



ANALYSIS OF EDUCATION AND ECONOMIC DEVELOPMENT: MAPPING RESEARCH ON THE SCOPUS DATABASE IN INDONESIA

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A B S T R A C T

Indonesia has made notable advancements in the development of its educational infrastructure. However, persistent challenges pertaining to educational equity and quality continue to impede economic progress. The objective of this study is to map the research on the relationship between education and economic development in Indonesia using the Scopus database from 1965 to 2024. The study employs bibliometric analysis to examine trends, themes, and research gaps across 920 articles. The findings indicate a notable surge in research activity following 2015, with pivotal themes encompassing educational inequality and regional disparities. These implications highlight the necessity for targeted policy interventions and future research that employs a longitudinal and interdisciplinary approach in order to support informed policymaking and strategic planning for Indonesia's educational and economic development.

Keywords: Education; Economic Development; Bibliometric Analysis; Indonesia; Research Trends.

ABSTRAK

Indonesia telah membuat langkah signifikan dalam meningkatkan infrastrukturnya, namun tantangan yang terus berlanjut dalam pemerataan dan kualitas pendidikan terus menghambat kemajuan ekonomi. Penelitian ini bertujuan untuk memetakan penelitian tentang hubungan antara pendidikan dan pembangunan ekonomi di Indonesia dengan menggunakan basis data Scopus dari tahun 1965 hingga 2024. Dengan menggunakan analisis bibliometrik, studi ini meneliti tren, tema, dan kesenjangan penelitian di 920 artikel. Temuan-temuannya menunjukkan adanya peningkatan yang nyata dalam minat penelitian pasca-2015, dengan tema-tema utama yang mencakup ketidakesetaraan pendidikan dan kesenjangan regional. Implikasinya menggarisbawahi perlunya intervensi kebijakan yang tepat sasaran dan penelitian di masa depan yang berfokus pada studi longitudinal dan interdisipliner untuk mendukung pembuatan kebijakan yang tepat dan perencanaan strategis untuk pembangunan pendidikan dan ekonomi Indonesia.



Kata kunci: Pendidikan; Pembangunan Ekonomi; Analisis Bibliometrik; Indonesia; Tren Penelitian

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INTRODUCTION

Indonesia has demonstrated advancement in its educational system through the allocation of resources toward infrastructure development and the enhancement of educational quality. However, the country continues to confront challenges in addressing educational inequalities and improving the overall quality of its educational institutions (Sukirman & Linse, 2024). The lack of clarity regarding learning outcomes in Islamic higher education institutions impedes the development of the critical thinking skills that are essential for global competitiveness (Juniati et al., 2022; Sunendar & Adriany, 2023). The Omnibus Law on Job Creation may have the unintended consequence of limiting secure employment opportunities for rural youth and affecting their education (Patria, 2022; Sanders et al., 2024). Islamic banks have played a role in supporting economic development at the district level, which has indirectly contributed to improvements in education (Junaidi, 2024).

In spite of numerous efforts to improve education, Indonesia still falls behind neighboring countries like Malaysia and Thailand in terms of the education development index (Jayadi et al., 2022; Putri et al., 2023). The Smart Indonesia Program (SIP) is a notable initiative aiming to mitigate cost barriers and promote equal access to education, particularly successful in Central Java with the Smart Indonesia Card (SIC) implementation receiving positive ratings (Ninghardjanti et al., 2023). However, challenges such as data synchronization and accountability issues impede the program's overall efficacy, while disparities in socioeconomic status and education literacy among the poor affect National Health Insurance uptake, indirectly impacting educational outcomes (Haemmerli et al., 2021; Miftahussurur et al., 2022).

The educational gap between Indonesia and neighboring countries like Malaysia and Singapore poses challenges to Indonesia's global competitiveness and workforce development (Mahfud et al., 2023). Lower education levels in Indonesia hinder the acquisition of specialized skills needed in a technology-driven economy, exacerbating social inequality and limiting upward mobility (Nuraeni et al., 2024). Addressing disparities in education quality and access, along with aligning vocational training with industry needs, is crucial for enhancing labor productivity, attracting foreign investment, and fostering inclusivity in the economy (Farkhati, 2024; Muhyiddin et al., 2024; Novianti, 2024).

To gain a deeper comprehension of the interconnection between education and economic advancement in Indonesia, it is essential to undertake a thorough examination of the extant research on this subject. This study aims to provide a comprehensive overview of the existing research on the nexus between education and economic development in Indonesia. The Scopus database serves as the primary source of scholarly literature. By analyzing the trends, themes, and gaps in the existing research, this study will provide valuable insights into the current state of knowledge and identify areas for future research that could inform policymaking and strategic planning for Indonesia's educational and economic development.

The accelerated advancement of science, technology, and information in the context of globalization has exerted a considerable influence on the Indonesian education system, with outcomes that may be perceived as either beneficial or detrimental (Bulow & Giu, 2019). While globalization has encouraged innovation and efficiency in education, it has also brought

challenges such as the commercialization of education and the potential loss of national control (Defit et al., 2022; Herdianto et al., 2022; Intiana & Mar'i, 2023). In addition to increasing enrollment and reducing dropout rates, the Indonesian government is also prioritizing the improvement of students' literacy skills, particularly in underserved areas. This is being achieved through the implementation of various literacy programs and assessments, such as AKSI and TELEPATI (Defit et al., 2022; Susetyo et al., 2021). In order to enhance the quality of education in Indonesia, it is necessary to adopt a comprehensive approach that incorporates technology integration, teacher training, and community engagement (Anggraini et al., 2023; Ruslin et al., 2022). This approach must be designed to ensure that students are able to demonstrate proficiency in literacy and other essential competencies that align with international standards.

