# A BIBLIOMETRIC ANALYSIS OF GLOBAL TRENDS AND NATIONAL CONTRIBUTIONS IN ACADEMIC LIBRARY REFERENCE SERVICES RESEARCH (2020–2024)

MGP Tharuka[1] and Rev.B Somananda Thero[2]

**Abstract**

Reference services in academic libraries are essential for meeting the dynamic information needs of students, faculty, and researchers. These services range from traditional in-person assistance to digital and virtual interactions, supported by personalized guidance and evolving technologies. In recent years, rapid technological advancements, changing user expectations, and global challenges such as the COVID-19 pandemic have driven significant shifts in service delivery, including the increased use of virtual reference models and artificial intelligence (AI). This bibliometric study investigates global trends and national contributions in academic library reference service research from 2020 to 2024. A total of 427 publications were retrieved using Google Scholar via the Publish or Perish software. Data visualization tools such as VOSviewer and Microsoft Excel were used to identify publication patterns, thematic clusters, and emerging research areas. The analysis reveals a steady increase in research output, peaking in 2024 with 117 publications (27% of the total), reflecting the sector's rapid adaptation to post-pandemic digital needs. India leads in national contributions with 103 publications (24%), followed by the United States (81; 19%) and Nigeria (51; 12%), indicating a blend of established and emerging research hubs. University libraries are the most studied institutions, contributing 269 publications (63%), while scholarly journals dominate as the primary publication source (333 articles; 78%). Thematic analysis highlights four key areas: traditional reference services, virtual/electronic services, AI-driven transformation (including ChatGPT), and broader technology integration. Emerging research hotspots include virtual service delivery models, user satisfaction assessment, institutional technology adoption, and the role of AI chatbots in information services. This study offers a comprehensive overview of current developments and provides a foundation for future research on academic library reference services in a digitally evolving, AI-influenced landscape.

***Keywords***: Academic library reference services, User satisfaction, Global research trends, Digital transformation, Bibliometric analysis.

[1]Palm Leaf and Manuscript Study and Research Library, University of Kelaniya, Sri Lanka.

Email: mgpth241@kln.ac.lk https://orcid.org/0009-0008-1393-7659

[2]Department of Library and Information Science, University of Kelaniya, Sri Lanka

Email: somananda@kln.ac.lk https://orcid.org/0000-0002-0479-5707



Received date: 11.07.2025 Accepted date: 26.08.2025
Print Publishing Date: 31.10.2025 Web Publishing Date:31.10.2025

**Introduction**

The academic library reference services have come a long way from basic user assistance to highly sophisticated user-centered support systems. Libraries were mostly storehouses of books and information during the early years. The role of librarians was more like that of a guardian who preserved volumes of texts without active engagement in providing information to users. With growing technology and increasing complex information needs, formalized reference services began to emerge. *Samuel S. Green, William Frederick Poole, and Melvil Dewey* are just some examples of formative figures in the advancement of these services, they fought for professional librarianship and tools aimed at streamlined information retrieval.

In academic libraries, reference services became essential in the late 19th and early 20th centuries, driven by the growth in resources and user diversity. Theoretical frameworks, such as *S.R. Ranganathan's* Five Laws of Library Science, emphasized the importance of user-centric approaches, efficiency, and adaptability in reference work.

The digital revolution brought transformative changes, introducing electronic and virtual reference services that allowed libraries to assist users remotely through various digital platforms. The COVID-19 pandemic further accelerated this shift, highlighting the critical role of virtual reference services in maintaining academic support during campus closures.

Today, reference librarians are not only information guides but also collaborators in research and digital literacy. Bibliometric analysis has become an important tool for understanding research trends, collaboration patterns, and emerging themes in library reference services. As technology and user expectations continue to evolve, academic library reference services remain vital, adapting to meet the changing needs of their communities.

***Objective of the Study***

- To analyze global research trends and country contributions in academic library reference service research from 2020 to 2024 using bibliometric methods.
- To identify the volume and growth patterns of scholarly publications on academic library reference services during 2020–2024.
- To determine the leading countries, institutions, and publication venues contributing to Publication sources and authors the field.
- To map key research themes and emerging topics, such as digital transformation, user satisfaction, and technology integration, within academic library reference service literature

