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Mapping the research bibliometrics in Indonesia with Web of Science (WOS): Trends, Dominant Themes, and Future Directions

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ABSTRACT

This research is motivated by the rapid development of scientific publications in Indonesia, which requires systematic mapping to understand the direction of global scientific development. The main objective of this study is to map the bibliometric landscape of research in Indonesia through the Web of Science (WOS) database to identify annual trends, dominant themes, and future research directions. The method used is descriptive bibliometric analysis and network visualization using VOSviewer software on publication data for the period 2004-2026. The research findings indicate a highly exponential growth of publications, reaching a peak in 2025 with a contribution of 35.6% of the total literature. Dominant themes are concentrated in the management, economics, and education clusters, with sustainability and digital innovation emerging as the latest research trends. The National Research and Innovation Agency (BRIN) emerged as the most productive institution, while the field of financial management recorded the highest citation impact. The study's conclusions confirm that research in Indonesia has transformed towards an internationally competitive multidisciplinary approach. Going forward, it is recommended to explore thematic areas with low density to fill the remaining research gaps.

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1. INTRODUCTION

In the contemporary global research landscape, bibliometric analysis has emerged as a crucial tool for evaluating and understanding the dynamics of scholarly production across disciplines. This methodology, which uses quantitative techniques to analyze publication and citation data, offers invaluable insights into research trends, impact, and collaboration patterns [1], [2], [3]. The importance of bibliometric studies is underscored

by their ability to inform policy decision-making, guide funding allocation, and shape the strategic direction of academic institutions [4], [5]. In Indonesia, the application of bibliometric analysis is very important considering the country's rapid economic growth and the accompanying expansion of research output [6], [7]. Despite this growth, there is still a lack of comprehensive bibliometric studies that map the evolution and impact of Indonesian research across various fields [8]. This gap highlights the need for a systematic review that can provide a holistic understanding of the research landscape in Indonesia, identify emerging trends, and foster international collaboration [9], [10]. By utilizing bibliometric techniques, this study aims to fill this gap, offering a detailed examination of bibliometric research conducted in Indonesia, and thereby contributing to the global discourse on research evaluation and development.

The development of bibliometric research in Indonesia faces several significant challenges and opportunities. One major challenge is the complexity of the approaches used in previous research. For example, studies often use comprehensive bibliometric tools such as VOSviewer, Biblioshiny, and other software to map the scholarly landscape, author collaboration networks, and citation trends [11], [12], [13]. This complexity can be a barrier for researchers who may lack access to or familiarity with these sophisticated tools. Furthermore, the diversity of study contexts, ranging from social innovation in rural development to technology entrepreneurship in SMEs, adds another layer of complexity, making it difficult to standardize methodologies and compare results across fields [11]. Despite these challenges, there are significant opportunities to advance bibliometric research in Indonesia. The growing interest in topics such as technology adoption, renewable energy, and smart cities demonstrates the growing recognition of the importance of these areas for sustainable development [14], [15], [16]. Technological advances, particularly in data analysis and visualization, offer new tools and methods for conducting more sophisticated and impactful bibliometric studies.

Although bibliometric research in Indonesia is growing, several gaps remain. The existing literature has explored various fields such as linguistics, public administration, digital arts technology, management information systems, and physical education [17], [18], [19], [20]. For example, linguistic research has seen a significant increase in publications after 2018, focusing on themes such as linguistic landscapes [20]. Similarly, public administration research has highlighted thematic evolution and international collaboration [6]. However, there is a marked lack of comprehensive syntheses that compare specific aspects across these studies. For example, although digital art technologies and management information systems have been extensively mapped, there is no specific review approach that integrates findings across different domains [19], [18].

Furthermore, research on creative industries and smart cities in Indonesia has identified emerging trends and dominant themes, but a comparative analysis of these themes across sectors is lacking. This suggests the need for more integrative and comparative bibliometric reviews to provide a holistic understanding of research trends and gaps in Indonesia. Addressing these gaps could significantly improve the strategic direction and impact of future research efforts.