This research study aims to address the existing gaps in the existing literature on the relationship between education and economic development in Indonesia by conducting a comprehensive analysis of the research on this topic utilizing the Scopus database. The findings of this study will provide valuable insights into the current state of research in this domain and inform policymakers and stakeholders of the necessary interventions to enhance the quality of education and its impact on economic development in Indonesia.

LITERATURE REVIEW

The relationship between education and economic development is indeed multifaceted, particularly in developing countries like Indonesia. Research has consistently shown that education is a crucial driver of economic growth and social progress. For instance, higher educational levels are associated with increased environmentally friendly behaviors and sustainable energy consumption, which in turn contribute to economic development through higher household equivalent income (Piao & Managi, 2023). In the context of Indonesia, income inequality remains a significant issue despite reductions in poverty rates, with economic growth and foreign direct investment (FDI) identified as key factors in reducing income disparity (Handayani et al., 2022). However, geographic location, socioeconomic status, and gender significantly influence educational outcomes, with provinces in Eastern Indonesia generally exhibiting higher rates of uneducated populations compared to their Western counterparts. This disparity reflects broader socioeconomic inequalities across the archipelago. Similar patterns are observed in other developing regions, such as Nepal, where lower levels of maternal education and disadvantaged socioeconomic status are significant risk factors for suspected developmental delays (SDD) among children, further highlighting the critical role of education in early childhood development and long-term economic prospects (Acharya et al., 2023). In China, spatial differences in educational development also impact economic growth, with provinces that have higher education levels promoting each other's development, while the western regions lag behind, suggesting the need for targeted educational and vocational training programs to achieve balanced economic growth (Li & Wye, 2022; Liu, 2022). These findings underscore the importance of addressing educational inequalities through tailored interventions that consider geographic, socioeconomic, and gender-based disparities to foster inclusive economic development and social progress in Indonesia and similar developing countries (Goczek et al., 2021; Hamdan et al., 2020; Sarwar et al., 2019).

Inequality in education is closely tied to broader social and economic conditions, with the decentralization of education management to regional authorities often worsening discrepancies, especially in underdeveloped areas (Bao et al., 2023; Kaye, 2023). This issue is observed across different global settings, such as in Colombia where delayed rural education initiatives have widened rural-urban educational gaps, emphasizing the impact of inadequate resource allocation and irrelevant curricula on regional disparities (España-Eljaiek et al., 2023). Similarly, in sub-Saharan Africa, persistent educational inequalities stem from factors like

material deprivation and insufficient public education spending, affecting children from lower socioeconomic backgrounds, while in Flanders, community-led educational projects by ethnic-cultural minority groups address disparities but are not always recognized by mainstream educators, potentially limiting their effectiveness (Plavgo & Bernardi, 2023; Schoenholzer & Burger, 2024).

Efforts to enhance the quality of education in Indonesia post the educational reforms of 1999 have produced varied outcomes, as despite improved access to education, there has been a decline in academic performance, emphasizing the necessity for quality-focused educational policies (Nuraeni et al., 2024). Indonesia's performance in global assessments like PISA continues to be below par, with low rankings in literacy, numeracy, and science, highlighting ongoing challenges in teaching quality, infrastructure, and curriculum development (Solihin et al., 2024). While there have been positive effects from government initiatives such as teacher sharing and internet quotas during the pandemic, a more cohesive and long-term strategy is essential to ensure equitable and high-quality education for all students, given the persistent disparities in educational outcomes (Mardhiyah, 2023; Pratama, 2023; Revina et al., 2023).

METHODOLOGY

Descriptive statistical methods are indispensable for the organization and presentation of research data in an effective manner. They provide a comprehensive picture of the characteristics of the sample and facilitate the interpretation of results. This research employs descriptive statistics to analyze bibliometric data, which entails the assessment of diverse bibliographic metrics, including the number of documents published annually, classified by source, author, affiliation, country or region, type, field of study, and funding sponsor.

This study employs a content analysis of articles published on the Scopus database between 1965 and 2024. The research theme is education and economic development. The data were collected by downloading all journals in the Scopus database in RIS format, with the keywords "education and economic development," and filtering only country/territory to Indonesia. A total of 920 articles published between 1965 and 2024 were identified through the search process. The aforementioned articles will be utilized in subsequent data analysis.

Additionally, trend analysis was conducted with the assistance of the VOSviewer software. The VOSviewer software was employed to facilitate the acquisition of data pertinent to bibliometric network visualization, thus enabling the completion of this research project.

The following steps outline the process for obtaining a file in RIS format from the Scopus database:

1. A document search should be conducted in the Scopus database using the keywords "Education and Economic Development."
2. The filter should be set to "Limited to Indonesia."
3. In the Scopus journal, choose the "All" option.
4. The "Export" function should then be selected, after which the file type "RIS" should be chosen.
5. The downloaded file should then be saved in RIS format to the designated folder.

