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Systematic Literature Review: The Implementation of Institutional Repositories in Supporting Open Access

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ABSTRACT

This study aims to analyze the implementation of institutional repositories in supporting open access at universities and to identify trends, challenges, and directions for their development. The method used was a Systematic Literature Review (SLR) with a bibliometric approach applied to 271 scientific articles obtained from the ScienceDirect database spanning the years 2010–2024, through a selection process based on inclusion and exclusion criteria. The analysis was conducted using VOSviewer and RStudio software to map topic clusters, research trends, and the productivity of literature sources. The research results indicate that the implementation of institutional repositories has evolved into a complex socio-technical ecosystem, characterized by the dominance of technical aspects (infrastructure, systems, interoperability) integrated with the roles of human resources such as librarians and academics. The findings also indicate a shift in the repository's function from mere document storage to a center for research data management that supports transparency and enhances scientific impact. Additionally, policy issues, copyright, and academic community awareness remain major challenges. This research provides important implications for the development of open access policies, institutional capacity building, and the integration of repositories into the global ecosystem. In conclusion, the success of institutional repositories is determined not only by technology but also by institutional commitment and collaboration among stakeholders in supporting sustainable open access.

Keywords: *Institutional Repository; Open Access; Academic Library; Bibliometric*

1. INTRODUCTION

Advances in science and technology have driven major transformations in various aspects of life. This technological progress is inevitable, as it offers numerous benefits and simplifies work (Mulyani

& Haliza, 2021). This includes the realm of higher education and the management of scientific information. Higher education institutions serve not only as centers for learning and teaching but also as primary producers of knowledge through research and scientific publications (Arifin, 2017). One of the main challenges faced in disseminating research results is limited access to scientific literature, particularly that published in paid commercial journals (Rachmawati, Anggraini, Erna, & Yanti, 2021). This poses a significant barrier for the academic community, independent researchers, and the general public who wish to access knowledge for research development or to improve the quality of life (Lund et al., 2023).

In response to these challenges, the *Open Access* movement has emerged as an alternative approach to scientific publishing, aiming to provide free and unrestricted access to academic information (Butler, Matthias, Simard, Mongeon, & Haustein, 2023). Open access ensures that research results can be read, downloaded, and shared without cost or permission barriers, provided that applicable copyright licenses are respected (Oktavia, 2019). Governments and higher education institutions in various countries have begun adopting policies that promote open access to research results, whether publicly funded or funded by educational institutions (Iswanto, 2021).

In this context, *Institutional Repositories* (IR) play a crucial role as digital management and storage systems for collecting, preserving, and distributing scholarly works from the academic community (Mahdavi-Zargari, 2026). Institutional repositories act as a formal channel to support open access, strengthen institutional visibility, and increase the impact and citations of scholarly works (Herlina, Alfida, Maryam, & Hamdani, 2023). IR enables universities to build independent and sustainable knowledge infrastructure, while fostering a culture of sharing and scientific collaboration among researchers globally (Dube, 2025).

However, the implementation of IRs in supporting open access still faces various challenges, such as low awareness among faculty and researchers regarding the importance of depositing their scholarly works, limited human resources for repository management, and technical and institutional policy barriers (Priyanto, 2012). Therefore, further research is needed on how institutional repositories are implemented, utilized, and developed within the higher education environment as part of a strategy to support sustainable open access.

As the demand for open and widely accessible scientific literature grows, various universities and research institutions in Indonesia have begun establishing *Institutional Repositories* (IRs) as part of their academic information systems. These institutional repositories are generally managed by university libraries, which serve as a bridge between internal scientific resources and the broader information-using community (Maha, Widiyaningrum, & Tupan, 2023). In practice, IRs not only provide documents such as theses dissertations, and journal articles but also play a role in preserving the institution's intellectual legacy and strengthening its academic reputation through the global dissemination of scholarly works (Vebiyanti, 2017).

The Indonesian government, through various national policies, also encourages the implementation of open access, one of which is a regulation requiring undergraduate, master's, and doctoral students to deposit their final works into university repositories as a graduation requirement (Irawan, Abraham, Zein, Ridlo, & Aribowo, 2021). This is outlined in the policy regarding the integration of students' scholarly works into the digital academic system (Ristekdikti, 2015). On the other hand, the *SINTA* program managed by the Ministry of Education, Culture, Research, and Technology increasingly emphasizes the importance of the visibility and accessibility of research outputs in open access formats (Fitria, 2023). With this policy push, institutional repositories have become the main backbone in

supporting efforts toward inclusive and equitable knowledge dissemination (Bradley, 2021).

Nevertheless, the reality on the ground indicates that the utilization of IRs is not yet fully optimized. There are still many scholarly works that have not been digitized or systematically deposited into repositories (Rothfritz, Matthias, Pampel, & Wrzesinski, 2026). Other challenges include limitations in technical understanding of metadata management, a lack of incentives for faculty and students to deposit their scholarly works, and the absence of integration between IR systems and broader national or international platforms such as DOAJ or Google Scholar (Aolia et al., 2024).

Furthermore, it is important to understand that the success of implementing an IR to support open access is not merely a technical or administrative issue, but is also closely tied to institutional commitment, information governance, and collective awareness in advancing an open and equitable knowledge ecosystem (Ibrahim, Hidayat, & Ilmi, 2023). Therefore, a strategy is needed that is not only technology-based but also involves socio-cultural approaches and institutional policies that support the long-term sustainability of repositories.

