancing his learning experience. However, Rajat mentioned that the accessibility landscape is far from uniform across different E-database platforms. While some databases prioritize accessibility and provide reasonable features, others lag behind, lacking essential functionalities that hinder screen-reader users ability to access and utilize educational resources seamlessly.

[21] Jennifer Horwath, 'Evaluating Opportunities for Expanded Information Access: A Study of the Accessibility of Four Online Databases' (2002) 20 Library Hi Tech - LIBR HI TECH 199.

[22] Rebecca Power and Chris LeBeau, 'How Well Do Academic Library Web Sites Address the Needs of Database Users with Visual Disabilities?' (2009) 50 The Reference Librarian 55.

Impact of Inaccessible E-database resources

Out of the total respondents, 48.54% reported that they have chosen not to use a specific e-database due to its lack of accessibility. This substantial percentage indicates a significant hindrance to accessing digital academic materials, suggesting that accessibility challenges directly influence the decision-making process of a considerable portion of the surveyed population. Conversely, 42.72% of respondents stated that they have not opted out of using a particular e-database due to accessibility issues, indicating that a notable proportion continues to use these resources despite potential challenges. This group may either find workarounds or tolerate less-than-ideal accessibility, suggesting a level of adaptability or a lack of alternative accessible options in their academic endeavours. Another noteworthy finding is that 7.77% of respondents reported taking the help of someone else to access e-databases, indicating a reliance on external assistance to overcome accessibility barriers. This highlights the collaborative efforts individuals may employ to navigate digital resources. Additionally, the 0.97% of respondents providing "Other Responses" necessitate further exploration to understand specific instances or perspectives not captured by the predefined options. These outliers may offer nuanced insights into unique challenges or strategies employed by individuals facing accessibility issues. Notably, the data underscores the significant impact of accessibility on the utilization of e-databases, with almost half of the respondents opting not to use certain resources due to accessibility shortcomings. Understanding the specific challenges faced by these individuals can guide targeted efforts to improve accessibility features, ensuring a more inclusive and equitable digital academic environment. Addressing these issues is crucial for fostering an environment where all individuals, regardless of their accessibility needs, can fully participate in and benefit from the wealth of information provided by e-databases. The data also highlights the varying impacts of accessibility issues on research activities, with a significant portion indicating that these issues, whether significant or slight, have hindered their research. A notable percentage of respondents (22.33%) reported that accessibility issues significantly hindered their research. This suggests that for a substantial portion of users, the lack of accessibility in e-databases has had a substantial negative impact on the progress and quality of their research. An equal percentage of respondents (22.33%) mentioned that accessibility issues slightly hindered their research. This indicates a common sentiment among users that accessibility challenges, even if not severe, still had some adverse effects on their research activities. A smaller percentage (5.83%) reported that they did not notice any effect on their research despite facing accessibility issues. This could suggest that, for some users, the impact of accessibility challenges on their specific research tasks may be limited. A portion of respondents (9.71%) indicated that they did not encounter inaccessible databases, making this question not applicable to them. This suggests that some researchers may be working with databases that are already accessible, or they may not have encountered accessibility issues. A notable portion left the question blank (15.53%). This might indicate a lack of clarity or importance assigned to explaining the impact, or respondents may have preferred not to provide additional details. Understanding these impacts is crucial for advocating improvements in accessibility, ensuring that researchers can fully leverage e-databases without being impeded by accessibility challenges. Moreover, a

significant majority of respondents (57.28%) report that accessibility issues have discouraged them from using certain e-databases. This indicates a substantial impact of accessibility challenges on user engagement and highlights the need for addressing these issues to retain users. While a notable percentage, 39.81%, has not been discouraged, indicating that they continue to use e-databases despite facing accessibility issues, there is still a considerable portion that has experienced discouragement. This suggests an opportunity to improve accessibility and retain users who may currently face obstacles. Other Responses (2.91%): A small percentage provided other responses. Further exploration of these responses could provide additional insights into the specific reasons or challenges faced by users and may offer additional opportunities for improvement. Overall Finding: The data emphasizes that a majority of respondents have been discouraged from using certain e-databases due to accessibility issues. This underscores the significant impact of accessibility challenges on user satisfaction and engagement. Improving the accessibility of e-databases is crucial to retain users and ensure a more inclusive and user-friendly experience for individuals with diverse needs. Pooja stated, “I have encountered situations where the lack of accessibility features in certain e-databases has influenced my decision not to use them. When faced with inaccessible platforms, I may choose alternative databases that offer better accessibility options. This decision is primarily driven by the practical challenges I face in navigating and extracting information from platforms that do not cater to my specific needs. The impact of opting not to use a particular e-database due to accessibility issues has directly or indirectly resulted in limitation of information, reduced efficiency, incomplete literature review, impact on grades and academic performance.” Saumya mentioned that due to these inaccessibility issues, she has even opted not to use several e-databases. She highlighted, "This has hindered my academics because others can go to the library to take physical books easily or access content online, but I can't get access to those contents for my study. It really affects the quality of my projects and research papers as I can't read and cite relevant concepts/research from well-thought papers by renowned thinkers or scholars. It also restricts diversity of ideas, and I can't stay updated with new research work in my domain." Prathemesh said, “there have been instances where I chose not to use several electronic databases due to its lack of accessibility features. The decision was driven by the challenges faced in navigating the platform effectively using screen readers. The impact of this approach on my research and academic pursuits has been significant. It limits my access to specific scholarly resources, and I have to rely upon others to access and provide me the same.” Mohan also recounted, “unfortunately, due to these accessibility issues, I avoid using certain E-databases. This decision has a considerable impact on my research. It limits my ability to explore broader and current scholarly content, excluding relevant sources crucial for my academic pursuits.” Atique highlighted, “There have been occasions where I've chosen not to use certain E-databases because of their lack of accessibility, especially when it comes to accessing Hindi materials. This decision has significantly impacted my research endeavors, as it restricts my access to crucial resources and limits the depth and breadth of my scholarly exploration.”

Awareness of accessibility laws and guidelines

About one-third of the respondents are fully aware of accessibility-related laws and guidelines. This indicates a foundational awareness among a portion of the surveyed population. However, an equal percentage is not aware of accessibility-related laws and guidelines. This suggests a significant portion of users who might benefit from increased education and awareness efforts regarding the legal aspects of accessibility. The largest proportion of respondents falls into the "Partly" category, signifying that they have some awareness but not a complete understanding. This group might require targeted efforts to bridge the knowledge gap and ensure a more comprehensive understanding of accessibility laws and guidelines. The distribution of responses indicates a need for increased awareness and education regarding accessibility-related laws and guidelines. While a portion of the respondents is fully aware, an equal portion is not, and the majority falls into the "Partly" category. Tailored educational initiatives or resources could help fill the gaps in understanding and ensure a more informed user base regarding the legal aspects of accessibility.