The following steps are required for the processing of bibliometrics in VOSviewer software:

1. Open VOSviewer software
2. Click create file → select data type select create map based on text data → next
3. Select data source select read data from reference manager file → next
4. Select files Select "RIS" → browse "RIS" file data that has been downloaded and stored in the folder → next

5. Select the title select field and the abstract field (keep checking ignore the structured abstract label and ignore the copyright statement) → next
6. Choose counting method pilih binary counting → next
7. Choose threshold → minimum number of occurrences of term (4) → next
8. Select the number of terms; the number of terms to be selected as needed
9. Verify selected terms (we can remove terms that are not related to the topic by unchecking the terms box)
10. Finished. The results can be seen in the network visualization, overlay visualization and density visualization.

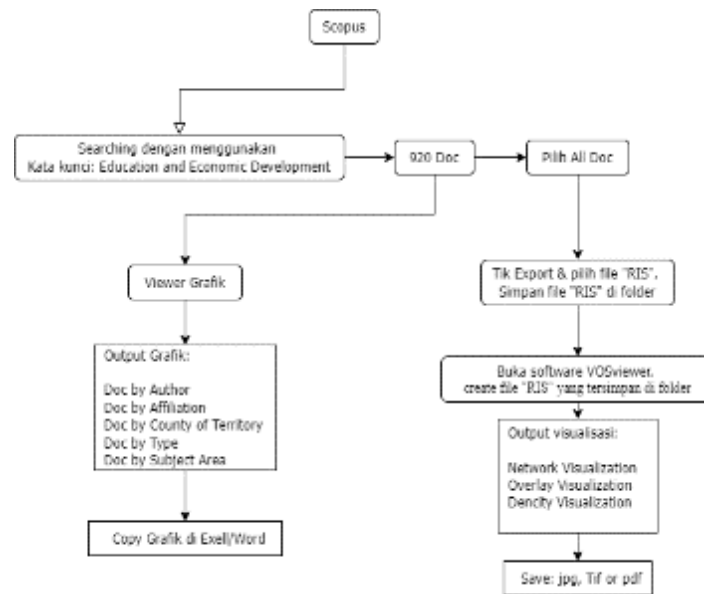


Figure 1. Stages of Data Collection Method.

Sumber: Author 2024

RESULT AND DISCUSSION

A review of the literature on the nexus between education and economic development, conducted using the Scopus database, reveals a number of significant trends and developments in this field. There has been a notable increase in interest in the topic of education and economic development in Indonesia from 2015 to the present. These insights collectively indicate that research on economic education is a topic worthy of further investigation.

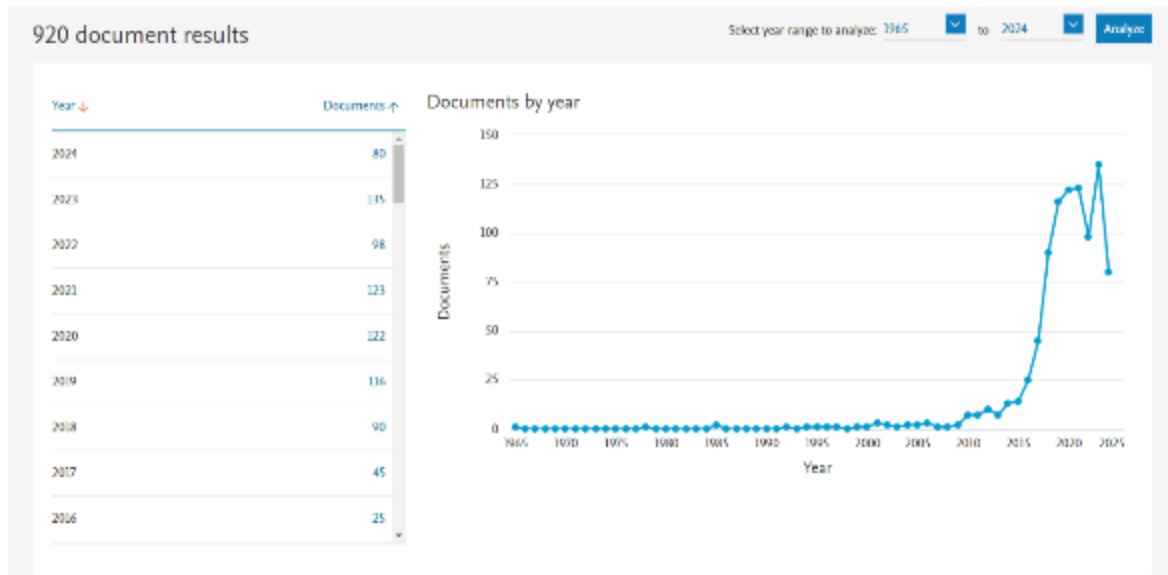


Figure 2. Documents by Year

A review of the Scopus database revealed that there were 920 documents/articles on the themes of education and economic development published between the years 1965 and 2024. The number of research documents addressing the topic of economic education exhibited an exponential growth trajectory, rising from a mere four documents in 2015 to a total of 135 documents in 2023. This surge represents the apex of research activity within this field.

