

Tracing the Evolution of Digital Competencies in Academic Librarianship: A Comprehensive Bibliometric Study (2010-2023)

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To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v14-i5/21483>

DOI:10.6007/IJARBSS/v14-i5/21483

Published Date: 16 May 2024

Abstract

In the digital transformation era, the role of digital competencies in academic librarianship has substantially increased. This bibliometric analysis, covering publications from 2010 to 2023, critically examines the evolution of digital competencies in this field. Through the scrutiny of 144 scholarly articles, the study maps the developmental trajectory of digital competencies, identifies emerging research themes, and predicts future trends in academic librarianship. The research reveals a vital, yet often undervalued, relationship between pedagogical expertise and digital proficiency in shaping the landscape of academic librarianship. It underscores the role of bibliometrics, scientometrics, and informetrics as pivotal tools in dissecting and understanding the nuances of digital competencies. The analysis highlights the universal importance of these skills, with significant contributions observed across various global regions, and emphasises the pressing need for enhanced digital capabilities, particularly in developing areas. Key findings include a diverse array of digital competency themes and the necessity for continuous skill development to keep pace with rapid technological advancements. The study concludes with an imperative for the academic librarianship community to embrace these evolving digital dynamics through

informed understanding and constant innovation. This approach is critical for maintaining their indispensable role in the digital age. By providing an extensive overview of current trends and advancements in digital competencies, this study lays a foundation for future academic inquiries in this vital domain, delineating a clear path for further exploration and understanding.

Keywords: Digital Competencies, Librarianship, Bibliometric Analysis, Scientometrics and Informetrics; Evolution of Library Science, Digital Transformation.

Introduction

The onset of the digital revolution marks a pivotal shift across various sectors, profoundly impacting academic librarianship (Schneider, 2016). Academic libraries have transformed from their traditional roles centered around physical resources into vibrant hubs of digital information thanks to an ever-expanding digitization wave. In this context, digital competencies, which encompass the skills and knowledge necessary for effective and responsible utilization of digital technologies Ferrari (2013), have become foundational to this transformation. The integration of digital databases, e-books, and cutting-edge technologies such as artificial intelligence signifies a fundamental shift in the operational paradigms of academic libraries (Dempsey, 2018).

Understanding the evolution of digital competencies in academic librarianship is crucial for several reasons. First, it addresses the growing demand for digital literacy and technical proficiency among librarians, enabling them to meet the diverse needs of modern library users. Second, this knowledge helps in identifying gaps in current training programs and developing targeted educational initiatives to enhance librarians' digital skills. Lastly, it highlights the importance of continuous professional development in keeping pace with rapid technological advancements, ensuring librarians remain effective facilitators of information access and digital literacy.

As a result of this digital transformation, the roles of academic librarians have undergone significant evolution. No longer confined to conventional librarian duties, they are now required to master digital competencies, positioning themselves as adept navigators in the digital realm (Hall, 2020). The dramatic increase in the acquisition of digital resources, such as a 260% rise in e-book procurements by academic libraries from 2010 to 2019 Association of Research Libraries (2020), reflects the magnitude of the digital revolution within the library sector. Today's academic librarians find themselves at the forefront of managing digital resources, curating online content, and guiding patrons through complex digital landscapes (Albright, 2016).

The utility of this study is multifaceted. By conducting a comprehensive bibliometric analysis of digital competencies in academic librarianship from 2010 to 2023, the research provides valuable insights into the developmental trajectory of these competencies. This analysis identifies emerging research themes, predicts future trends, and underscores the significance of continuous skill development. Furthermore, it emphasizes the critical role of bibliometric, scientometric, and informetric tools in understanding and enhancing digital competencies. This study is particularly beneficial for library and information science educators, policymakers, and librarians themselves, offering a robust framework for strategic planning and curriculum development.

The utilization of bibliometric analysis in Library and Information Science (LIS) mirrors an evolving research dynamic within the discipline. Pritchard (1969) developed bibliometric methods, which use quantitative techniques to analyze and synthesize bibliographic content to provide in-depth summaries of particular subjects (Donthu et al., 2020). As noted by Hota et al (2019), these tools are instrumental in constructing a robust academic framework for scientific information, enabling comparative analyses across various geopolitical and institutional contexts (Singh & Chander, 2014).

The emergence of bibliometric research methodologies within LIS, given the discipline's extensive bibliographic landscape, aligns with the field's natural progression (Broadus, 1987). Pioneering studies such as those by Orero-Blat, Jordán, and Palacios-Marqués (2022); Wang and Si (2023) have highlighted the critical need for quantifying digital skills and competencies, particularly in the current technology-centric environment.

