



Influence of Collaborative Models Between Libraries, Information Technology Departments and Disability Services on Web Accessibility Outcomes

Victoria Olubola Fadeyi

Abstract:

This study seeks to establish how cooperation between libraries, Information Technology (IT) departments and disability services influences the results of web accessibility provided by higher education institutions. The adopted design in this case is mixed-methods whereby 150 staff respondents were used in quantitative surveys and 20 key informants in qualitative interviews and focus groups. The quantitative information was studied using descriptive statistics, correlation and multiple regression. Thematic analysis was used to analyse qualitative data. Findings indicated a moderate degree of collaboration, which takes informal and reactive forms, and has some weak policies, shared training and planned activities. Particularly, user-based designs, frequent interdepartmental liaison meetings, role specificity and capacity development programs have been identified to be relevant especially in enhancing accessibility, usability and inclusiveness of websites. The unclear roles, poor resources, poor communication and lack of formal policies are the major barriers that hinder the collaboration of the units. Based on the arguments presented in this paper, the conclusion is that sustainable enhancement of web accessibility is possible only through formalisation of collaborative structure, role definition, and sufficient resources in addition to involvement with users with disabilities. Some recommendation that can be given is the establishment of official structures of collaboration which involves scheduling of frequent joint planning and training. Mechanisms such as continuous monitoring and feedback are also required. The review established that coordinated and user friendly interdepartmental work is needed in offering inclusive, effective and accessible web based library services.

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Influence of Collaborative Models Between Libraries, Information Technology Departments and Disability Services on Web Accessibility Outcomes

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ABSTRACT

This study established how collaboration between libraries, Information Technology (IT) departments and disability services influences web accessibility outcomes in higher education institutions. Mixed-method research design was adopted whereby 150 staff respondents were used in quantitative surveys and 20 key informants in qualitative interviews and focus groups. The quantitative information was subjected to descriptive statistics, correlation and multiple regression analysis. Thematic analysis was used to analyse qualitative data. The findings revealed a moderate level of collaboration, which was mostly informal, reactive, and supported by weak policies, limited shared training, and ad hoc planning. Key strategies that enhanced website accessibility, usability, and inclusiveness included user-centered design, regular interdepartmental meetings, clearly defined roles, and staff capacity-building programs. The unclear roles, poor resources, poor communication and lack of formal policies are the major barriers that hinder collaboration among the units. The review established that coordinated and user friendly interdepartmental teamwork is needed in offering inclusive, effective and accessible web based library services. This article concludes that sustainable enhancement of web accessibility is possible only through formalisation of collaborative structure, role definition, sufficient resources, and involvement of users with disabilities. The article suggests the importance of establishing formal collaborative structures that would facilitate scheduling of frequent meetings, planning and training. Mechanisms such as continuous monitoring and feedback are also required.

Keywords: Collaboration, Disability Services, Libraries, IT Departments, Web Accessibility

INTRODUCTION

Emerging technologies such as online catalogues, virtual services and supplementary physical resources are increasingly making academic libraries hybrid learning centres in the digital age. The emergence of these services into the online platform has given everyone, including users with disabilities, equal access to information. However, recent studies indicate that there are still a significant number of library websites that fail to meet international standards such as WCAG 2.1 and pose the challenge of usability, which undermines the concept of digital inclusion. On this note, a study by Kerdar et al. (2024) on digital technologies accessibility by people with visual impairment showed that the issues of accessibility, which include lack of alt text, low contrast ratios and non-existent labels on the elements of a form, significantly limit the access of the people

with visual impairment. The concerns of access are not specific to visual impairment, and are cross-disability in nature. According to Chemnad and Othman (2024), digital platforms that are not accessible are disadvantageous to the user with cognitive, motor, or sensory disability, effectively stopping them from participating in learning institutions. Also, there is some contemporary evidence that libraries cannot easily resolve the problem of digital inclusiveness with mere technical web solutions. Goroba et al. (2023) and Kiruki and Mutula (2024) argue that the provision of information services is dependent on the institutional commitments, including adjustive technologies, support policy, and partnership with disability experts.

Similarly, Okafor and Omorinkoba (2024) hold that the day to day operations of libraries should incorporate the availability of tools and inclusive digital design in an effort to make the accessibility of information by persons with disabilities sustainable. Despite the growth in literature, there still exists a wide gap in the area of interdepartmental collaboration. Even though scholars such as Ibenne and Durodolu (2024) focus on the availability of some resources such as research guides to students with disabilities, there is a dearth of empirical studies on how the potentials of collaboration among libraries, IT departments, and disability services can shape overall outcomes on web accessibility. This is required because the problem of access is multi-layered in terms of technical codes, platform design, staff capacity, user training programs, and policy control. No single unit in the university would be able to handle all these multi-layered dimensions. Effective collaboration can include technical capabilities of IT departments, service delivery in the libraries, and an advocacy and rights-based services approach to disability. Conversely, poor teamwork may lead to discrepancy in accessibility practices, fragmented processes and poor responsibility. Consequently, the research will investigate the influence of collaborative models between libraries, IT departments, and disability services on web accessibility outcomes. The mixed-method research structure will provide quantitative and qualitative information as regards accessibility issues and the effect of the collaborative process in establishing inclusive virtual space in academic libraries.