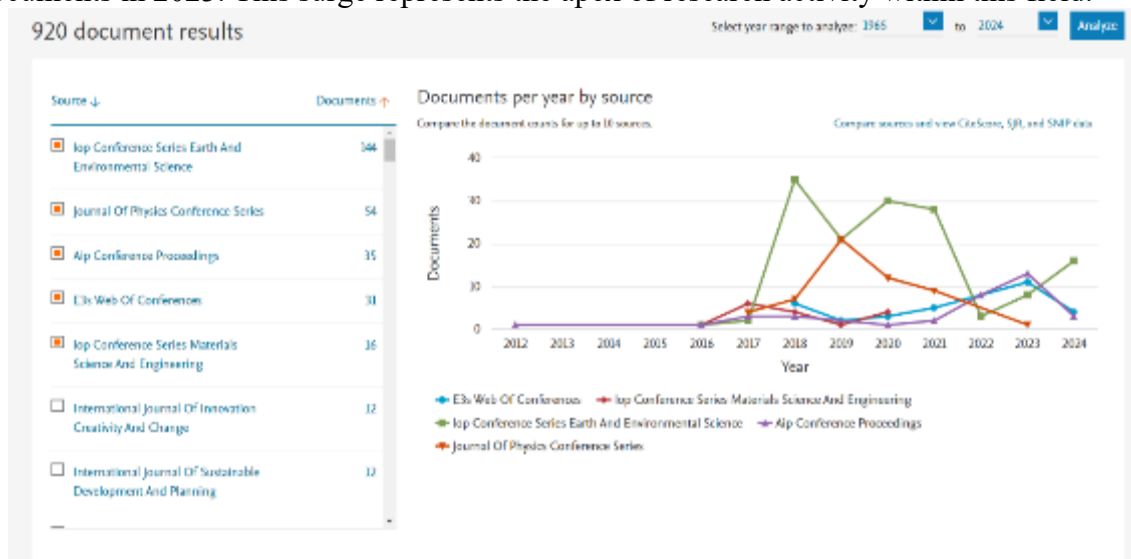


Figure 3. Documents per year by Source

Figure 3 illustrates the seven most prolific journals publishing articles pertaining to the interdisciplinary field of education and economic development. The most prolific publishers on this topic are the IOP Conference Series Earth and Environmental Science, which has published 144 documents, and the Journal of Physics Conference Series, which has published 54 documents. One of these publishers is an international conference that is indexed in the Scopus database.

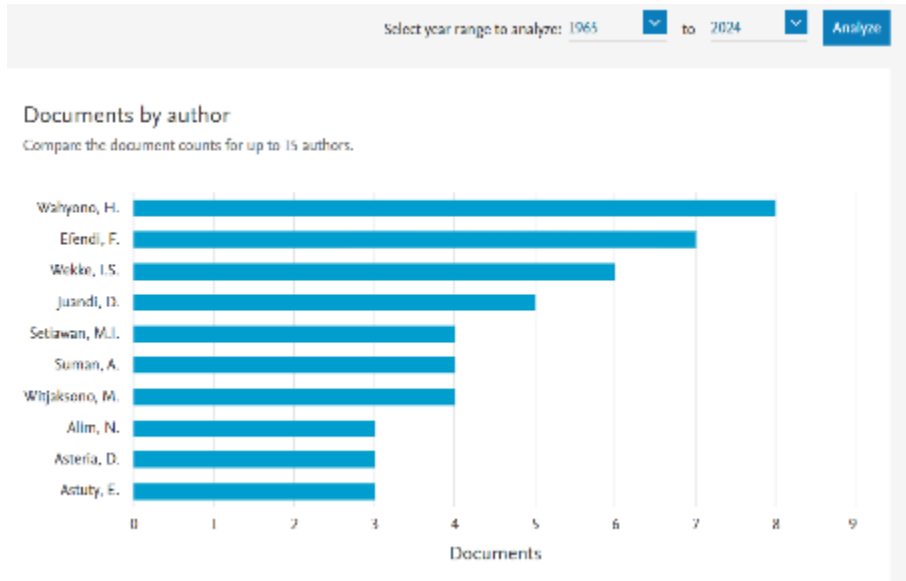


Figure 4. Documents by Author

The authors contributed to the publication of research on economic education in Indonesia from 1965 to 2024. In this section, the author with the highest number of documents is Wahyono, H. from the State University of Malang, with a total of 8 documents. The second-highest number of documents is held by Efendi, F. from Airlangga University, with a total of 7 documents. Third is Wekke, I.S. from the Sorong State Islamic Institute, with a total of 6 documents. Fourth is Juandi, D. from the University of Education Indonesia, with a total of 5 documents. Fifth is Setiawan, M.I. from Narotama University, with a total of 4 documents.

