# Research Trends in Remote Library Services: A Bibliometric Analysis Using the Web of Science Database (1990–2022)

**Kutty Kumar**
Assistant professor, Library and Information Science, University Library,
Sri Venkateswara Veterinary University
Tirupati 517502
Email: https://orcid.org/0000-0002-3510-5924

**M. Panduranga Swamy**
Assistant Librarian
Central Library
Sri Sathya Sai Institute of Higher Learning
Prasanthi Nilayam
Puttaparthi – 515134
Email: https://orcid.org/0000-0002-0737-588X

***Abstract***

The Remote Library Services (RLS) are now integrated into the current library infrastructure and open the doors around the library environment. The present study addresses in-depth bibliometric research of Remote Library Services from 1990 to 2022 conducted across the globe, set against the Web of Science Core Collection. From database analysis, 637 papers were identified, published by 3,335 authors across 348 journals. Bibliometric methods were used to study the number of publications, the number of authors, the number of prolific authors, the main institutions, top journals, and the evolution of the themes in the literature. Citation analysis was employed using HistCite; network visualisation of co-authorship, keywordco-occurrence, and co-citation patterns was shown using VOSviewer. The findings indicate that RLS research continued growing slowly up to the pandemic butrose sharply in the COVID-19 era, indicating the swift uptake of remote and digital library services. The United States ranked as the largest and most productive country, and the National Institute of Health was the most active institution. A keyword analysis showed how important digital access, health information services, and technology infrastructure were theme-wise. This project adds to the literature by elucidating the structure of RLS's research and how they interact with academic research and provides implications for the library system, policymakers, and researchers regarding developing long-distance remote library services.

***Keywords*****:** Remote Library Services; Digital Libraries; Bibliometric Analysis; COVID-19 Impact; Information Access

## Introduction

The swift progress of digital technology has effectively changed the face of the way libraries provide information services. Remote Library Services (RLS) have become vital in delivering online facilities, including electronic journals, databases, virtual reference, and academic support to ensure users' unceasing access to resources, regardless of their physical location (Owiti et al., 2025; Kuyela, 2025). These are becoming more relevant with the proliferation of distance education, online learning spaces, and digitally interfaced learning environments. The use of RLS accelerated dramatically by the outset of the COVID-19 pandemic, when libraries were closed temporarily worldwide. Libraries were forced to depend on computerized mechanisms and the service models of remote services to support academic, research, and professional works (Wani & Ganie, 2024; Hanaysha & Eli, 2025). Thus, RLS transformed from an add-on service to be a part of library operation. The role of remote services has been highlighted, yet this could indicate long-term structural changes in the delivery of library services, even in the post-pandemic period (Park & Lim, 2025). However, despite this changing scenario, a number of academic publications have investigated the different dimensions of remote and digital library services, such as technology infrastructure, user behaviour, e-learning implementation, and the effect of the service itself. Bibliometric methods have been performed in numerous examples concerning trends of digital libraries and e-learning technology. However, the majority of bibliometric studies focused broadly on digital libraries, where they only explored particular fields (e-learning, health information services, etc.). There exist only a few comprehensive, longitudinal bibliometric analyses specifically addressing Remote Library Services as a separate field of research. This research provides a systematic bibliometric analysis covering global remote library services studies published between 1990 and 2022, which addresses the gap inthe literature available on remote library services research across borders. Through the study of trends in publications, top authors, major institutions, significant journals, and the development of themes, its objectives are to map the intellectual development (the structure and progress direction) of RLS research. This study aims to further demonstrate how remote library services have developed and to provide some lessons for researchers, policy makers, and strategic thinkers interested in library and information science.

## Review of Literature

### COVID-19 Impact on RLS

The Covid-19 pandemic has resulted in unprecedented disruptions to library services globally, significantly transforming how traditional means of access to such services are carried out (Siriwardana & Wickramasooriya, 2025). When library units were shut down and service hours were cut back, there was an exponential fall in physical service visits and circulation, with UK public libraries reporting a 70–90% reduction in people using the library for physical lending and around 120 million fewer books issued during closures (McMenemy et al., 2023). These services were suspended or severely reduced, and core in-person services such as reference desks, study

spaces, and community initiatives were suspended, whilst library staff were reported to be more likely to work remotely or to have reduced hours or temporary unemployment, but they were also subjected to higher stress and workplace anxiety (Ashiq et al., 2022), (Robinson et al., 2023). As a response, libraries moved quickly to digital and remote services across the board, especially through e-books, online journals and information retrieval online, and the increasing use of virtual reference resources or online information literacy training (Mehta & Wang, 2020). Communication and outreach became increasingly dependent on library websites, social media, and apps like WhatsApp and Zoom (Kang et al., 2022), (Dube & Jacobs, 2023). Libraries undertook new public health and social roles, such as disseminating reliable COVID-19 information and combating misinformation, but with new responsibilities came a host of challenges, including insufficient IT infrastructures, lack of digital literacy of personnel, and continuing connectivity challenges (Amraei et al., 2023 ; Qian, 2025). While many libraries moved towards curbside pickup, home delivery, and mobile services, resource constraints meant that limited solutions were implemented. Significantly, the pandemic exacerbated existing inequalities, since there is a significant digital divide, this results in worse performance for disadvantaged users, rural libraries, international students, and marginalised groups, who have commonly mentioned reduced literacy and usage of digital library resources (Shi et al., 2021).