Additionally, a relatively small portion of respondents 24.27%) have read policy, law, or guidelines related to web accessibility. This suggests that there is room for improvement in promoting awareness and encouraging individuals to familiarize themselves with these documents. The majority of respondents, 56.31%, have not read any policy, law, or guideline related to web accessibility. This highlights a potential gap in knowledge and underscores the need for increased efforts to inform users about the relevant policies and guidelines. Partly Read (19.42%): A significant proportion falls into the "Partly" category, indicating that they may have started reading or have some familiarity but haven't completed the process.

Besides, the data highlights varying levels of familiarity with Web Content Accessibility Guidelines (WCAG) among the surveyed population. A relatively small portion of respondents 15.53%) claim to know the Web Content Accessibility Guidelines (WCAG) in detail. This suggests a need for targeted education and awareness campaigns to deepen the understanding of these guidelines among the surveyed population. The majority of respondents 46.60%) are familiar with WCAG but only at a superficial level. While this indicates some level of awareness, there is an opportunity to enhance their understanding through more comprehensive educational efforts. A significant portion of respondents 37.86% admit to not knowing about WCAG.

A notable portion of respondents (28.16%) have actively demanded web accessibility features from websites. This indicates a level of advocacy and engagement with the issue of web accessibility among a significant subset of the surveyed population. The majority of respondents (71.84%) have not demanded web accessibility features from websites. This might suggest a potential lack of awareness or reluctance to advocate for accessibility features, highlighting an opportunity for increased education and empowerment among users.

Regarding web accessibility guidelines, Saumya shared "I have some knowledge about web accessibility guidelines. I heard a couple of podcast on this topic. I think that the Rights of Persons with Disabilities Act, 2016 also contains provisions related to web accessibility.” In her advocacy for better accessibility, she remembered, "Once I complained to the vendor of a web portal but did not receive any response, and my efforts were unsuccessful.” Azharuddin

demonstrates a deep understanding of web accessibility laws. He mentioned, "I was an accessibility tester for a couple of years, and I am aware of web accessibility guidelines. In fact, I know about web accessibility laws from my college days. I am familiar with the Web Content Accessibility Guideline and the Rights of Persons with Disabilities Act, 2016. However, I feel that these laws are not properly implemented. I feel that if we only follow the principles of WCAG, Indian websites will become accessible."

Prevailing scenario and issues highlighted by users

With regard to inaccessibility faced by the respondents while accessing E-database resources, the majority of respondents (76.70%) highlighted difficulty in understanding the interface as a significant factor affecting their ability to use e-databases effectively. This suggests that improving the clarity and user-friendliness of the interface could greatly enhance accessibility. This is the most commonly selected option, indicating that a significant portion of users faces challenges in comprehending the interface of e-databases. Improvements in the clarity and user-friendliness of the interface could lead to a substantial enhancement in accessibility. Navigational challenges (64.08%) and problems in reading or interpreting content (59.22%) were also commonly selected, indicating that enhancements in these areas could contribute to a more accessible experience. Enhancements in the navigation system and search functionalities could contribute to a more accessible experience for users. Problems in reading/interpreting the content (59.22%): This selection indicates that a considerable number of users encounter difficulties in reading or interpreting the content within e-databases. Solutions such as improved readability options or alternative formats might address these concerns. A substantial number of respondents (57.28%) reported problems in downloading the desired file. This indicates that issues with the download process are significant and addressing these concerns could improve the overall usability of e-databases. Evidently, the data underscores that users encounter various challenges related to the interface, navigation, content interpretation, and file downloading when using e-databases. Addressing these specific issues through interface improvements, enhanced navigation features, readability enhancements, and resolving download problems could greatly enhance the accessibility of e-databases for persons with disabilities.

Additionally, the survey data indicates specific areas within e-databases where users commonly experience critical accessibility challenges. These areas include the login/registration process, search functionality, reading/searching content within documents, navigating between sections/pages, downloading/exporting content, and accessing supplementary materials. The login/registration process stands out as the area where respondents have experienced the most critical accessibility challenges. This emphasizes the importance of making these processes more accessible to ensure a smoother onboarding experience for users with diverse needs. Search functionality (62.14%): A significant percentage of respondents face challenges with search functionality. Improving the accessibility of search features is crucial to facilitate efficient information retrieval for all users. Reading/searching content within documents (59.22%): Many respondents encounter critical challenges when reading or searching content within documents.

Improving document accessibility, including features like text-to-speech and search functionalities, could enhance the overall usability. Navigating between sections/pages (56.31%): Accessibility challenges related to navigating between sections/pages are experienced by a substantial portion of respondents. This highlights the need for improvements in the navigation system to ensure a seamless user experience. Downloading/exporting content (54.37%): A considerable percentage of respondents face challenges when downloading or exporting content. Addressing these issues is crucial for users who rely on these functions for further use or reference. Accessing supplementary materials (45.63%): Some respondents experience challenges when accessing supplementary materials like images, charts, and graphs. Improving the accessibility of these additional resources can enhance the overall user experience. Addressing these challenges is crucial for improving the overall accessibility and usability of e databases for a diverse user base.

When accessing E-data base resources, Azharuddin has encountered various accessibility challenges. He mentioned, "There are certain situations where I find problems. Many graphics on the page are undescribed, and many buttons are unlabeled. Also, if you have to fill in certain forms or log-in credentials, many elements are unlabeled. Additionally, there are some internal links given on the page, which, when clicked, display data below, but it is not readable by screen readers, as it does not describe whether the cursor has located at that point or not. Moreover, sometimes, external links do not indicate whether the given link leads to a new page or not. In this situation, a new page opens, and we keep on pressing keyboard shortcuts to go back, but the same does not work, and it becomes very frustrating." Another interviewee, Mohit, said “during my experience with e-databases, I feel problem in navigation. I have also encountered instances where accessing reading materials has proven to be a challenge.” Mohan highlighted, “I have encountered several accessibility challenges while using E-database resources. One notable issue is the lack of consistent compatibility with screen readers across various platforms. Some databases are not adequately optimized for screen reading software, leading to difficulties in navigating, accessing, and interpreting the content. There have been instances where certain E-databases did not provide sufficient alternative text for images or charts. Additionally, not all platforms offer intuitive keyboard navigation or shortcuts.”

One significant challenge Rajat faces is the inconsistency in accessibility features across various E-databases. While some platforms offer comprehensive accessibility options, others may lack critical features, such as screen reader compatibility or keyboard navigation. Furthermore, Rajat highlights the issue of accessibility not being prioritized during the design and development of E-databases. Some platforms may overlook the needs of users with disabilities, resulting in interfaces that are not intuitive or user-friendly. Another challenge is the limited availability of accessible formats for materials within E-databases. While some databases may offer text-based content that is easily accessible to screen readers, others may primarily contain image-based or poorly scanned documents that are not compatible with assistive technologies. Furthermore, Rajat finds accessibility issues in conducting advanced searches or filtering results within E-databases. Additionally, Rajat encounters issues related to the organization and structure of information within E-databases. Some databases may present information in a non-linear or

disorganized manner, making it difficult for him to navigate through the content and locate specific resources.