**Literature Review**

Academic library reference services have progressed from custodial information provision to sophisticated, user-centered support that is deeply informed by both classical theory and contemporary technological innovation. The foundational influence of S. R. Ranganathan's Five Laws of Library Science "Books are for use," "Every reader his/her book," "Every book its reader," "Save the time of the reader," and "The library is a growing organism" remains pivotal, supplying a philosophical framework that continues to guide modern reference activities even as they migrate into digital environments (Green, 2006). Ranganathan's user-centric emphasis on efficiency and adaptability dovetails with today's demand for virtual and artificial-intelligence-enhanced service models, illustrating how enduring theoretical principles can accommodate rapidly evolving practice. Building on this foundation, scholars have chronicled the field's shift from traditional face-to-face transactions to digitally mediated interactions; Roy and Bhattacharya (2015), for instance, map a trajectory that begins with basic user assistance and culminates in complex digital reference ecosystems powered by mobile apps, social networks, and real-time chat platforms. Nowhere has this evolution been more visible than in the rapid rise of virtual reference services (VRS). Chow and Croxton (2014) report that among five widely used VRS platforms, synchronous chat consistently scores highest for user satisfaction and usability, underscoring how effectiveness and efficiency directly shape preferences. The COVID-19 pandemic further accelerated VRS adoption: Radford et al. (2021) document how 300 virtual reference librarians and 28 heads of reference swiftly shifted to wholly online operations, attributing success to pre-existing digital infrastructures that enabled libraries to remain vital information gateways when physical spaces were closed. Bibliometric trends corroborate this surge, with studies noting a pronounced spike in VRS scholarship between 2020 and 2022, mirroring heightened institutional reliance on digital service delivery. Earlier, Kasowitz (2001) had already highlighted core digital-reference challenges real-time responsiveness, interlibrary collaboration, and the development of quality standards issues that became even more salient as user expectations for 24/7 access intensified during pandemic-induced shutdowns. Parallel to VRS expansion, artificial intelligence (AI) has emerged as a transformative force in reference work. Nawaz and Saldeen (2020) delineate five foundational layers of an AI chatbot input, patron channel, natural language processing, knowledge base, and natural language generation demonstrating how these components collaborate to resolve routine inquiries while routing complex questions to human experts. Case studies provide concrete illustrations:

Rodriguez and Mune (2022) chronicle San Jose State University Library's chatbot, which grew from 44 to 137 monthly interactions over 18 months, showing both scalability and heightened user engagement despite limited technical resources. Similarly, the University of Calgary's multilingual RAG-based chatbot achieved a 50 percent deflection rate from human-staffed chat, freeing 1.5 full-time equivalents for higher-level tasks and highlighting the labor-reallocation benefits of AI integration. While technology drives service delivery, user experience remains the evaluative cornerstone. Abdul Rahman et al. (2018) propose criteria emphasizing accessibility, responsiveness, answer quality, and librarian communication; subsequent studies widely adopt this framework to benchmark digital reference effectiveness. Complementing these findings, Chow and Croxton (2014) note that convenience defined as anytime/anywhere availability and immediacy remains the principal reason users select VRS, with Net Generation patrons displaying a comparatively higher desire for personal librarian relationships than older adults. Methodologically, the study of reference services has itself matured. Gentles et al. (2016) set out seven paired principles for systematic methods reviews, addressing challenges such as boundary setting, non-traditional database searching, and rigorous interpretation to enhance review quality. More recently, Liu et al. (2024) outline a comprehensive bibliometric-service model that emphasizes librarian researcher collaboration and underscores the necessity of targeted training to maximize bibliometric tool utility. Marzi et al. (2024) take integration a step further with their Bibliometric Systematic Literature Review (B-SLR) framework a ten-step process marrying quantitative bibliometrics with qualitative synthesis to deliver more cohesive, replicable, and holistic overviews of scholarly domains. Collectively, these methodological advances equip researchers to map intellectual landscapes, trace thematic evolutions, and measure institutional contributions with increased precision. In sum, the theoretical lineage from Ranganathan's laws intertwines seamlessly with digital transformation, AI deployment, user-experience research, and evolving review methodologies, forming a rich, interconnected tapestry that defines contemporary academic library reference services.

**Research Method**

This study employed a bibliometric analysis to systematically evaluate global research output on academic library reference services from 2020 to 2024. Publication records were retrieved using the Publish or Perish software, which extracts data from Google Scholar based on a comprehensive set of keywords related to academic library reference services (e.g., "academic library," "reference service," "information desk"). The exact Boolean search strings used included combinations such as ("academic library" OR "university library" OR "college library") AND ("reference service" OR "information desk" OR "reference assistance"), ensuring thorough coverage. The search was limited to English-language publications within the specified timeframe.

Google Scholar was our only data source because it covers a wide variety of scholarly work, including conference papers and theses, not just traditional journals. This helps make the study more inclusive, although it also means there could be issues like less consistent indexing and duplicate records. To address this, we carefully checked the results by hand to remove duplicates and anything that wasn't relevant. We also gathered details about each publication, such as year, author affiliation, country, document type, and citation count. To make sure the data was consistent, we double-checked a sample of records manually.

In the end, we had a dataset of 427 publications, all focused on higher education academic library reference services. We used Microsoft Excel for basic statistics and VOSviewer software to map out research trends, collaborations between authors, and main topics in the field. This approach gave us a clear and reliable overview of who is publishing, what the main trends are, and which topics are emerging. We present the results using tables, graphs, and figures, along with citation metrics: there were 1,562 citations in total, averaging 312.4 citations per year and 3.66 citations per paper.