In the Indonesian context, institutional repositories serve as digital platforms for storing, managing, and disseminating scholarly works produced by institutions, particularly universities, to support the Tri Dharma of Higher Education (Ibrahim et al., 2023). Several recent studies confirm that the growth of institutional repositories is driven by various factors, such as efforts to preserve intellectual property, the need for broader access to information, and technological advancements. Additionally, the repository web rankings published by Cybermetrics Lab since 2008 have also served as a key catalyst for institutions to establish and enhance the visibility of their repositories (Ulum & Setiawan, 2016). However, the growth of repositories in Indonesia remains relatively low compared to the number of higher education institutions (Tupan & Rahayu, 2022). Some of the challenges faced include the absence of clear access policies, difficulties in the publication submission process by authors, as well as copyright issues and infrastructure availability. This indicates a gap between the potential of repositories and the reality of their implementation in the field. In this context, libraries play a central role, but they need to be more proactive in disseminating regulations and promoting the benefits of repositories (Ulum & Setiawan, 2016).

Research on policies and copyright highlights that most libraries in Indonesia do not yet have formal open access policies (Safira, 2021). Generally, the access provided to the public remains limited, and the primary issue that frequently arises is ensuring that copyright infringement does not occur. One suggested solution is to grant libraries exclusive rights to distribute works, while the initial copyright remains with the author (Oktavia, 2019). On the other hand, research on digital preservation indicates that although many libraries have developed institutional repositories, the implementation of long-term digital preservation has not yet been fully optimized (Pramudyo & Perdani, 2022). Applicable digital preservation methods include technological preservation, emulation, migration, encapsulation, duplication, or updating. The lack of awareness among librarians and the vulnerability of digital file formats are major challenges in this process.

From these various studies, it can be concluded that institutional repositories are an important tool in supporting open access, although their implementation in Indonesia still faces challenges related to policy, copyright, and infrastructure readiness. Optimizing institutional repositories requires commitment from the entire academic community, clear policy support, and the implementation of sustainable digital preservation strategies. Although previous studies have highlighted technical, policy, and copyright issues, significant research gaps remain. Most previous studies tend to be partial in nature, focusing on case study evaluations at a specific institution, or

addressing managerial aspects in isolation. There are few comprehensive studies that map the evolution of research, implementation trends, and the direction of institutional repository development in supporting open access in a macro and systematic manner. It is this gap in the literature that needs to be filled to gain a comprehensive view of the current scientific repository ecosystem.

Unlike previous studies, this study integrates an approach that combines *a Systematic Literature Review* (SLR) with bibliometric analysis. This approach allows researchers not only to synthesize narratives related to repository implementation but also to visualize a literature roadmap, collaboration networks, and critical topics that have long been overlooked (*blind spots*) in the discourse on institutional repositories. The focus of this study is on addressing the research question: how does the implementation of institutional repositories support open access within the higher education environment?

This research is expected to go beyond the theoretical realm and provide measurable practical impacts for the development of repository management in higher education institutions. Practically, the research findings will serve as an empirical foundation and strategic blueprint for institutional policymakers and library administrators. The resulting recommendations will assist higher education institutions in formulating ideal *open access* policies, designing inclusive scientific information system integration, and ensuring long-term digital preservation, so that repositories can function optimally as the main pillars of the institution's academic visibility and reputation.

2. RESEARCH METHOD

This study examined various articles closely related to the implementation of institutional repositories in supporting open access. Articles from internationally reputable journals serve as the primary sources for this study. The review focuses on several key aspects, such as understanding the concepts, roles, and implementation patterns of institutional repositories in supporting the open access movement. The researchers aim to synthesize prior studies to identify common patterns and understand how institutional repositories contribute to the open dissemination of knowledge. The research method applied in this study is a systematic literature review. The primary reason for selecting ScienceDirect as the sole database in this study is its reputation as one of the leading academic databases providing access to high-quality, peer-reviewed scientific literature and offering comprehensive coverage in the fields of information science, technology, and library science.

The literature search procedure was conducted systematically on the ScienceDirect search engine using a combination of specific keywords and Boolean operators. The search string used was "institutional repository and open access and library." This search was specifically limited to publications from the past 15 years, namely from 2010 to 2024, to capture the evolution, current trends, and technological developments in repositories over the past decade. To ensure the quality and relevance of the analyzed documents, this study established inclusion and exclusion criteria. Inclusion criteria include original research *articles*; written in English; and the content of the article focuses directly on institutional repositories and the *open access* ecosystem in higher education. Conversely, documents were excluded if they were literature reviews (*review articles*), *book chapters*, or conference proceedings; if the *full text* was inaccessible; or if the focus of the study fell outside the academic scope (e.g., corporate data repositories). Through this rigorous selection process, a total of 271 final scientific articles that met the criteria were obtained. The metadata from these 271 documents was then exported for further analysis. Bibliometric network mapping and topic trend analysis were conducted using VOSviewer and RStudio software.

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3. RESULTS AND DISCUSSION

Figure 1 displays data on how these themes are grouped, and these groups are organized for review based on the themes discussed. Table 1 maps concepts or themes based on clusters related to studies on the application of institutional repositories in supporting open access.