STATEMENT OF THE PROBLEM

The rapid digitalization of academic libraries has made web accessibility a core aspect of service delivery in the provision of equitable access to information. The population of library websites users has grown steadily following the necessity of conducting research, learning, and delivery services. Many of the users with visual, cognitive, auditory, and motor disabilities still face difficulties of access to the websites. The gaps restrict their inclusion in the academic operations, which undermine the principles of inclusion and equity without giving consideration to the fact that application of technical accessibility audits and remediation strategies requires well-structured coordination and collaboration among libraries, IT services, and disability services. Many institutions also lack well-organised ways of integrating the user experience across the aforementioned units, which often leads to non-coordinated efforts, unequal remediation, and poor compliance with accessibility rules. There is also a lack of empirical evidence on the influence of collaborative models on web accessibility outcomes coupled with the fact that universities lack clear direction on how to integrate inclusivity and accessibility into digital services as part of organizational practices. This problem ought to be addressed in order to develop the strategies that could enhance digital inclusion and equity in access to information to all people, including the users with disability challenges.

RESEARCH QUESTIONS

1. To what extent do collaborative models between libraries, IT departments, and disability services exist in academic institutions?
2. How do collaborative practices among libraries, IT departments, and disability services influence the accessibility of library websites?
3. What specific strategies within collaborative models contribute most significantly to improving web accessibility outcomes?
4. What challenges hinder effective collaboration between libraries, IT departments, and disability services in promoting accessible digital services?
5. How do users with disabilities perceive the accessibility and inclusiveness of library web services in institutions with varying levels of collaboration?

RESEARCH HYPOTHESIS

H1: There is a significant positive relationship between the strength of collaboration among libraries, IT departments, and disability services and the web accessibility outcomes of library websites.

LITERATURE REVIEW

Many studies have been conducted on accessibility of academic library websites and their compliance with certain accessibility guidelines such as the Web Content Accessibility Guidelines (WCAG). Research conducted by Fraser et al. (1998) on including users with disabilities while designing library websites for accessibility indicate that the Americans with Disabilities Act (ADA) emphasised that library programs, including those hosted in cyberspace, must be accessible to all users. The study provides guidelines for library web design, such as using ALT tags for images, meaningful hypertext links, and consistent page organization to support users with print, visual, or hearing impairments. Casey (1999) reported the need for libraries to comply with the ADA, which stipulates equal access for utilization of resources irrespective of formats without considering personal data, which often excludes or hinders people with disabilities from satisfying their information needs. In his research on the importance of web standards, Carrie Bickner (2002) is of the opinion that libraries must adopt web standards in same way attention is paid to traditional cataloging standards to ensure long-term interoperability and information accessibility. He argues that compliance to standards and accessible code is crucial for future-proofing digital resources, such as Online Public Access Catalogs, despite rapid technological evolution. According to Blansett (2008), the exclusion of users with disabilities, particularly the visually impaired, from digital information and library resources suggests a form of discrimination with the argument that ADA should be reviewed to accommodate the digital and internet needs of special groups just as it does for physical spaces. Blansett states that libraries are increasingly moving resources to online environments, and failure to provide text alternatives or screen-reader-compatible content effectively would hinder users with print disabilities from the digital commons. He also advocates for the use of accessibility tools, such as the WAVE 4.0 evaluation tool, to identify and correct barriers in initial web design, and argues that inclusive design such as audio captions and structured metadata should be adopted to benefit all users, and not just those with specific impairments.

Green & Huprich (2009) reported the failure of many high-ranked LIS schools' disability-related curricula and their university libraries to meet the basic accessibility standards. Frequent accessibility issues, including a lack of alternative text for images, missing frame titles, and inadequate alternative content for objects, were identified. According to Paolini (2005), many New Jersey libraries serve diverse needs of Hispanic populations, but public library websites often fail to meet WCAG Section 508 accessibility requirements, which leads to poor color contrast. The author emphasized that libraries must consider the needs of varied populations, including those with limited English proficiency, to improve web accessibilities for all. Ingle et al. (2009) found such inequalities in access, which often exclude users with visual and motor impairments from realizing the potentials of the websites for their personal needs, in an automated analysis of Georgia's public library website to ascertain compliance with Web Content Accessibility Guidelines. Barriers such as accessibility errors and consistency issues in the form of missing alt-text for images or poor keyboard navigation were identified. There also existed a wide gap between larger library systems and smaller, rural libraries in terms of site compliance.

Schmetzke & Comeaux (2009) studied how academic institutions in North America improved their digital accessibility over a six-year period. The authors noted persistent barriers that exclude users with disabilities from maximizing the potentials of the websites despite the improvement in design strategies. The research also indicated that Canadian library websites were more accessible than their U.S. counterparts during the period under review. Another study on accessibility compliance on academic library websites in North America conducted by Comeaux and Schmetzke (2013) focused on the impact of design practices, such as the use of table-based layouts, on accessibility. The authors explained that despite some progress being made, there were still issues with accessibility that could potentially impede users with assistive technologies in many academic library websites. The study highlighted the need for institutions to prioritize accessibility policies and monitor library web services. Forgrave and McKechnie (2013) conducted a research to assess the accessibility of Canadian public library web pages to visual- and hearing-challenged individuals using adaptive technologies and found that public library web pages are generally inaccessible, with only 10% meeting the basic accessibility standards. Lack of alternative text for images is a major barrier, which is essential for screen reader users, and insufficient support for adaptive technologies was identified. The article concludes that libraries must prioritize accessibility in their original design strategies, rather than incorporating them later on.