Pooja mentioned, “My experience with e-database resources is marked by a range of inaccessibility issues that significantly impact my ability to engage with digital content effectively. One prevalent challenge is the insufficient compatibility with screen readers, crucial tools for individuals with visual impairments. Some e-databases lack proper markup or descriptors for images, leading to a lack of context and comprehension for visually impaired users. This absence of alternative text diminishes the accessibility of visual content, limiting my understanding of diagrams, charts, or other graphic elements integral to scholarly materials. Moreover, the limited provision for customizable text sizes and fonts poses additional hurdles. Additionally, inadequate keyboard navigation functionalities in some platforms hinder my ability to swiftly and independently navigate through databases, affecting the overall efficiency of my research process.” Mohit Pandey also echoed with Pooja’s observations.

Atique highlighted a notable issue of the absence of tutorials to access any E-database platform, which is a major hurdle. Even though some platforms offer tutorials, they only provide visual tutorials, which poses a challenge for users like him. Mr. Deepak admitted to facing some accessibility challenges in a few platforms. "I feel the internet archive website is not fully accessible. There is the National Digital Library; I have an account, but it asks for a Captcha to proceed, and the same is not screen-reader friendly. On many platforms, the Captcha issue is present, which is very annoying and frustrating. There are also issues in navigations and inaccessible graphical elements. Inaccessible ads are also very problematic, as they distract the screen reader speech and cursor pointers. Additionally, many times I am not able to find the download link as the whole website is not properly structured."

Saumya highlighted accessibility challenges, "I found Jstor and Bookshare accessible, but I had trouble accessing Economic and Political Weekly (EPW), and I'm not sure what the issue is, maybe the interface of EPW is not intuitive (not structured properly). Many times, I struggle with the interface of websites. I also feel frustrated when I don't get short descriptions, making it confusing to decide what to download. Sometimes, I get links to articles but can't download them." Prathamesh mentioned certain accessibility issues when using electronic databases. He highlighted, “I often encounter various accessibility challenges. One prevalent issue is the lack of compatibility with screen readers, hindering the ability to effectively navigate through the interface and access the content. This includes difficulties in reading text, interpreting images without proper alternative text, and navigating complex structures within the database. Moreover, non-standardized labeling of buttons, links, and form fields also creates ambiguity and makes it challenging to understand the functionality of different elements. Another common challenge is the absence of keyboard shortcuts or alternative navigation methods.”

It can be gleaned from the responses that the participants' experiences illustrate the significant challenges encountered when accessing E-database resources. These challenges range from linguistic barriers and navigation difficulties to compatibility issues with assistive technologies and inadequate accessibility features. Despite efforts to seek assistance and alternative solutions,

users with disabilities continue to face barriers that impact their academic performance and efficiency. The varied nature of these challenges underscores the need for comprehensive improvements in E-database accessibility, including standardized accessibility features, intuitive interface designs, and enhanced support for assistive technologies. Addressing these challenges is crucial for promoting equitable access to scholarly resources and ensuring inclusivity in educational environments.

Moreover, the scenario highlighted by the interviewees in accessing e-database resources align with findings from various studies assessing the accessibility of online databases. For instance, a study was conducted with 10 Canadian students with print disabilities to assess accessibility of three different online databases -- CBCA Complete, Sociological Abstracts and Expanded Academic ASAP. It revealed that more than 50% students were not able to perform the given task to retrieve the desired research paper. In another survey, a range of E-data base resources were assessed to understand the accessibility of those resources using keyboard navigation, which demonstrated mixed results about the accessibility of those platforms as few of them were having search and retrieval inaccessibility issues.[23] Similarly, a study conducted with 18 blind academic library users revealed that screen reader users face difficulty in locating full text.[24] Additionally, Inaccessible articles and several different interfaces limit their access to locate the desired files/results.[25] Furthermore, in the study conducted in 2011, Dermody and Majekodunmi examined how library databases affect students with print disabilities who use screen reading technologies to navigate online resources.[26] Participants conducted online searches across three different databases to perform certain tasks. Notably, they encountered difficulties when attempting to access full-text articles using their screen readers specifically when using Expanded Academic ASAP and Sociological Abstracts databases. on the results page in all three databases posed a barrier and interfered with the functionality of screen readers. One of the major challenges encountered by them was the articles were in PDFs format, which were image-based and lacked proper tagging for screen reader accessibility. Kumar, Sunil Mitra and Gareema Sanaman found that the primary challenge encountered by blind users of NCR libraries during Internet usage is the complexity of available online content. Audio books on CDs/DVDs and DAISY books are favoured electronic resources among the majority of blind or visually impaired users. Another challenge faced by blind or visually impaired users during Internet usage is the absence of accessible web design. The limited availability of resources in accessible formats also presents a hurdle. Insufficient ICT and infrastructure facilities within libraries pose a challenge for blind or visually impaired users during Internet use.[27]

---

[23] 'Library E-Resource Accessibility Testing — UW Libraries' <https://www.lib.washington.edu/services/accessibility/e-resource-testing> accessed 1 July 2023.

[24] Adina Mulliken and Kerry Falloon, 'Blind Academic Library Users' Experiences with Obtaining Full Text and Accessible Full Text of Books and Articles in the USA: A Qualitative Study' (2019) 37 Library Hi Tech 456.

[25] Ibid.

[26] Kelly Dermody and Norda Majekodunmi, 'Online Databases and the Research Experience for University Students with Print Disabilities' (2011) 29 Library Hi Tech 149.

[27] Kumar, Sunil Mitra and Gareema Sanaman. "Preference and Use of Electronic Information and Resources by Blind/Visually Impaired in NCR Libraries in India." Journal of Information Science Theory and Practice 1 (2013): 69-83.

Preferred accessibility features and suitable measures

The majority of respondents 90.29% highly value screen reader compatibility. This indicates a critical need for e-databases to ensure compatibility with screen readers to make content accessible to users with visual impairments. A significant percentage of respondents 82.52% find keyboard navigation support essential. This highlights the importance of allowing users to navigate and interact with e-databases without relying solely on a mouse, benefiting individuals with mobility impairments. Alternative text for images (69.90%): Many respondents appreciate the presence of alternative text for images, emphasizing the importance of providing text descriptions to make visual content accessible to individuals with visual impairments. High contrast mode (56.31%): Over half of the respondents find high contrast mode helpful. This feature can benefit users with visual impairments or those who prefer a higher contrast for better readability. Adjustable font size (59.22%): A significant percentage of respondents appreciate the ability to adjust font size. This accommodates users with varying visual needs and preferences for text display. Captioning for multimedia content (60.19%): A substantial portion of respondents values captioning for multimedia content, ensuring that individuals with hearing impairments can access and understand multimedia content.