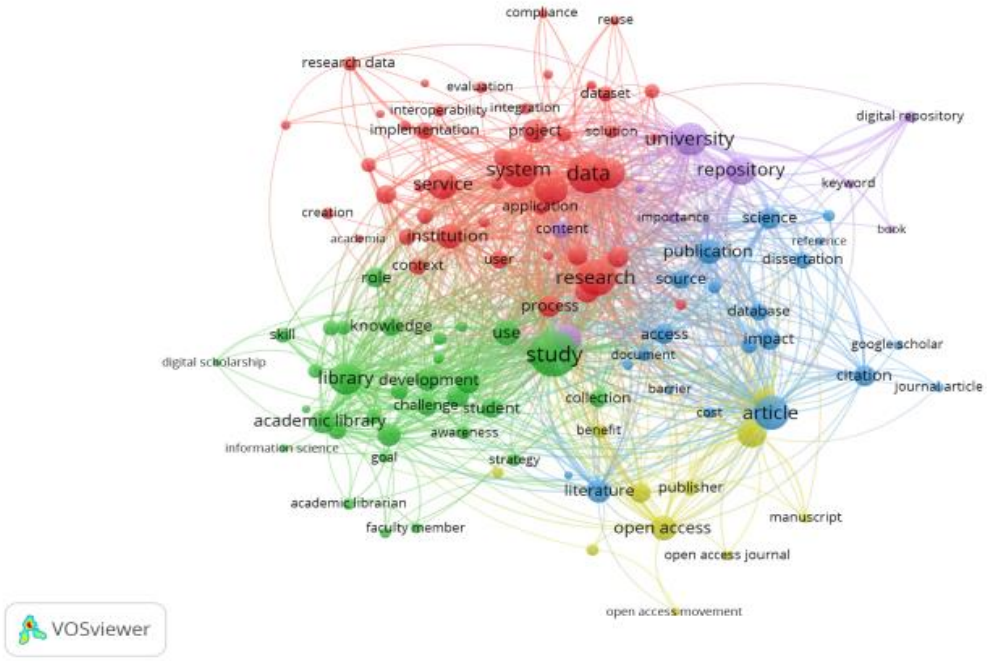

Figure 1. Classification of discussion topics related to the implementation of institutional repositories in supporting open access.

Table 1. Themes grouped into clusters.

Cluster	Concept	Total
Cluster 1	Academia, adoption, application, communication, community, compliance, context, contribution, creation, data, dataset, dissemination, evaluation, framework, hand, implementation, information, infrastructure, institution, integration, interoperability, management, metadata, open data, open science, platform, policy, practice, process, project, requirement, research, research artifact, research data, research data management, research institution, research output, researcher, reuse, service, solution, system, tool, user, value	45
Cluster 2	Academic librarian, academic library, awareness, challenge, change, collection, concept, development, digital	33

	scholarship, education, experience, faculty member, goal, higher education, increase, information science, initiative, knowledge, librarian, library, program, resource, role, scholarly communication, skill, stakeholder, strategy, student, study, support, technology, university library, use	
Cluster 3	Access, article, availability, barrier, citation, cost, database, dissertation, document, effectiveness, google scholar, impact, internet, journal article, literature, organization, publication, reference, science, source, web	21
Cluster 4	Author, benefit, copyright, journal, manuscript, movement, open access, open access journal, open access movement, publisher, publishing	11
Cluster 5	Book, content, digital library, digital repository, importance, institutional repository, keyword, repository, university	9

This table shows that Cluster 1 is the group of concepts with the highest number of keywords, namely 45 concepts. The main focus in this cluster is on the technical and institutional aspects of implementing institutional repositories, such as *implementation*, *infrastructure*, *institution*, *policy*, *platform*, *system*, and *research data management*. The most dominant keywords point to complex technical and managerial processes, indicating that many studies discuss how institutions build and manage repositories so that they can function optimally as open access tools. This suggests that infrastructure and system integration are crucial foundations for the success of institutional repositories.

Cluster 2 contains 33 concepts that highlight the role of academic librarians and academic libraries in supporting the implementation of institutional repositories. Keywords such as *awareness*, *faculty member*, *higher education*, *scholarly communication*, and *strategy* are the focal points. This indicates that the success of a repository depends not only on technology but also on the active involvement of various stakeholders, including librarians, faculty members, and students. In other words, a collaborative approach and capacity building for human resources are crucial in supporting open access.

Cluster 3, consisting of 21 concepts, focuses on issues *of access to scientific publications* and the barriers associated with them. Keywords such as *access*, *availability*, *barrier*, *cost*, *citation*, and *impact* indicate that the main issues discussed in this cluster are how institutional repositories can overcome obstacles in the availability and distribution of scientific information. This reflects a concern for the effectiveness of repositories as tools to enhance the visibility and impact of research.

Cluster 4 contains 11 concepts related to *scientific publications* and *copyright*. Dominant keywords such as *open access*, *journal*, *publisher*, and *copyright* indicate that many researchers focus

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their discussions on the dynamics of scientific publishing within the open access framework. This cluster highlights the importance of understanding copyright regulations and publishing policies so that institutional repositories can operate legally and ethically.

Cluster 5 is the cluster with the fewest concepts, namely 9 concepts, yet it still plays a crucial role. The primary focus of this cluster is on the identity and existence of the repository itself, as evidenced by keywords such as *repository*, *institutional repository*, *university*, and *digital library*. This indicates that institutional repositories are viewed as strategic entities within the higher education sector that must be developed with a specialized approach to function optimally as a means of open access.