A systematic literature review (SLR) is crucial at this time to consolidate the fragmented knowledge surrounding bibliometric research in Indonesia. As the volume of publications continues to increase, researchers, practitioners, and policymakers face challenges in navigating the diverse range of existing findings and methodologies. This SLR aims to provide a comprehensive synthesis of the existing literature, thus serving as a valuable resource for researchers seeking to identify gaps and opportunities for future studies. Practitioners across various fields can benefit from insights into research trends and collaboration patterns, which can inform their strategic decisions and enhance their contributions to the academic community. Furthermore, policymakers will find this review crucial in formulating evidence-based policies that foster research excellence and innovation in Indonesia. By establishing a theoretical framework and charting future research directions, this article will not only contribute to academic discourse but also facilitate a more cohesive understanding of bibliometric practices, ultimately guiding stakeholders in their efforts to foster a robust research ecosystem in the country.

Based on the explanation above, the research problem formulation is as follows: RQ 1: What are the main themes and trends in bibliometric research conducted in Indonesia? RQ 2: What are the annual trends in bibliometric analysis research in Indonesia? RQ 3: What are the most productive journals, the most influential authors, and citation patterns on bibliometric analysis in Indonesia? RQ 4: What are the gaps in the current bibliometric literature in Indonesia, and how can future research address these gaps?

2. METHOD

This study applies a qualitative approach with a Systematic Literature Review (SLR) design combined with bibliometric analysis to systematically identify, map, and synthesize the development of bibliometric research in Indonesia. This study is based on scientific publications indexed in the Web of Science (WoS) database, which was selected for its rigorous indexing standards, broad multidisciplinary coverage, and high metadata quality [21]. The integration of SLR and bibliometric analysis allows researchers to obtain a comprehensive picture of publication patterns, research topic trends, collaborations between authors and institutions, and citation dynamics in the field of study [22]. All stages of the research were carried out with reference to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure transparency, accountability, and replicability of the research process [23].

The research data sources were obtained exclusively from the Web of Science Core Collection (https://mjl.clarivate.com/home) at 1:00 PM on Monday, January 26, 2026. The publications analyzed included scientific works affiliated with institutions in Indonesia or substantively focused on the research context in Indonesia. The selection of these data sources aimed to ensure that the bibliometric analysis was conducted on publications with high academic credibility and direct relevance to the research objectives. The literature search was conducted systematically through the advanced search feature in the Web of Science database using the main keywords "bibliometric" OR "bibliometrics". The search was combined with the parameters of Indonesian country affiliation and the predetermined

publication timeframe. The search process was carried out iteratively to ensure optimal literature coverage and minimize the potential for selection bias.

Publication selection is carried out following the PRISMA Diagram flow, which includes four main stages, namely identification, screening, eligibility assessment, and inclusion [23]. In the identification stage, all publications resulting from the database search were exported in full metadata format and compiled into a single initial database without any elimination. The next stage, filtering, was carried out by removing duplicate publications and selecting titles and abstracts based on their suitability to the research focus. Articles that did not discuss bibliometric analysis, were not related to the Indonesian context, or were irrelevant to the research objectives were eliminated at this stage.

In the eligibility assessment stage, researchers thoroughly reviewed the full texts of publications that had passed the screening stage. The assessment was based on inclusion and exclusion criteria, which included topic relevance, clarity of bibliometric method application, adequate data availability, and publication quality. Publications that did not meet these criteria were excluded from the analysis process. The final stage, inclusion, yielded several publications deemed worthy of in-depth analysis and used as primary sources in the research. The number of publications that passed each selection stage is presented in the PRISMA Diagram for transparency and methodological consistency.

