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A SYSTEMATIC REVIEW OF WEB 2.0 TECHNOLOGIES IN LIBRARY WEBSITES (2010 – 2023)

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ABSTRACT

Web 2.0 technologies have reshaped library services by facilitating participatory engagement, user-centered design, and real-time integration. Despite widespread implementation, their impact remains uneven across geographic and institutional contexts. This systematic review examines the adoption and application of Web 2.0 tools in library websites globally, with a focus on trends, evaluation frameworks, barriers to usage, and strategic recommendations. For the study, a PRISMA-2020 guided review was conducted on 29 peer-reviewed articles published between 2010 and 2023. Databases searched for the study included Scopus, LISTA, and Google Scholar. Inclusion criteria required empirical studies focusing on Web 2.0 tools in library environments. It is found that social media platforms had been emerged as the most prevalent tool, followed by blogs, RSS feeds, and multimedia sharing. Content analysis was the dominant evaluation method, supplemented by surveys and mixed-method approaches. Key barriers included infrastructural limitations, digital literacy deficits, absence of formal policies, and low user engagement. In conclusion, Web 2.0 technologies have emerged as powerful catalysts in redefining library services, fostering enhanced interactivity, collaboration, and user-driven content creation. Libraries must transition from passive adoption to active integration of these tools, emphasizing participatory design principles that center user experience.

Keywords: Web 2.0 Tools, Library Services, User Engagement, Library Websites, PRISMA Methodology, Content Analysis

1. INTRODUCTION

Libraries are undergoing a profound shift from traditional, passive service models to dynamic, participatory ecosystems. At the heart of this transformation lies the strategic adoption of Web 2.0 technologies, which facilitate collaborative engagement, real-time interaction, and user-generated content across digital platforms. These tools – including social media platforms, blogs, wikis, and interactive feedback channels – not only expand the reach of library services but also redefine user roles from consumers to co-creators of knowledge.

This study examines the integration of Web 2.0 tools within library websites, analyzing global trends in technological uptake, variations in tool functionality, and institutional readiness for participatory design. By employing a systematic content analysis framework, the paper explores how libraries are reshaping digital engagement, highlighting the implications for inclusivity, strategic planning, and evidence-based evaluation mechanisms.

2. OBJECTIVES

1) To identify and classify the range of Web 2.0 tools integrated into library websites.
2) To systematically examine the presence and functionality of Web 2.0 tools on academic and public library websites.
3) To identify global patterns and variations in tool adoption and participatory features.
4) To examine the challenges and barriers to adopting Web 2.0 tools in library websites.

3. RESEARCH QUESTIONS

- What types of Web 2.0 tools are currently implemented across academic and public library websites?
- How do these tools vary in terms of functionality, user interactivity, and institutional adoption?
- What strategies and design principles support participatory engagement through these digital tools?

4. METHODOLOGY

4.1. REVIEW FRAMEWORK

This systematic review adhered to the PRISMA-2020 protocol, ensuring transparency and reproducibility in study selection, documentation, and reporting. The screening process – ranging from initial identification to full-text inclusion – is visually represented in the accompanying PRISMA flowchart, which outlines each decision point and exclusion step Page et al. (2021)

Recent PRISMA-guided reviews emphasize the strategic role of Web 2.0 tools in enhancing academic library services. Madhusudhan and Soni (2024) analyzed 25 studies from 2018 to 2023, revealing that platforms like Facebook, WhatsApp, and Instagram significantly improved communication, outreach, and reference services, especially during the COVID-19 pandemic. Pasipamire (2025), using both PRISMA and PICO frameworks, reviewed 20 studies and found that while social media and AI-driven tools such as chatbots enhanced personalization and engagement, adoption remains uneven due to infrastructural, policy, and training challenges. Both studies advocate for structured implementation, stakeholder collaboration, and robust evaluation frameworks to ensure sustainable and inclusive integration of Web 2.0 services in academic libraries.