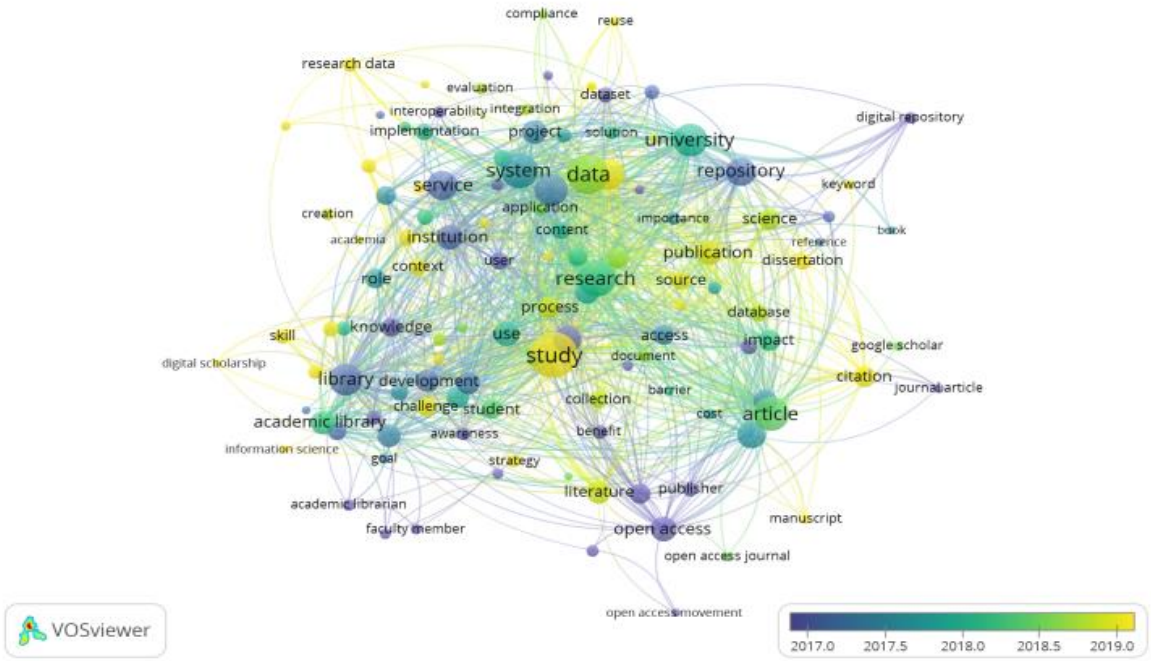

Figure 2. Publications on trends related to the implementation of institutional repositories in supporting open access.

Figure 2 shows a visualization of the development of scientific publications related to institutional repositories in supporting open access during the period from 2017 to 2019. The colors on the nodes (circles) represent the year of publication, with a color spectrum ranging from dark blue (2017) to light yellow (2019). The lighter the color on a node, the more recent the publication. This figure shows that topics such as *repository*, *university*, *publication*, and *data* have large sizes and strong connectivity, indicating that these themes are central to the discussions in many of the studies conducted. The keywords *study*, *research*, and *system* also have strong connections to other concepts, demonstrating a close relationship between research activities and repository systems and open access.

The dominant yellow color associated with keywords such as *citation*, *reuse*, *interoperability*, and *implementation* indicates that in the years leading up to 2019, the focus of research began to shift toward how repositories are actively used and how interoperability and research data management became new areas of interest. This suggests a trend in research toward more strategic and integrated use of repositories within the open science ecosystem.

Meanwhile, keywords such as *"academic librarian," "faculty member,"* and *"open access*

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journal," located in the lower left of the figure, are dominated by a blue-violet hue, indicating that discussions regarding the roles of academic librarians, faculty members, and open access publications began to gain prominence early in the observation period (around 2017).

Thus, this figure shows that studies on the implementation of institutional repositories have been evolving over time. Initially, they focused on basic concepts and the roles of institutional actors, but in subsequent periods, they began to shift toward strengthening technical systems, integrating research data, and improving scientific accessibility as part of the global open access agenda.