The responses from the interviewees collectively underscore a deep understanding of the multifaceted challenges surrounding the accessibility of e-database resources for individuals with disabilities. In this backdrop, there are several measures that can enhance the accessibility of these platforms.

When questioned about enhancing and promoting web accessibility, Azharuddin provided a straightforward response, “No extraordinary measures are necessary—simply adhering to basic web accessibility guidelines will solve the issue.” He believed that the guidelines are the blueprint; strict adherence is the path. Saumya highlighted that there are several accessibility features that are helpful when accessing e-databases. Saumya passionately outlined essential accessibility features, "I like mentioning shortcut keywords on the homepage, proper buttons and structured links, headings, and structured tables. Each journal paper should have a short description before the download link. Additionally, there should be a feedback mechanism for responding to individual queries." Further, she added, "Colour contrast is also important, and providing audio options before text content, as seen in newspapers websites like the Indian Express, can be helpful. We should also consider the needs of autistic individuals by keeping web content simple and avoiding complex layouts. Avoid excessive hyperlinks in the middle of content; place them at the beginning. Ensure that all graphics have alt text, and make sure that mouse and keyboard functionality is maintained. While CAPTCHA is not a major problem for most users, it is really annoying for me and other screen reader users." She highlighted that there are several accessibility features that are helpful when accessing e-databases. Saumya suggested several ways to raise awareness related to making E-database resources accessible. She emphasized the need for awareness and change, mentioning that it is important to make students with screen reader users aware of E-books. She narrated, "In my school days, I was not aware of E-books of

my syllabus. We used to get a few numbers of braille books, and we had to share those books among ourselves. Generating awareness about E-books can be really useful.” She further mentioned, "Additionally, it is necessary to conduct proper orientation sessions in colleges to effectively use them. Enabling Units should help us to train to use E-database resources. They should also take initiative to make books more accessible. Additionally, most E-database resources are owned by private vendors; still they should not be allowed to claim exemption from implementing accessibility guidelines. They should follow accessibility guidelines. And those platforms that do not follow the laws, the government should penalize them, so that they can make their services accessible and usable for everyone."

Azharuddin emphasized several features and practices that can enhance the accessibility of E-data base resources and other web portals. He suggested, "Every website should be in basic HTML. Dynamic sliding navigation should be avoided because it keeps interrupting screen readers. Properly structured elements should be present on the website, including headings, links, and combo boxes that should be easily usable by the keyboard. It is essential to avoid graphical or designer pages. Additionally, when we download any book or paper, many times the PDF files are image scanned copies. It is essential to upload tagged and text content."

In discussing the challenges of web accessibility, Mr. Deepak emphasized, "It is essential to raise awareness among persons without disabilities regarding web accessibility. Conducting videos and talks, similar to initiatives by organizations like Saksham and Barrier-Break, can play a pivotal role in this endeavour. Additionally, students with specific needs should proactively address these concerns with their respective college staff, while librarians must receive training through NGOs. It is also crucial for persons with disabilities to become more aware of web accessibility." He continued, "The shortage of accessibility testers remains a significant challenge. I firmly believe that if we can expand the number of accessibility testers who are both approachable and cost-effective, it could have a transformative impact. Many institutions desire to make their websites accessible but face budget constraints. In such situations, volunteer-based and cost-effective testing can make a substantial difference. Furthermore, E-database resources should store OCR PDFs, incorporate image descriptions, ensure well-structured navigation, and adhere to WCAG guidelines. He added, "It is imperative to mandate publishers to provide accessible copies of books and research papers to vendors and E-portals. Enforcing a legal requirement for publishers to offer accessible content to platforms like Bookshare or Sugmaya Pustakalaya could prove highly beneficial. He thinks the establishment of centers by NGOs and governments dedicated to making E-materials accessible and screen-reader friendly is much needed." He finally said, "while there has been some progress, there remains a long road ahead in achieving comprehensive digital and E-database resources accessibility.”

Drawing from his experience, Prathamesh proposed measures to enhance the accessibility of E-database resources. “Database resources should be compatible with screen readers, and all navigations should be operable by keyboard.” Prathamesh said, “When databases incorporate descriptive alternative text for images, it enhances my understanding of visual content and ensures that I don't miss crucial information conveyed through images. Additionally, adjustable

Text Settings, consistent Page Structure and Headings, accessible Forms and Links, and consistent and Predictable Navigation Flow can play a crucial role to make the platforms usable and operable." Rajat emphatically emphasized that developers of the platforms of E-database resources should adhere to standardized accessibility guidelines such as the Web Content Accessibility Guidelines (WCAG) and institutions can implement procurement policies that prioritize accessibility. Additionally, compatibility with assistive technologies remains a significant concern, requiring E-database developers to prioritize compatibility with a wide range of assistive technologies commonly used by persons with disabilities. Moreover, the limited availability of accessible formats within E-databases poses challenges, and administrators should ensure materials are available in formats compatible with assistive technologies. Enhanced search functionalities and user-friendly navigation are also essential to address challenges in conducting advanced searches and navigating through the database efficiently. Lastly, educational institutions should prioritize accessibility in policies and practices related to E-database usage, providing training and support for users with disabilities.

When asked about her opinion or suggestions to enhance the accessibility of E-database resources, Pooja narrated, "The compatibility of e-databases with screen readers is particularly invaluable. Databases should ensure that content is presented in a logical reading order and include properly labeled elements. Additionally, the flexibility to customize text sizes and fonts greatly improves my reading experience. Being able to adapt the visual presentation of text according to my preferences allows for a more comfortable and efficient engagement with scholarly materials. E-databases should incorporate alt text for images. The inclusion of descriptive alternatives for images ensures that I can comprehend visual content, fostering a more inclusive learning environment. Text-to-speech functionality is also crucial for persons with visual or reading disabilities. This functionality enables me to listen to articles and research papers, providing an alternative method of consuming content beyond traditional visual reading. Moreover, e-databases with keyboard shortcuts enhance navigation for users with mobility impairments or those who prefer keyboard-based interactions. These shortcuts streamline the browsing experience, contributing to increased efficiency in accessing and managing digital content. It's important to acknowledge that the landscape of E-database resources is continually evolving. Regularly exploring and advocating for enhancements in accessibility features within e-databases is vital for fostering a truly inclusive academic environment for students with disabilities. The commitment to accessibility not only benefits individuals like me but contributes to a more equitable and accessible educational experience for all." She finally concluded, "In terms of suggestions for making e-databases more accessible, continuous efforts should be made to ensure that accessibility features are not only present but also well-documented and easy to find within the interface. Providing comprehensive and user-friendly guides on how to use these features can empower individuals with disabilities to make the most of the available tools. A salient feature that would further enhance accessibility is the implementation of advanced artificial intelligence or machine learning algorithms. These technologies could assist in generating more accurate and context-aware descriptions for complex images or figures, providing a richer

understanding for users with visual impairments. In conclusion, the commitment to accessibility in e-databases is critical, and ongoing advocacy for improvements is necessary."