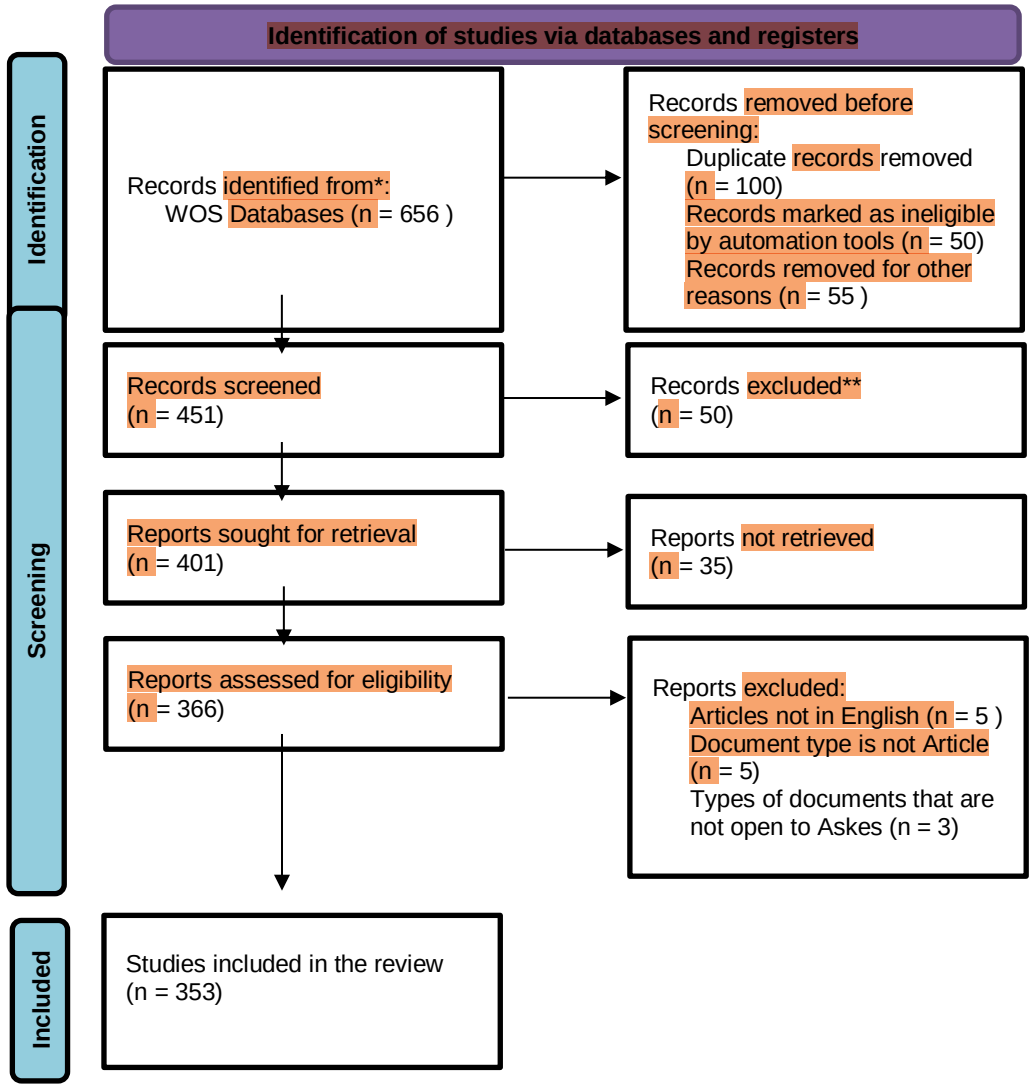
Data analysis was conducted using a descriptive bibliometric approach and science mapping. Descriptive analysis was used to identify annual publication trends, the most productive journals, the most influential authors, and citation patterns. Furthermore, science mapping was conducted to analyze the collaborative networks of authors, co-authors, co-citations, and co-keywords using bibliometric software such as VOSviewer (https://www.vosviewer.com/) and Biblioshiny (https://www.bibliometrix.org/home/index.php/layout/biblioshiny) [24].

3. RESULTS AND DISCUSSION

Based on the search results from the WOS database at 1:00 PM, Monday, January 26, 2026, with the keywords "bibliometric" OR "bibliometrics". With a focus on the type of article document, the country of Indonesia, open access documents, and the English language, 353 results were generated.

https://doi.org/10.58421/misro.v5i1.1074

3.1. Results



Prisma Diagram 2020 (Page, 2020)

574 https://doi.org/10.58421/misro.v5i1.1074

RQ 1: What are the main themes and trends in bibliometric research conducted in Indonesia?