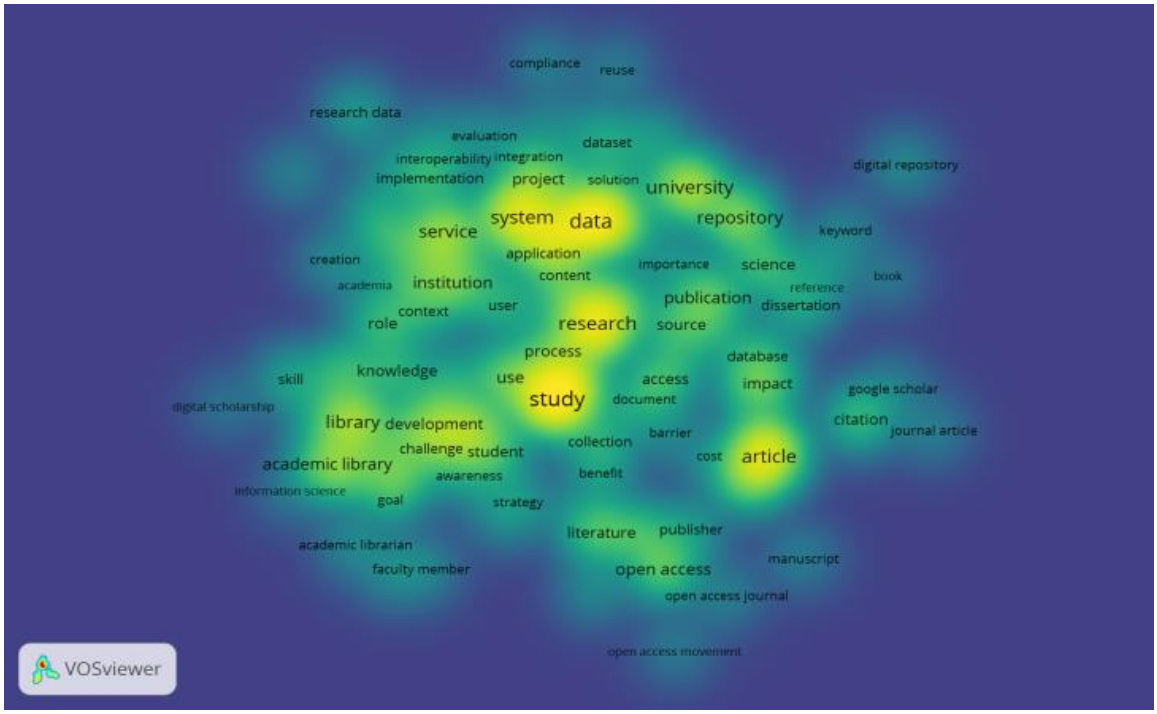

Figure 3. The dominant themes relate to the implementation of institutional repositories in support of open access.

Looking at the word clusters shown in Figure 3, it becomes apparent that, from the previous discussions on institutional repositories and open access, certain clusters address dominant themes or concepts that tend to be discussed most frequently. The researchers in this study used an analysis tool called *VOSviewer* to process the data and identify dominant themes and concepts related to repository studies, scientific publications, and open access. Dominant concepts frequently discussed by previous researchers include *study*, *research*, *article*, *data*, *system*, *publication*, *repository*, and *open access*.

The concepts of "*research*" and "scientific article" occupy central positions in the visualization map, indicating that many studies focus on the production and dissemination of scientific knowledge. Additionally, the presence of keywords such as *data*, *system*, and *repository* indicates that significant attention is also given to data management systems and digital infrastructure supporting the storage and distribution of scientific knowledge. This underscores the importance of institutional repositories in supporting academic and research activities.

Open access is a key focus in the analyzed literature, as it is viewed as a strategic solution for expanding the reach of scientific publications to the general public without access barriers. Implementing open access not only enhances the accessibility of scientific articles but also provides greater opportunities for increased *citations* and *the impact* of a publication.

On the other hand, the connection to institutions such as *universities*, *academic libraries*, and

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faculty members indicates that the success of institutional repositories is heavily influenced by the support of higher education institutions and academics. In this regard, the role of academic libraries is also crucial in the processes of curation, metadata management, as well as providing training and technical support.

Through the implementation of integrated systems and sound data management strategies, institutional repositories can foster broader scientific information openness. With growing awareness of the importance of open access and transparent data management, it is hoped that an inclusive, collaborative, and sustainable scientific ecosystem will emerge.

Digital transformation in scientific information management must be supported by institutional policies, stakeholder commitment, and collaboration among libraries, researchers, and technology system developers. Thus, repository systems can be optimized not only as storage media but also as knowledge distribution hubs that make significant contributions to the advancement of science globally.

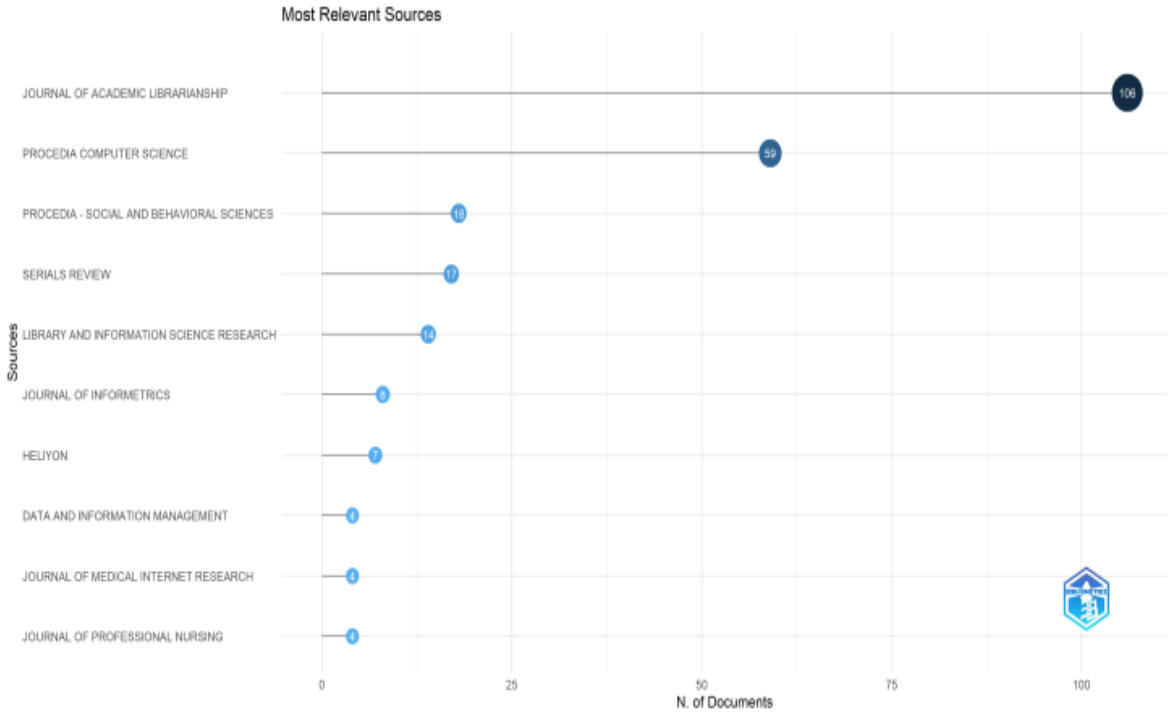

Figure 4. The most relevant and frequently cited scientific sources or journals in studies on institutional repositories and open access

Figure 4 shows a list of the most relevant and most frequently cited sources or scientific journals in studies on institutional repositories and open access. This visualization illustrates the number of documents originating from each journal, indicating the extent of each source's contribution to the literature on the studied topic. This data was generated through bibliometric analysis using *Bibliometrix*, a tool commonly used in scientific literature mapping.