**e-Learning by Students**

Distance students and online students experience good remote learning when online libraries are easily accessible, and many distance options and preferences are expected to persist post‐ pandemic (Zhou, 2022; Martzoukou, 2021; Tsekea & Chigwada, 2021). Postgraduate distance students' satisfaction with e‐ library services can be a strong predictor of continued use (Imoro et al., 2025). In Ghana, strong digital access, information literacy instruction, and remote support are linked to higher user satisfaction and success in distance education (Banleman et al., 2023).

**Bibliometric Studies on RLS**

In a worldwide bibliometric analysis of e‐ libraries, digital, electronic, and internet-based libraries (1971–2020) examined 4,266 Web of Science papers about digital/online library services. It found that digital libraries were top themes, conference papers were prominent vehicles, the USA and computer science departments were major contributors, and 2006–2010 was the highest growth period (Ali, Shoaib & Syed, 2023). A comprehensive bibliometric study on information literacy and research support services in academic libraries (2001–2020) contained 4,079 WoS documents, revealing "information literacy and library" as the largest topic cluster according to the bibliometric analysis that found the greatest development over time with strong increases and high contributions from US institutions (University of Illinois and journals such as Journal of Academic Librarianship) (Ali, Shoaib, & Abdullah, 2023). These services play a pivotal role in remote student support for teaching and research. A retrospective science-mapping study of libraries and COVID-19 examined 225 Scopus records and found four major clusters: the role of libraries/librarians, use of social media and communication technologies to provide services, online library services, and misinformation issues (Nadi-Ravandi & Batooli,

2023). This aligns with the fast development of remote digital services during the pandemic. A library digital transformation knowledge map (LDT, 1990–2024, 1,736 records) exhibited exponential growth since 2005. Hotspots are IT infrastructure, AI‐ driven services, and facilitation enablers (funding, facilities, and information‐ literacy education) (Yan et al., 2025). These themes cast remote services on a broader scale of digital transformation. Bibliometric analysis of emerging technologies in higher education libraries (1994–2024) used the combination of Scopus and WoS data along with Biblioshiny to map smart libraries and smart services and technology‐ enabled teaching support using performance analysis and network mapping (Mitha & Omarsaib, 2025).

**Research Gap**

Literature on Remote Library Services (RLS) has received great interest, particularly for how the COVID-19 pandemic has affected library operations and the transfer to digital services. Service disruptions, digital transformation, staff challenges, and user satisfaction have been extensively studied both in terms of empirical studies and review studies in this time period. Then the bibliometric studies are conducted about digital libraries, information literacy, e-learning technologies, and library response to COVID-19. Yet, most of these studies focus on larger themes or on specific contexts without addressing RLS as an independent research area. Existing bibliometric analyses often have limitations, including limited focus on specific services or temporal scales, incomplete mapping of authorship patterns, institutional roles, collaboration networks, or thematic evolution specific to RLS, etc.This study addresses a significant research gap by performing a comprehensive, longitudinal bibliometric analysis of global RLS research from 1990 to 2022, utilizing the Web of Science Core Collection. It integrates citation analysis with network visuals of co-authorship, keyword co-occurrence, institutional productivity, and country collaboration. The research adds to field knowledge in three main ways: documenting the historical development of RLS research, revealing its intellectual structure and thematic clusters, and addressing geographical, linguistic, and institutional disparities.As such, the present work aims to consolidate disparate literature and develop a strategic agenda for future studies, policymaking, and future sustainable development of remote library services in a post-pandemic digital era.

**Objectives**

1. To examine worldwide research output of remote library services between 1990 and 2022.
2. To point out prolific authors, active institutions, and leading journals.
3. To analyze the co-occurrence of author keywords and co-authorship networks.
4. To visualize trends and collaborations through bibliometric mapping tools.
5. To provide insights for improving the implementation and management of remote library services.

## Methodology

This study uses a bibliometric research design to explore the scholarly literature on Remote Library Services (RLS) by investigating publication trends, research productivity, networks of collaboration, and trends in the field through statistical approaches. The data is taken from the Web of Science Core Collection, which is a known bibliometric research database, and a search was performed on July 7, 2022, covering the literature published between January 1990 and January 2022, including the keywords: (i) Remote Library Services, (ii) Virtual Library Services, (iii) Distance Library Services, (iv) Digital Library Services, (v) Online library services, and (vi) Library services during COVID-19" to achieve a full identification of related literature through titles, abstracts, and keywords. A method of fine-tuning results used the criterion of choosing only peer-reviewed journal articles, conference papers, and reviews, not the non-relevant document types such as editorials and book reviews. Duplicate records were removed, and only documents that related to library services or information science were retained through manual screening, and a total of 637 documents were selected for analysis. The bibliometric analysis included citation tracking through HistCite for Total Local Citation Score (TLCS) & Total Global Citation Score (TGCS) for key authors, institutions, and publications in the field. A network visualization and mapped network space with visual and mapping were also conducted in VOSviewer for the co-authorship dynamics analysis, co-occurrence of keywords, and thematic clustering. Main variables included annual volume growth of publications, number of authors/institutions who published regularly or prolific authors per year, leading journals/countries, co-occurrence of keywords in author keywords, and joint research designs. In using these bibliometric methods, the study achieved a systematic overview of the research structure and evolution of Remote Library Services during the chosen time frame.