When asked about the accessibility features of E-database resources, Mohan remarked, "I am aware of certain accessibility features provided by E-databases. Few platforms offer compatibility with screen readers, enabling users with visual impairments to navigate and access content. High contrast themes and customizable colour schemes enhance visibility for individuals with low vision. Keyboard shortcuts improve accessibility for those with mobility impairments. Alt text for images and adjustable font sizes/styles cater to diverse needs. However, the availability of these features varies." Mohan said that this situation underscores the broader need for improved digital accessibility standards, not only for the benefit of individuals with disabilities but also to ensure that all researchers can access and contribute to a diverse array of academic resources. Efforts to enhance accessibility will not only address the challenges I face but will also foster a more inclusive and equitable academic environment. Sharing his opinions on the situation for enhancing the accessibility of E-database resources, he suggests a few quick intuitive measures. Firstly, it would be immensely helpful if comprehensive text-to-speech capabilities are provided for Hindi content, allowing screen-reader users to access materials more efficiently. Additionally, having searchable text versions of documents instead of relying solely on PDFs would greatly enhance navigation. Offering training sessions specifically designed for visually impaired users, focusing on effective utilization of screen reader software, would empower screen-reader users to make better use of available resources. Lastly, actively involving users with specific-needs in the feedback and improvement processes for E-databases would ensure that their perspectives and requirements are considered in any accessibility enhancements.

In brief, participants highlighted various suggestions to enhance the accessibility of e-database resources. They emphasized the importance of adhering to basic web accessibility guidelines, advocating for essential accessibility features such as shortcut keywords, proper buttons, and structured links. Additionally, there was a consensus on the need for awareness-raising initiatives and increasing the number of accessibility testers. Suggestions also included compatibility with screen readers, accessible navigation options, comprehensive user guides, and the implementation of advanced technologies.

In a study done by Adina Mulliken, a search task was conducted with 4 E-data base resources (IEEE Xplore, ACM, Scopus and Google Scholar). Analysing the usability of these data bases, the researchers outlined certain design suggestions for making a web search interface usable for screen reader users, such as, highlighting each search result, reducing the number of unnecessary elements before the search results, placing search edit field and button at the top of the page, providing abstract below the search result title and giving descriptive labelling of search elements.[28] Additionally, defining the required functions on the homepage of E-data base resources, logically arranged headings and well-coded interface can make more accessible and

[28] Tapio Haanperä and Marko Nieminen, 'Usability of Web Search Interfaces for Blind Users – A Review of Digital Academic Library User Interfaces' in Constantine Stephanidis and Margherita Antona (eds), Universal Access in Human-Computer Interaction. Applications and Services for Quality of Life (Springer 2013).

user-friendly interface.[29] Craven and Booth (2006) has studied the significance of involving users in accessibility and usability assessments of the user-centered design.[30] By actively engaging individuals with disabilities in the evaluation process, designers and developers gain invaluable insights into the real-world challenges and preferences encountered by their target audience. This user-centric approach not only fosters empathy and understanding but also ensures that the design solutions proposed are tailored to the specific needs and capabilities of users with disabilities. Furthermore, incorporating user feedback into the design of electronic resources serves multiple purposes. Firstly, it enhances the inclusivity and accessibility of the final product by addressing issues and preferences identified directly by the end-users themselves. Secondly, involving users in the design process fosters a sense of empowerment and ownership, as individuals with disabilities are actively contributing to the creation of solutions that directly impact their daily lives. This collaborative approach fosters a sense of partnership between designers, developers, and users, ultimately leading to more effective and user-friendly digital resources. Moreover, by prioritizing user involvement in accessibility and usability assessments, organizations can demonstrate a commitment to equity and inclusivity. They can signal that the perspectives and experiences of individuals with disabilities are valued and integral to the design process. This not only promotes social responsibility but also helps to mitigate the risk of unintentional exclusion or oversight of accessibility considerations. In essence, the importance of involving users in accessibility and usability assessments and incorporating their feedback for the design of electronic resources, cannot be overstated. It is a cornerstone of inclusive design practices, ensuring that digital solutions are accessible, usable, and responsive to the diverse needs of all users, including those with disabilities. Kumar, Sunil Mitra and Gareema Sanaman stated that as access to digital world has become increasingly crucial for people with disabilities, libraries should prioritize accessible web design to facilitate their access to and utilization of various online resources and services.[31]

11 Recommendations and suggestions: A journey ahead

In alignment with the comprehensive discussions held during the interview phase, this chapter presents a synthesis of actionable strategies and proposals aimed at fostering a more inclusive digital environment for individuals with disabilities. By closely examining the voices and

[29] Adina Mulliken, 'Eighteen Blind Library Users' Experiences with Library Websites and Search Tools in U.S. Academic Libraries: A Qualitative Study | Mulliken | College & Research Libraries' <https://crl.acrl.org/index.php/crl/article/view/16947> accessed 20 July 2023.

[30] Helen Booth and Jenny Craven, 'Putting Awareness into Practice: Practical Steps for Conducting Usability Tests' (2006) 55 Library Review https://www.researchgate.net/publication/27398783_Putting_awareness_into_practice_Practical_steps_for_conducting_usability_tests Accessed 29 February 2024.

[31] Kumar, Sunil Mitra and Gareema Sanaman. "Preference and Use of Electronic Information and Resources by Blind/Visually Impaired in NCR Libraries in India." Journal of Information Science Theory and Practice 1 (2013): 69-83.

perspectives of participants, this chapter endeavors to offer practical recommendations that resonate with the overarching goal of improving web accessibility. Their insights serve as a catalyst for driving meaningful change in the realm of e-database accessibility. Through a holistic consideration of these recommendations, this chapter aims to lay the groundwork for informed interventions that prioritize inclusivity and equitable access to E-database resources.

Incorporating accessibility features and web design principles into the development of e-database platforms is essential to ensure equal access to information and services for persons with disabilities. It involves integrating functionalities and design elements that facilitate navigation, operation, comprehension, and interaction for users with specific needs. For example, when designing forms for searching and filtering database content, the development team ensures that all form elements have appropriate labels and are properly associated with their corresponding input fields. They should also implement keyboard shortcuts and ARIA attributes to enhance the accessibility of form controls for users who rely on assistive technologies.

