Bibliometric Analysis in the Digital Economy: An Overview of Entrepreneurship, Local Wisdom, and Financial Literacy in 2021-2023

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Abstrak. This bibliometric analysis aims to provide a comprehensive explanation through a literature review on digital economic education, entrepreneurship, local wisdom, and financial literacy. Article searches were conducted using software on the Google Scholar database. The search and sorting identified 30 out of 200 articles found within the 2021-2023 range. The processed data were subsequently edited using Desktop software and analyzed using VOSviewer software to visualize data distribution patterns and mappings. Based on the keywords in the network visualization, no keywords pointing to local wisdom were observed. This indicates that research on digital economic education incorporating local wisdom remains underexplored.

1. Introduction

The Industrial Revolution 4.0 era has brought significant changes across all aspects of life. The development of the industry 4.0 era is marked by digitalization and automation (Sundari, n.d.).The rapid advancement of technology has become a necessity to keep pace with the times. Society has increasingly utilized technology in daily activities, including economic activities. This technology-based economic activity, often referred to as the digital economy, is currently growing globally, including in Indonesia, as evidenced by the increasing number of internet users (Rahayu, 2022).

The concept of the digital economy explains the global impact of information technology, including the internet, on the economic sector, highlighting the interaction between innovation and advancing technology that influences both macro and microeconomic dynamics (Maria, 2020).The growth of the digital economy has shifted consumer behavior, transforming the traditional preference for shopping in physical retail stores to online shopping on marketplaces or e-commerce platforms (Yuliani, 2020).

Economic actors now widely leverage technology to streamline their economic activities. According to Permana and Puspitaningsih (2019), digitalization in the economic field is inevitable as it simplifies economic activities and reduces high economic costs. Entrepreneurs are among the economic actors who significantly benefit from the digital economy. Entrepreneurs are individuals capable of transforming opportunities into profit-generating ventures through creativity, innovation, and uniqueness in developing products. They are also willing to take risks and remain resilient in the face of failures while building their businesses.

In the 4.0 era, students are also encouraged to develop an entrepreneurial spirit. Entrepreneurship education at educational institutions serves as an initial gateway to preparing students to develop their potential and be ready for the future workforce. Instilling entrepreneurial values from an early age enables students to generate creative and innovative ideas and critically identify opportunities for entrepreneurship, grounded in honesty and responsibility (Kartikasari, 2023).

Local wisdom refers to the collective knowledge, worldview, and strategies developed by local communities to address challenges and meet their needs. The digital economy can support the preservation of local wisdom. Digital economic practices can be a strategy to enhance the

competitiveness of creative industries based on local wisdom (Krisnatalia, 2023).Digital-based economic activities enable businesses to reach customers not only locally but also nationally and internationally (Saprianto, 2020). This provides an opportunity to introduce local wisdom products to the international stage.

The digital economy era necessitates high economic literacy, particularly in financial literacy and financial management behaviour (Anam, 2023). According to Vhalery, Leksono, and Irvan Moh (2019), financial literacy aids in managing money more effectively and efficiently. Higher financial literacy correlates with better financial management skills. Financial literacy education is not only a critical soft skill for today's students but also a character education component that prepares children for financial well-being in adulthood (Yuwono, 2020). Research by (Tomášková, 2011) highlights that financial literacy education equips individuals with the knowledge and skills necessary to make informed financial decisions and avoid financial difficulties.

Based on a literature review through the Google Scholar database from 2021 to 2023, several bibliometric analysis articles related to the digital economy were identified. These include studies on MSME mapping (Rahayu, 2022),the relationship between humanity, well-being, and the digital economy (Utami, 2022), and digital marketing scientific publications across the globe (Sari, 2023). However, bibliometric analysis of the digital economy in the field of education has not been found. Moreover, studies integrating digital economy education, entrepreneurship, local wisdom, and financial literacy in Indonesia are also absent within the 2021–2023 timeframe.

Based on these three reasons, this article aims to map the distribution of research on the digital economy and provide a bibliometric analysis of the literature on the digital economy, entrepreneurship, local wisdom, and financial literacy. Metadata obtained from the Google Scholar database is analyzed and categorized based on author affiliations and distribution. Through this analysis, research trends in the digital economy and future research opportunities can be identified. The methodology employed in this study involves bibliometric analysis using the Publish or Perish (PoP) software. Data processed with PoP is then edited using Mendeley Desktop software. The edited data is subsequently analyzed using VOSviewer software to visualize data distribution patterns and mapping. Finally, the findings are discussed, and conclusions are drawn based on the bibliometric analysis.