**Discussion and Interpretations:**
***Publication Trends (2020–2024)***

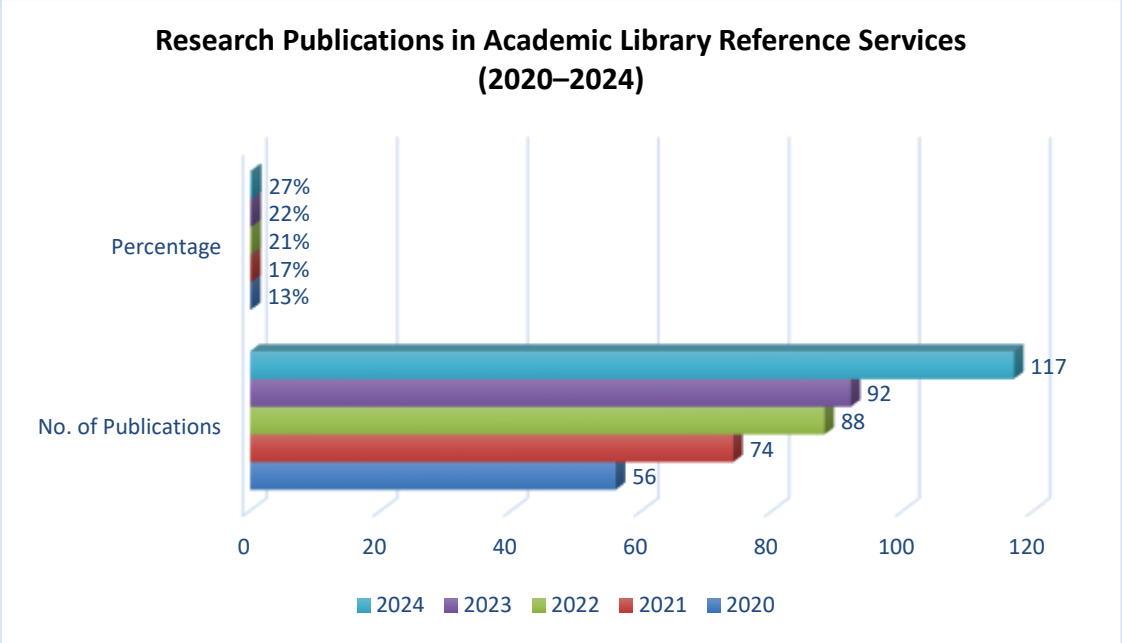


**Figure 01: Research Publications in Academic Library Reference Services (2020–2024)**

Figure 1 presents the annual distribution of research publications in the field of Academic Library Reference Services from 2020 to 2024. The analysis of research publications in academic library reference services from 2020 to 2024 reveals a clear upward trend in scholarly output. In 2020, there were 56 publications, accounting for 13% of the total during this period. This number steadily increased over the years, with 74 publications (17%) in 2021, 88 publications (21%) in 2022, and 92 publications (22%) in 2023. The most significant growth occurred in 2024, which saw 117 publications, representing 27% of the total output. This steady increase highlights a growing academic interest in library reference services, possibly influenced by the rapid shift to digital platforms, evolving user needs, and the increased role of virtual reference services in the post-pandemic academic environment. The substantial rise in 2024 suggests that the topic has gained significant relevance in recent years, warranting further exploration and innovation in the field.