The march towards digitalization in academic librarianship also brings to light several challenges. These include the prevalence of digital literacy deficits among librarians and patrons, the necessity for continuous skill enhancement in the face of rapid technological advancements, and the presence of a digital divide that creates unequal access to digital services (Seadle, 2018). Addressing a notable gap in the existing literature, this study ventures into an in-depth bibliometric analysis of digital competencies within academic librarianship. The anticipated outcomes of this research are poised to provide significant insights into current trends, thereby empowering libraries to bolster their services and strategically plan for future developments in the field.

Literature Review

The digital era heralds a significant paradigm shift in academic librarianship, necessitating augmented digital competencies for librarians to excel in service provision. This shift, as Saib et al (2023) highlight, calls for dynamic adaptation in digital pedagogies, underscoring the pedagogical transformation essential for contemporary academic librarians. The role of technology in reshaping educational practices is pivotal, yet as O'Neil and Pegrum (2018) found in their longitudinal study, a beneficial impact emerges through enhanced technological competencies and deeper understanding of pedagogies among librarians. This evolution aligns with the increasing recognition of digital learning theories and pedagogical strategies (Ciccone and Hounslow, 2019; Chanetsa and Ngulube, 2017).

The use of frameworks like technological pedagogical content knowledge and the community of inquiry model, which help students become better communicators and thinkers, shows how digital pedagogies have changed over time in librarianship. The role of academic librarians in fostering communities of practice for knowledge-sharing on digital teaching methodologies further emphasizes the significance of these developments (O'Neil and Pegrum, 2018).

Despite these advancements, a notable gap persists in the integration of digital pedagogies within academic librarianship. Often, the discourse remains confined to basic digital competencies, such as standard application usage (Ciccone and Hounslow, 2019). Moreover, while the pedagogical competencies of librarians have been extensively studied, the interplay between technology and teaching practices is underrepresented in current research (Withorn

and Willenborg, 2020). This gap is pronounced in the global context, where regions like Zambia, Nigeria, and others display a deficiency in digital competencies due to challenges like inadequate infrastructure and a lack of funding for training (Baro et al., 2019; Chewe and Zulu, 2020; Khan, 2020). Additionally, the narrow focus of research on basic computer skills sidelines the importance of digital teaching methods in online library instruction (Hiremath and Bankapur, 2019; Shahbazi and Hedayati, 2016).

Addressing this gap, the present study situates itself at the crucial intersection of digital competencies and academic librarianship. Through a bibliometric analysis spanning 2010 to 2023, this investigation aims to identify trends and propose research areas to bridge these chasms in the literature (Zhang, 2019; Thelwall, 2020). Our focus on global publishing trends, especially data from Scopus, endeavours to illuminate the current status and future trajectories of digital competencies in academic librarianship. The advent of the digital era heralds a profound paradigmatic shift in the realm of academic librarianship, necessitating the augmentation of digital competencies vital for librarians to provide superior services. Within this technologically saturated milieu, the prowess to adeptly maneuver digital technologies—a skill encapsulated under the umbrella term 'digital competencies'—emerges as an integral facet of academic librarianship. This suite of competencies transcends mere technical proficiency, morphing into a comprehensive understanding that encompasses the ethical creation, efficient management, and potent dissemination of information within the digital sphere. The attainment of these competencies empowers academic libraries to enhance research and instruction, thereby significantly enriching the academic landscape.

Method

This section delineates the methodological blueprint embraced for the bibliometric analysis of digital competencies in academic librarianship. The objective of the investigation is to fully address the following research questions:

Q1: What attributes define the bibliometric profile of digital competencies in academic librarianship spanning from 2010 to 2023?

Q2: What insights can be inferred about the evolution and impact of the field from 2010 to 2023, drawing from the annual trends in publication and citation?

Q3: Who have been the pivotal authors contributing to the field of digital competencies in academic librarianship, and what do their collaborative patterns and output reveal?

Q4: What are the most highly cited papers in the field of digital competencies in academic librarianship, and what does their citation frequency elucidate about their influence?

Q5: Which countries have wielded the most influence in the field of digital competencies in academic librarianship, based on their research output and citation impact?

Q6: Which journals have been the most frequented platforms for dissemination, and what keywords have been recurrent in the field of digital competencies in academic librarianship?

Q7: What are the key competencies, trends, and regional differences in digital competencies and academic librarianship as identified through the co-citation analysis of leading publications in the field?

These research questions served as the foundation for a thorough collection, selection, and analysis of the pertinent literature. The subsequent sections delineate the detailed procedural steps taken in this investigation.

Adherence to the PRISMA Statement

As previously stated, the bibliometric review strictly adhered to the PRISMA Statement, a benchmark for providing comprehensive reporting frameworks for systematic reviews (Moher et al., 2009). The robust review process involved the meticulous collection, selection, and appraisal of pertinent articles.

Data Collection

The review process commenced with a comprehensive exploration of the Scopus database, known for its wide-ranging coverage and credibility in academic research (Falagas et al., 2008). The search conducted on May 30, 2023, yielded a sizeable corpus of 61,731 documents focused on Digital Competencies.