4.2. DATABASES SEARCHED

- Scopus
- LISTA (Library, Information Science & Technology Abstracts)

- Google Scholar

4.3. KEYWORDS USED

Search queries are the combinations of the following keywords:

- "Web 2.0"
- "Library services"
- "Social media libraries"
- "Content analysis"
- "Library websites"
- "Academic libraries"
- "Public libraries"

Boolean operators (AND, OR) and truncation symbols were used where applicable to maximize search efficiency.

4.4. INCLUSION CRITERIA

Studies were included if they met the following criteria:

- Published between 2010 and 2023.
- Empirical and peer-reviewed.
- Focused on Web 2.0 tools applied in academic or public library environments.

4.5. EXCLUSION CRITERIA

- Editorials, or conference abstracts without full text.
- Grey literature without peer review.

Figure 1

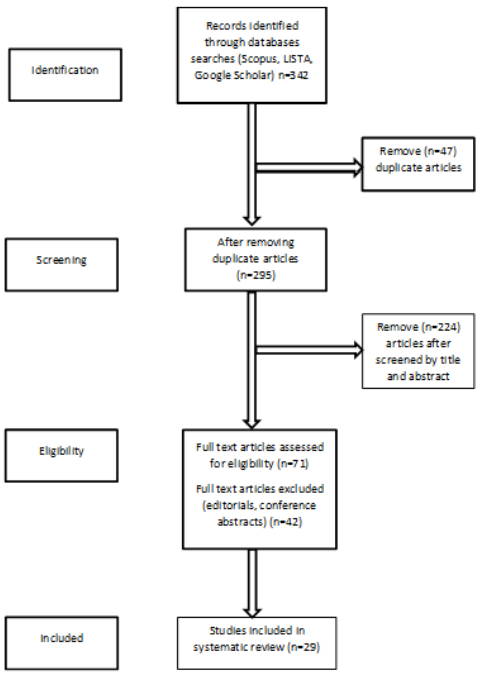

Figure 1 Flow Diagram of PRISMA

***n** = denotes the number of articles

5. REVIEW OF SELECTED LITERATURES

5.1. WEB 2.0 TOOLS USED IN LIBRARY WEBSITES

The evolution of library services through Web 2.0 technologies has significantly reshaped digital engagement and participatory access. Singh and Gill (2013) conducted a bibliometric survey of 206 articles across 13 Emerald journals, identifying blogs, wikis, RSS feeds, instant messaging (IM), podcasts, mashups, and multimedia sharing tools as core components of Library 2.0. Mahmood and Richardson (2011) found that over 80% of surveyed academic libraries in the U.S. had adopted RSS, blogs, wikis, and social networking platforms, emphasizing institutional support and staff training as key enablers. Shah (2017) analyzed 12 national libraries and reported RSS as the most widely used tool (83%), followed by blogs (66%) and podcasts (50%), while IM lagged due to staffing constraints. Leblanc and Kim (2014) highlighted the strategic use of blogs, IM, and podcasts to support distance learners and virtual outreach in academic settings. Boateng and Liu (2014) provide a detailed examination of how Web 2.0 applications were adopted across the top 100 academic library websites in the United States. Their study revealed that social networking platforms – especially Facebook and Twitter – were the most widely implemented tools, serving as primary channels for marketing, outreach, and real-time user engagement. Blogs emerged as the second most prevalent application, followed by RSS feeds and instant messaging services. Wikis, however, were the least utilized among the tools surveyed. Kumar et al. (2019) expanded the typology by including tools like LibraryThing, Second Life, Technorati, and Ning, underscoring the shift toward user-generated content, multimedia integration, and decentralized service models. Ranjan and Bhatt (2021) surveyed three major Delhi libraries and found Web 2.0 tools – like blogs, wikis, RSS, IM, and social media – are widely used for services such as OPAC, announcements, and training. Collectively, these studies affirm that Web 2.0 tools – ranging from blogs and wikis to mashups and social bookmarking – are not merely technical add-ons but strategic instruments for transforming libraries into dynamic, user-driven ecosystems.