***Thematic Clustering and Research Hotspots***

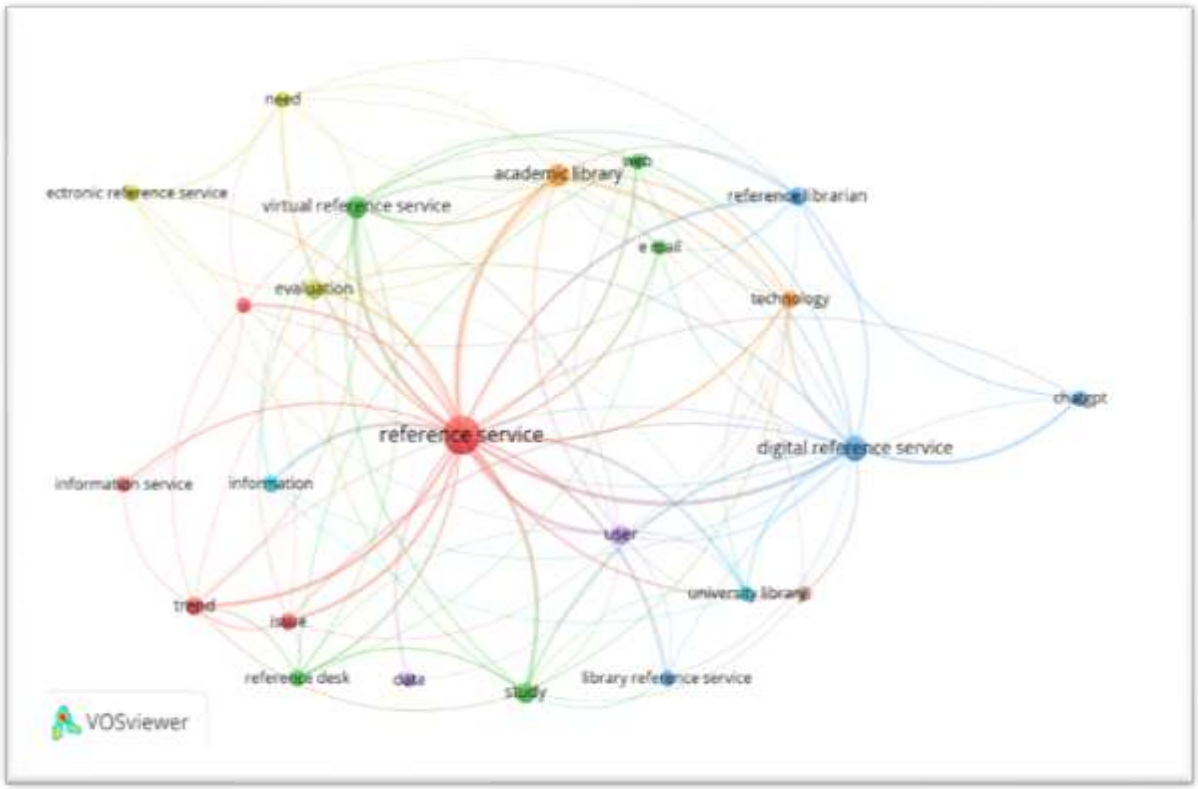


**Figure 02: Clustering of Terms Related to Library Reference Services**

Using VOSviewer, the analysis identified four distinct thematic clusters within the academic literature on library reference services:

- **Cluster 1 (Red):** Focuses on traditional reference services and includes terms such as *reference service*, *information service*, *trend*, *issue*, *opportunity*, *evaluation*, *reference desk*, and *information*. This cluster reflects ongoing discussions about conventional service models and their evolving roles.
- **Cluster 2 (Green):** Centers on virtual and electronic reference services, featuring keywords like *virtual reference service*, *electronic reference service*, *need*, *study*, *data*, and *web*. This cluster highlights the shift toward online service models and the growing emphasis on digital user needs and access.
- **Cluster 3 (Blue):** Emphasizes digital transformation and AI integration, including terms such as *digital reference service*, *reference librarian*, *ChatGPT*, *University library*, *library reference service*, and *user*. It reflects the emerging role of technology and artificial intelligence in academic library services.
- **Cluster 4 (Yellow):** Relates to institutional and communication aspects of reference services, with keywords like *academic library*, *technology*, *e-mail*, and *evaluation*, pointing to the infrastructure and tools used in modern reference delivery.

Network visualization showed that "reference service" was centrally linked to 23 related terms. The most common terms associated with reference service were: study, technology, ChatGPT, web, trend, data, issue, and user.

**Institutional and Library Type Focus**

Analysis of institutional focus revealed that university libraries were the primary subject of research, followed by academic institutions more broadly.

**Table 01: Types of Libraries Studied in Reference Service Research**

| Type of Library | No. of Publications | Percentage |
|---|---|---|
| University Library | 269 | 63% |
| Academic Institution (Colleges, etc.) | 79 | 18% |
| All Types (General Approach) | 42 | 10% |
| Public Library | 21 | 5% |
| Special Library | 11 | 3% |
| National Library | 5 | 1% |

Table 1 provides an overview of the types of libraries that have been the focus of research in the field of reference services. The data reveals that University Libraries dominate the research landscape, accounting for 269 publications, which represent a substantial 63% of the total. This indicates a strong scholarly interest in how reference services are provided and developed in university settings. Academic Institutions such as colleges follow with 79 publications (18%), highlighting their secondary yet significant role in reference service research. A general approach covering all types of libraries contributed to 42 publications (10%), reflecting cross-institutional studies or broad analyses. Public Libraries (21 publications, 5%), Special Libraries (11 publications, 3%), and National Libraries (5 publications, 1%) have comparatively lower representation. These figures suggest that while reference services are studied across various library types, the focus remains predominantly on academic environments, particularly universities, likely due to their dynamic user communities, research needs, and evolving digital services.

**Country Contributions**

The analysis of country-wise publication output highlighted significant geographic diversity, with strong representation from both established and emerging research communities.

**Table 02: Country-wise Publication Output**

| Country | Number of Publications | Percentage |
|---|---|---|
| India | 103 | 24% |
| United States | 81 | 19% |
| Nigeria | 51 | 12% |
| China | 28 | 7% |
| United Kingdom | 17 | 4% |
| South Africa | 13 | 3% |

Table 2 highlights the distribution of research publications on academic library reference services by country. *India* leads with 103 publications, accounting for 24% of the total output, indicating its strong research activity and growing interest in library reference services, possibly driven by the expansion of academic institutions and digital initiatives in higher education. The *United States* follows with 81 publications (19%)**,** reflecting its established tradition of academic research and innovation in library services. *Nigeria* ranks third with 51 publications (12%)**,** showcasing notable contributions from African scholars and institutions, particularly in addressing local information needs and reference service models. *China* (28 publications, 7%) and the *United Kingdom* (17 publications, 4%) also demonstrate active engagement, albeit to a lesser extent, while *South Africa*

contributes *13 publications (3%)***.** These figures suggest that reference service research is globally distributed but more prominent in developing and emerging economies, especially in regions where academic libraries are rapidly evolving to meet new user demands.