Data Refinement and Selection

The data refinement process was precise and detail-oriented, utilizing Boolean operators and refined keyword filters. Inclusion criteria comprised articles published between 2010 and 2023, written in English, and directly exploring "digital competencies" and "academic librarian". Exclusion criteria ruled out non-English articles, opinion pieces, books, and articles with no direct relevance to the targeted search terms. Following the rigorous implementation of these criteria, a targeted subset of 144 articles was derived. A subsequent round of stringent selection, considering relevance, citation count, and publication prestige, further narrowed down the articles to 106, which served as the cornerstone for detailed analysis.

Data Examination

The selected articles were methodically assessed using a standardized data extraction form. This form ensured the consistent extraction of crucial information, including author(s), year of publication, journal name, keywords, citation count, and main findings. The data examination process yielded 106 articles, strictly pertinent to 'Digital Competencies' and 'Academic Librarian'.

Analysis

The analysis of the data gathered used Biblioshiny, a specialized program supported by the R environment. This software facilitated quantitative studies in scientometrics and bibliometrics, assisting in the comprehensive understanding of the research domain, its dynamics, and trends (Aria & Cuccurullo, 2017).

Quality Indicators

In this bibliometric analysis, indicators of article 'quality' or 'influence' were carefully considered. These include the number of citations an article received, reflecting its impact and recognition within the academic community, and the Impact Factor (IF) of the publishing journal, indicating the journal's relative importance within its field (Garfield, 2006). Furthermore, the author's affiliations were noted, with a particular focus on the presence of highly recognized and influential research institutions. It should be noted that while these indicators can provide insights into an article's influence, they do not represent a comprehensive assessment of the quality of the research methodology or findings presented in the article.

Illustration

The research journey, starting from the expansive literature search to the final selection and assessment of articles, is visually represented in the PRISMA flow diagram (Figure 1). This illustrative depiction provides a holistic view of the robust and exhaustive research methodology implemented in this study.

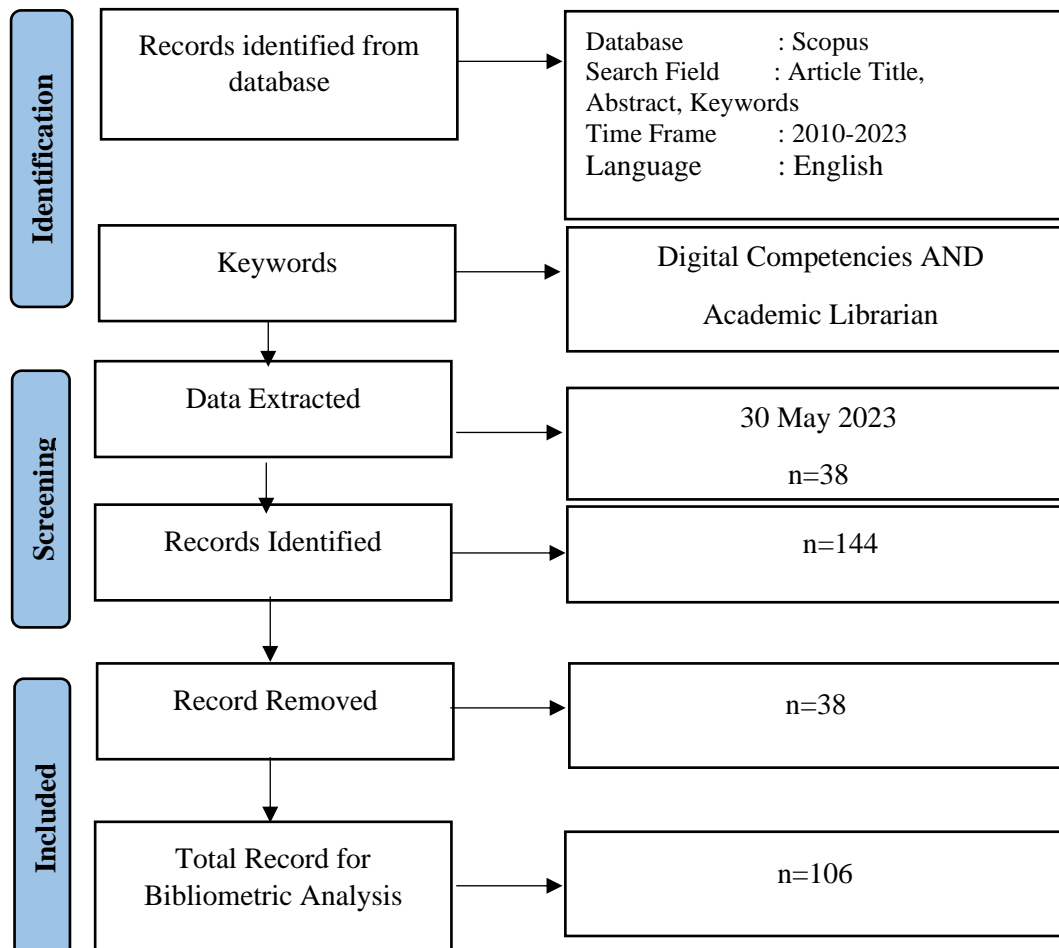


Figure 1: PRISMA flow diagram of literature retrieval (adapted from Moher et al., 2010)