From the figure, it is evident that the *Journal of Academic Librarianship* is the most dominant source with the highest number of publications, totaling 106 documents. This indicates that this journal pays close attention to issues related to academic libraries, information systems, and repository management. The journal's dominant position also reflects that the scientific community frequently cites its articles as a primary source when discussing institutional repositories and open access.

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Followed by *Procedia Computer Science* with 59 documents, this journal represents a significant contribution from the field of computer science to the development of digital repository systems and other information technology platforms. Furthermore, *Procedia - Social and Behavioral Sciences* and *Serials Review* contributed 18 and 17 documents, respectively, indicating a focus on social and behavioral dimensions, as well as aspects of serial management and scientific publishing.

Other journals such as Library and Information Science Research (14 documents), Journal of Informetrics (8 documents), and Heliyon (7 documents) also made significant contributions to this study. These three journals address various aspects related to scientific impact measurement, information studies, and open access from diverse scientific and technical perspectives.

Interestingly, there are also journals from other fields such as the Journal of Medical Internet Research, the Journal of Professional Nursing, and Data and Information Management, each contributing 4 documents. The presence of these journals indicates that the topics of institutional repositories and open access also have interdisciplinary relevance, particularly in the fields of health and nursing, which are increasingly adopting the principles of information openness in the dissemination of research results.

Overall, these findings underscore the importance of interdisciplinary collaboration in developing and implementing effective and sustainable institutional repository systems. The involvement of various leading journals indicates that this issue is not only relevant within the context of library and information science but is also recognized as an integral part of developing an open and inclusive global knowledge ecosystem.

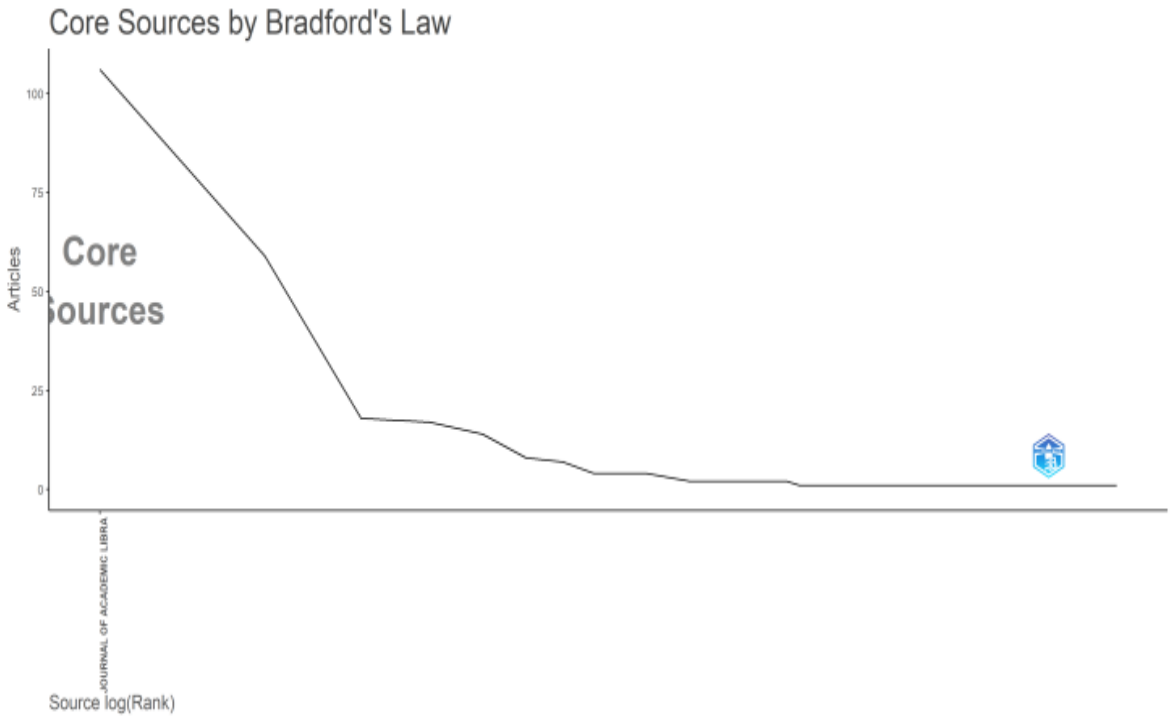

Figure 5. Core Sources by Bradford's Law

Table 2. Core Sources by Bradford's Law

Source	Rank	Freq	cumFreq	Zone
JOURNAL OF ACADEMIC LIBRARIANSHIP	1	106	106	Zone 1

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PROCEDIA COMPUTER SCIENCE	2	59	165	Zone 2
PROCEDIA - SOCIAL AND BEHAVIORAL SCIENCES	3	18	183	Zone 2
SERIALS REVIEW	4	17	200	Zone 2
LIBRARY AND INFORMATION SCIENCE RESEARCH	5	14	214	Zone 2
JOURNAL OF INFORMETRICS	6	8	222	Zone 3
HELIYON	7	7	229	Zone 3
DATA AND INFORMATION MANAGEMENT	8	4	233	Zone 3
JOURNAL OF MEDICAL INTERNET RESEARCH	9	4	237	Zone 3
JOURNAL OF PROFESSIONAL NURSING	10	4	241	Zone 3

The table above shows the results of applying Bradford's Law to the top ten journals that served as literature sources in this study. Zone 1 consists of only one journal, namely the Journal of Academic Librarianship, which significantly dominates with 106 documents. This indicates that this journal is the primary information hub (core journal) in the researched topic, reflecting the high intensity of its contribution to the development of literature on institutional repositories and open access.