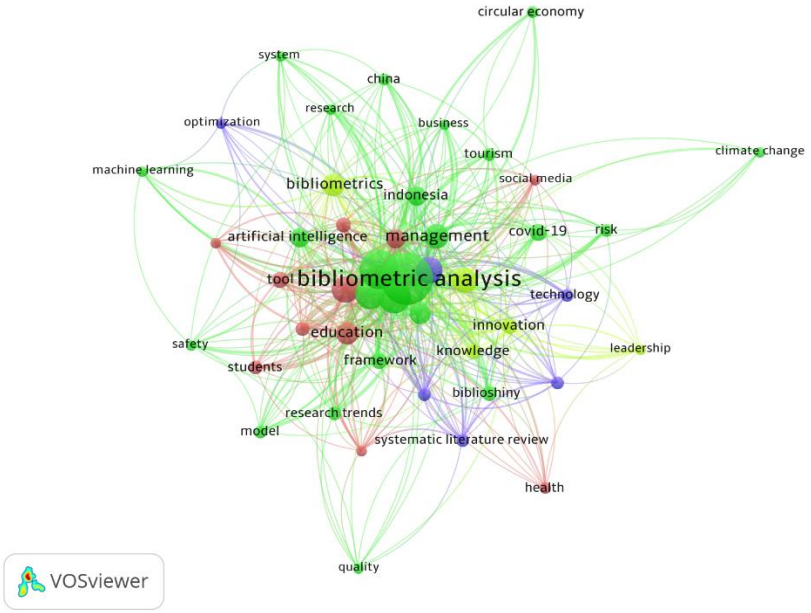


Figure 1: Network Visualization

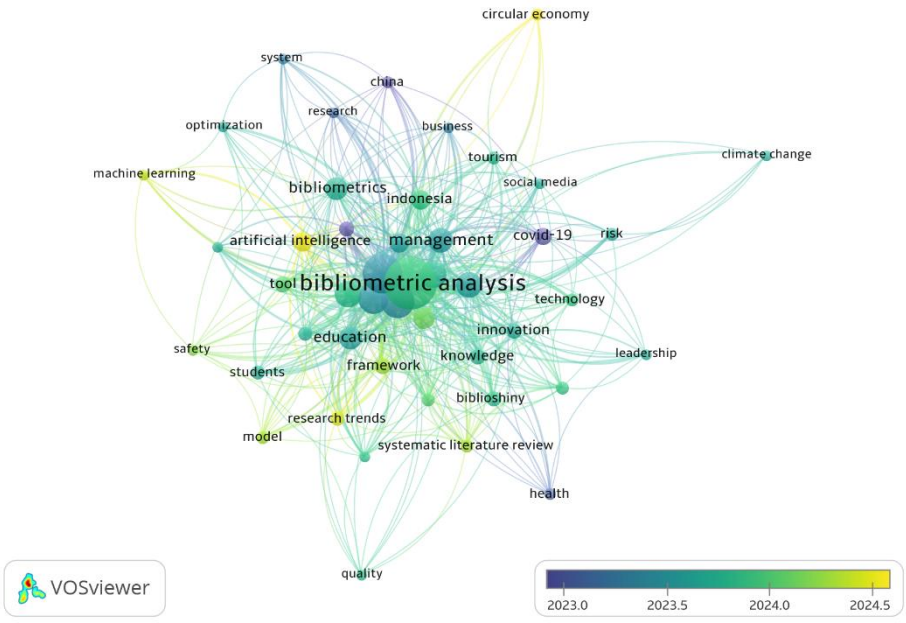


Figure 2: Overlay Visualization

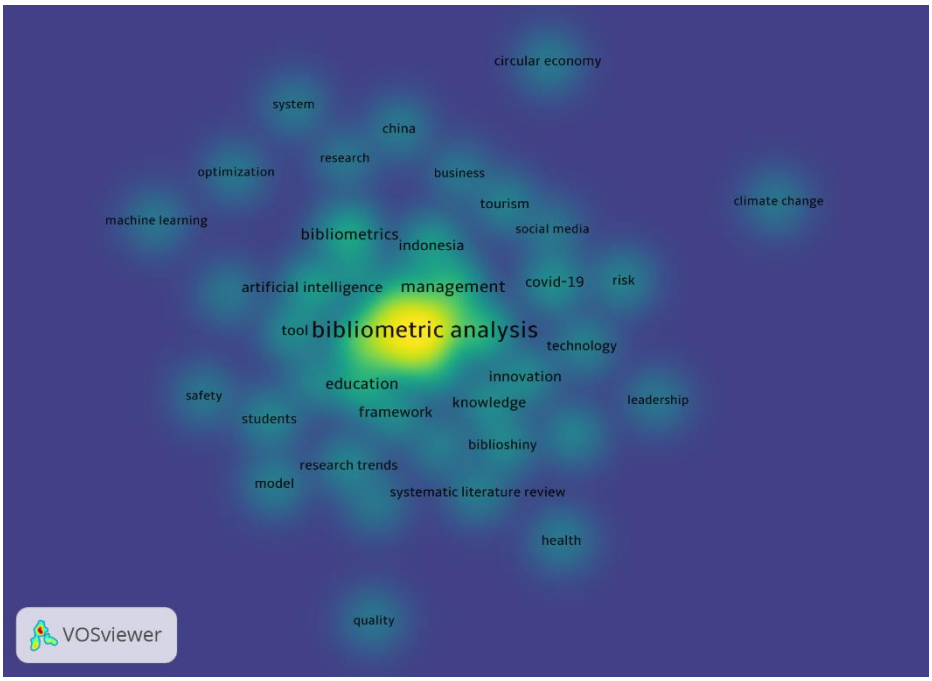


Figure 3: Density Visualization

Figures 1, 2, and 3, analyzing the Network, Overlay, and Density Visualization maps, reveal the deep structure of Indonesia's highly consolidated yet dynamic bibliometric research landscape. The network map demonstrates strong interdisciplinary collaboration centered on major nodes such as bibliometric analysis and VOSviewer, indicating that these methodologies have become established instruments for validating scientific knowledge in the country. Meanwhile, the overlay map demonstrates a clear thematic evolution; research trends have shifted from sociology and basic education to more complex, cutting-edge issues such as digital innovation and sustainable economics in recent years. This is further emphasized by the density map, which displays "hot" or saturated areas in the management, economics, and education clusters, while also revealing "cold" areas that remain underexplored, offering opportunities for future research directions in Indonesia. Overall, the integration of these three visualizations maps Indonesia's research position in the Web of Science (WOS), which is increasingly globally competitive through a multidisciplinary approach based on robust literature data.

RQ 2: What is the annual trend of bibliometric analysis research in Indonesia?