Results

Bibliometric Profile

Table 1 provides a synoptic overview of the scholarly landscape surrounding digital competencies in academic librarianship from 2010 to 2023. During this period, a corpus of 106 articles, each with a mean age close to five years, has been amassed. This signifies the timeliness and relevance of the research theme. The average citation frequency per document approximates 6.528, illustrating the resonance of these works within the scholarly community and their efficacy in propelling further investigations. The metric of 4.94, potentially delineating either the annual citations per paper or the average annual rate of article output, underscores a steady engagement with the subject. Furthermore, the participation of 223 unique authors across these articles underscores a vibrant research environment typified by a high degree of collaborative endeavor. Collectively, this data elucidates an ongoing, active, and collaborative scholarly engagement in understanding and enhancing digital competencies within the sphere of academic librarianship.

Table 1

Primary information on relevant articles

Description	Results
Duration	2010 – 2023
Documents types (articles)	106
Document average age	4.94
Average citations per document	6.528
Average per year for each document	4.94
Authors	223

Publication and Citation Trends

By reviewing both the comprehensive year-by-year breakdown provided in Table 2 and the graphical visualization of citation trends in Figure 2, we gain a deep understanding of scholarly production and impact trends in the field of digital competencies in academic librarianship from 2010 to 2023. Table 2 elucidates the consistent scholarly attention this topic has received over the years, as evidenced by a steady flow of article publications. Presumably, Figure 2 provides a complementary perspective by graphically illustrating the annual citation trends, which enhances the insights garnered from Table 2. The visual representation most likely accentuates the increasing influence of research in this area, potentially showcasing a steady or growing citation trend over time. This side-by-side analysis of publication and citation trends offers an insightful view into the dynamic scholarly interest and the resonating influence of research on digital competencies in academic librarianship. The collective interpretation of both Table 2 and Figure 2 reveals not just the vibrancy of this research domain, but also the ripple effect of its scholarly contributions, indicating promising prospects for continued scholarly interest and investigations in the future.

Table 2

Annual publication trends and citations

Year	Articles	MeanTCperArt	MeanTCperYear	CitableYears
2023	4	0.75	0.75	1
2022	13	0.92	0.46	2
2021	15	1.47	0.49	3
2020	14	2.79	0.70	4
2019	12	3.83	0.77	5
2018	6	3.5	0.58	6
2017	7	14.14	2.02	7
2016	10	10.1	1.26	8
2015	8	11.75	1.31	9
2014	4	12.5	1.25	10
2013	5	8.6	0.78	11
2012	1	8	0.67	12
2011	3	9	0.69	13
2010	4	31.75	2.27	14
Total	106	119.1	14	105

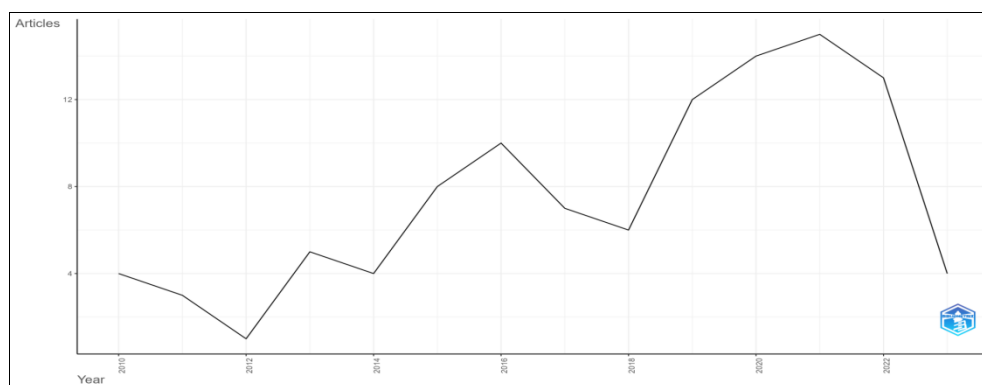


Figure 2: Annual citations trends

Authorship Contribution

Informed by Figure 3 and Table 3, it's notable that authorship within the field of digital competencies in academic librarianship exhibits both individual and collaborative efforts. The top five contributors have produced between two and four articles each, suggesting a consistent engagement with the field. The fractionalized article count, ranging from approximately 0.67 to 2.00, underscores the collaborative nature of research, as it takes into account shared contributions across multiple authors. This authorship pattern serves to demonstrate the synergistic knowledge creation in the domain of digital competencies for academic librarians.