Table 1. Top 5 Indonesian Researchers Article

Author's	Title	Journal
(Dinaloni et al., 2017)	Analysis of factors affecting professional competences of high school economic teachers in east Java	International Journal of Applied Business and Economic Research
(Efendi et al., 2019)	Determinants of facility-based childbirth in Indonesia	Scientific World Journal
(Alfita et al., 2019)	Educating the external conditions in the educational and cultural environment	International Journal of Higher Education
(Anwar et al., 2020)	Education for sustainable development: Investigating the sustainability consciousness and mathematical competence in the geometry for middle school students	Journal of Physics: Conference Series
(Rahmattullah et al., 2021)	Economic learning educational practices for local values of "baharit" culture based on the perspective of sustainable development	Educational Administration: Theory and Practice

Sources: Author (2024)

In table 1 below is an example of research from the top 5 researchers in the document by author. Among them are published by the journals “International Journal of Applied

Business and Economic Research”, “Scientific World Journal”, “International Journal of Higher Education”, “Journal of Physics: Conference Series”, ”Educational Administration: Theory and Practice”

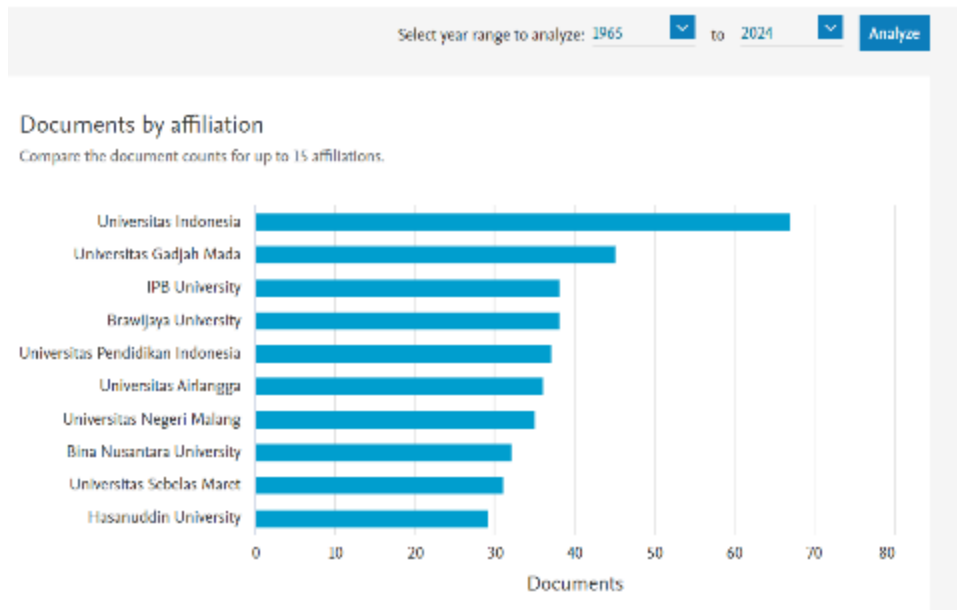


Figure 5. Documents by Affiliations

This study employs bibliometric analysis to delineate the trends and evolution of research pertaining to education and economic development in Indonesia, as well as to identify the institutions that are most active in this research domain. The top 10 affiliations in education and economic development research publications from 1965 to 2024 are as follows: The University of Indonesia is the most prolific institution in the field of education and economic development research, with a total of 67 documents published. This is followed by Gadjah Mada University, which has published 45 documents, IPB University with 38 documents, Brawijaya University with 38 documents, and Universitas Pendidikan Indonesia with 37 documents. Airlangga University has published 36 documents, State University of Malang 35 documents, Bina Nusantara University 32 documents, Sebelas Maret University 31 documents, and Hasanuddin University 29 documents.

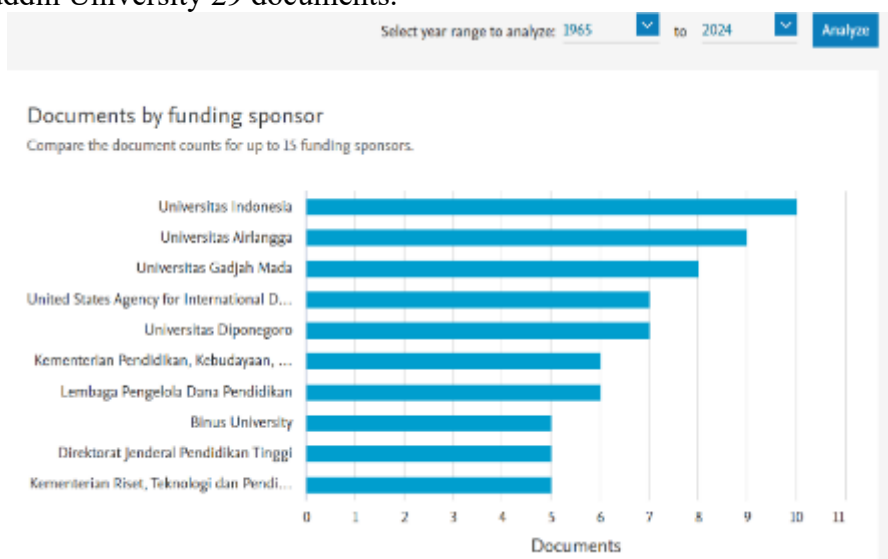


Figure 6. Documents by Funding Sponsor

In the field of education and economic development in Indonesia, the Scopus database also contains information regarding research funding sponsors. The University of Indonesia is the primary sponsor, funding 10 documents. Airlangga University is the second-largest sponsor, funding 9 documents. Gadjah Mada University is the third-largest sponsor, funding 8 documents. The Ministry of Education, Culture, Research and Technology is the fourth-largest sponsor, funding 6 documents. The Education Fund Management Institution is the fifth-largest sponsor, funding 6 documents.