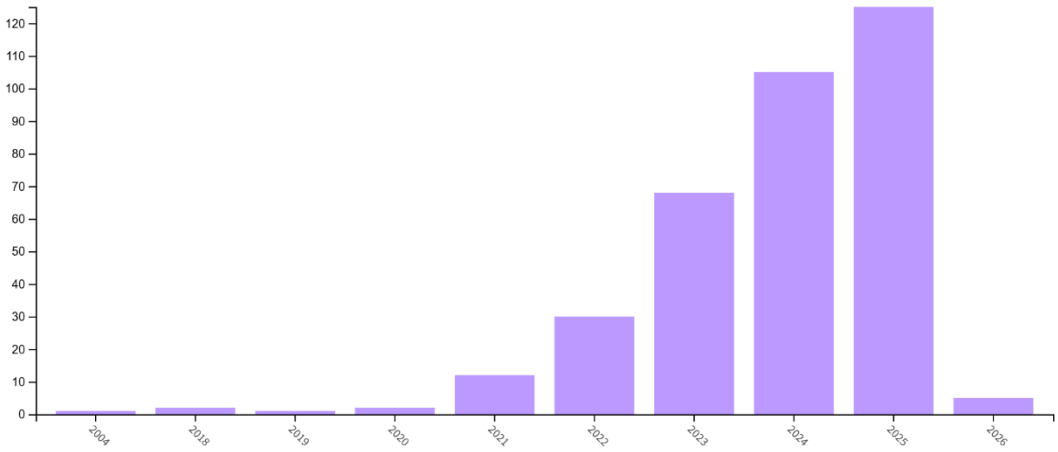


Figure 4: Diagram of publication trends per year

Table 1: Publication trends per year

Publication Years	Record Count	% of 351
2026	5	1,425
2025	125	35,613
2024	105	29,915
2023	68	19,373
2022	30	8,547
2021	12	3,419
2020	2	0.570
2019	1	0.285
2018	2	0.570
2004	1	0.285

Based on Figure 4, Table 1, and the distribution of publication years, the trend of bibliometric-based research in Indonesia in the Web of Science (WOS) database shows very aggressive and exponential growth, especially in the last three years. The drastic surge began in 2023 and peaked in 2025 with a contribution of 35.6% (125 articles), indicating that bibliometric methods have become a very popular and dominant research instrument among Indonesian academics. This phenomenon reflects a major shift in the national research landscape towards large-scale data analysis and a more structured mapping of the global literature. With publication volume remaining high in 2024 (29.9%) and projections for early 2026, the future direction of research in Indonesia is predicted to increasingly focus on strengthening the quality of research evaluation methodologies and integrating strategic themes with high international visibility in WOS.

https://doi.org/10.58421/misro.v5i1.1074

RQ 3: What are the most productive journals, most influential authors, and citation patterns of bibliometric analysis in Indonesia?