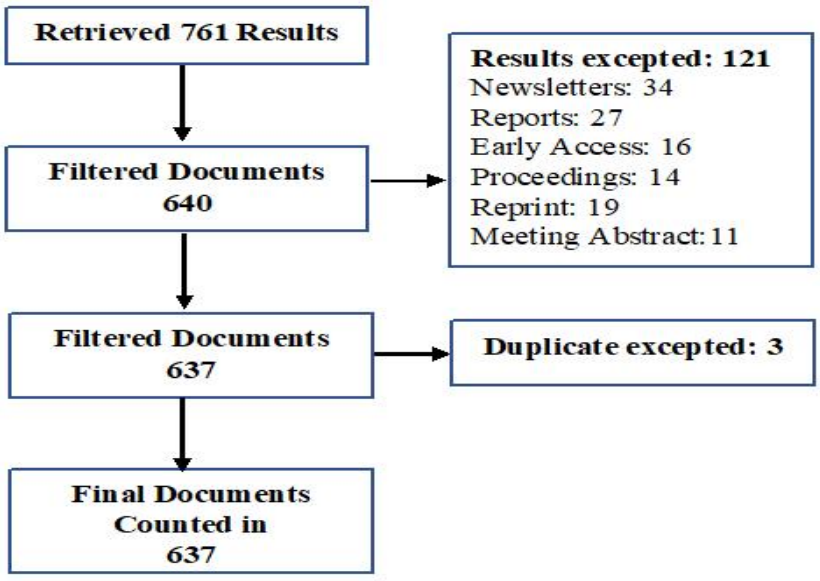


**Fig. 1: PRISMA based Document Selection Process**

A PRISMA protocol of document selection carried out in this bibliometric study is shown in Figure 1. We then subjected an initial dataset retrieved from the Web of Science Core Collection to incremental screening procedures, in which document type filtering, duplicate elimination, and relevance assessment were used. This resulted in a final sample of 637 documents, ensuring that only peer-reviewed and thematically relevant studies were included. This structured filtering approach improves the reliability of the data while ensuring methodological rigor and adding to the validity of the results of the following bibliometric analyses.

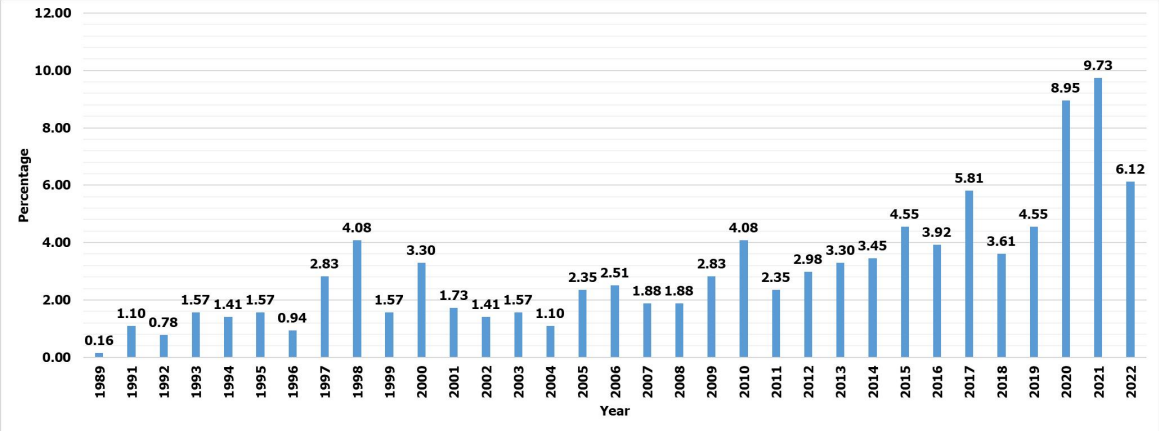


**Fig. 2: Annual Publication Growth (1990–2022)**

Figure 2 shows an upward trend of the RLS publications from 1990 till 2022 and the slow increase in recognition of the influence of remote services in library science. Early outputs occurred sparsely until the latter half of the 1990s, but gradually increased in 2000 to 2009, reaching annual returns between 1.10% and 4.08%. The rise was remarkable from 2010-2019 till 2016, but peaked at 5.81%, and then peaked again in 2020 and 2021 due to COVID-19, peaking at 9.73% in 2020 and 8.95% in 2021. Although output decreased to 6.12% in 2022, publication rates were still quite robust compared to pre-pandemic years and evidence that there was still an ongoing academic participation in RLS.