Table 3

Most productive authors

No	Authors	Articles	Articles Fractionalized
1.	Batool SH	4	1.08
2.	Raju J	3	2.00
3.	Shahbazi R	3	1.17
4.	Al-Fadel M	2	0.67
5.	Aslam M	2	1.25

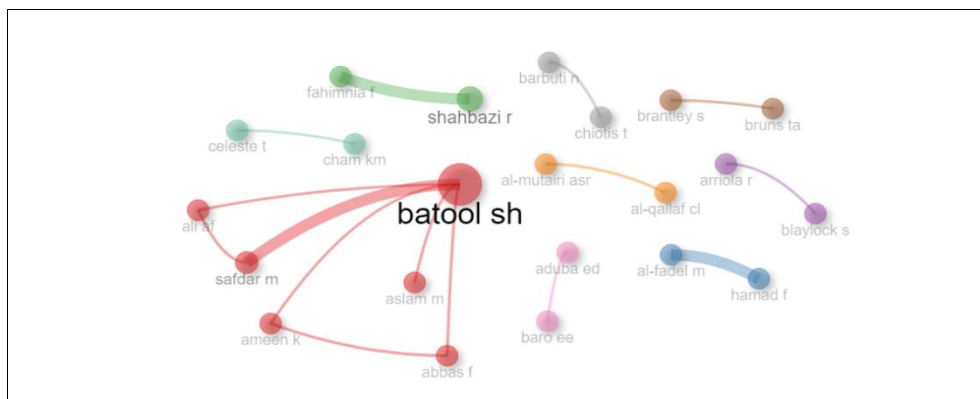


Figure 3: Visual depiction of authorship contributions

Highly Cited Articles

Table 4 elucidates the foremost scholarly contributions in the realm of digital competencies within academic librarianship, as indicated by citation frequency. Collectively, these distinguished papers have procured a total of 153 citations, marking their considerable influence and importance in the scholarly discourse. Leading the register is a seminal work by Ayoku and Okafor (2015) addressing ICT skill acquisition within the context of Nigerian university libraries, which alone accounts for 26 citations. It is closely trailed by an insightful examination of digital literacy skills in African university libraries by Baro et al (2019), contributing another 21 citations. Interestingly, a recent publication by Hamad et al (2021) scrutinizing the effects of librarians’ digital skills in Jordanian academic libraries, despite its recency, has rapidly accrued 8 citations. This fact underscores its immediate pertinence and impact within the discourse. Concluding the list, a study by Kim et al (2021) examining digital curation in the academic library job market, though placed at the list’s end, continues to significantly resonate within the field, as evidenced by its enduring citation count of 8.

Table 4

Most cited papers

Author	Title	DOI	Total Citations	TC per Year	Normalized TC
Ayoku, O.A. and Okafor, V.N. (2015)	ICT skills acquisition and competencies of librarians: Implications for digital and electronic environment in Nigerian universities libraries	10.1108/EL-08-2013-0155	26	2.89	1.53
Baro, E.E., Obaro, O.G. and Aduba, E.D. (2019)	An assessment of digital literacy skills and knowledge-based competencies among librarians working in university libraries in Africa	10.1108/DLP-04-2019-0013	21	4.20	3.28
Mansour, E. (2017)	A survey of digital information literacy (DIL) among academic library and information professionals	10.1108/DLP-07-2016-0022	21	3.00	2.00
Ford, E., Izumi, B., Lottes, J. and Richardson, D. (2015)	Badge it! A collaborative learning outcomes based approach to integrating information literacy badges within disciplinary curriculum	10.1108/RSR-07-2014-0026	20	2.22	1.18
Blummer, B., & M. Kenton, J. (2014)	Reducing Patron Information Overload in Academic	10.1080/10691316.2014.906786	15	1.50	1.02

	Libraries				
Thomas, W. J. (2013)	The Structure of Scholarly Communications Within Academic Libraries	10.1016/j.serrev.2013.07.003	15	1.36	1.74
Schwartz, J. (2018)	Visual literacy: academic libraries address 21 st century challenges	10.1108/RSR-04-2018-0048	10	1.67	1.67
Lefevre, J., & Huwe, T. K. (2013)	Digital publishing from the library: a new core competency.	<u>10.1080/19322909.2013.780519</u>	9	0.82	1.05
Hamad, F., Al-Fadel, M., & Fakhouri, H. (2021).	The effect of librarians' digital skills on technology acceptance in academic libraries in Jordan.	<u>10.1177/0961000620966644</u>	8	2.67	3.76
Kim, J., Warga, E., & Moen, W. (2012).	Digital curation in the academic library job market.	<u>10.1002/meet.14504901283</u>	8	0.67	1

Geographic Impact and Influence in Digital Competencies and Academic Librarianship

The figures presented in Table 5 and Figure 4 underscore the vast international interest and contributions to the study of digital competencies in academic librarianship. The United States stands out as a major contributor, generating 39 publications which constitute 27.08% of total publications and amassing a remarkable 220 citations. This reflects the country's prominent role in advancing this academic field.