Zone 2 consists of four journals: "Procedia Computer Science" (59 documents), "Procedia Social and Behavioral Sciences" (18 documents), Serials Review (17 documents), and "Library and Information Science Research" (14 documents). The cumulative number of documents in this zone reaches 108, which is relatively comparable to Zone 1 despite involving more journals. This zone represents journals with moderate yet significant contributions to supporting both the theoretical and practical frameworks of research.

Zone 3 includes five other journals: the Journal of Informetrics, Heliyon, Data and Information Management, the Journal of Medical Internet Research, and the Journal of Professional Nursing, each contributing between 4 and 8 documents. The cumulative total in this zone reaches 41 documents, indicating that although the contribution of each journal is smaller, the accumulation from this zone remains important in enriching the study from a multidisciplinary perspective.

This distribution pattern reflects the fundamental principle of Bradford's Law, which states that the majority of important literature in a given field is concentrated in a small number of core journals, while the remainder is scattered across other journals with fewer contributions. These findings are useful for identifying key sources that can serve as primary references in the development of further research on the topics discussed.

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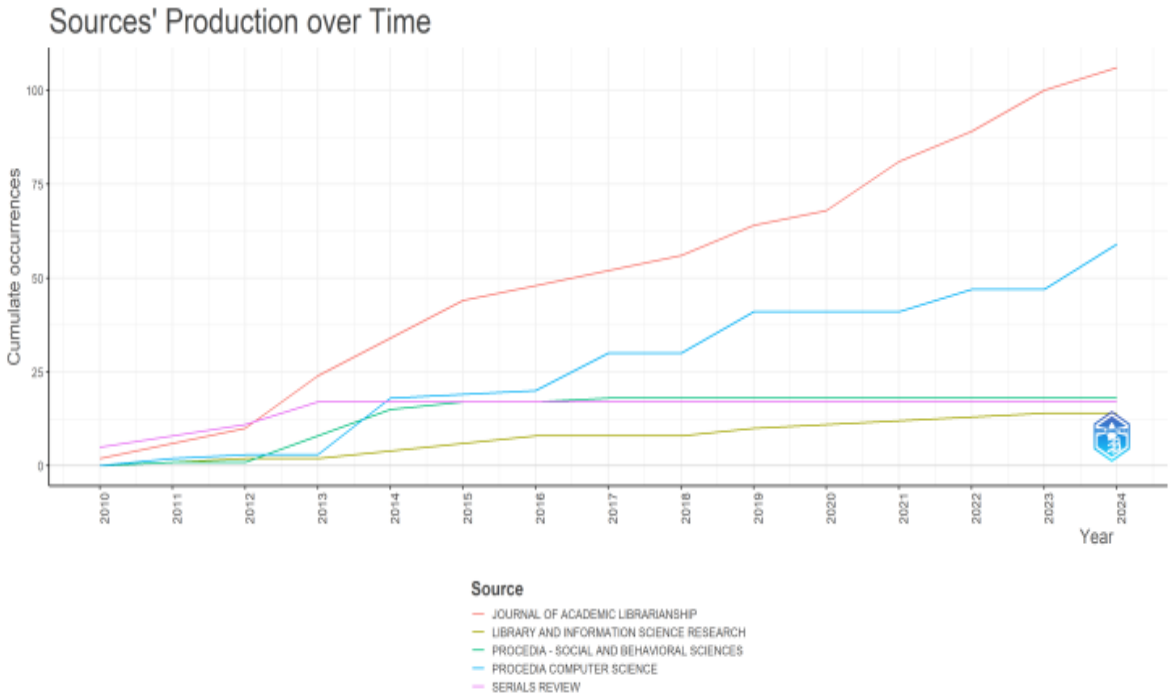

Figure 6. Sources' Production over Time

Table 3. Sources' Production over Time

Year	JOURNAL OF ACADEMIC LIBRARIANSHIP	PROCEDIA COMPUTER SCIENCE	PROCEDIA - SOCIAL AND BEHAVIORAL SCIENCES	SERIALS REVIEW	LIBRARY AND INFORMATION SCIENCE RESEARCH
2010	2	0	0	5	0
2011	6	2	1	8	1
2012	10	3	1	11	2
2013	24	3	8	17	2
2014	34	18	15	17	4
2015	44	19	17	17	6
2016	48	20	17	17	8
2017	52	30	18	17	8
2018	56	30	18	17	8
2019	64	41	18	17	10
2020	68	41	18	17	11
2021	81	41	18	17	12
2022	89	47	18	17	13
2023	100	47	18	17	14
2024	106	59	18	17	14

The Table of Source Production Over Time shows the development of the number of publications from the five major journals that serve as reference sources in studies of institutional repositories and open access from 2010 to 2024. From this data, it is evident that there has been a

significant increase in the number of publications over time, particularly in certain journals that are the main contributors to the provision of literature in this field. The most consistent and dominant journal in scientific output is the "Journal of Academic Librarianship". Starting with just 2 publications in 2010, this journal has shown a steady and continuously rising growth trend, reaching 106 publications in 2024. This pattern indicates that the journal plays a central role and is increasingly relied upon in disseminating research on academic libraries, information systems, and open access.