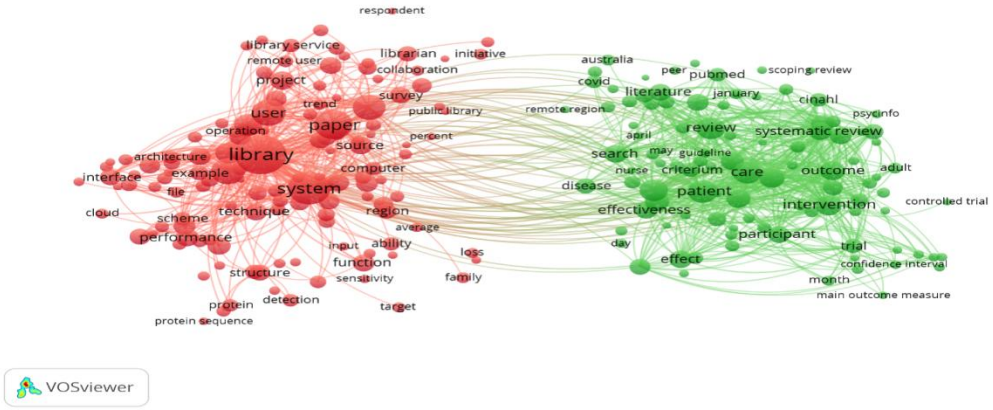


**Fig. 3:Keyword Co-Occurrence Network**

A map of keyword co-occurrence is shown in Figure 3, identifying two main thematic clusters in RLS research. The first cluster, library systems, technological infrastructure, and user interface design, represents the operational and technical aspects of distance services. The second cluster considers health information services and systematic reviews, emphasizing the significant role of RLS in evidence-based healthcare. Bridging words ("collaboration" and "survey") suggest the interdisciplinary integration. The clustering pattern verifies that RLS research has become more technology-oriented and application-related; it enjoys strong interdisciplinary relevance.

**Table 1**
**Prolific Authors**

| Rank | Author | Documents | % | TLCS | TGCS |
|---|---|---|---|---|---|
| 1 | Lee CC | 11 | 1.7 | 9 | 252 |
| 2 | Li CT | 6 | 0.9 | 8 | 172 |
| 3 | Locatis C | 5 | 0.8 | 1 | 128 |
| 4 | Weng CY | 5 | 0.8 | 8 | 156 |
| 5 | Barrett B | 4 | 0.6 | 0 | 38 |
| 6 | Crawford MJ | 4 | 0.6 | 0 | 41 |
| 7 | Foster I | 4 | 0.6 | 4 | 147 |
| 8 | Ackerman M | 3 | 0.5 | 1 | 116 |
| 9 | Antani S | 3 | 0.5 | 0 | 70 |
| 10 | Banerjee S | 3 | 0.5 | 0 | 50 |

Table 1 presents the main authors for RLS publication, exhibiting a high concentration of authorships. The ten authors contribute about 7.3% to the overall content. Lee CC is now the first author, including 11 documents (1.7%), and the largest TGCS (252), in world terms, shows that it has significant impact. For example, Li CT and Weng CY display a balanced

productivity/citation impact, while others demonstrate lower TLCS despite moderate publications, emphasizing that their figures do not reflect RLS core influence but represent an outsize interdisciplinary citation. This distribution aligns with Lotka's Law, in which scholarly output is dominated by a small number of authors.

**Table 2**
**Language Distribution of Publications**

| S. No. | Language | Documents | % | TLCS | TGCS |
|---|---|---|---|---|---|
| 1 | English | 628 | 98.7 | 74 | 13499 |
| 2 | Spanish | 2 | 0.3 | 0 | 1 |
| 3 | Chinese | 1 | 0.2 | 0 | 7 |
| 4 | French | 1 | 0.2 | 0 | 60 |
| 5 | German | 1 | 0.2 | 0 | 0 |
| 6 | Japanese | 1 | 0.2 | 0 | 1 |
| 7 | Portuguese | 1 | 0.2 | 0 | 2 |
| 8 | Russian | 1 | 0.2 | 0 | 0 |

The dominance of English in RLS research is visible in Table 2, with 98.7% (628 documents) of all published works and the absolute share of citations that exceeded 99%. On the other hand, non-English publications represent less than 1.5% of total and local citations have little effect. At first glance, French and Chinese publications show moderate global citations, but their minor presence in the citation list underscores structural language challenges in scholarly discourse. We aim to provide evidence for the need for multilingual dissemination and to foster regional awareness and inclusivity across RLS studies and in RLS research.

**Table 3**
**Active Institutions**

| Rank | Institutions | Documents | % | TLCS | TGCS |
|---|---|---|---|---|---|
| 1 | National Institute of Health | 14 | 2.2 | 1 | 1027 |
| 2 | Fu Jen Catholic University | 12 | 1.9 | 10 | 257 |
| 3 | University of Oxford | 12 | 1.9 | 0 | 549 |
| 4 | Asia University | 11 | 1.7 | 9 | 252 |
| 5 | Columbia University | 11 | 1.7 | 0 | 611 |
| 6 | Stanford University | 11 | 1.7 | 1 | 226 |
| 7 | University of Washington | 11 | 1.7 | 1 | 561 |
| 8 | University of Maryland | 9 | 1.4 | 2 | 1125 |
| 9 | Harvard University | 8 | 1.3 | 1 | 345 |
| 10 | University of California San Francisco | 8 | 1.3 | 0 | 212 |

The best institutional concentration of RLS research is shown in Table 3, which shows 15.3% of publications from the top 10 institutions. The National Institute of Health is most closely associated, recording 2.2 % documents, with a strikingly high TGCS of 1027; their influence in global research is clear. Despite a low TLCS, universities like Oxford, Columbia, and Stanford excel in the worldwide visibility of citations. Institutions that have higher TLCS, like Fu Jen Catholic University, also have a higher relationship with the central research community of RLS.