**Table 03: Top 10 leading institutions in the field**

| Rank | Institution (Inferred) | Country |
|---|---|---|
| 1 | University of Delhi | India |
| 2 | Jawaharlal Nehru University | India |
| 3 | Banaras Hindu University | India |
| 4 | University of Ibadan | Nigeria |
| 5 | University of Nigeria, Nsukka | Nigeria |
| 6 | University of Illinois at Urbana-Champaign | USA |
| 7 | Harvard University | USA |
| 8 | University of North Carolina at Chapel Hill | USA |
| 9 | Peking University | China |
| 10 | University College London | UK |

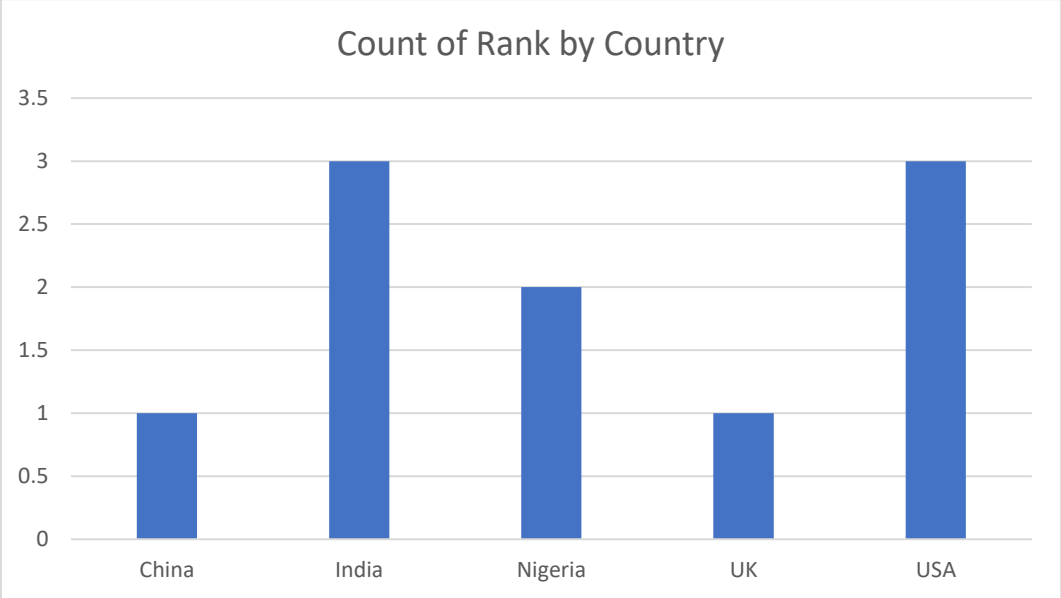


**Figure 03: Count of Rank by Country**

The analysis highlights that the top ten institutions leading academic library reference services research represent a diverse blend of emerging and established global hubs, predominantly from India, Nigeria, the United States, China, and the United Kingdom. India's strong representation through the University of Delhi, Jawaharlal Nehru University, and Banaras Hindu University underscores the country's robust commitment to advancing academic library research and digital innovation, consistent with its position as the leading contributor by publication

volume. Nigerian universities, notably the University of Ibadan and the University of Nigeria, Nsukka, illustrate the growing prominence of African academic institutions in this field, reflecting expanding research capacity and regional leadership. The United States maintains significant influence with three major research universities—University of Illinois at Urbana-Champaign, Harvard University, and University of North Carolina at Chapel Hill—known for their sustained contributions, particularly in digital transformation and user-centered reference services. Meanwhile, China's Peking University and the UK's University College London contribute important perspectives, enhancing the global diversity of research and innovation.

This distribution aligns closely with publication source data, where peer-reviewed journals dominate (78%), supported by conference papers (11%) and postgraduate theses (5%), indicating a vibrant ecosystem of scholarly communication. These institutions are at the forefront of exploring emerging trends such as artificial intelligence integration, virtual reference services, and enhanced user experience, reflecting the evolving demands of academic communities worldwide. The geographic and disciplinary diversity of these leading institutions, combined with varied dissemination channels, illustrates a dynamic and responsive research community adapting to technological advances and shifting user needs. This integrated landscape positions these institutions as key drivers shaping the future trajectory of academic library reference services globally.

**Publication Sources**

**Table 04: Publication Venues**

| Publication Venue | Number of Publications | Percentage |
|---|---|---|
| Journals | 333 | 78% |
| Conference Papers | 45 | 11% |
| Theses/Dissertations | 23 | 5% |
| Books/Book Chapters | 16 | 4% |
| Reports/Other | 10 | 2% |

The data on publication sources indicates that the majority of research on academic library reference services has been disseminated through journals, which account for 333 publications, representing a dominant 78% of the total. This highlights the preference for peer-reviewed journal articles as the primary medium for scholarly communication in this field. Conference papers contribute 45 publications (11%)**,** reflecting the importance of academic gatherings in sharing emerging research and practical developments.

Theses and dissertations make up 5% (23 publications)**,** indicating the involvement of postgraduate students and researchers in contributing to the knowledge base. Books and book chapters represent 4% (16 publications**)**, often providing in-depth explorations or theoretical perspectives. A smaller portion of research (10 publications, 2%**)** is published in reports or other formats, suggesting limited but diverse dissemination channels. Overall, the data underscores the central role of academic journals in shaping and sharing research in reference service studies, while also pointing to the supporting roles of conferences, academic research, and scholarly books.