5.2. PRESENCE AND FUNCTIONALITY OF WEB 2.0 TOOLS

From 2010 to 2023, the literature on Web 2.0 tools in libraries reflects a dynamic evolution from early experimentation to strategic integration. Tripathi and Kumar (2010) and Mahmood and Richardson (2011) laid the groundwork by documenting widespread adoption of blogs, RSS feeds, wikis, and instant messaging in academic libraries across North America, Europe, and Asia, emphasizing their role in enhancing reference services and user engagement. Imran (2011) studied 12 national libraries in developed countries and found RSS feeds were the most used Web 2.0 tool, mainly for sharing updates on books and events. Blogs were also common, while podcasts and instant messaging were less used due to technical and staffing challenges. As a decade progressed, regional studies such as Rakshikar (2015) in Mumbai and Rahoo et al. (2018) in Sindh highlighted growing interest in social media platforms like Facebook and WhatsApp for outreach and marketing, though infrastructural and training barriers persisted. Sahoo and Panda (2017) evaluated Web 2.0 tool usage across 16 IIT libraries in India, revealing that all libraries employed at least one tool, with RSS feeds used by all 100% of institutions. Facebook (50%), Twitter (43.75%), Blogs (37.5%), and Google + (37.5%) were moderately adopted, while Live Chat and Google Maps were minimally utilized (6.25%). Patel and Bhatt (2019) offered a comprehensive analysis of Indian State

University Libraries, revealing that only 9.77% had implemented Web 2.0 tools, with OPAC 2.0, mashups, and RSS being most prevalent, and Kerala leading in application index. Bamidele et al. (2019) in Nigeria and Buigues-García and Giménez-Chornet (2012) globally echoed similar patterns of uneven adoption, with Africa and Asia lagging behind Oceania and the Americas. Conceptual contribution by Eraj (2020) reinforced the philosophical shift toward participatory, user-centered service models, while Leblanc and Kim (2014) showcased practical implementations in U.S. academic libraries. Kalra (2016) analyzed websites of 46 central university libraries in India and found that only 50% used at least one Web 2.0 tool. The authors argue that broader adoption of Web 2.0 tools would improve marketing, user engagement, and service accessibility across university libraries. The study of Burhansab et al. (2020) surveyed 1022 library users across 26 colleges affiliated to Solapur University. Web 2.0 tools like blogs, RSS feeds, wikis, and mobile alerts were significantly underutilized – largely due to low awareness and insufficient training. The authors recommend targeted interventions to enhance adoption and maximize the impact of Web 2.0 technologies in academic libraries.

5.3. GLOBAL PATTERNS IN WEB 2.0 ADOPTION AND PARTICIPATORY FEATURES IN LIBRARIES

The adoption of Web 2.0 technologies in academic libraries marks a significant evolution towards participatory, user-centered service models. Globally, research into this transformation has shown both enthusiasm and disparity. Poluru et al. (2023) examined 72 university libraries in Europe and the Americas, noting widespread adoption of social media tools such as Facebook, Instagram, and YouTube to enhance communication and engagement. Their Application Index revealed strategic integration and strong digital presence among European institutions. In contrast, studies from Africa, such as Williams (2020) and Akwang (2021), underscore challenges linked to infrastructure, restrictive ICT policies, and limited budgets. While Belgian libraries showed strong planning and usage of Web 2.0 tools, South African libraries were hindered by structural constraints. Akwang's study of Nigerian librarians revealed positive perceptions of Web 2.0's potential but low actual adoption, primarily due to external barriers despite internal motivation. Punchihewa (2018) found that Sri Lankan university libraries have low adoption of Web 2.0 tools, with RSS and social media being the most used. However, tools like Instant Messaging, wikis, blogs, podcasts, and vodcasts are mostly underutilized. Libraries use Web 2.0 mainly for basic functions like sharing new resources and announcements, but lack strategic integration and training to fully leverage these technologies. Harinarayana and Raju (2010) explored how top global university libraries adopted Web 2.0 features. They found RSS feeds and Instant Messaging were the most common tools for sharing news and offering live reference help. Other tools like blogs, podcasts, wikis, and social media were underutilized. In India, Ali et al. (2020) reported that 83% of university libraries used at least one Web 2.0 tool, with Twitter, Facebook, and YouTube being dominant. However, blogs, wikis, and RSS were underutilized due to lack of strategic planning and ICT infrastructure. Santosh (2017) studied how Indian academic libraries use Web 2.0 tools like blogs, videos, and social media. Out of 58 top institutions, only 34% used these tools, mostly blogs and video sharing. Tools like instant messaging and RSS feeds were rarely used. Across regions, the adoption of Web 2.0 tools in academic libraries reflects a complex interplay of institutional readiness, infrastructure, policy, and user engagement. While Western countries lead in strategic implementation, developing regions demonstrate strong intent but face systemic