Following the United States, Nigeria and Pakistan also exhibit significant contributions with 19 publications each, accounting for 13.19% of total publications. Furthermore, Nigeria has garnered 50 citations, signifying its influential work in this domain. Further demonstrating the international relevance of digital competencies in academic librarianship, other countries such as India, China, Italy, and Spain show considerable representation in terms of publication output. In addition, Spain holds its own in terms of citation impact, with 72 citations. In total, these contributions from around the globe represent a sum of 493 citations, underscoring the widespread influence and the global relevance of research into digital competencies in academic librarianship.

Table 5

Geographical distribution

No	Country	Total Publication	% of Publication
1	USA	39	27.08
2	NIGERIA	19	13.19
3	PAKISTAN	19	13.19
4	INDIA	13	9.03
5	CHINA	10	6.94
6	ITALY	10	6.94
7	SPAIN	10	6.94
8	SOUTH AFRICA	7	4.86
9	IRAN	5	3.47
10	AUSTRALIA	4	2.78
11	MEXICO	4	2.78
12	UK	4	2.78
Total		144	100.00

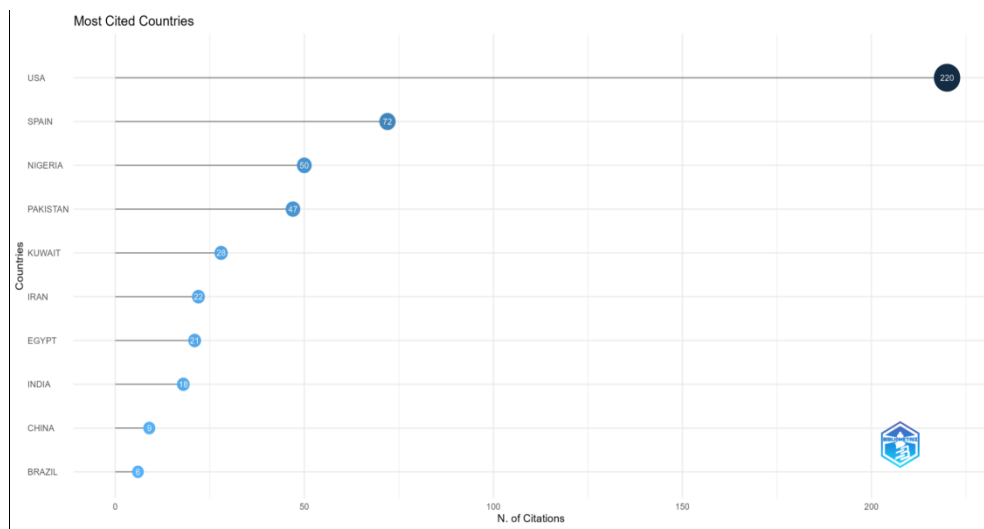


Figure 4: Most cited countries

Most Frequent Journals and Most Common Keywords Used

Table 6 displays the most frequently utilized journals for research in this field over the years, with “Library Philosophy And Practice” consistently showing high publication numbers. Other significant contributors include “Digital Library Perspectives”, “Electronic Library”, and “Journal Of Academic Librarianship”. This distribution is indicative of the leading journals in this research space, providing important platforms for disseminating work on digital competencies in academic librarianship. Moving to Figure 5, it outlines the most prevalent keywords associated with digital competencies and academic librarianship. Among the terms,

“human”, “librarian”, “design/methodology/approach”, and “library” were most frequently employed. Other recurring keywords, such as “education”, “learning”, “libraries”, and “skill”, further underscore the main themes and areas of focus within the field. A total of 96 instances of these keywords were identified, reflecting a diverse range of research topics and interests under the umbrella of digital competencies in academic librarianship.

Table 6
Frequent journals

Year	Library Philosophy And Practice	Digital Library Perspectives	Electronic Library	Journal Of Academic Librarianship	Evidence Based Library And Information Practice	Global Knowledge, Memory And Communication	Journal Of Education For Library And Information Science	Serials Librarian	Serials Review	Vjesnik Hrvatske Bibliotekara
2023	10	4	4	4	3	3	3	3	3	3
2022	10	4	4	4	3	2	3	3	3	3
2021	10	4	4	3	3	1	3	3	3	1
2020	5	3	4	3	3	1	2	3	3	1
2019	4	2	4	3	1	0	0	3	2	0
2018	2	1	4	2	0	0	0	2	2	0
2017	2	1	4	2	0	0	0	2	2	0
2016	2	0	3	2	0	0	0	2	2	0
2015	2	0	2	1	0	0	0	1	2	0
2014	2	0	0	1	0	0	0	0	2	0
2013	2	0	0	0	0	0	0	0	2	0
2012	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0

(Tamaro, 2007). These variegated geographical perspectives underline the global significance of these issues. Several works provide methodological insights, notably Braun and Clarke (2006) for their exposition on using thematic analysis in psychology. These methodological contributions underscore the value of robust research methods in the investigation of key competencies in academic librarianship.