Thomas Dowling in his 2003 Library Technology report "Usability and Accessibility" outlines essential principles for creating user-centered library websites, emphasizing that accessibility is fundamental to usability. The report highlights the need to eliminate technical jargon that confuses patrons, reveals the best practices for running a library website today, and identifies technical skills required of a library website manager. A study carried out by Southwell and Slater (2012) evaluated the digital archival tools used by members of the Association of Research Libraries and their compatibility with screen readers and assistive technologies. The results show that some archival interfaces created accessibility problems for people with disabilities. The study suggested that libraries should use accessibility driven design principles to set up digital archival systems so as to enable equitable access to historical and scholarly resources. Criado and Such (2019) explained that users are treated unfairly, unethically, or just differently based on their personal data processed by an algorithm based on the judgment of prior decision makers or widespread prejudices embedded in training programs. The authors posited that this could widen the existing inequalities leading to unfavourable treatment or disqualification of

historically disadvantaged groups from using the website. The authors propose a roadmap to overcome these unresolved problems.

Another study was carried out by Stitz and Blundell (2019) on the online research guide accessibility in an academic library setting in the United States, with emphasis on selected research guides using WCAG guidelines and Section 508 guidelines. Libraries strive to provide equal access to learning environments, and emphasize the importance of library staff training and awareness in creation of digital content to enhance web accessibility. However, some discrepancies were observed in the accessibility compliance of the different research guides. Rayl (2020) reported a case study of an accessibility audit carried out on the website of a university library in North America in order to enhance the usability of the website for people with disabilities. The results revealed that frequent accessibility audits, collective engagement of librarians, web developers, and accessibility experts, and compliance with WCAG 2.1 guidelines can greatly enhance digital inclusion and accessibility in university libraries. A study conducted by Liu et al. (2024), indicated the use of automated accessibility evaluation tools such as WAVE and AChecker with WCAG 2.0 standards in top universities in United States. Errors such as missing alternative text and low color contrast were identified, making it difficult for visually impaired people to navigate the website. The study concluded that academic libraries should make accessibility evaluations an integral part of web development process to enhance equal access to digital information resources.

Web Accessibility Initiatives (WAI) (2026), defined web accessibility as a system of browsing the websites, web tools, and technological resources that are organised in a manner that all web users, including less privileged i.e. with visual, auditory, cognitive and motor disabilities, can effectively perceive, comprehend, navigate, and interact with the content within the web. WAI explains that “when websites and web tools are properly designed and coded, people with disabilities can use them”. However, currently many sites and tools are developed with accessibility barriers that make them difficult or impossible for some people to use. In order to make the web accessible and benefit individuals, businesses, and society, Web Content Accessibility Guidelines must be adhered to. WCAG provides a global standard of accessible web design with four principles of perceivable, operable, understandable, and robust (POUR). Similarly, Galkute et al (2020) argued that the needs of older individuals with temporary impairment and low resource environments should be catered to just as the people with disabilities. According to the authors, web access is essential, and enhances social inclusion. On the other hand, Inal and Torkildsby (2023) in their study observed that many websites pose severe barriers such as lack of alternative text and low color contrast that limit access to information despite the fact that people are aware of the accessibility principles. Similarly, Surjit (2022) highlighted that the compliance of WCAG 2.1 is the primary feature of access in different devices and assistive technologies, which can be separated into level A, AA and AAA.

However, as stated by Ogbuju et al. (2023), most of the websites used by Nigerian universities are not designed in accordance with the requirements of WCAG 2.1, and the most frequent issues are associated with unlabeled forms, the absence of text alternatives, and low contrast, demonstrating that there is never a perfect match between the requirements and the practice. Abdussalam et al. (2023) posit that even as university libraries have continued to offer more online libraries and e-resources options, the majority of students with visual and physical impairments still cannot use it due to ineffective site design and usability blockers. Abdullahi et al. (2025) similarly demonstrate that accessibility, despite the possibility of utilising adaptive technology such as screen readers to improve access, is not a common practice and that the library

staff is not always knowledgeable about the needs accessibility needs. According to Almalky and Qaysi (2025), when the institutions are willing and the assistive technologies are well-integrated, libraries can successfully make digital services accessible, which will engage more users with disabilities. However, a systematic review of Shaibu and Abdullahi (2024) infers that despite the tools developed in the digital library services, there remains a big gap. They emphasized that organisational commitment and strategy partnership are vital to the actual digital inclusion. The implication is that collaboration of library and IT departments is gaining increased acceptance as a factor to offering convenient and accessible digital services. The American Library Association (2023), emphasized the need for systematic cooperation of the professional organizations, librarians, IT employees, and disability activists to facilitate integration of accessibility standards to enhance both physical and online information service delivery.