barriers. The literature underscores the need for inclusive planning, capacity building, and cross-regional collaboration to ensure equitable digital transformation in library services.

5.4. CHALLENGES AND BARRIERS TO ADOPTING WEB 2.0 TOOLS IN LIBRARY WEBSITES

Adopting Web 2.0 technologies in university libraries presents multifaceted challenges that span infrastructural, institutional, and human factors. Ogbomo and Ijiekhuamhen (2020) reveals in South-South Nigeria, despite the growing awareness of social media's promotional potential, only 14 out of 25 institutions have implemented promotional activities using these tools. While Facebook, WhatsApp, Instagram, and Twitter are widely embraced for outreach, more content-driven platforms such as YouTube, LinkedIn, wikis, and blogs remain underutilized. Librarians primarily use these tools to promote user education, reference services, and selective dissemination of information, yet deeper engagement with resources like academic databases and software remains limited. Critical barriers – including inadequate internet infrastructure, lack of training, absence of policy frameworks, erratic electricity, and privacy concerns – stifle comprehensive implementation. These findings reflect broader systematic issues in developing countries where digital innovation often clashes with infrastructural limitations and policy vacuums, echoing similar patterns observed in Kenya, and Tanzania Fred and Tom (2015), Lwoga (2012). Santosh (2017) found that poor internet access, lack of support, and limited training were major barriers towards adopting Web 2.0 technologies. Overall, the study showed that while librarians are open to using new technology, more support and training are needed to make it work well. Idiegbeyan-ose et al. (2019) mentioned that in the adoption of Web 2.0 tools, faces barriers such as poor ICT infrastructure, digital divide, lack of policies, skill gaps, and resistance to change. The authors advocate strategic policies, government support, and training to enable meaningful Web 2.0 integration. Collectively, these insights illustrate that while enthusiasm among library professionals remains strong, sustainable Web 2.0 integration requires deliberate investment in capacity-building, institutional policy reform, and robust infrastructural support.

6. CONCLUSION

The systematic review conducted from 2010 to 2023 reveals that Web 2.0 technologies have played a transformative role in redefining academic and public library websites. These tools – ranging from blogs and wikis to RSS feeds and social media platforms – have significantly enhanced digital engagement, fostering participatory services and two-way communication between libraries and their users. Despite notable progress in adoption, particularly in regions like India, Pakistan, and Nigeria, persistent challenges remain. These include inadequate staff training, limited bandwidth, insufficient funding, and the absence of formal institutional policies to guide integration. Methodologically, most studies employed quantitative techniques such as content analysis and user surveys, with an uptick in mixed-methods research post-2015 reflecting a more nuanced exploration of user behaviour and institutional responses. Overall, libraries demonstrate a growing readiness to leverage Web 2.0 tools for deeper engagement, but sustained success depends on strategic planning, capacity-building, and inclusive digital policies. This review underscores the need of scalable frameworks that balance innovation with

accessibility and positions Web 2.0 not merely as a set of tools, but as a catalyst for reimagining library services in the digital age.

CONFLICT OF INTERESTS

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