E-database venders should provide training and awareness programs to their web developers. Providing comprehensive training and awareness programs for database web developers on accessibility guidelines and best practices can be beneficial for ensuring that e-database platforms are designed and developed with accessibility in mind. Regular workshops, webinars, and resources can help developers stay informed about emerging trends and best practices in accessibility. These programs aim to educate developers about the importance of accessibility, familiarize them with relevant guidelines and standards, and equip them with the knowledge and skills needed to implement accessibility features effectively. Developers should learn about the principles of accessibility outlined in WCAG, such as perceivable, operable, understandable, and robust (POUR), and how to apply these principles in the context of e-database development. In addition to technical skills, awareness programs can also focus on fostering empathy and understanding towards users with disabilities. Venders may participate in empathy-building exercises.

Additionally, the development team should employ responsive design techniques to ensure that the e-database platform is accessible across different devices and screen sizes. They should prioritize the use of scalable fonts, flexible layouts, and fluid grids to accommodate users with varying levels of vision and motor abilities. Similarly, the developers can ensure that all images are accompanied by descriptive alternative text that conveys the content and purpose of the image to users who may not be able to see it. This allows individuals using screen readers or those with visual impairments to access and understand the content effectively. Additionally, ensuring that all functionalities and elements are fully operational by keyboards is extremely necessary. Developers should ensure that all interactive elements and functionalities within the e-database platform can be accessed and operated using keyboard shortcuts and tab navigation. It enables persons using screen readers, persons with mobility impairments or dexterity limitations to navigate through the platform independently and seamlessly. Moreover, ensuring compatibility with assistive technologies such as screen readers, magnifiers, and voice recognition software is essential. Developers should test the e-database platform with a variety of

assistive technologies to ensure compatibility and usability for users who rely on these tools to access their contents.

Furthermore, optimizing the color contrast and text size is beneficial for users with low vision or color blindness. Designing the e-database platform with high contrast color schemes and providing options to adjust text size can enhance readability and usability for persons with visual impairments. Also, all e-database resources should include a comprehensive tutorial in an accessible format on their homepage, explaining how to operate all functionalities.

It must be noticed that for E-database venders, collaborating with disability advocacy groups and organizations during the development and testing phases of e-database platforms can be useful for ensuring that the accessibility needs and preferences of persons with disabilities are effectively addressed. Due to such approach, developers can gain valuable insights and feedback that can inform the design and implementation of accessibility features. During the development phase, persons with disabilities may be invited to provide feedback on the initial designs and prototypes of the e-database platform. They can review the user interface, navigation features, and content presentation to identify any potential accessibility barriers or challenges. Based on their feedback, the developer can make the required improvements to the platform. Through such collaborative approach, the venders can gain valuable insights into the accessibility needs and preferences of users with visual impairments, ensuring that the e-database platform is designed to be inclusive and accessible to all users. Throughout the design process, the development team conducts accessibility audits and testing to identify and address any accessibility barriers or issues. They collaborate with accessibility experts and individuals with disabilities to gather feedback and ensure that the e-database platform meets the diverse accessibility needs of its users. Conducting regular accessibility audits and user testing sessions is essential to identify and address accessibility barriers effectively in e-database resources. Accessibility audits involve systematically reviewing the design, content, and functionality of the e-database platform to assess its compliance with accessibility standards and guidelines, such as the Web Content Accessibility Guidelines (WCAG).

In the Indian context, advocating for the proper implementation of accessibility standards and guidelines policies governing the web designs is essential for promoting development and procurement of accessible e-database resources. Currently, the provisions of the RPwD Act, its rules, other web accessibility related guidelines mandate the creation of accessible digital content and services for persons with disabilities. Advocates should work with policymakers and government officials to ensure that the provisions pertaining to web accessibility are effectively implemented and enforced in the context of e-database resources. Government should allocate specific budget for digital accessibility in general and E-database resources in particular and ensure proper utilization of it. Judiciary should also play proactive role to enforce compliance of web accessibility guidelines. Additionally, educational institutions are encouraged to prioritize the procurement of e-database resources that meet these accessibility standards. This ensures that students with disabilities have equal access to educational materials and resources, enabling them to fully participate in academic activities and achieve their educational goals.

Additionally, allocating resources and funding support for initiatives aimed at enhancing the accessibility of e-database resources and promoting digital inclusion is essential for ensuring that persons with disabilities have equal access to digital information and services. Furthermore, the funding can be utilized to support the development of training programs and capacity-building workshops for librarians and IT staff on accessibility best practices. These programs can empower university staff to create accessible content, navigate assistive technologies, and support students with disabilities in accessing e-database resources effectively.

12 Conclusion

Accessibility in Information and Communication Technology (ICT) denotes the extent to which products or services can be effectively and independently utilized by Persons with Disabilities. In the context of e-database resources, accessibility refers to how effectively these resources can be used by persons with disabilities compared to those without disabilities. The broader the accessibility of an e-database resource, allowing more users to access and navigate its contents effectively, the better its perceived accessibility. Such improved accessibility brings various benefits across different sectors. Users with different needs enjoy increased independence, better access to information, and enhanced educational and research opportunities. Producers and service providers gain from expanded reach, compliance with legal requirements, and improved reputation. Governments fulfil both local legal obligations and international commitments by ensuring that accessibility standards are met across e-database platforms.

Evidently, the findings underscore the importance of tailoring E-database accessibility initiatives to meet the diverse needs of students, professionals, employers, and other stakeholders. Further investigation into specific challenges and requirements within each group will enhance the effectiveness of accessibility measures for E-database resources.

Overall, enhanced E-database accessibility aims to promote inclusivity by accommodating the needs of all users in the e-database environment, striving to include a larger proportion of users more consistently.

13 Future research directions

This foundational research highlights the existing gaps in accessibility of e-database resources for persons with disabilities, providing an initial understanding for future studies to delve deeper into specific areas of concern. Thus, fundamentally this research sets the stage for future studies to investigate user experiences in greater detail, leading to the development of more user-centered solutions. The following are the pointers for future study:

- To conduct in-depth investigations into the accessibility requirements and preferences of diverse user groups.
- To study and analyze the accessibility of E-database resources pertaining to different specific domains such as law, science, social science ETC.
- To investigate the effectiveness of specific accessibility interventions and technologies in improving the usability and accessibility of e-database resources.
- To explore the impact of emerging technologies, such as artificial intelligence and machine learning, on the accessibility of e-database platforms for persons with disabilities.
- To examine the intersectionality of disability with other social identities for instance, gender, socio-economic status, in shaping accessibility experiences and needs in the context of E-database usage.