**Table 05: Keyword Analysis**

| Keyword | Occurrences | Percentage of Total* |
|---|---|---|
| Reference Service | 144 | 33.8% |
| Digital Reference | 62 | 14.6% |

| Keyword | Occurrences | Percentage of Total* |
|---|---|---|
| User Satisfaction | 59 | 13.9% |
| AI Chatbot | 41 | 9.6% |
| Virtual Library | 38 | 8.9% |

***Total occurrences considered = 144 + 62 + 59 + 41 + 38 = 344**

The keyword distribution clearly reflects the field's emphasis on digital transformation and technological integration within academic library reference services. The dominant keyword, "reference service" (33.8%), underscores the core focus of the research. The prominence of "digital reference" (14.6%) and "virtual library" (8.9%) highlights the shift towards online and virtual service models. The significant occurrence of "user satisfaction" (13.9%) indicates sustained interest in evaluating the quality and effectiveness of these services from the user perspective. Additionally, the notable presence of "AI chatbot" (9.6%) points to emerging research on artificial intelligence applications and automation in reference services, reflecting contemporary technological trends.

This keyword pattern aligns with recent academic library trends emphasizing innovation, user-centered service design, and AI-driven solutions, illustrating the dynamic evolution of reference services in response to changing user needs and technological advancements.

**Table 06: Top Ten Authors in Academic Library Reference Services Research**

| Rank | Author | Notable Contribution/Collaboration |
|---|---|---|
| 1 | Wang, T | Significant individual contribution |
| 2 | Price, E | Strong collaboration with Ostermiller, H |
| 3 | Ostermiller, H | Strong collaboration with Price, E |
| 4 | Bohr, A | Collaborative work with Memarzadeh, K |
| 5 | Memarzadeh, K | Collaborative work with Bohr, A |
| 6 | Iqbal, M | Individual contribution |
| 7 | Shoaib, M | Individual contribution |
| 8 | Rubalcaba, L | Individual contribution |
| 9 | Gupta, V | Individual contribution |
| 10 | Thelwall, M | Individual contribution |