Procedia Computer Science has also shown quite notable growth, albeit with a slower increase at the outset. The number of publications from this journal began to rise significantly in 2014 with 18 articles, and continued to increase, reaching 59 articles by 2024. This indicates that issues related to information technology and computing are beginning to receive greater attention within the context of digital libraries and academic information systems. The journal Procedia - Social and Behavioral Sciences also experienced a surge in contributions during the early period, particularly between 2013 and 2016, when the number of publications increased from 8 to 17 articles. However, after 2016, the number of publications from this journal stagnated at 18 articles, indicating that while it remains relevant, its contributions have begun to stabilize and are not experiencing significant growth like other journals.

Meanwhile, "Serials Review" has shown a relatively constant trend since 2013, contributing 17 articles annually through 2024. This indicates that the journal has reached a stable point in its role as a source of information regarding periodical management, metadata, and the sustainability of access to scientific information. As for "Library and Information Science Research", it shows a slow yet consistent increase. From just 1 document in 2011, this journal has seen a gradual increase, reaching 14 publications by 2024. This indicates growing interest in more in-depth scientific research within the field of library and information science, particularly in the context of developing technology-based information services and user needs. Overall, this data illustrates how journal productivity dynamics evolve over time, as well as the shifting focus and contributions of each journal in supporting the development of literature and research in the library and information field. Understanding these trends can assist researchers in identifying primary sources and reference priorities for future similar studies.

Based on the mapping of five clusters generated through *VOSviewer* and the analysis of source productivity, it is clear that the implementation of institutional repositories (IRs) is no longer viewed solely as an information technology project, but rather as a complex socio-technical ecosystem. The dominance of the first cluster (technical and managerial aspects), closely intertwined with the second cluster (the role of human resources and librarians), signifies an inevitability: advanced infrastructure (*platforms, systems, interoperability*) loses its value without human intervention (*awareness, strategy, librarians*). The frequency of the keywords *"research data"* and *"management"* indicates a paradigm shift in the function of repositories. Institutional repositories no longer serve merely as static archives for theses or journal articles (final text documents), but have transformed into centers for *research data* management (RDM). This indicates that universities are beginning to recognize the importance of preserving research "raw materials" (datasets) so they can be retested, replicated, and reused to enhance academic transparency and integrity.

Findings in this study reveal significant contrasts and updates compared to the literature from the early 2010s. In earlier research (the initial observation period), discourse regarding institutional repositories generally revolved around software comparisons (such as EPrints, DSpace, or Fedora), basic system installations, and initial skepticism among academics regarding the concept *of open access*. Conversely, the results of this SLR found that contemporary literature has moved far beyond software issues. The emergence of central keywords such as *compliance*, *impact*, and policy indicates that the

success of IRs today is heavily determined by university-level institutional mandates. This finding aligns with the argument that repositories are now positioned as strategic tools to boost university rankings (web visibility) and as metrics for institutional research performance. Challenges related to copyright and cost reaffirm past findings that legal barriers remain obstacles, though the approach has shifted toward seeking negotiated solutions with publishers.

Figure 2, which shows a surge in keywords related to interoperability and datasets leading up to 2019, has a very strong correlation with the global dynamics of *Open Science*. The past decade has been marked by the emergence of various international initiatives and mandates compelling educational institutions worldwide to modernize their repositories. Current global trends demand that repositories not operate in isolation (*siloed*) but must be connected to global aggregator ecosystems such as DOAJ and *Google Scholar*. The high contribution of interdisciplinary journals—which is not only dominated by the "Journal of Academic Librarianship" but also *by* "Procedia Computer Science" (59 documents)—indicates that the future trend of global repository research is multidisciplinary research. Globally, institutional repositories are moving from *the "collection* phase" toward *the "connection and analytics phase*," where the impact of each uploaded work can be tracked in *real-time* through citations and metrics to ensure fair visibility for researchers.

4. CONCLUSION

The implementation of institutional repositories in supporting open access at universities has now transformed from merely providing technological infrastructure into a complex socio-technical ecosystem. Repositories no longer function solely as passive storage spaces for final theses or individual articles but have evolved into essential centers for research data management (*RDM*), crucial for academic transparency. The success of repositories as pillars of *open science* heavily depends on institutional mandates, where repositories now serve as strategic tools to boost institutional research visibility and performance. However, the sophistication of this system must be balanced with the active involvement of human resources and librarians, given that challenges such as low awareness among the academic community and copyright issues remain significant barriers. Given the global trend demanding that repositories not operate in isolation but be interconnected with international aggregator ecosystems, it is strongly recommended that policymakers and library administrators immediately formulate comprehensive *open access* regulations that are adaptable to publisher policies. Additionally, continuous improvement in information literacy and the implementation of long-term digital preservation strategies are crucial for protecting an institution's digital intellectual assets. For future research, studies should focus on developing a multidisciplinary framework that explores the effectiveness of *real-time* metric analytics, as well as optimizing automatic interoperability between local repositories and global scientific portals so that contributions to the advancement of global science can be maximized.

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