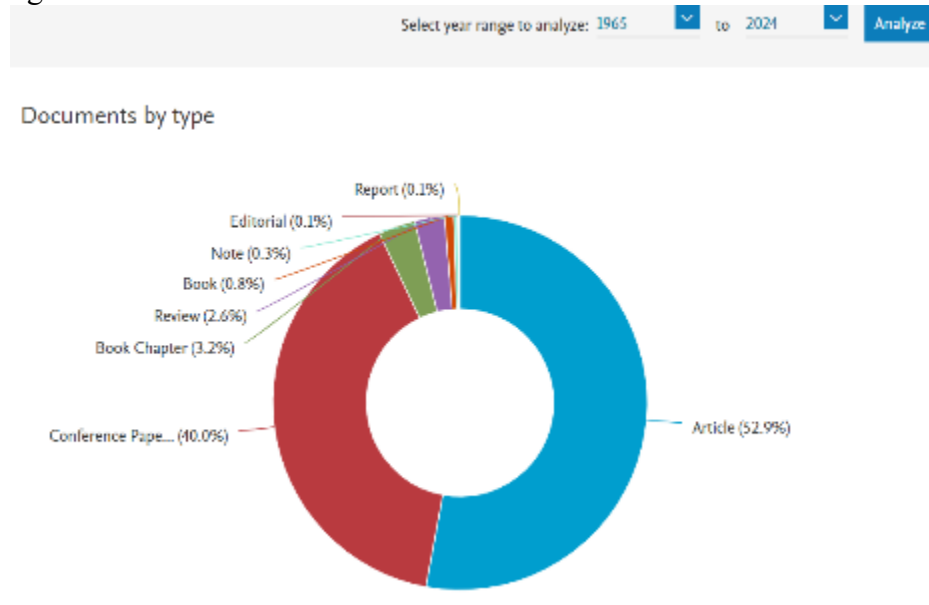


Figure 7. Documents by type

This study employs bibliometric analysis to examine research trends in education and economic development in Indonesia. It identifies the most studied research topics and the most common author collaborations, as well as the most prevalent form of publication, which is an article (52.9%), followed by a conference paper (40%) and a book chapter (3.2%).

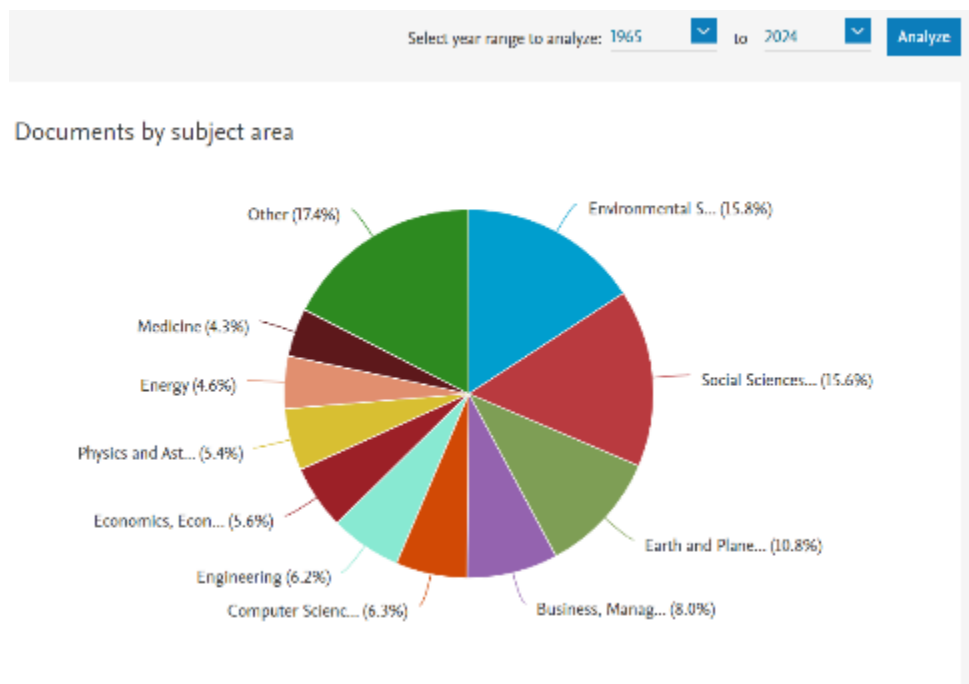


Figure 8. Documents by Subject Area

A review of research on the theme of halal tourism business documents, organized by field of study, reveals that the Environmental Science discipline has the highest representation (15.8%), followed closely by the Social Sciences discipline (15.6%). Business, Management, and Accounting constitute the next largest group (8.0%), while other disciplines account for the remainder. This distribution is illustrated in Figure 8.