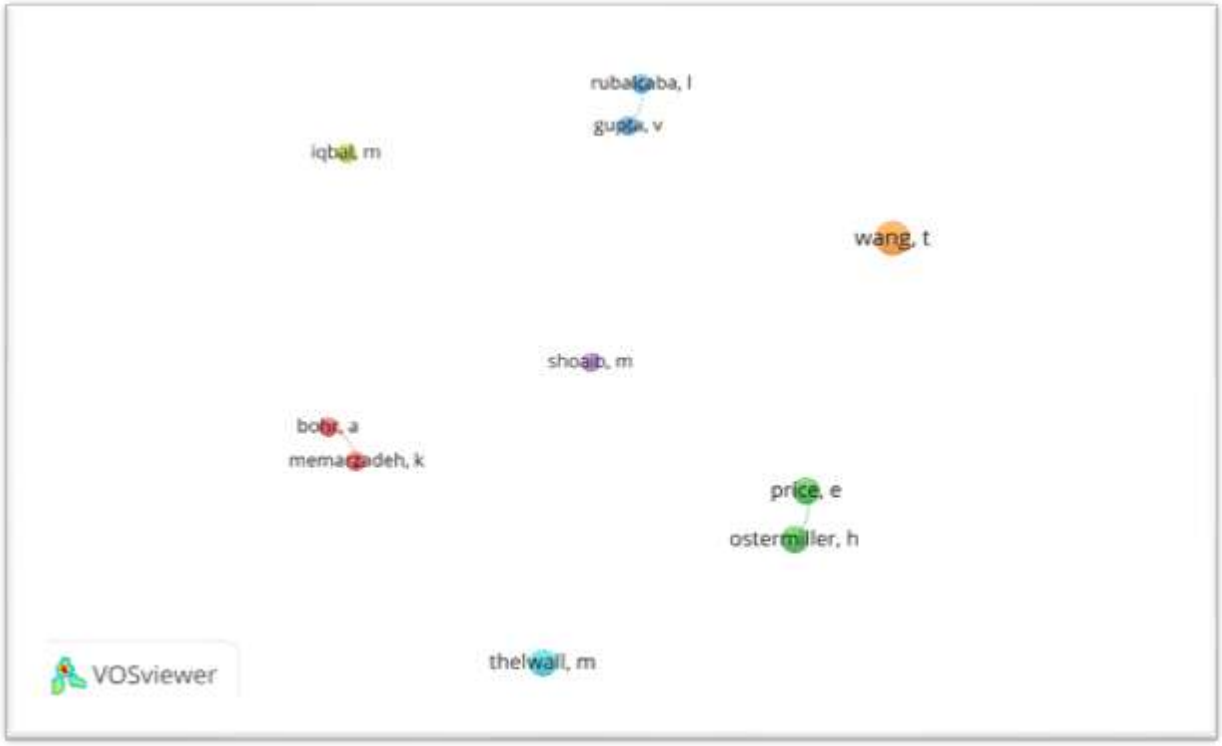


**Figure 04: Top Ten Authors in Academic Library Reference Services Research**

The VOSviewer author collaboration map highlights the key contributors to academic library reference services research based on their co-authorship and network presence. The ten authors identified in the visualization, each represented by a colored node, are pivotal figures in the field from 2020 to 2024. Their placement and connections indicate both individual productivity and collaborative engagement. Wang, T appears as one of the most prominent nodes, suggesting a significant individual contribution, possibly as a lead or highly cited author in the field. Price, E, and Ostermiller, H are closely connected, indicating strong co-authorship and collaborative research output. Similarly, Bohr, A. and Memarzadeh, K show a direct collaborative link, reflecting joint contributions to the literature. Meanwhile, Iqbal, M, Shoaib, M, Rubalcaba, L., Gupta, V., and Thelwall, M are present as distinct nodes, each contributing individually to the research landscape. Their positions suggest independent or less interconnected research, yet their inclusion in the map marks them as notable contributors to advancing academic library reference services research.

**Future Research Directions and Recommendations**

This bibliometric study offers a thorough overview of global research trends and national contributions in academic library reference services from 2020 to 2024, but several research gaps still need further investigation. First, even though digital transformation and AI integration, such as the use of ChatGPT and chatbots, are emerging themes, there is little empirical research on the long-term effects of these technologies on user satisfaction, service quality, and librarian workflows. Future studies should focus on ongoing assessments and user-centered evaluations of AI-enhanced reference services to determine their effectiveness and possible challenges.

Second, research has focused mainly on nations such as India, the United States, and Nigeria, while under-performing areas include Latin America, Eastern Europe, and the Middle East. It would be admirable to extend research articles on bibliometric and empirical studies to include all underrepresented regions, recognizing that each context is culturally, economically, and technologically positioned based which can lend itself to the state of academic library reference services across the globe.

Third, research regarding reference services focused heavily on university libraries whereas, other libraries, including public, special and national libraries, have received little research attention, despite the variability of users and issues associated with reference services that drive them. Comparative analyses of the many different library types could illustrate appropriate practice and relevant strategies in many organizational contexts. Additionally, this study only utilized Google Scholar data. Even as comprehensive as Google Scholar is, indexing scales associated with different publications are inconsistent, and the potential for duplication exists. It would

promote learning in the future to both specify limitations from studies utilizing only one database and to incorporate multiple sources, such as Scopus and Web of Science, in bibliometric research. Additionally, this study used only Google Scholar data. Although this source is inclusive, it has indexing inconsistencies and potential duplication issues. Future bibliometric research would improve by incorporating multiple databases like Scopus and Web of Science. This would enhance data validity and offer a clearer understanding of scholarly output. Finally, emerging research topics such as the ethical implications of AI in reference services, digital equity and access issues, and the changing roles of librarians in hybrid service models are still underexplored. Addressing these gaps will be essential for informing policy, training, and technology adoption strategies. This will help ensure that academic library reference services continue to meet the changing needs of users in a fast-evolving digital landscape.

**Conclusion**

This bibliometric analysis provides a comprehensive overview of global research trends and national contributions in academic library reference services from 2020 to 2024. The findings demonstrate a significant and steady increase in scholarly output, particularly in response to digital transformation and post-pandemic service adaptation. The dominance of university libraries as research subjects and journals as the primary publication venues underscores the academic focus and credibility of the field. Geographically, *India, the United States, and Nigeria* emerge as leading contributors, reflecting both established and emerging centers of library science research. Thematic clustering reveals a clear shift from traditional reference services to virtual models, with growing attention to artificial intelligence applications, including tools like ChatGPT. Frequently used keywords such as "user satisfaction," "digital reference," and "AI chatbot" further emphasize the sector's evolving priorities in user experience and technology integration. The study highlights critical research hotspots, including digital service delivery, institutional technology adoption, and AI-enhanced reference models, offering valuable insights for practitioners, scholars, and policymakers. As academic libraries continue to transform, this analysis provides a foundational understanding of current developments and serves as a roadmap for future inquiry into reference services in an increasingly digital and AI-driven information environment.

**References**

Abdul Rahman, S., Ahmad, N., & Kamaruddin, A. (2018). The effectiveness of reference services and users' satisfaction in the academic library. *International Journal of Academic Research in Progressive Education and Development*, 7(3), 413-425. https://doi.org/10.6007/IJARPED/v7-i3/4370 9

Ahmad, S., Irfan, M., Nazir, S., Wahab, A., Ullah, A., Mahdi, M. N., & Khan, M. A. (2022). An integrated methodology for bibliometric analysis: A case study of Internet of Medical Things research. *PLOS ONE*. https://doi.org/10.1371/journal.pone.0279398 14

Chow, A. S., & Croxton, R. A. (2014). A usability evaluation of academic virtual reference services. *College & Research Libraries, 75*(3), 309–361. https://doi.org/10.5860/crl.75.3.309

College Values Online. (2025). Top virtual reference tools for online college libraries in 2025. https://www.collegevaluesonline.com/library-resources/top-virtual-reference-tools-online-libraries/ 12