14 Bibliography

- 'Accessible India Campaign | Department of Empowerment of Persons with Disabilities (DEPwD) | India' <https://depwd.gov.in/accessible-india-campaign/>
- 'Bruce Lindsay Maguire v Sydney Organising Committee for the Olympic Games | Australian Human Rights Commission' <https://humanrights.gov.au/our-work/disability-rights/bruce-lindsay-maguire-v-sydney-organising-committee-olympic-games>
- 'Library E-Resource Accessibility Testing — UW Libraries' <https://www.lib.washington.edu/services/accessibility/e-resource-testing>
- 'Making the Digital Eco-System Disabled Friendly' (Vidhi Centre for Legal Policy) <https://vidhilegalpolicy.in/research/making-the-digital-eco-system-disabled-friendly/>
- 'Standard Rules on the Equalization of Opportunities for Persons with Disabilities | United Nations Enable' <https://www.un.org/development/desa/disabilities/standard-rules-on-the-equalization-of-opportunities-for-persons-with-disabilities.html>
- 'THE 17 GOALS | Sustainable Development' <https://sdgs.un.org/goals>
- Adina Mulliken and Kerry Falloon, 'Blind Academic Library Users' Experiences with Obtaining Full Text and Accessible Full Text of Books and Articles in the USA: A Qualitative Study' (2019) 37 Library Hi Tech 456.
- Adina Mulliken, 'Eighteen Blind Library Users' Experiences with Library Websites and Search Tools in U.S. Academic Libraries: A Qualitative Study | Mulliken | College & Research Libraries' <https://crl.acrl.org/index.php/crl/article/view/16947>
- Angela Dresselhaus. "The Americans with Disabilities Act compliance and library acquisitions" Acquisitions Institute at Timberline Lodge (2013)
Available at: http://works.bepress.com/angela_dresselhaus/24/
- Donna Jodhan v. Attorney General of Canada, 2010 FC 1197.
- General comment no. 2 (2014), Article 9, Accessibility, https://digitallibrary.un.org/record/812025?ln=en
- Helen Booth and Jenny Craven, 'Putting Awareness into Practice: Practical Steps for Conducting Usability Tests' (2006) 55 Library Review
- Indian Standard ACCESSIBILITY FOR THE ICT PRODUCTS AND SERVICES (2023) https://cdnbbsr.s3waas.gov.in/s3e58aea67b01fa747687f038dfde066f6/uploads/2023/11/20231129153305774 1.pdf
- Jennifer Horwath, 'Evaluating Opportunities for Expanded Information Access: A Study of the Accessibility of Four Online Databases' (2002) 20 Library Hi Tech - LIBR HI TECH 199.

- Junaid Rayini, 'Library and Information Services to the Visually Impaired Persons' (2017) 2017 Library Philosophy and Practice.
- Kelly Dermody and Norda Majekodunmi, 'Online Databases and the Research Experience for University Students with Print Disabilities' (2011) 29 Library Hi Tech 149.
- Kumar, Sunil Mitra and Gareema Sanaman. "Preference and Use of Electronic Information and Resources by Blind/Visually Impaired in NCR Libraries in India." Journal of Information Science Theory and Practice 1 (2013): 69-83.
- Mohammed Suleiman Abubakar, Availability and utilization of electronic information databases for research by agricultural scientists in federal university libraries in north central Nigeria, November 2017, Library Philosophy and Practice (e-journal) https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4614&context=libphilprac
- NATIONAL FEDERATION OF THE BLIND V. SCRIBD, INC., 97 F.Supp.3d 565 (D. Vermont 2015).
- Rebecca Power and Chris LeBeau, 'How Well Do Academic Library Web Sites Address the Needs of Database Users with Visual Disabilities?' (2009) 50 The Reference Librarian 55.
- Shri Rahul Bajaj Vs. Practo Technologies Private Limited and Others, Case No. 13205/1102/2022.
- Tapio Haanperä and Marko Nieminen, 'Usability of Web Search Interfaces for Blind Users – A Review of Digital Academic Library User Interfaces' in Constantine Stephanidis and Margherita Antona (eds), Universal Access in Human-Computer Interaction. Applications and Services for Quality of Life (Springer 2013).
- the National Policy on Universal Electronic Accessibility, https://www.meity.gov.in/writereaddata/files/National%20Policy%20on%20Universal%20Electronics%281%29_0.pdf (
- The Rights of Persons with Disabilities Act, 2016, https://www.indiacode.nic.in/bitstream/123456789/15939/1/the_rights_of_persons_with_disabilities_act%2C_2016.pdf
- the Rights of Persons with Disabilities Rules, 2017, https://upload.indiacode.nic.in/showfile?actid=AC_CEN_25_54_00002_201649_1517807328299&type=rule&filename=Rules_notified_15.06.pdf
- Valentine Joseph Owan and Daniel Clement Agurokpon, 'A Digital Library for Researchers, Scientists, and Scholars: Mendeley Desktop Application' in Tlou Maggie Masenya (ed), Advances in Knowledge Acquisition, Transfer, and Management (IGI Global 2022) <https://services.igi-global.com/resolvedoi/resolve.aspx?doi=10.4018/978-1-6684-3364-5.ch006>

- 'Law Schools in India Must Pay More Attention to Disability Legislation' (The Wire) <https://thewire.in/law/law-schools-in-india-must-pay-more-attention-to-disability-legislation >
- Chiwandire, Desire, and Louise Vincent, 'Funding and Inclusion in Higher Education Institutions for Students with Disabilities' (2019) 8 African Journal of Disability 336
- Ismail, Abid and KS Kuppusamy, 'Accessibility of Indian Universities' Homepages: An Exploratory Study' (2018) 30 Journal of King Saud University - Computer and Information Sciences 268
- Jagtap, Anjali, 'Questionnaire for Accessibility Audit to Assess the Accesibility of College/University Campus to the Students with Disabilities in Higher Education' (2017) 6 Global Journal of Multidisciplinary Studies 16
- Lekha, Shruti, 'Review of National Policy for Persons with Disability, 2006' (2021) 10(2)(3) International Journal of Multidisciplinary Educational Research 54-56 <https://www.researchgate.net/publication/350106479_REVIEW_OF_NATIONAL_POLICY_FOR_PERSONS_WITH_DISABILITY_2006>
- Morrison, J, Handre Brand and C Cilliers, 'Students with Disabilities in Higher Education' (2009) 41 Acta Academica 201
- Afaq Ahmad Mir and Abdul Waheed, 'Experiences of Students with Disabilities in Indian Higher Education: An Interpretative Phenomenological Study' [2022], 9 Higher Education for the Future 186.
- Shalini Saksena, Rashmi Sharma, 'Deconstructing Barriers to Access Higher Education: A Case Study of Students with Disabilities in University of Delhi' (2015) 1 (2) DU Journal of Undergraduate Research and Innovation 316.
- The Convention on the Rights of Persons with Disabilities | United Nations Enable' https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities/article-9-accessibility.html