Empirical research conducted by Akin-Fakorede et al. (2024) indicated that Southwest Nigerian academic libraries provide disproportional access to clients with different disabilities. Based on the findings, libraries are encouraged to adopt assistive technologies and inclusive practices. Similarly, according to Warjri et al. (2024), libraries that successfully communicated with IT departments through joint plans, frequent meetings, and shared equal responsibility as regards e-resource administration and online services orientation achieve reasonable success in accessibility. The study offers practical design strategies for libraries that would help to create engaging and empowering learning experiences that promote inclusiveness of all users. Beyene et al. (2023) suggest that the universal design model is concerned with the planning and design of the library services with emphasis paid to the realisation of the principles of accessibility, which will enable a seamless experience for all users. This model is systemic, that is, collaboration is required between the library management, IT departments, disability services and at times disability external organisations at all the levels of service provision.

Another resolution, which is mentioned by Flacke et al. (2025), recommends the user co-creation model, which enables the needs of the persons with disabilities to be actively integrated the digital services planning, designing, and testing process to ensure real-time accessibility of all services. The literature also indicates the need for institutional frameworks and policies to enhance the successful implementation of collaborative models to eradicate challenges associated with accessibility issues (American Library Association, 2023; Mutuma et al. 2024). According to the explanation of Okafor and Omorinkoba (2024), issues such as insufficient funding, lack of awareness, and fragmented departmental responsibility could hamper effective collaboration required for the realization of sustainable web accessibility in academic libraries.

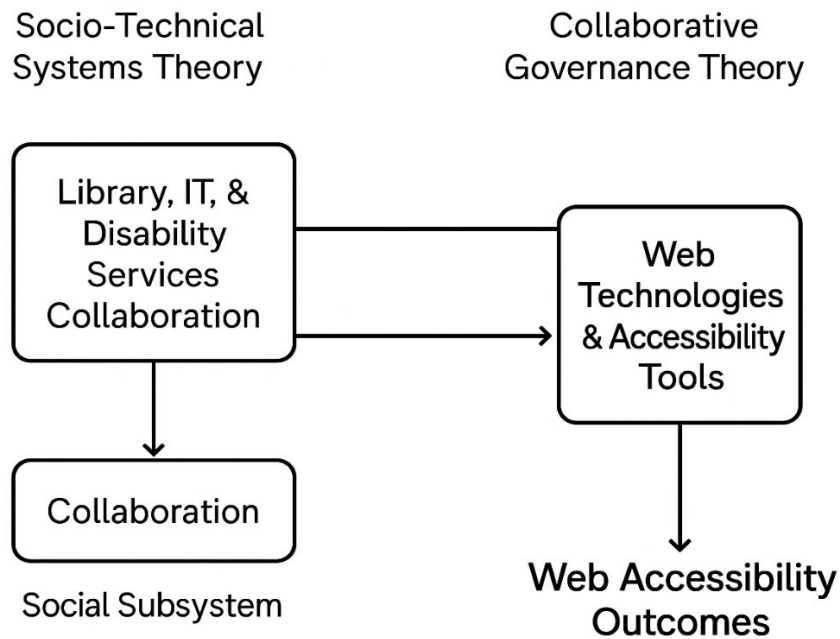
THEORETICAL FRAMEWORK

This research relies on the Socio-Technical Systems (STS) Theory and Collaborative Governance Theory to conceive the influence of interdepartmental collaboration on success of web accessibility in academic libraries. The initial theory of the organisation performance is the Socio-Technical Systems Theory that was first proposed by Trist and Bamford (1951), which emphasizes that interaction between the social and the technical subsystems determines the performance of the organisation. Technical subsystems as regards library web accessibility include digital platforms, web site design, accessibility tools, and IT infrastructure as opposed to the social subsystems, which include library staff, IT staff, disability services, and end-users, such as persons with disabilities. STS theory also emphasizes that maximum results can be achieved once both subsystems are designed and implemented in unison and that the technological solutions cannot

only be considered as certain ways to achieve accessibility but should be accompanied by effective human collaboration, training, and engagement.

Alongside STS theory is Collaborative Governance Theory, which explains the existence of many actors within the organisation and how they collectively decide on certain issues and coordinate their efforts towards achieving a shared objective by the staff (Ansell & Gash, 2008). The theory can be applied in academic libraries where the outcome of work is determined and based on the cooperation among the libraries, information technology unit, and disability services. Inclusive participation, shared decision-making, transparency, and trust-building, coupled with accountability, are the main aspects of collaborative governance that are relevant in the design, implementation, and maintenance of accessible library websites. Furthermore, the theory explains how formal collaboration, the institutional policies, and intra-departmental communication could influence users' accessibility compliance and inclusivity. The STS theory establishes the dynamics between social-technical theory and the collaborative governance theory within the library systems. The theories explain the mechanisms and processes that contribute to collaborative efforts within an organization towards achieving accessibility goals. By integrating both perspectives, the synergy between organisational technological environment and interdepartmental collaborations would improve web accessibility, which will increase the digital access of users with disabilities.

Conceptual model



This model demonstrates that the joint effort of Library, IT and Disability Services (social subsystem) interacting with web technologies and accessibility tools (technical subsystem) result in web accessibility outcomes and that both social and technical systems are critical to inclusive library services based on the Socio-Technical Systems Theory and Collaborative Governance Theory.