Digital Library Perspectives. (2024). Analysis of content, services, and resources available and accessible through academic libraries' websites. *Emerald Insight*. https://www.emerald.com/insight/content/doi/10.1108/dlp-02-2024-0027/full/html 16

Gentles, S. J., Charles, C., Ploeg, J., & McKibbon, K. A. (2016). Reviewing the research methods literature: Principles and strategies illustrated by a systematic overview of sampling in qualitative research. *Systematic Reviews, 5*(1), 172. https://doi.org/10.1186/s13643-016-0343-0

Gibson, C., & Mandernach, M. (2018). Reference service at an inflection point: Transformations in academic libraries. *The Ohio State University Libraries*. https://kb.osu.edu/server/api/core/bitstreams/76b416e5-bbd6-5d1e-92bf-733f92427ae5/content 11

Green, S. S. (2006). Components and functions of the reference service. In *Reference Services* (Unit4)eGyanKosh. https://egyankosh.ac.in/bitstream/123456789/59870/1/Reference%20Services.pdf

Harzing, A. W. (2016). *Publish or Perish*. https://harzing.com/resources/publish-or-perish 1

Harzing, A. W. (2016). Bibliometric research using Google Scholar and Publish or Perish. https://harzing.com/resources/publish-or-perish/tutorial/bibliometric-research 2

Kasowitz, A. S. (2001). Trends and issues in digital reference services. *ERIC Digest*. U.S. Department of Education. https://files.eric.ed.gov/fulltext/ED457869.pdf

Liu, X., Zhang, J., & Chen, Y. (2024). A comprehensive bibliometrics analysis and service model for academic libraries. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4769974 15

Marzi, G., Balzano, M., Caputo, A., & Pellegrini, M. M. (2024). Guidelines for bibliometric-systematic literature reviews: 10 steps to combine analysis, synthesis, and theory development. *International Journal of Management Reviews*. Advance online publication. https://doi.org/10.1111/ijmr.12381

Mehta, D., & Wang, X. (2020). COVID-19 and digital library services – a case study of a university library. *Digital Library Perspectives*, 36(4), 351-363. https://doi.org/10.1108/dlp-05-2020-0030 4

Nawaz, N., & Saldeen, M. A. (2020). Artificial intelligence chatbots for library reference services. *Journal of Management Information and Decision Sciences, 23*, 442-449.

Oyedokun, T. T. (2024). Navigating the dynamics of present-day academic libraries: An in-depth analysis of strategies, challenges, and emerging trends. *Journal of Librarianship and Information Science*. https://doi.org/10.1177/03400352241291907 13

Palestine Polytechnic University. (2010). Publish or Perish software program retrieves and analyzes academic citations. https://library.ppu.edu/en/news/publish-or-perish-software-program-retrieves-and-analyzes-academic-citations-it-uses-google18

Quigley, B. D., Caswell, T. R., Burroughs, J. M., Dority, G. K., Gonzalez, A. M., Hinchliffe, L. J., Malenfant, K. J., & Nuñez, A. V. (2024). 2024 Top trends in academic libraries: A review of the trends and issues. *College & Research Libraries News*, 85(6), 231-240. https://doi.org/10.5860/crln.85.6.231 6

Radford, A., Kim, J. W., Hallacy, C., Ramesh, A., Goh, G., Agarwal, S., Sastry, G., Askell, A., Mishkin, P., Clark, J., & Krueger, G. (2021). Learning transferable visual models from natural language supervision. *arXiv*. https://doi.org/10.48550/arXiv.2103.00020

Rodriguez, S., & Mune, C. (2022). Uncoding library chatbots: Deploying a new virtual reference tool at the San Jose State University Library. *Reference Services Review*, 50(3), 392-405. https://doi.org/10.1108/RSR-05-2022-0020 8

Rodriguez, S., & Mune, C. (2022). Uncoding library chatbots: Deploying a new virtual reference tool at the San Jose State University library. *Reference Services Review, 50*(3–4), 392–405. https://doi.org/10.1108/RSR-05-2022-0020

Roy, A., & Bhattacharya, U. (2015). The future of reference service: Treading into and going beyond digital reference service. *SRELS Journal of Information Management*, *52*(1), 27-39. https://doi.org/[insert DOI if available]

Singh, N. K. (2012). Digital reference service in university libraries: A case study of northern India. *International Journal of Library and Information Studies*, 2(4), 1-15. 10

Tunon, J. (2024). Redefining reference services in the 21st century. *School of Information Student Research Journal*, 14(2), Article 3. https://scholarworks.sjsu.edu/ischoolsrj/vol14/iss2/3 7

University of Illinois at Chicago. (2022). VOSViewer - Bibliometric analysis and visualization. *Research Guides*. https://researchguides.uic.edu/bibliometrics/vosviewer 3

Washington State University Libraries. (2014). Google Scholar and "Publish or Perish" – Academic profiles: Tools and resources. *LibGuides*. https://libguides.libraries.wsu.edu/c.php?g=294448&p=1960387 17

Zareef, M., & Ahmad, P. (2021). The impact of COVID-19 on university library services: A systematic literature review. *Library Philosophy and Practice*, Article 6062. https://digitalcommons.unl.edu/libphilprac/6062 5