15 Annexure I

Survey Form

Section 1: Personal and Demographic Information

Q. Name*

Edit box

Q. E-mail ID e.g. xyz@gmail.com *

Edit box

Q. Contact Number

Edit box

Q. I am currently * (check box)

Student

Employee

Employer

Other

Q. Educational institution or name of your organisation *

Edit box

Q. I identify my gender as * (check box)

Male

Female

Queer/Non-Binary

Other

Q. Type of disability * (check box)

Blindness

Low Vision

Leprosy-cured Person

Hearing Impairment (deaf and hard of hearing)

Locomotor Disability

Dwarfism

Intellectual Disability

Mental Illness

Autism Spectrum Disorder

Cerebral Palsy

Muscular Dystrophy

Chronic Neurological Conditions

Specific Learning Disabilities

Multiple Sclerosis

Speech and Language Disability

Thalassemia

Haemophilia

Sickle Cell Disease

Multiple Disabilities including Deaf-blindness

Acid Attack Victim

Parkinson's Disease

Q. State/City *

Edit box

Section 2: Experience with E-databases

Assessing the usability of E-database resources (For quick understanding, the common examples of E-databases are Jstor, National Judicial Data grid, Economic and Political Weekly, Scconline and Manupatra)

Q. Have you ever used E-databases i.e. academic journals, research databases, online libraries? * (check box)

Yes

I know about E-database resources, but I do not use

I have never used

Other

Q. If yes, please specify the names of E-database resources you have used *

Edit box

Q. Have you received any guidance/training on how to effectively use E-databases with accessible devices/tools? * (check box)

Yes

No

Yes, but not properly

Other

Q. How often do you use E-databases? * (check box)

Daily

Weekly

Monthly

Occasionally

Never

Other

Q. Are you aware of any accessibility features or reasonable accommodations provided by E-databases? * (check box)

Yes

No

Other

Q. If yes, kindly explain the accessibility features you have used or observed

Edit box

Q. Have you ever opted not to use a particular E-database because of its lack of accessibility? * (check box)

Yes

No

I take help from someone else to access

Other

Q. If the answer to the previous question is Yes, kindly explain the impact of this approach on your research (check box)

Significantly hindered research

Slightly hindered research

No noticeable effect

Not applicable (did not encounter inaccessible databases)

Other

Q. How do the accessibility issues affect your ability to use E-databases effectively (you can select multiple options) *

Difficulty in understanding the interface

Difficulty in navigating/searching for content

Problem in reading/interpreting the content

Problem in downloading the desired file

Other

Section 3: Laws and Guidelines

Q. Are you aware of accessibility-related laws/guidelines? * (check box)

Yes

No

Partly

Q. Have you read any policy/law/guideline related to web accessibility? * (check box)

Yes

No

Partly

Other

Q. Do you know about Web Content Accessibility Guidelines? (check box)

Yes, I know in detail

I know superficially

I do not know

Other

Q. Have you demanded web accessibility features from any website? * (check box)

Yes

No

Other

Q. Do you think E-data-based resources follow accessibility guidelines? (check box)

Many of them follow

Few of them follow

A very negligible number of them follow

They do not follow at all

Section 4: Recommendable Accessibility Features

Q. What accessibility features do you find helpful when accessing E-databases? (Check all that apply) *

Screen reader compatibility

Keyboard navigation support

Alternative text for images

High contrast mode

Adjustable font size

Captioning for multimedia content

Other

Q. In which areas of E-databases have you experienced the most critical accessibility challenges? (Check all that apply) *

Login/registration process

Search functionality

Reading/searching content within documents

Navigating between sections/pages

Downloading/exporting content

Accessing supplementary materials (e.g. images, charts, graphs)

Other

Q. Have the accessibility issues you faced discouraged you from using certain E-databases? *

Yes

No

Other

Q. If Yes, please explain how these challenges affected your usage *

Edit box

Section 5: Suggestions for improvement

Q. If you have explored any E-databases that provide excellent accessibility for users with disabilities, please provide their names and briefly describe the features that make them accessible

Edit box

Q. Are there any specific E-database platforms you would like to mention for their efforts in improving accessibility for users with disabilities?

Edit box

Q. Do you have any suggestions for raising awareness of the importance of E-database accessibility for users with disabilities, among database providers, researchers, or the public?

Edit box

Q. Do you have any suggestions for making E-databases more accessible to users with disabilities?

Edit box

Q. Is there anything else you would like to share about the accessibility of E-databases for users with disabilities?

Edit box

Q. Are you willing to participate or join us in follow-up interviews or discussions to provide more detailed feedback on E-database accessibility? *

Yes

No

Other

Note: Star-marked questions were mandatory

16 Annexure II

Interview ethics:

The interviewer is committed to maintaining the confidentiality and privacy of your personal information provided during the interview. Your certain personal data is collected solely for the purpose of conducting the interview and ensuring its accuracy. Your personal data will not be disclosed, shared, or used for any purpose other than this research work without your explicit consent.

Introduction:

Please introduce yourself. Could you provide your name, gender, and a brief overview of your educational and professional background?

Can you share details about any disabilities or impairments you may have?

Awareness of Web Accessibility Guidelines/Laws:

Are you familiar with web accessibility guidelines or laws?

If yes, could you mention some of the guidelines or laws you are aware of?

Familiarity with E-database Resources:

Have you ever used e-databases, such as academic journals, research databases, or online libraries?

If yes, when did you first start using them, and how many different e-database resources are you familiar with and actively use?

Who initially guided or introduced you to using e-databases? Did a librarian provide any guidance?

Have you received any formal guidance or training on how to effectively use e-databases with accessible devices or tools?

If yes, could you elaborate on the type of guidance or training you received and how helpful it was?

Frequency of E-database Usage:

How often do you currently use e-databases for your academic or research needs?

Awareness of Accessibility Features:

Are you aware of any accessibility features or reasonable accommodations provided by the e-databases you use?

Impact of Accessibility on Database Usage:

Have you ever chosen not to use a particular e-database due to its lack of accessibility?

If yes, could you explain how this decision impacted your research or academic endeavours?

Inaccessibility Issues Faced:

What kinds of inaccessibility issues do you typically encounter when using e-database resources?

Helpful Accessibility Features:

Are there any specific accessibility features or accommodations you find helpful when accessing e-databases?

Discouragement Due to Accessibility Challenges:

Have the accessibility issues you faced ever discouraged you from using certain e-databases?

If yes, could you describe how these challenges affected your usage and any subsequent academic or research impacts?

Exploring Accessible E-databases:

Have you come across any e-database platforms that provide excellent accessibility for users with disabilities?

If yes, could you mention the names of these platforms and briefly describe the features that make them accessible?

Suggestions for Improvement:

Do you have any suggestions for raising awareness about the importance of e-database accessibility among database providers, researchers, or the general public?

What specific features or improvements would you like to see implemented to make e-databases more accessible for users with disabilities?

Closing Thoughts:

Is there anything else you would like to share about your experiences with the accessibility of e-databases for users with disabilities?

NCPEDP

www.ncpedp.org
011 2622 1276
@ncpedp_india