**Table 4**
**Institutional Subdivisions**

| Rank | Institutions with Subdivisions | Documents | % | TLCS | TGCS |
|---|---|---|---|---|---|
| 1 | Asia University, Department of Photon & Communication Engineering | 10 | 1.6 | 9 | 248 |
| 2 | Fu Jen Catholic University, Department of Library and Information Science | 10 | 1.6 | 10 | 242 |
| 3 | Harvard University, School of Medicine | 6 | 0.9 | 1 | 340 |
| 4 | Tainan University of Technology, Department of Information Management | 6 | 0.9 | 8 | 172 |
| 5 | Central and North West London NHS Foundation Trust | 4 | 0.6 | 0 | 41 |
| 6 | National Institute of Health, National Library of Medicine | 4 | 0.6 | 0 | 96 |
| 7 | University of Iowa, Department of Internal Medicine | 4 | 0.6 | 3 | 245 |
| 8 | University of Oxford, Nuffield Department of Primary Care Health Sciences | 4 | 0.6 | 0 | 133 |
| 9 | University of York, Department of Health Science | 4 | 0.6 | 0 | 30 |
| 10 | Kings College London, Institute of Psychiatry, Psychology & Neuroscience | 3 | 0.5 | 0 | 24 |

Table 4 indicates the role of special academic subdivisions has contributed to RLS research development. Figures of the two academic departments,namely, the Department of Photon & Communication Engineering at Asia University and the Department of Library and Information Science at Fu Jen Catholic University, respectively, comprise 1.6% of the total publications. Harvard Medical School The highest TGCS is at this institution (340), and this means that the institution's research is very relevant globally. These RLS subdivisions with higher TLCS suggest a central position in the RLS research network, which indicates the critical role of domain-specific expertise in influencing the content of scholarly output.

**Table 5**
**Country-wise Publication Output**

| Rank | Country | Documents | % | TLCS | TGCS |
|---|---|---|---|---|---|
| 1 | United States of America | 302 | 47.5 | 53 | 8888 |
| 2 | United Kingdom | 87 | 13.7 | 4 | 2508 |
| 3 | Australia | 53 | 8.3 | 5 | 1898 |
| 4 | China | 42 | 6.6 | 6 | 793 |
| 5 | Canada | 36 | 5.7 | 5 | 960 |
| 6 | Germany | 33 | 5.2 | 4 | 890 |
| 7 | Italy | 25 | 3.9 | 6 | 822 |
| 8 | Taiwan | 21 | 3.3 | 10 | 305 |
| 9 | Spain | 19 | 3 | 6 | 656 |

Table 5 shows this geographical concentration with the greatest contribution of the United States with 47.5% of all publications and the greatest impact (TGCS 8888) on citations. For the other side, the United Kingdom, Australia, and Canada account for some 28% of those, and all help reinforce the supremacy of the English-speaking world. For instance, China (6.6%) and Taiwan have relatively substantial TLCS values, signifying increasing regional research activity. The uneven geography around the globe highlights disparities in the existing research infrastructure and the importance of wider global cooperation.

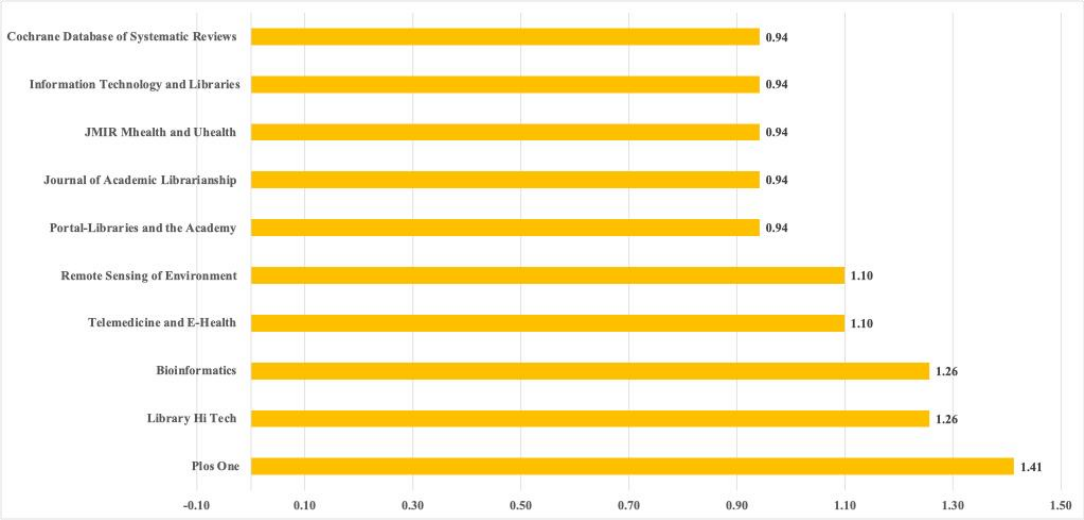


**Fig. 4: Top Ten Journals**

The selected journals that published the most articles are listed in Figure 4. PLOS One has published the most (9 articles),followed by Bioinformatics and Library Hi Tech with 8 publications each, accounting for 1.26%. Other publications were from Remote Sensing of Environment and Telemedicine and E-Health, contributing 6 and 7 articles. Journals such as