Bibliometric Analysis of Economic Education

This study employed the VOSViewer software to conduct a bibliometric analysis by entering keywords such as "Education and Economic Development." Following the application of the VOSViewer software, the study yielded three visualizations: a network visualization, an overlay visualization, and a density visualization. The results of the bibliometric analysis are presented below:

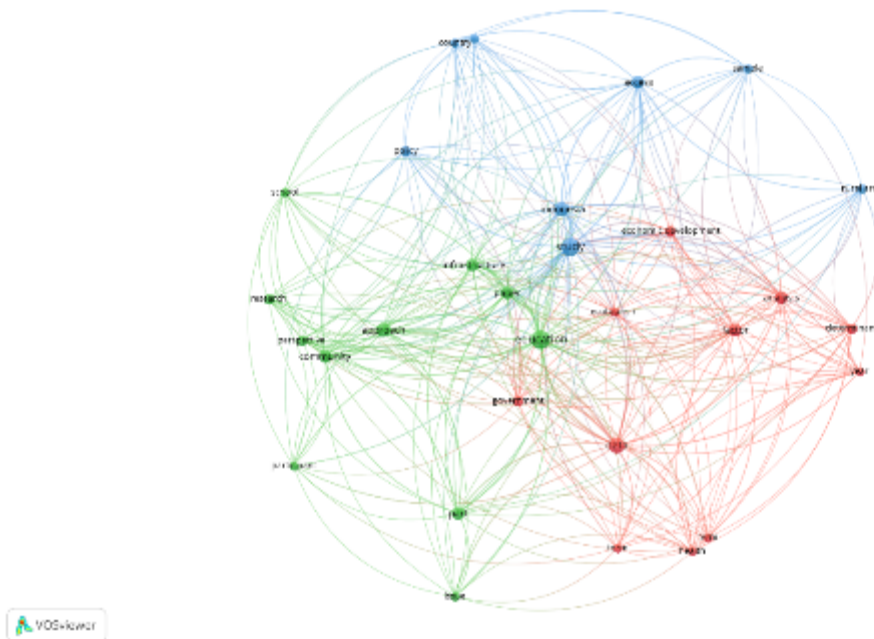


Figure 9. Network Visualization

As illustrated in Figure 9, the VosViewer platform offers insights into the most prevalent keywords within articles pertaining to economic education, as featured in the publication "Education and Economic Development." The list of keywords includes "Education," "Study," "Infrastructure," "Government," and "Economic Development." It can be seen that these keywords have already been researched by numerous other scholars.

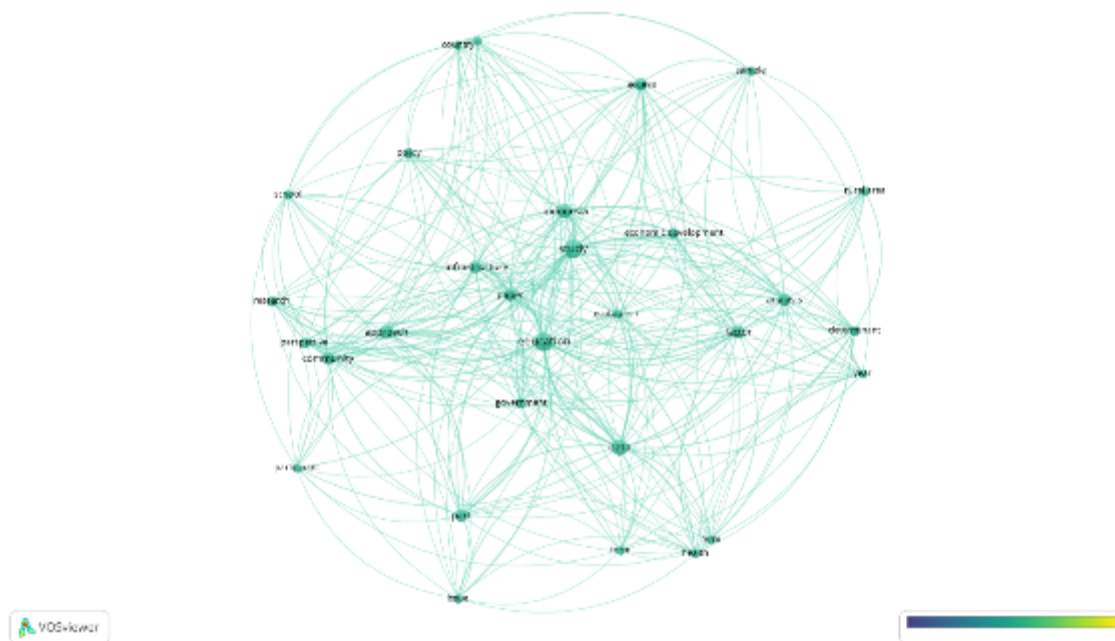


Figure 10. Keyword distribution in Overlay Visualization

Figure 10 depicts the distribution of keywords as presented in the overlay visualization. The colors utilized in the circular image serve to indicate the timeframe during which the article was published. The prevalence of green indicates a higher frequency of keywords in publications prior to 2024. Furthermore, VosViewer automatically establishes the minimum and maximum scores in 2024, thereby ensuring the research trend remains dynamic.