2. Method

General Background

A systematic and explicit method was chosen to review various bibliometric analysis literature (Garza-Reyes, 2015). The bibliometric analysis research method employed is an adaptation of the five-step method described in Figure 1.
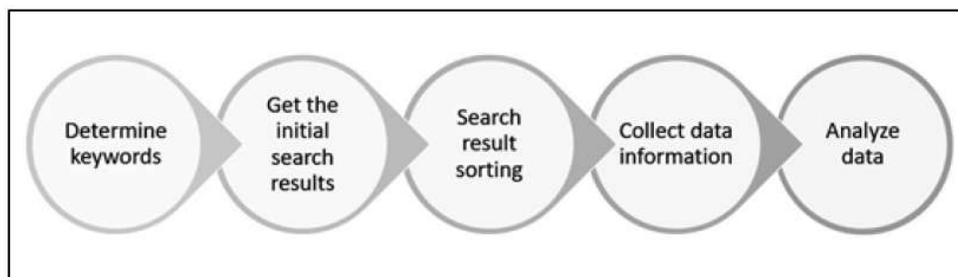

Figure 1. Five-Stage Method in Bibliometric Analysis

Sample/Participants/Group

The literature and metadata search began in November 2023 using the keyword *'digital economy.'* The Google Scholar database was selected as it is the largest database and part of the world's most popular search engine, Google. The Publish or Perish (PoP) software was chosen for conducting the search, as it has been proven to be the most effective tool for assisting in article metadata retrieval (Baneyx, 2008).The search results were refined to focus on scholarly articles published between 2021 and 2023. A maximum search limit was set at 200 articles.

Instruments and Procedure

The search results were saved in the Research Information Systems (RIS) format using the PoP software. The 200 articles were then sorted based on their publication medium, specifically scientific journals, resulting in 195 articles. A second round of filtering was conducted based on the relevance of the titles to the fields of education and learning, narrowing the selection to 30 articles. The filtered results were still saved in RIS format for further processing using Mendeley Desktop software.

Data Analysis

The RIS-formatted data was processed by editing the metadata of each article individually using Mendeley Desktop software. In Mendeley Desktop, the *Import Data* menu was used to upload the RIS-formatted data. The software then parsed the RIS data into a detailed reference list. Mendeley Desktop also offers metadata editing functionality for references to articles, books, proceedings, journals, and more. Incomplete metadata was edited, including details such as titles, authors, journal names, publication years, volumes, issues, pages, and abstracts, ensuring they aligned with the published articles. The processed data was then saved again in RIS format.

The RIS-formatted data from Mendeley Desktop was subsequently analyzed using VOSviewer software. VOSviewer processes RIS-formatted data and extracts keywords based on the titles and abstracts of the article metadata. VOSviewer was selected as the analytical tool due to its efficiency and its ability to generate visually appealing and informative visualizations (van Eck, 2010).

3. Results and Discussion

Publication Structure and Citations

The RIS-formatted data from Mendeley Desktop was analyzed using VOSviewer software. VOSviewer identifies the most frequently used keywords in the RIS-formatted search data and provides visual mapping for bibliometric analysis.

In the initial search using the Publish or Perish (PoP) software, 200 articles were retrieved from the Google Scholar database. The search results were limited to articles published between 2021 and 2023, using the Indonesian keyword *"ekonomi digital"* (digital economy).

The first filtering stage focused on publication media, selecting only scientific journals, resulting in 195 articles. Among these 195 journal articles, the citation metrics revealed an average of 1170.00 citations per year and 12.00 citations per article.

The second filtering stage focused on title relevance to the fields of education and learning, narrowing the selection to 30 articles. For these 30 journal articles, the citation metrics indicated 163.00 citations per year and 10.87 citations per article.

The comparative metrics from the first and second filtering stages are presented in Table 1.

Table 1. Comparison of PoP Metric Data Outputs

Metric Data	First Filtering	Second Filtering
Keyword	"digital economy"	"digital economy"
Publication Year	2021-2023*	2021-2023*
Papers	195	30
Citations	2340	326
Citations/Year	1170.00	163.00
Citations/Paper	12.00	10.87
Authors/Paper	2.49	2.33
h-index	24	11
g-index	36	17

hI_norm 18   9
hI_annual 9.00 4.50

Based on the third-stage filtering data generated by the PoP software, the systematically sorted articles, ranked from highest to lowest relevance to the keyword, are presented in Table 2.