In conclusion, this co-citation analysis offers a multifaceted understanding of digital competencies and academic librarianship's intricacies. The importance of continuous development and adaptation of skills and competencies in an increasingly digital milieu is highlighted. The continuous evolution of these fields necessitates the constant updating and expansion of skills for those operating within them, particularly in academic librarianship.

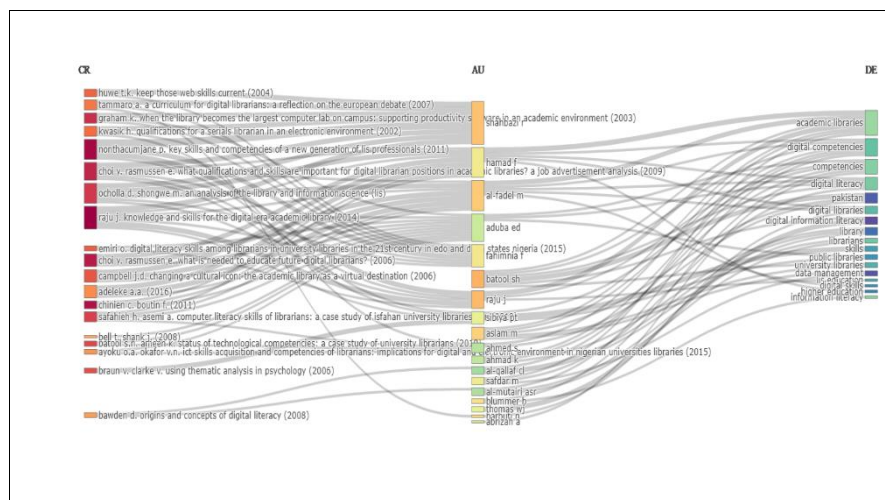


Figure 6: Visual representation of co-citation analysis in the field of digital competencies and academic librarianship

Discussion

This bibliometric study represents a novel contribution to the field by providing a comprehensive analysis of digital competencies within academic librarianship, as indexed in the Scopus database. Pioneering in its scope, this study examines the multifaceted nature of digital competencies, encompassing:

- **Digital Literacy:** According to Bawden (2008), digital literacy includes the ability to recognize, assess, and produce digital content.
- **Technical Proficiencies:** As Ayoku & Okafor (2015) suggest, this involves a range of skills, from basic computer operation to advanced programming.
- **Online Communication and Collaboration:** Drawing from Choi & Rasmussen (2006), this involves leveraging digital tools for effective communication.
- **Digital Safety and Security:** Huwe (2004) highlighted this aspect, which focuses on awareness and prevention of digital threats.
- **Digital Ethics and Legal Conduct:** As Kwasi (2002) notes, this involves understanding the rights and responsibilities associated with digital citizenship.

Through a holistic analytical approach, our study addresses a critical gap in the literature, offering a nuanced understanding of these competencies within the academic librarianship framework.

Trends in Scholarly Production and Impact

This study uncovers evolving trends in digital competencies within academic librarianship, corroborating Aharony's (2006) assertions about the dynamic nature of knowledge structures in this domain. The year-on-year analysis and citation trends point to a growing scholarly interest and influence, forecasting a promising future for academic exploration in this area.

Assessing Authorship and Influence

Our findings indicate extensive international involvement, with the United States being a primary contributor (reflected in publication and citation counts). However, this dominance could suggest a bias towards developed countries, as noted in the literature. Nigeria and Pakistan also stand out as significant contributors, with Nigeria's work having the most citations. The representation from India, China, Italy, and Spain further underscores the global appeal of this field. The high citation frequencies of certain scholarly works necessitate a critical examination of the breadth and focus of these highly cited articles. Authorship patterns reveal both individual and collaborative efforts, with Batool SH's contributions being particularly noteworthy. However, as Enakrire et al (2020) argue, the fractionalized count system may not fully acknowledge the contributions of secondary authors.

Analysing Key Journals and Dominant Themes

Key journals such as "Library Philosophy and Practice," "Digital Library Perspectives," and "Electronic Library" have been instrumental in shaping discourse in this field. The role these journals play in gatekeeping scholarly conversations aligns with observations by Haddow and Mamtora (2017). The recurrence of certain keywords suggests their central role in the discourse, though it raises questions about the potential overshadowing of other themes. The diverse keyword usage, including terms like "education," "learning," and "skill," indicates a broad scope of research within the field. However, the dominance of certain keywords warrants a discussion on the expansiveness of the field and the potential confinement of focus areas.

In summary, this bibliometric analysis elucidates the complexity and richness of the digital competency domain within academic librarianship. While highlighting key contributors, journals, and themes, it also calls for a more balanced exploration of diverse topics and a challenge to existing norms in the field.