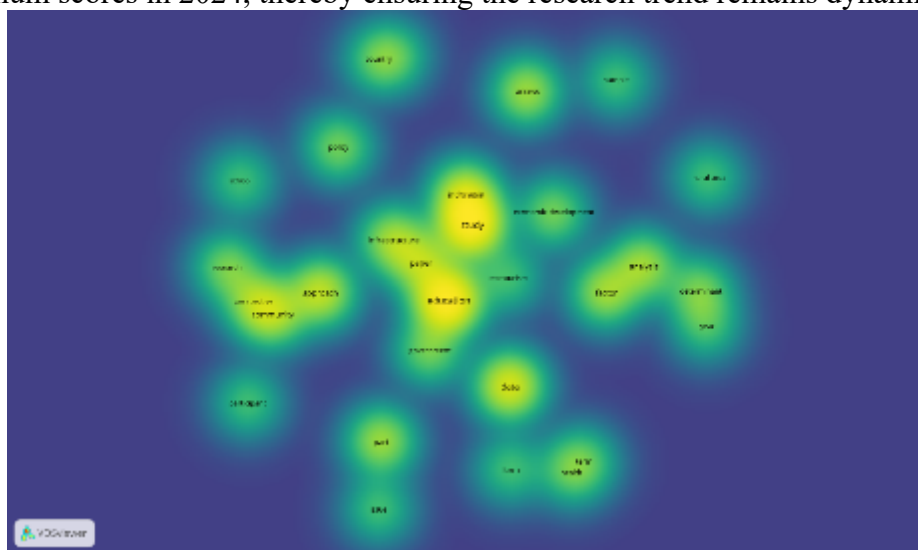


Figure 11. Keyword distribution in Dencity Visualization

Figure 11 illustrates the distribution of keywords in the density visualization, with a particular focus on keywords related to education and economic development in Indonesia that have been indexed in Scopus. The visualization identifies the most frequently utilized keywords, including "education," "study," "Indonesia," "community," "approach," and "data," which are represented in yellow. The findings offer insight into the innovative nature of research on economic education. It is anticipated that future research in the field of economic education will explore themes centred on education infrastructure and education approach, as well as education and economic development.

CONCLUSION

The thorough examination of the correlation between education and economic advancement in Indonesia, utilizing the Scopus database, has revealed significant findings and patterns. This research emphasizes the crucial role of education as a key catalyst for economic development and societal advancement in Indonesia. The substantial rise in scholarly publications from 2015 to 2023 underscores the increasing interest in this connection, highlighting its significance for policymakers, educators, and economists alike. Our results suggest that despite various efforts to enhance educational infrastructure and quality, Indonesia continues to face persistent obstacles such as educational disparities, socioeconomic gaps, and uneven regional development. These challenges impede the nation's global competitiveness and restrict the potential for comprehensive economic progress. The disparities in education among different regions and socioeconomic classes call for targeted interventions that comprehensively address these discrepancies.

The bibliometric analysis indicates that the most active institutions and researchers in this field are clustered in prominent universities and urban areas, pointing to a necessity for more inclusive research endeavors involving a wider array of institutions and regions, particularly those that are currently underrepresented. Moreover, the emphasis on keywords like "education," "study," "infrastructure," and "government" underscores the key themes propelling ongoing research, signaling the critical areas warranting further investigation. Looking ahead, the implications of this research are manifold. Policymakers should prioritize aligning educational outcomes with the demands of a technology-oriented economy, ensuring that vocational training and higher education programs are in line with industry needs. Investments in educational infrastructure, especially in underserved areas, are essential for bridging regional disparities and promoting equitable development. Furthermore, enhancing teacher training and incorporating technology in education will play a crucial role in enhancing educational standards and results. Future studies should concentrate on longitudinal research evaluating the lasting effects of educational interventions on economic progress. Additionally, there is a call for more interdisciplinary research combining insights from economics, education, and social sciences to devise holistic solutions to the identified challenges. In summary, the intersection of education and economic development in Indonesia presents both opportunities and challenges. By addressing the identified gaps and leveraging the insights from this research, stakeholders can formulate strategies that not only improve educational standards but also drive sustainable economic growth. Progress in this direction demands a coordinated effort from all sectors of society to ensure that education acts as a strong foundation for Indonesia's economic advancement and societal development.

RESEARCH LIMITATIONS AND SUGGESTIONS

The study's research limitations include constraints related to the database, temporal coverage, geographical focus, keyword selection, and quantitative emphasis. Utilizing only the Scopus database may result in overlooking research from non-indexed journals, affecting the completeness of literature representation. The temporal scope from 1965 to 2024 may miss recent studies due to the dynamic nature of educational and economic fields. While focusing on Indonesia offers detailed insights, it limits the findings' generalizability to other regions. The selected keywords ("education" and "economic development") may not encompass all relevant studies, especially those with different terminologies. The emphasis on quantitative methods could overlook qualitative aspects, such as in-depth analysis and theoretical contributions, potentially missing contextual nuances in individual studies. Additionally, the VOSviewer software, though useful for visualizing bibliometric networks, has limitations in depicting complex network relationships, suggesting a need for more advanced analytical tools.

Future research should explore incorporating multiple databases like Web of Science and Google Scholar, as well as regional databases, to gain a more comprehensive view of literature. Longitudinal studies can offer deeper insights into the causal relationships between education and economic development over time. Comparative studies with other developing countries can provide valuable perspectives on the effectiveness of different educational and economic strategies.

Expanding the scope of keywords and adopting a mixed-methods approach can enrich research findings and provide a holistic understanding of the research landscape. It is crucial for future research to evaluate the impact of educational policies on economic development outcomes to offer practical insights for policymakers. Encouraging interdisciplinary research and focusing on underrepresented areas within Indonesia can lead to more comprehensive and equitable educational and economic development policies.

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