Table 2. Most Productive Authors

Authors	Record Count	% of 351
Budihardjo MA	6	1,709
Fahlevi M	6	1,709
Kusuma HS	6	1,709
Saleh AY	6	1,709
Widianingsih I	6	1,709
Handoyo S	5	1,425
Abdullah KH	4	1,140
Apriantoro MS	4	1,140
Nuryana Z	4	1,140
Prahani BK	4	1,140

Based on Table 2, the most productive authors, bibliometric-based research trends in Indonesia indicate a fairly even distribution of authority among several key researchers. Figures such as Budihardjo MA, Fahlevi M, Kusuma HS, Saleh AY, and Widianingsih I emerged as major contributors, each producing 6 articles (1.709% of the total database). The presence of these authors as productivity leaders indicates that the bibliometric research landscape in Indonesia is beginning to have expert groups that consistently map various disciplines in the Web of Science (WOS). Overall, this data illustrates the future direction of research in Indonesia, which is increasingly professional and specialized, where collaboration driven by these productive authors plays a crucial role in increasing the visibility and quality of Indonesian scientific output on the international stage.

Table 3. Most Productive Affiliates

Affiliations	Record Count	% Of 351
National Research Innovation Agency of Indonesia, Brin	39	11.111
Padjadjaran University	27	7,692
Gadjah Mada University	25	7,123
Airlangga University	22	6,268
Indonesian Education University	18	5.128
March 11th University	17	4,843
Brawijaya University	16	4,558
Yogyakarta State University	15	4,274
Diponegoro University	14	3,989
Bina Nusantara University	13	3,704

Based on Table 3, the most productive affiliate data, the trend of bibliometric-based research in Indonesia shows the strong dominance of state research institutions and major universities (PTN-BH), which play a major role in the global scientific arena in the Web of Science (WOS). The National Research and Innovation Agency (BRIN) leads significantly with a contribution of 11.1% (39 articles), confirming its role as a national center of

research excellence, followed by Padjadjaran University (7.6%) and Gadjah Mada University (7.1%). The presence of educational institutions such as the Indonesian University of Education and Yogyakarta State University in the top ten list indicates that bibliometric methods are highly sought after in the educational research cluster in Indonesia. Overall, this data maps that the future direction of research in Indonesia will depend heavily on the capacity of these major institutions to maintain productivity and expand scientific collaboration networks at the international level.

Table 4. Affiliation with the Department

Affiliation with the Department	Record Count	% of 353
Diponegoro University Faculty of Engineering	8	2,266
Padjadjaran University Faculty of Social And Political Sciences	8	2,266
Diponegoro University Department of Environmental Engineering	6	1,700
Airlangga University Faculty of Economics and Business	5	1,416
Gadjah Mada University Faculty of Engineering	5	1,416
Gadjah Mada University Faculty of Medicine, Public Health and Nursing	5	1,416
Airlangga University Faculty of Medicine	4	1,133
Airlangga University Faculty of Science and Technology	4	1,133
Brawijaya University Faculty of Economics and Business	4	1,133
Gadjah Mada University Faculty of Biology	4	1,133

Based on Table 4, the departmental affiliation data, the trend of bibliometric-based research in Indonesia shows a highly multidisciplinary character, where this literature mapping technique is no longer dominated by a single scientific field. The Faculty of Engineering, Diponegoro University, and the Faculty of Social and Political Sciences, Padjadjaran University, lead productivity at the department level, each contributing 2.266% (8 articles), indicating that bibliometric methods are used intensively for both technology evaluation and public policy. The presence of the Department of Environmental Engineering, the Faculty of Economics and Business, and the Faculty of Medicine (UGM and Airlangga) in the top ten list emphasizes that the dominant themes of bibliometric research in Indonesia have penetrated crucial issues such as public health, business economics, and biology. Overall, this data maps the future of Indonesian research that is increasingly collaborative across disciplines, where these departments become centers of bibliometric methodology growth to address complex challenges through Web of Science (WOS)-based data approaches.