Cochrane Database of Systematic Reviews, JMIR mHealth and uHealth, and library science journals are all around the mark, at around 0.94%, contributing 6 articles each.

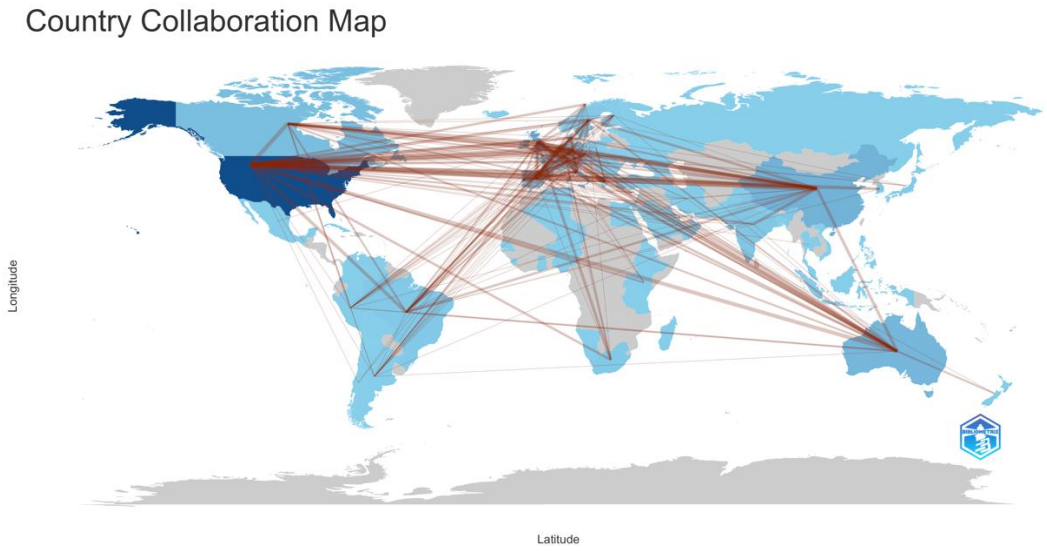


**Fig. 5: Country Collaboration Network**

Figure 5 depicts a global country collaboration map of joint national research efforts. There are especially strong linkages of collaboration across North America, Europe, and certain parts of Asia, where most scholarly activity is situated. It is the US and certain European countries that are more central and closely interconnected, indicating higher research output and other cross-border cooperation. Other new collaborations also unfold across Asia-Pacific regions, notably Australia and East Asia, highlighting the growing international scope of involvement. In contrast, parts of Africa and South America show relatively little interconnection, meaning that the intensity of partnerships is low. As a whole, the map indicates a more integrated global research environment, wherein cooperation is primarily the outcome of economically and scientifically advanced regions of the world.

**Discussion**

The results of the current study give a comprehensive overview of the evolution of research on RLS, which shows organizational trends and central themes from 1990 to 2022. This gradual rise in publications, with a breathtaking increase during the COVID-19 pandemic, highlights that remote library services have transitioned from being an add-on service model to an integral part of the library services in use today. This aligns with prior systematic and empirical studies that underlined the pandemic as the precursor to the rapid digitization of libraries across the globe. (Mehta & Wang, 2020; Ashiq et al., 2022; Wani & Ganie, 2024). Indeed, continuing levels of publication revealed in the post-pandemic period suggest that remote services exist beyond temporary crisis responses and, more fundamentally, are considered permanent strategic aspects