Table 2. Top 10 Ranked Articles from PoP Filtering

No	Publication Year	Author(s)	Title	Journal	Citations	Publisher
1	2022	Deri Firmansyah, Dede	Entrepreneurial Performance: Economic Literacy, Digital Literacy, and the Mediation Role of Innovation	Formosa Journal of Applied Sciences	30	journal.formosa publisher.org
2	2021	Jerni Hasmiah, Thamrin Tahir	The Influence of Economic Literacy and Digital Literacy on Students' Entrepreneurial Interest	Indonesian Journal of Economics, Entrepreneurship, and Innovation	11	journal.ilininstitute.com
3	2022	Heni Mulyani, Imas Purnamasari, Arvian Triantoro, et al.	Technical Guidance for Developing Digital Economy and Business Learning Models through 21st Century Skills Strengthening	DIKEMAS (Jurnal Pengabdian Kepada Masyarakat)	0	pnm.or.id
4	2022	Liza Afriyanti, Kholid Junaidi	Assistance in Introducing Digital Literacy for Developing Santripreneurs as Drivers of the Creative Economy in Islamic Boarding Schools	SENTIMAS: Seminar Nasional Penelitian dan Pengabdian Masyarakat	7	journal.irpi.or.id
5	2022	Deri Firmansyah, Dwinanto Priyo Susetyo	Financial Behavior in the Digital Economy Era: Financial Literacy and Digital Literacy	Jurnal Ekonomi dan Bisnis Digital	10	journal.formosa publisher.org
6	2022	Ahmad Almaarif, Riksa Belasunda, et al.	Hydroponics as a Strategy to Strengthen the Digital Economy Community in Pesantren Miftahul Falah Bandung	Abdiformatika: Jurnal Pengabdian Masyarakat Informatika	1	abdiformatika.org

The six leading publishers for the topic of digital economy based on PoP filtering are shown in Table 3.

**Table 3. Top 6 Publishers in Digital Economy Topics**

No	Penerbit	Artikel
1	journal.formosapublisher.org	3
2	journal.ilininstitute.com	
3	pnm.or.id	
4	journal.irpi.or.id	
5	abdiformatika.org	
6	jurnalintelektiva.com	

The two leading publishers identified through PoP software filtering for the topic of digital economy education are presented in Table 4.

Table 4. Top 2 Publishers in Digital Economy Topics

No	Publisher	Total Articles	Citations
1	Formosa Journal of Applied Sciences	3	30
2	Indonesian Journal of Economics, Entrepreneurship, and Innovation	1	11

The visualization of metadata analysis results can be displayed in three distinct visualizations using VOSviewer software (Hamidah, 2020).The network visualization is shown in **Figure 2**, the overlay visualization in **Figure 3**, and the density visualization in **Figure 4**.
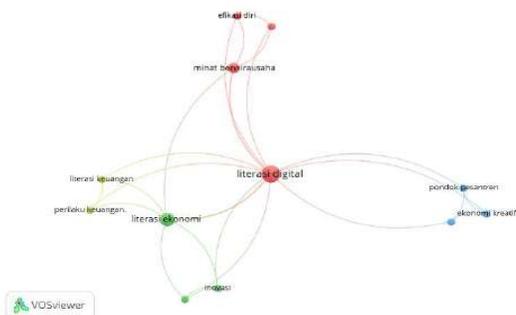
Gambar 2. Visualisasi jaringan pada basis data google scholar.
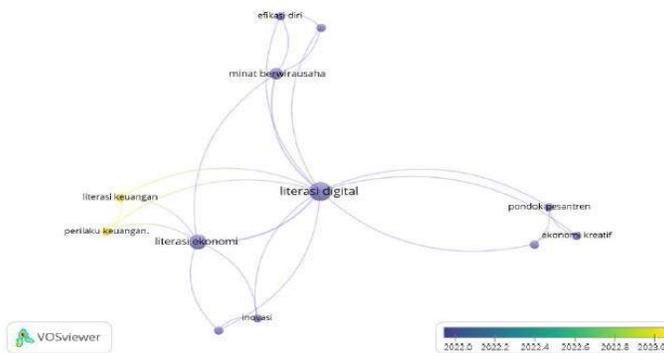
Gambar 3. Visualisasi overlay pada basis data google scholar.
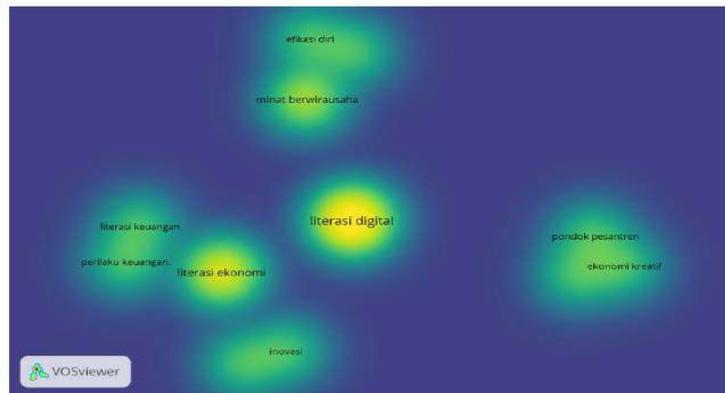
Figure 4. Visualization of Density on the Google Scholar Database