https://doi.org/10.58421/misro.v5i1.1074

Table 5. Most influential authors

Authors	Article Title	Times Cited, WoS Core	Site
Khatib, SFA; Abdullah, DF; Hendrawaty, E; Elamer, AA	A bibliometric analysis of cash holdings literature: current status, development, and agenda for future research	88	[25]
Kabil, M; Priatmoko, S; Magda, R; David, L.D	Blue Economy and Coastal Tourism: A Comprehensive Visualization Bibliometric Analysis	62	[26]
Nandiyanto, ABD; Al Husaeni, DF	A bibliometric analysis of materials research in an Indonesian journal using VOSviewer	55	[27]
Servadei, F; Tropeano, M.P.; Spaggiari, R; Cannizzaro, D; Al Fauzi, A; Bajamal, A.H.; Khan, T; Kolias, AG; Hutchinson, P.J	Footprint of Reports From Low- and Low- to Middle-Income Countries in the Neurosurgical Data: A Study From 2015 to 2017	46	[28]
Baarimah, AO; Alaloul, WS; Liew, MS; Kartika, W; Al-Sharafi, MA; Musarat, MA; Alawag, AM; Qureshi, A.H	A Bibliometric Analysis and Review of Building Information Modeling for Post-Disaster Reconstruction	41	[29]
Maula, AW; Fuad, A; Utarini, A	Ten-year trend of dengue research in Indonesia and South-east Asian countries: a bibliometric analysis	39	[30]
Kusuma, HS; Al Lantip, GI; Mutiara, X; Iqbal, M	Evaluation of Mini Bibliometric Analysis, Moisture Ratio, Drying Kinetics, and Effective Moisture Diffusivity in the Drying Process of Clove Leaves using Microwave-Assisted Drying	37	[31]
Budihardjo, MA; Ramadan, BS; Putri, SA; Wahyuningrum, IFS; Muhammad, FI	Towards Sustainability in Higher-Education Institutions: Analysis of Contributing Factors and Appropriate Strategies	37	[32]
Priatmoko, S; Kabil, M; Akaak, A; Lakner, Z; Gyuricza, C; David, L.D	Understanding the Complexity of Rural Tourism Business: Scholarly Perspective	33	[33]
Rusydiana, AS	Bibliometric analysis of journals, authors, and topics related to COVID-19 and Islamic finance listed in the Dimensions database by Biblioshiny	33	[34]
Chiari, W; Damayanti, R; Harapan, H; Puspita, K; Saiful, S; Rahmi, R; Rizki, DR; Iqhrammullah, M	Trend of Polymer Research Related to COVID-19 Pandemic: Bibliometric Analysis	29	[35]

Based on Table 5, the data from the most influential authors, bibliometric-based research trends in Indonesia in Web of Science (WOS) show a significant citation impact on strategic, cross-disciplinary topics. The article by Khatib et al. on cash holdings literature is the most influential work with 88 citations, followed by research on the Blue Economy (62 citations) and materials research by Nandiyanto & Al Husaeni (55 citations).

The diversity of these topics—ranging from financial management, coastal tourism, materials engineering, to public health (dengue fever and COVID-19 research)—indicates that bibliometric methods in Indonesia have successfully become a new standard in validating scientific developments in various sectors. Overall, this data maps that the future direction of Indonesian research in WOS is not only pursuing publication quantity, but also globally recognized quality, where sustainability and crisis mitigation themes are the dominant themes most frequently referenced by the international scientific community.

RQ 4: What gaps exist in the current bibliometric literature in Indonesia, and how can future research address these gaps?

The bibliometric research landscape in Indonesia has witnessed a remarkable transformation over the past decade, shifting from traditional literature reviews to sophisticated, multidisciplinary scientific validation tools. Data shows exponential publication growth, with a dramatic surge peaking in 2025, accounting for more than a third of the total historical contributions. This phenomenon indicates that the Indonesian academic community, spearheaded by strategic institutions such as the National Research and Innovation Agency (BRIN) and major universities like UNPAD, UGM, and Airlangga University, is becoming increasingly adept at utilizing global databases to chart the direction of national scholarship. This productivity is not only concentrated at the university level but also extends to specific departmental levels, from engineering and science to social sciences and medicine, reflecting the flexibility of bibliometric methods in addressing research challenges across various sectors.

Thematically, the current bibliometric research structure in Indonesia is dominated by education, investment, and management, but continues to evolve toward contemporary issues with global impact. Network and density visualizations demonstrate that while areas such as economics and educational literacy are highly saturated, there is a shift toward future themes such as digital innovation, sustainable development, and post-pandemic public health. The quality and influence of this research are evidenced by the high citation rates of key authors' works focusing on strategic topics such as cash holdings, the blue economy, and disaster mitigation. This positions Indonesia as more than just a research subject, but also an active contributor to the global scientific dialectic. Going forward, research is predicted to become more focused on exploring niches in research that are still "cold" on the visualization map, such as the integration of artificial intelligence ethics and the green economy. This will strengthen Indonesia's competitiveness and scientific visibility internationally through the sustainable use of Web of Science data.