METHODOLOGY

This study was based on a mixed-method research design. The population consisted of the staff and administrators of the libraries, IT, and disability services departments in universities, as well as users with disabilities making contact with library websites. It involved the application of a stratified purposive sampling method, in which a total of about 150 members of staff were sampled to be utilised in the quantitative part and 20 key informants sampled to be utilised in the qualitative interviews, or focus group interviews. The research was conducted in selected universities that have functional academic libraries with websites and disability services. The study participants were selected from three different categories: staff in libraries, Information Technology departments, and disability services. They were selected purposively due to their involvement in website management and implementation of disability services. The 20 participants were selected purposively from the 150 participants who took part in the quantitative research for focus group discussions and interviews. Quantitative data was gathered using two data collection instruments: the Collaboration Practices Questionnaire (CPQ) and the Web Accessibility Outcomes Checklist (WAOC). The Web Accessibility Outcomes Checklist measured the extent to which the library websites of the selected institutions conformed to the stipulated standards. The library websites were evaluated using a combination of automatic testing tools and expert assessment to ascertain technical compliance and usability of the websites by persons with disabilities. Semi-structured interviews and structured focus group discussions were used for data collection. The focus group discussions members were drawn from the different departments in the organization, with the discussions taking about 60-90 minutes. This allowed the participants to give detailed information about the implementation of the collaborative process and the accessibility standards. The instruments were examined by experts in the field to establish their validity, while the reliability of the scale was established using a Cronbach's alpha with coefficient of 0.8. The process of collecting data took about six to eight weeks using an online survey, automated and manual website accessibility tests, and recording focus group discussions and interview responses. Quantitative data analysis was subjected to descriptive statistics, correlation and multiple regression analysis to discover the relationship between collaborative practices and accessibility. Qualitative data was done using thematic analysis, in which patterns, themes, and sub-themes were identified from the participants' responses. The integration of quantitative and qualitative research results enabled triangulation, making the results more reliable. Ethical standards were strictly adhered to throughout the research process, and informed consent, confidentiality of participants, and obtaining institutional approvals from the participating universities were considered before starting the research.

RESULTS AND ANALYSES

Research question one: to what extent do collaborative models between libraries, IT departments, and disability services exist in academic institutions?

Table 1: Extent of Collaborative Models among Library, IT and Disability Services Staff

Collaborative Practice Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Regular interdepartmental meetings are held	5	15	30	70	30	3.8
Policies and strategies for collaboration are formally documented	10	40	50	40	10	3.0
Joint training or workshops between departments exist	8	30	60	40	12	3.1
Shared responsibility for accessibility improvements	12	25	50	45	18	3.2
Communication channels are efficient across departments	5	20	40	65	20	3.6
Collaboration enhances service delivery to users with disabilities	3	10	20	75	42	4.0

Statement of Analysis:

The existence of collaborative practices between libraries, IT, and disability services in academic institutions is indicated by Table 1, but the level of effectiveness is not the same. Collaboration in interdepartmental meetings (mean = 3.8) and effective communication channels (mean = 3.6) are moderately strong, which indicates that participants believe that collaboration seems to be important and could impact service delivery to users with disabilities. However, formal policies for collaboration (mean = 3.0), training for collaboration (mean = 3.1), and sharing responsibility for improvements in accessibility (mean = 3.2) are less effective, which indicates a lack of institutionalization. The highest level of agreement was on the effect of collaboration on service delivery for users with disabilities (mean = 4.0), which indicates that it is an effective practice, although the institutional structures are not fully formalized. The quantitative data indicated that certain collaborative practices are in place but are informal, reactive, and founded on interpersonal communication.

Discussion in the focus group revealed that the collaboration between libraries, IT, and disability services is mainly ad hoc, reactive, and situation-driven. The participants seem to understand that collaboration is a useful tool to ensure collaboration. However, there are no regular meetings, a lack of formal policies, and training is mainly at the department level. Collaboration is seen as helpful to enhance web accessibility for users with disabilities. Still, there are challenges, such as lack of clarity in responsibilities regarding tasks to undertake and scarcity of resources as observed by one of the respondents. The results also show that there are weaknesses in the formalization of collaboration practices, especially in the areas of policies and joint training programs. The results show that although collaborative efforts put in place seem to be helpful, there is a need to improve the formalization of collaboration in many institutions to improve the outcomes of web accessibility.

Research question two: how do collaborative practices among libraries, IT departments, and disability services influence the accessibility of library websites?

Table 2: Influence of Collaborative Practices on Library Website Accessibility

Collaborative Practice Aspect	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Collaboration ensures adherence to accessibility standards	5	15	25	75	30	3.9
Joint problem-solving improves website usability	4	10	30	80	26	4.0
Interdepartmental coordination reduces accessibility errors	6	20	35	60	29	3.7
Shared responsibility accelerates website updates	8	22	40	55	25	3.6
Collaboration increases user satisfaction with website accessibility	3	12	28	80	27	4.0
Lack of collaboration leads to recurring accessibility issues	25	60	30	25	10	2.7

Statement of Analysis

Table 2 above illustrates the perceived degree of the influence of collaborative practices on the accessibility of library websites. The respondents are able to show that collaboration is an important factor in improving accessibility. In particular, collaboration is perceived to ensure that accessibility standards are followed (mean = 3.9), make websites more user-friendly through collaboration to solve problems (mean = 4.0), and enhance user satisfaction with accessibility (mean = 4.0). Interdepartmental collaboration is also useful in minimizing errors in accessibility (mean = 3.7) and speeding up website updates (mean = 3.6). On the other hand, the item measuring the lack of collaboration had the lowest mean (2.7), which implies that a small percentage of the participants still perceived that ineffective collaboration, or collaboration as it were, and not based on institutional formal structures, could lead to accessibility issues.