The three types of visualizations above are the results of analysis using the VOSviewer software by processing 30 articles after a two-stage sorting and metadata editing process. The minimum event threshold was set to 1. The analysis results indicate that 12 items meet the criteria representing the keyword "digital economy." Based on Figure 2, the 12 items that meet the keyword criteria are divided into four clusters with different colors: red, green, blue, and yellow. The development of digital economy research is clearly represented by each cluster, as shown in Table 5.

Table 5. Research Development Across Clusters

No	Cluster	Total Items	Research Elements
1	Red Cluster	4	Self-efficacy, income expectations, digital literacy, entrepreneurial interest
2	Green Cluster	3	Innovation, entrepreneurial performance, economic literacy
3	Blue Cluster	3	Creative economy, Islamic boarding schools, santripreneur
4	Yellow Cluster	2	Financial literacy, financial behavior

Author and Co-author Relationships

The analysis of authorship, co-author relationships, and collaboration patterns among authors is visualized in Figure 5. Based on Figure 5, it can be observed that there are 28 groups of co-authors, each represented by different colors.
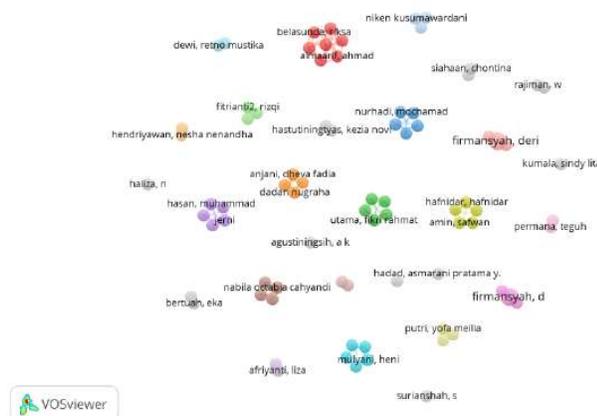

Figure 5. Visualization of Authorship Relationships and Collaboration Patterns Among Authors

Based on Figure 5, many authors already have relationships as co-authors. However, there are no authors collaborating with other groups on the keyword "digital economy." The analysis of publication updates in the form of a time overlay is visualized in Figure 6.
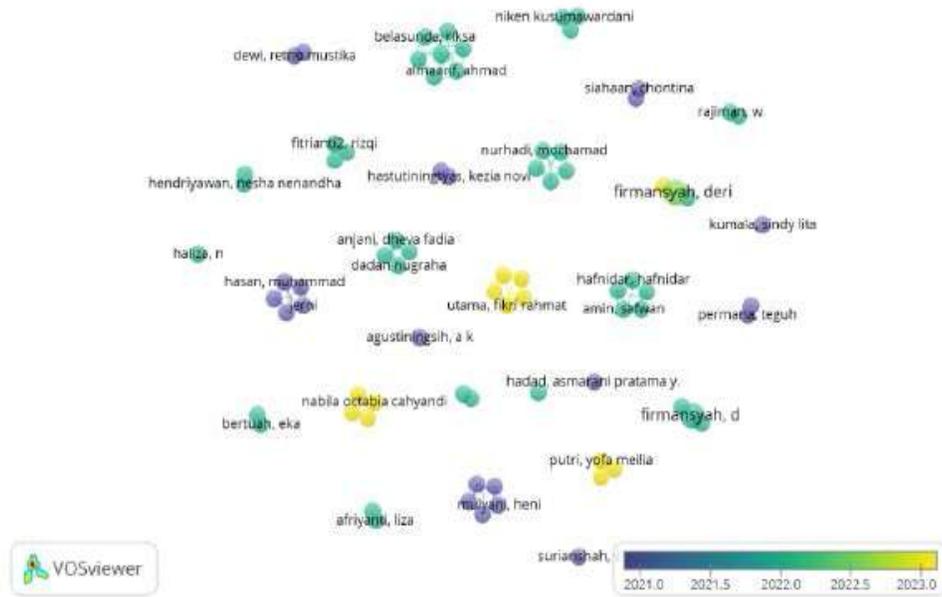