of library service delivery (Park & Lim, 2025). The dominance of the United States in both publication output and citation impact resonates with previously done bibliometric work about digital libraries/information services, which has found a steady trajectory of advanced technological infrastructure, robust research funding, and early adoption of digital technologies affecting global leadership (Ali, Shoaib & Syed, 2023; Yan et al., 2025). Likewise, the recognition of health-oriented organizations like the National Institutes of Health illustrates that the boundaries of the partnership have blurred; now, evidence-based medicine, telehealth, and systematic reviews support RLS as well. Such important evidence backs earlier observations about medical and health libraries pioneering remote service innovation caused by the urgent need for timely and reliable information (Amraei et al., 2023). Keyword co-occurrence analysis shows that the RLS research is becoming technology and cross-disciplinary topics, which are based in digital platforms, collaboration, user access, and health information services. These thematic clusters reflect earlier science-mapping studies that revealed online services, social media utilization, and misinformation handling as a prominent set of research areas during and post pandemic (Nadi-Ravandi & Batooli, 2023). The usage of bridging keywords, "collaboration" and "survey," also indicates a move towards user-centered service design and interdisciplinary research techniques, consistent with the results from research on digital transformation in libraries and on smart library services (Mitha & Omarsaib, 2025; Yan et al., 2025). Although RLS research is expanding and diversifying, the large proportion of English-language papers indicates continuing structural injustices in academic communication. Similar linguistic biases have been described in previous bibliometric research, which suggests that research from non-English-speaking regions remains underrepresented despite local significance and innovation (Ali, Shoaib, & Abdullah, 2023). This imbalance mirrors the service-level digital divide reported during the pandemic, in which marginalized groups such as poor communities, library users from rural areas, and more disadvantaged users were confronted with larger barriers in achieving remote access (Shi et al., 2021; Dube & Jacobs, 2023). The alignment of these results highlights the importance of an inclusive method of dissemination of research and increased international cooperation, especially of lesser-represented regions. In general, our findings expand on what is known in the literature and show RLS to be a mature and unique research area defined by ongoing growth, cross-disciplinary coordination, and improving societal importance. Although prior research has concentrated on certain situational contexts—such as COVID-19 response initiatives, e-learning support, or new technologies—this longitudinal bibliometric analysis demonstrates a comprehensive approach to RLS research evolution.The findings that we derive may aid in guiding evidence-informed policy-making by librarians, policymakers, and academic institutions to improve remote services approaches. As library facilities become more accustomed to meeting the needs of more and more users with the help of technology, RLS education and practice are becoming necessary to advance equitable, resilient, and user-centered access to information in the digital era.

**Limitations and Future Directions**

Apart from the academic research findings, the study has limitations that need to be mentioned.

1 The analysis is based on literature indexed in the Web of Science Core Collection. While this database offers a comprehensive and widely used literature database, it might overlook relevant literature published in regional journals or indexed in other databases such as Scopus or Google Scholar.
2 The predominance of English language outlets may also be in part to blame for less research conducted in non-English regions.
3 Bibliometric analysis may only consider quantitative data such as citation structures and the frequency of keywords, which could neglect the qualitative depth or contextual richness of single studies. These weaknesses may be addressed in the next work by covering multiple databases in order to facilitate coverage, and inclusion of non-English-language publications would increase inclusiveness.

Finally, bibliometric analysis with qualitative content analysis using mixed-methods approaches may also be beneficial to explore the conceptual emergence and practical implications of Remote Library Services. More research is needed to explore emerging trends post-2022, such as how libraries adapt their remote services in comparison to the new technologies and consumer expectations.

**Conclusion**

A bibliometric study of Remote Library Services (RLS) literature from 1990 to 2022 has shown an important trend with several insights indicating that digital access to library resources is becoming more important. Based on analysis of 637 documents in the Web of Science Core Collection, the United States is the main author, using about half the corpus of literature. The National Institute of Health instead emerged as the most prolific institution, thereby showing that RLS research is most applicable worldwide. The research emphasizes that library technology has altered the experience of library services, specifically since this COVID-19 pandemic, when many libraries have sought support from remote services. It underlines that digital infrastructure needs investment and increasing access to digital resources for the diverse user segments. An approach that integrates library science with new technology and cross-functional use cases was evidenced by visualization mapping tools that exhibited the emphasis on thematic analysis in RLS research. We discovered major contributions from prolific authors and leading journals, which allowed us to understand the co-authorial landscape within RLS research. English-speaking publications dominate, so fewer non-English publications have won world-famous coverage but have needed to be included. As technology and knowledge are advancing, RLS acts as a crucial platform for education, research, and lifelong learning. This bibliometric analysis indicates areas in question would seem promising to open paths for research and create a more meaningful branch of a remote library's existence in the future and result in increasingly relevant remote library services. It will be essential to continue to invest in RLS upgrades over time to guarantee that our service adapts to the evolving needs of users globally.

**References**

Ali, N., Shoaib, M., & Abdullah, F. (2023). Information literacy and research support services in academic libraries: A bibliometric analysis from 2001 to 2020. *Journal of Information Science*, *49*(6), 1593–1606. https://doi.org/10.1177/01655515211068169

Ali, N., Shoaib, M., & Syed, K. (2023). Steady ship: Digital, online, and e-libraries (1971–2020). *Journal of Information Science*, *49*(5), 1187–1201. https://doi.org/10.1177/01655515211040678

Amraei, M., Geraei, E., Hashemian, M., Ghassabi, F., & Zare-Farashbandi, F. (2023). COVID-19 and Innovation in Medical Library Services: A Scoping Review of Case Studies. *Medical Reference Services Quarterly*, *42*(1), 1–15. https://doi.org/10.1080/02763869.2023.2160129

Ashiq, M., Jabeen, F., & Mahmood, K. (2022). Transformation of libraries during Covid-19 pandemic: A systematic review. *The Journal of Academic Librarianship*, *48*(4), 102534. https://doi.org/10.1016/j.acalib.2022.102534

Banleman, K. B., Banleman, B. K. D., & Banleman, L. D. (2023). Academic Libraries and Distance Education in Ghana: Evidence from the Sd Dombo University of Business and Integrated Development Studies. *International Journal of Applied Research in Social Sciences*, *5*(10), 422–439. https://doi.org/10.51594/ijarss.v5i10.632