Discussion from the focus group revealed that collaboration between libraries, IT, and disability services helps in improving the accessibility of websites. The focus group members believe that collaboration helps in speeding up problem-solving, compliance, and identification of barriers, as well as updating and maintaining websites. Collaboration also improves user experience, making it easier to navigate, especially for users with disabilities. Collaboration across departments facilitates problem-solving, shared responsibility, and coordination of efforts, which can improve usability, minimize errors, and maximize user satisfaction. However, the participants are of the opinion that lack of coordinated collaboration among the relevant departments could hamper positive accessibility outcome experiences for users with disabilities, which indicates the importance of institutionalizing collaboration with defined roles for each department.

Research question three: what specific strategies within collaborative models contribute most significantly to improving web accessibility outcomes?

Table 3: Specific Collaborative Strategies and Their Impact on Web Accessibility

Strategy / Practice	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Regular interdepartmental meetings to review accessibility	4	10	25	80	31	4.0
Joint training and capacity building across departments	6	20	35	65	24	3.7
Clear documentation of roles and responsibilities	8	18	30	60	34	3.8
Collaborative planning for website updates and maintenance	5	15	28	70	32	3.9
Shared monitoring and evaluation of accessibility outcomes	7	20	35	60	28	3.7
Use of feedback from users with disabilities in planning	3	10	20	75	42	4.0

Statement of Analysis

The strategies for collaboration and their perceived impact on web accessibility in academic libraries are shown in Table 3. The results show that interdepartmental meetings for reviewing accessibility on a regular basis received a high mean of 4.0, which indicates that some of the respondents seem to recognize that coordination is an effective collaborative strategy. Collaborative planning for website updates and maintenance also received a high mean of 3.9, which indicates that collaborative planning is effective in managing websites efficiently. Documentation of roles and responsibilities (mean = 3.8) and collaborative training or capacity building (mean = 3.7) received moderate means. The respondents appear to understand documentation of roles and capacity building are positively related, but their implementation cannot be deemed as entirely uniform across the institutions. Monitoring and evaluation of accessibility outcomes together also received a mean of 3.7, which indicates that the practice of monitoring accessibility performance together is gaining momentum. A high mean score of 4.0 was also received by using feedback from users with disabilities in planning, which indicates that there is a strong recognition of the need for user-centric collaboration to improve website accessibility.

The focus group interviews showed that collaborative approaches are effective in enhancing the accessibility of library websites. The participants stressed the need to take into consideration the views of users with disabilities, and ensure that changes are made to meet their needs. The interdepartmental meetings were identified as critical for coordination and problem-solving. One of the participants “recognized the need for clear roles and responsibilities to ensure that tasks are accomplished efficiently and errors are avoided.” Collaborative approaches such as

regular meetings, planning, and use of feedback from users with disabilities can improve usability and ensure that accessibility outcomes are met. However, the moderate results for collaborative approaches such as joint training, role documentation, and monitoring suggest that structured approaches and capacity-building are not fully implemented. The results confirm that collaboration is present and is effective, but structured approaches can help improve web accessibility in academic libraries.

Research question four: What challenges hinder effective collaboration between libraries, IT departments, and disability services in promoting accessible digital services?

Table 4: Challenges Hindering Effective Collaboration for Accessible Digital Services

Challenge / Barrier	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Lack of clearly defined roles and responsibilities	4	10	20	80	36	4.0
Limited resources (staff, funding, technology)	3	8	25	85	29	4.0
Poor communication between departments	6	15	30	70	29	3.7
Lack of formal policies and frameworks	10	25	35	60	20	3.4
Resistance to change among staff	12	30	40	50	18	3.2
Insufficient training on accessibility standards	8	20	35	60	27	3.6

Statement of Analysis

Table 4 shows the challenges that hamper collaborative work and provision of accessible digital services in academic institutions. The findings show that the lack of clearly defined roles and responsibilities (mean = 4.0) and the lack of resources, including human resources, financial resources, and technological infrastructure (mean = 4.0), are the most important challenges. This shows that there are institutional constraints that could hamper collaborative work. Lack of communication between departments (mean = 3.7) and lack of training on accessibility standards (mean = 3.6) were found to be moderate challenges, which show that there are institutional constraints in information sharing and training. The lack of formal policies and frameworks (mean = 3.4) and lack of change acceptance among staff (mean = 3.2) were found to be less important, but they still hamper collaborative work. The quantitative findings indicate that organisational and resource-related factors reflect significant barriers to collaboration for effective accessible digital services.