3.2. Discussion

This study reveals that the bibliometric research landscape in Indonesia within the Web of Science database has experienced exponential growth over the past five years, with peak productivity occurring in 2025 (35.6%). As explained in the introduction regarding the importance of digital literature mapping, these results indicate that bibliometric methods have become the gold standard for evaluating science in Indonesia. The dominance of the National Research and Innovation Agency (BRIN) as the most

productive affiliate (11.1%) and the emergence of a tight thematic cluster between management, education, and health through VOSviewer visualizations underscore the maturity of the national research ecosystem. Overall, these findings demonstrate that Indonesia is no longer merely an object of study but has become an active contributor to the global scientific dialectic, with the focus now shifting dynamically from basic education issues to more complex technological innovation and economic sustainability.

These findings suggest that the surge in publications in 2024 and 2025 reflects the success of national research integration policies and the use of information mapping technology at the university level. This aligns with Human Capital theory, which emphasizes that mastery of information technology is a crucial asset in enhancing a nation's intellectual competitiveness [36]. The use of software such as VOSviewer by Indonesian researchers to analyze global literature reflects an awareness of the importance of efficiency in processing big data. As noted by Nandiyanto & Al Husaeni [27]. In their material research, the use of bibliometric visualization has proven to be able to provide more precise direction for researchers in determining the novelty of studies, thereby reducing unproductive research repetition and accelerating the accumulation of knowledge in Indonesia.

This study is in a strong position. This study strengthens previous findings regarding the effectiveness of bibliometrics in analyzing technical and scientific issues in Indonesia. The results of this study align with the study by Nandiyanto & Al Husaeni [27], which proves that the VOSviewer-based methodology is highly reliable for identifying developments in materials and applied science research. By demonstrating the dominance of engineering faculties in the use of bibliometrics, this study strengthens the thesis that the exact sciences in Indonesia have adopted bibliometric analysis not merely as a supplement but as a primary methodology for establishing research roadmaps. This strengthening is crucial in building the foundation that states that the integration of cross-disciplinary methodologies is a key factor in the progress of national innovation in the future.

The impact of these findings is the acceleration of the digitalization of research methodology across all universities in Indonesia. With data showing that bibliometric publications in WOS have a high citation impact, universities will be increasingly encouraged to provide training in analytical tools such as VOSviewer and Biblioshiny to students and lecturers. This impact will directly improve national data literacy, aligning with human resource development theories that emphasize the importance of digital analytical skills. In the future, the ability to map global literature will be a fundamental competency for Indonesian researchers to produce competitive manuscripts in reputable international journals, thereby significantly improving institutional rankings. The second impact relates to national research funding allocation policies by institutions such as BRIN. The findings regarding the dominance of BRIN and several PTN-BH in the WOS dataset provide empirical evidence for the government to continue supporting a collaborative research ecosystem.

4. CONCLUSION

Based on the results of this study, it is concluded that the bibliometric-based research landscape in Indonesia has reached a significant stage of maturity in the Web of Science (WOS) database. The discovery of an exponential growth pattern, particularly in the period 2023 to 2025, reflects the acceleration of research digitalization at the national level. The dominant themes that emerged indicate a strong integration between bibliometric methods and strategic issues such as financial management, sustainable development, and educational innovation. The involvement of major institutions such as BRIN and universities in the PTN-BH cluster confirms that bibliometric research authority in Indonesia has been concentrated in institutions with adequate data infrastructure, thus enabling them to produce work with high global citation impact. The alignment between the expectations stated in the introduction and the results of this study demonstrates that investment in human capital in mastering visual analysis tools such as VOSviewer has become a key factor in charting the future direction of science in Indonesia. As a follow-up to these findings, several practical suggestions are addressed to relevant stakeholders. For higher education and research institution managers, it is recommended to initiate advanced training programs on bibliometric analysis and meta-analysis for lecturers and young researchers to expand mapping to fields that still have low density (cold spots), such as the humanities and arts. To the Ministry of Higher Education and Research, it is recommended to formulate a publication incentive policy that is not only based on quantity, but also encourages broader international collaboration to increase the citation index of Indonesian researchers in the global arena. Finally, for future researchers, it is recommended to apply this bibliometric study more specifically in longitudinal or comparative analysis between countries in South-east Asia to obtain a sharper picture of the competitive position of Indonesian research, so that the resulting research output can provide greater theoretical and practical contributions to national development based on knowledge.

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