Dube, T. V., & Jacobs, L. (2023). Academic library services extension during the COVID-19 pandemic: Considerations in higher education institutions in the Gauteng Province, South Africa. *Library Management*, *44*(1/2), 17–39. https://doi.org/10.1108/LM-04-2022-0039

Hanaysha, J. R., & Eli, T. B. (2025). Impact of teacher lecturing skills, ICT resources, physical classroom environment and library facilities on university image: Student satisfaction as a mediator. *Learning and Teaching in Higher Education: Gulf Perspectives*, *19*(1), 15–34. https://doi.org/10.1108/LTHE-03-2023-0016

Imoro, O., Barfi, K. A., Arkorful, V., Baffour, N. O., Armah, J. K., & Arthur, B. (2025). Students' Satisfaction with E-Library Services: Perspectives of Postgraduate Distance Education Students. *New Review of Academic Librarianship*, *31*(2), 169–186. https://doi.org/10.1080/13614533.2025.2491341

Kang, Q., Song, Z., Lu, J., Shi, T., & Yang, J. (2022). COVID-19 impact on the Chinese top academic libraries: Libraries' response to space, collection and services. *The Journal of Academic Librarianship*, *48*(4), 102525. https://doi.org/10.1016/j.acalib.2022.102525

Kuyela, K. M. (2025). *An assessment of the effect of the fourth industrial revolution on library services: A case of academic libraries in Lusaka province*. https://dspace.unza.zm/handle/123456789/9165

Martzoukou, K. (2021). Academic libraries in COVID-19: A renewed mission for digital literacy. *Library Management*, *42*(4/5), 266–276. https://doi.org/10.1108/LM-09-2020-0131

McMenemy, D., Robinson, E., & Ruthven, I. (2023). The Impact of COVID-19 Lockdowns on Public Libraries in the UK: Findings from a National Study. *Public Library Quarterly*, *42*(1), 92–110. https://doi.org/10.1080/01616846.2022.2058860

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

Mitha, S. B., & Omarsaib, M. (2025). Emerging technologies and higher education libraries: A bibliometric analysis of the global literature. *Library Hi Tech*, *43*(2–3), 1248–1270. https://doi.org/10.1108/LHT-02-2024-0105

Nadi-Ravandi, S., & Batooli, Z. (2023). Libraries respond to the COVID-19 pandemic: Drawing a science map of published articles. *Library Hi Tech*, *41*(1), 42–58. https://doi.org/10.1108/LHT-04-2022-0209

Owiti, J. O., Kamau, G., & Mwai, N. (2025). Towards Quality Remote Library Resources and Services in Kenyan University Libraries. *Journal of Scholarly Communication*, *1*. https://doi.org/10.62160/JSC33

Park, H., & Lim, H. (2025). Space guidelines for resilient public libraries in the post-COVID-19 era: A systematic review. *IFLA Journal*, *51*(2), 502–513. https://doi.org/10.1177/03400352251317714

Qian, S. (2025). Changes and the Challenges of Library Reference Services After the Covid-19 Pandemic: Findings From a Survey Study in New England Liberal Arts Colleges. *International Journal of Librarianship*, *10*(2), 48–67. https://doi.org/10.23974/ijol.2025.vol10.2.453

Robinson, E., Ruthven, I., & McMenemy, D. (2023). Delivering services in the new normal: Recording the experiences of UK public library staff during the COVID-19 pandemic. *Journal of Librarianship and Information Science*, *55*(3), 617–633. https://doi.org/10.1177/09610006221093371

Shi, Y., Li, C., & Luo, L. (2021). Impact of the COVID-19 Pandemic on Chinese College Students' Information Behavior and Library Needs: A Qualitative Study. *The Library Quarterly*, *91*(2), 150–171. https://doi.org/10.1086/713051

Siriwardana, A. S., & Wickramasooriya, H. (2025). Enhancing Public Library Services in Anuradhapura District: A Comprehensive Analysis of Library Services during COVID-19 Pandemic. *Journal of the University Librarians Association of Sri Lanka*, *28*(2), 31–52. https://doi.org/10.4038/jula.v28i2.8109

Tsekea, S., & Chigwada, J. P. (2021). COVID-19: Strategies for positioning the university library in support of e-learning. *Digital Library Perspectives*, *37*(1), 54–64. https://doi.org/10.1108/DLP-06-2020-0058

Wani, Y. M., & Ganie, S. A. (2024). Beyond Boundaries: Charting the Academic Library Landscape in the Wake of COVID-19 – A Systematic Review of Services and Strategies. *Journal of Library Resource Sharing*, *33*(1–5), 47–71. https://doi.org/10.1080/26915979.2024.2425389

Yan, C., Zhang, H., & Wang, H. (2025). Knowledge mapping of library digital transformation: A bibliometric study using visual analysis. *Journal of Librarianship and Information Science*, 09610006251353222. https://doi.org/10.1177/09610006251353222

Zhou, J. (2022). The role of libraries in distance learning during COVID-19. *Information Development*, *38*(2), 227–238. https://doi.org/10.1177/02666669211001502