The focus group also identified some of the challenges that affect collaboration between libraries, IT, and disability services in making accessible digital services. Some of the challenges that were identified include role confusion, lack of resources, communication barriers, lack of formal policies, lack of training, and resistance to change. According to participants, these

challenges cause updates to occur gradually; the accessibility standards have not been applied uniformly, and this has been depicted in quotes such as, “Sometimes it’s hard to know who should fix particular issues, which delays updates.” Others claim, “We want to improve accessibility, but there aren’t enough staff or tools to do it properly.” These challenges can be overcome by defining roles, providing resources, communicating, establishing policies, and training. Analysis of the results shows that there are both structural and operational issues that hinder collaboration. There is a need for well-defined roles and resources to facilitate collaboration between libraries, IT, and disability services. Furthermore, there are some gaps in communication, training, and policies that hinder the potential of collaboration strategies. By addressing these issues, it is possible to enhance collaboration and the provision of accessible digital services in learning institutions.

Research question five: How do users with disabilities perceive the accessibility and inclusiveness of library web services in institutions with varying levels of collaboration?

Table 5: Perception of Library Web Accessibility and Inclusiveness by Users with Disabilities

Perception Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
Library websites are easy to navigate	5	12	20	40	23	3.8
Websites provide accessible formats (text, audio, etc.)	6	14	25	38	22	3.7
Online services accommodate my specific needs	8	15	30	35	22	3.6
Collaboration among departments improves website access	5	10	20	45	30	3.9
Feedback is considered and acted upon	7	12	25	38	25	3.7
Overall, I feel included and supported by library web services	4	8	20	42	33	4.0

Table 5 shows the perceptions of users with disabilities on the accessibility and inclusiveness of library web services. The users agreed that library web services are easy to navigate (mean = 3.8) and offer accessible formats like text and audio (mean = 3.7). The mean for online services offering specific needs was slightly lower (mean = 3.6), suggesting that some users face difficulties in accessing personalized assistance for accessibility. The mean for collaboration among departments was 3.9, indicating that users appreciate the effects of combined efforts to make the website more accessible. The mean for consideration and action on user feedback was 3.7, showing moderate responsiveness of the institutions. The highest mean score (4.0) was recorded for users feeling included and supported by library web services. The results show that users with disabilities report satisfaction with the accessibility of library websites, especially when the collaboration among the departments is in place. Although the basic navigation and accessible formats offered are satisfactory, the personal accommodation and feedback response need improvement. The results

confirm that the collaborative approach is an important factor in creating a more inclusive environment, which increases users’ feelings of support and inclusion in accessing library web services. Overall, the data indicate that collaboration among library, IT, and disability services correlates with higher perceptions of accessibility and inclusiveness.

The result of the focus group interviews revealed that users with disabilities seem to be satisfied with the ease of navigation and structured layout of library websites. One user said, “I can search for information quickly because the site is well-organised,” and another stated, “The menus and headings are easy to navigate, making browsing less stressful.” The availability of various formats such as text, audio, and materials that are compatible with screen readers is very essential to the users. One user commented, “I can access most materials through audio formats, which is a big help to me,” while another stated, “Not all documents are available for users with disabilities, so sometimes I have to ask for help from staff members.” The users believed that a collaboration of different departments with the library would make accessibility much better. They quoted, “When different departments cooperate, accessibility issues are readily addressed,” and also said, “I can suggest improvements, and they are often implemented quickly due to effective teamwork.” Feedback is also well-received by the users. One of them said, “I once reported an issue about a document, and it was corrected within a week,” although others claimed that not all feedback is addressed immediately. Various means of accessible services contribute to a sense of inclusion and support. One user agreed, “I feel that the library takes care of people like me when they plan their services,” while another one added, “It’s a relief to know that my needs are taken into account when modifications are made.”

RESEARCH HYPOTHESIS

Hypothesis 1: There is a significant positive relationship between the strength of collaboration among libraries, IT departments, and disability services and the web accessibility outcomes of library websites.

Table 6: Correlation and Regression Analysis between Collaboration Strength and Web Accessibility Outcomes

Variable	N	Mean	SD	r (Correlation)	β (Regression Coefficient)	t-value	p-value
Collaboration Strength (CS)	150	3.8	0.6	0.72	0.68	10.85	<0.001
Web Accessibility Outcomes (WAO)	150	3.7	0.7	—	—	—	—

Notes:

- **CS (Collaboration Strength):** Measured by the Collaboration Practices Questionnaire (frequency of meetings, joint planning, communication, shared roles).
- **WAO (Web Accessibility Outcomes):** Measured by Web Accessibility Outcomes Checklist (adherence to standards, usability, inclusiveness).

- **Significance Level:** $\alpha = 0.05$

Statement of Analysis

The correlation in the table indicates a strong positive relationship between the strength of collaboration and the web accessibility outcomes, as demonstrated by the values of $r = 0.72$ and $\beta = 0.68$, $p < 0.001$. More precisely, this means that improved collaboration among libraries, IT departments, and disability services results in higher adherence to standards for accessibility, better usability, and greater inclusiveness in library websites. With a regression coefficient of $\beta = 0.68$, a one-unit increase in the strength of collaboration makes for a 0.68-unit improvement in the outcome for web accessibility, therefore corroborating the practical significance of coordinated interdepartmental efforts.