Implications and Future Research Directions

The findings of this comprehensive bibliometric analysis underscore the pressing need for enhancing digital competencies within academic librarianship, particularly in developing countries. Recognizing this need, future research initiatives should prioritize the systematic assessment of these competencies in such regions. The adoption of such routine practices could aid in tailoring library services more effectively to user needs, thereby fostering user-oriented and efficient libraries. The proficiency of library staff in modern, technological, and leadership skills emerges as a crucial determinant of service quality. Hence, to keep pace with the rapidly evolving digital landscape, there is an imperative need for libraries to provide regular professional development opportunities to their staff. Tripartite collaborations among professional library associations, library schools, and librarian organizations could be a promising avenue for fostering such skill development. Equipped with contemporary skills

and facilitated by updated resources and infrastructure, library professionals can spearhead the transformation of libraries into dynamic learning hubs at the heart of academic institutions.

While the focus of this bibliometric study has been academic libraries, future research could extend this exploration to other library types, including public, national, and special libraries. Such inclusive studies could shed light on the broader spectrum of digital competence requirements in the library sector, enabling the development of modern and user-centric services that align with evolving user expectations. In terms of research methodologies, while the present study adopted a predominantly quantitative approach, future research could also leverage qualitative methodologies. Such methodologies could unearth deeper, more nuanced insights into user needs and expectations, guiding the development of more user-focused services and resources. Ultimately, these research directions can contribute to enhancing the perceived value of libraries and promoting their evolution in harmony with the digital age. The inherent interplay of pedagogical and digital competencies in academic librarianship also presents compelling avenues for future research. These research directions could significantly contribute to the enrichment of academic librarianship, the advancement of digital pedagogy, and the enhancement of user experiences in libraries globally. By undertaking such studies, we can look forward to a future where libraries are not just repositories of information but also dynamic hubs of learning and innovation.

Conclusions Remarks

This bibliometric analysis, covering the period from 2010 to 2023, highlights the evolving landscape of digital competencies in academic librarianship, demonstrating significant scholarly activity and global contributions. The study examined 106 pertinent articles, revealing a dynamic discourse with an average citation frequency that underscores the research's relevance and impact within the academic community. Central to the findings is the transformative influence of digital literacy on the profession of academic librarianship. As the digital era advances, the role of librarians is shifting significantly. Traditional responsibilities are expanding to include advanced digital competencies, such as technological proficiency, digital communication, safety, and ethical practices. This evolution marks a departure from conventional librarian roles, positioning librarians as key navigators in the digital information environment. Understanding the evolution of digital competencies in academic librarianship is crucial for several reasons: It aids librarians in recognizing essential skills required to stay relevant in the digital age, emphasizing the need for continuous professional development and training in digital technologies. It also helps in aligning their career goals with industry trends, making them more competitive in the job market. Insights from this bibliometric analysis assist library administrators in strategic planning and resource allocation by identifying areas where digital skills are lacking, thus focusing on targeted training programs. Policymakers can develop policies that support digital literacy initiatives and professional development programs, ensuring libraries effectively meet user needs. Educators and trainers in Library and Information Science (LIS) can use the study's findings to inform curriculum design, ensuring that educational programs address current and future digital competencies required in academic librarianship, thereby preparing future librarians to handle the demands of a digital information environment. Improved digital competencies among librarians benefit library users through enhanced access to digital resources, better information literacy instruction, and more effective support in navigating

digital information environments, leading to a more user-friendly and efficient library experience. This study's utility is multifaceted. By conducting a comprehensive bibliometric analysis of digital competencies in academic librarianship, it provides valuable insights into the developmental trajectory of these competencies, identifies emerging research themes, predicts future trends, and underscores the significance of continuous skill development. Furthermore, it emphasizes the critical role of bibliometric, scientometric, and informetric tools in understanding and enhancing digital competencies, enabling a robust analysis of publication trends, citation patterns, and collaborative networks. In conclusion, this study underscores the criticality of advancing digital literacy within academic librarianship, reshaping the required competencies and revolutionizing the nature of librarians' work. As librarians adapt and expand their digital skills, they are increasingly becoming essential actors in the digital information landscape. This evolution calls for ongoing learning and innovation to ensure librarians maintain their indispensable role in the digital knowledge economy. Future research endeavors should continue to explore and enhance digital competencies, especially in developing countries, to equip librarians globally to effectively respond to and lead in the changing landscape of their profession. Academic libraries, thus, have the potential to evolve into dynamic centers of learning, adept at supporting the diverse digital literacy needs of their user communities.

Acknowledgements

The authors would like to extend their heartfelt appreciation to the Malaysian Ministry of Higher Education and Universiti Teknologi MARA for their valuable support and funding of the study.

Conflict of Interest

The authors assert that there is no conflict of interest in relation to the subject matter discussed within this paper.

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