DISCUSSION OF FINDINGS

From the findings, it is evident that the level of collaboration between libraries, IT, and disability services in universities is moderate, which means that some activities and communication take place, but these are informal and reactive. There are evidences of meetings and communication channels, but formal policies, strategies, and training activities are very limited. Communication is key to the collaborative process, of which the staff agreed that communication is a positive factor to influencing accessibility outcomes for users with disabilities. In addition, collaborative efforts are presently hampered by lack of role clarity, resource limitation, and the absence of institutionalised policies. This finding corresponds with Purnomo et al.'s (2025) position that accessible infrastructure and technology by themselves are insufficient to improve accessibility outcomes and that comprehensive staff training and effective institutional policies are essential to enhance provision of library services for persons with disabilities.

However, the study established that while there are evidential benefits accruable to web accessibility as a result of collaboration between libraries, IT, and disability services, the unclear roles and resource constraints hinders full scale collaboration. These findings based on quantitative data revealed the positive impacts of collaborative approaches on standards of accessibility, usability, and satisfaction derived from the websites. It is, therefore, essential to conclude that even though formal and well-structured collaboration has the ability to enhance accessibility of library websites, formal roles, resource availability, and frequent collaboration will also be required to ensure these benefits are maximized. The findings were in line with Du Toit (2025), which found that training, policy, and resource allocation within organisations are factors that hinder effective collaboration in selected South African university libraries, yet noted that having proper structures and resources is paramount for harnessing the benefits of accessibility.

The results show that user-centric approaches, particularly those involving users with disabilities, have the most important role in assuring better web accessibility outcomes for academic libraries. Structured collaboration mechanisms such as regular interdepartmental meetings, shared planning and monitoring, clearly defined roles and responsibilities, shared training and capacity building facilitate coordination and accountability, and thus efficiency, although not uniformly adopted by the surveyed libraries. In any case, all these identified strategies, when adopted in a collaborative manner, play an important role in improving the accessibility and usability of the library websites. This is in line with another study performed by Purnomo and Wikandani (2024), that stressed the importance of not solely relying on technology for facilitating web accessibility but, instead, finding the answer in a comprehensive approach

encompassing staff development, corporate policies, and collaboration with the users and disability bodies.

The findings from this study suggest that undefined role and responsibility ambiguity, as well as a lack of resources, pose major concerns to effective collaboration. Barriers concerning resources are perceived as limiting the efficiency of collaboration. Breakdown of communication, lack of policies, lack of training, and resistance to change are found to be important considerations for effective collaborations. Role and responsibility confusion, lack of policies, lack of training, lack of available resources, lack of communication, lack of policies, and lack of training and resistance to change were found as important barriers for effective collaborations. These are in line with a study on academic libraries in South Africa, carried out by Du Toit in 2025, where a lack of training of staff, policies, and available resources are named as a factor that inhibits collaboration.

The results indicate that users are satisfied with the accessibility and navigation of library websites, particularly in libraries where there is a high level of collaboration between the library, IT, and disability services. A high level of collaboration was linked to better accessibility, faster response times, and easier navigation. Although users were satisfied with the provision of multiple formats, there were some areas where the gap was not closed, and not all user feedback was taken into consideration. When collaboration was successful, users felt included. Collaboration is clearly a positive factor in website usability, accessibility, and user inclusion. The results support Goroba et al. (2025), who found that collaboration and user participation are key factors in improving accessibility, user satisfaction, and inclusivity of library services.

From the findings, it can be deduced that a positive relationship among the degree of collaboration between the libraries, IT, and disability services, and the web accessibility performance of library web services does exist. The correlation analysis and regression analysis clearly reveals that the institutions with a high degree of collaboration, planning, and shared responsibility provide user-friendly services and perform better in relation to compliance with accessibility. Generally, interdepartmental collaboration plays a key role in achieving better performance in relation to web accessibility. This result aligns with a study done by Popoola and Taiwo in 2025, which found that standard approaches to collaboration, communication, and inclusive planning had played a significant role in enhancing accessibility as well as user satisfaction in academic library services.

CONCLUSION

This research indicates that cooperation between libraries, IT, and disability services in institutions of higher education has a key role to play in facilitating positive web accessibility outcomes. Cooperation does exist, but most are informal and reactive, and restricted due to a lack of formal policies, shared training, and planning. User-centric approaches, communication, clearly defined roles, and capacity building showed major potential in achieving substantial positive impacts in improving the accessibility, usability, and inclusiveness of library website interfaces. Cooperation among various departments would enhance website navigation and responsiveness, which ultimately will give users with disabilities a sense of belonging and opportunities to satisfy their information needs. However, issues pertaining to undefined roles, lack of resources and formal policies as well as inconsistencies in collaborative practices may limit attainment of optimal results.

RECOMMENDATIONS

1. Universities should provide formal policies that define the role of libraries, IT departments, and disability services.
2. Universities should put in place structures for coordination among the departments.
3. Universities should include users with disabilities in the design, testing, and evaluation of website accessibility to make sure that their needs are met.
4. The management of universities should also implement relevant training sessions to increase understanding and responsibility of web accessibility outcomes across all different departments.
5. Universities should invest sufficient resources in finance, technology, and human personnel to facilitate cooperation and a long-term approach in making their institutions accessible.
6. Provide ways in which users' responses can be quickly reacted to, with constant monitoring of web accessibility to improve.

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