Figure 6. Visualization of Writing Time and Collaboration Patterns Among Authors

Figure 6 highlights the most recent research on digital economy keywords, indicated by yellow patterns. Other colors represent older studies. The yellow color shows that the research was published before 2023.

An analysis was also conducted on publishers contributing the most articles over the past three years. Of the 30 sorted articles, 6 were published by the **Jurnal Ekonomi**, and 2 articles each were published by the **Formosa Journal of Applied Sciences** and **Edukatif dan Jurnal Ilmu Pendidikan**. This indicates that these three journals are active in publishing articles on the digital economy.

Entrepreneurship serves as the driving force of innovation in the digital economy. Entrepreneurs leverage digital technology to create new products and services. The digital economy era is marked by the increasing prevalence of business transactions conducted online. Producers and consumers blend in a virtual space known as the internet. To compete effectively in this mutually beneficial digital world, business actors must master and understand thirteen entrepreneurial characteristics in the digital era: knowledge, digitalization, virtualization, molecularization, internetworking, disintermediation, convergence, innovation, immediacy, globalization, discordance, and co-creation (Kasidi, 2020).

Digital technology provides a platform that promotes and integrates local wisdom into the global market (**Saprianto**, 2020). The integration of local wisdom into the digital economy can be achieved by elaborating and utilizing existing values of local wisdom. Exploring the potential of local wisdom values can bridge economic and cultural values, generating positive impacts (Hermawanto, 2020).

In the digital economy, financial transactions are often conducted electronically, requiring a good understanding of electronic financial products and services. Financial literacy is a basic necessity for everyone to avoid financial problems. Financial difficulties can arise from financial mismanagement. A high level of financial literacy enables individuals to plan their money usage effectively, both for the short and long term (Yushita, 2017).

4. Conclusion

Based on the keywords that appeared in the network visualization, there were no keywords pointing to local wisdom. This indicates that research on digital economy education incorporating local wisdom has not been widely explored. Generally, the data obtained provides an overview of research trends in digital economy education over the past three years.

Several recommendations for future research include developing digital economy entrepreneurship programs based on local wisdom to enhance financial literacy. The limitation of this study is its inability to sort search results by city and author affiliation. Additionally, future research should expand the keywords used to organize a topic, for instance, based on city, affiliation, and country, to achieve more comprehensive results through bibliometric analysis.

The gaps in this study indicate a forward projection that digital economy education is a promising area for exploration, with content emphasizing entrepreneurship, local wisdom, and financial literacy. This should be examined within a scope that extends beyond national institutions to include international collaboration.

Acknowledgment

Reference

Anam, K., & S. S. (2023). Analisis Perilaku Manajemen Keuangan Generasi Milenial: Prespektif Literasi Keuangan, Literasi Ekonomi, Dan Kesadaran Digital. *Jurnal Ilmiah Akuntansi*, *4*(1), 14–21.

Baneyx, A. (2008). Publish or Perish" as citation metrics used to analyze scientific output in the humanities: International case studies in economics, geography, social sciences, philosophy, and history. *Scientometrics*, *56*, 363–371.

Garza-Reyes, J. A. (2015). Lean and green – a systematic review of the state-of-the-art literature. *Journal of Cleaner Production*, *102*(1), 18–29.

Hamidah, I., S. & H. M. N. (2020). A bibliometrics analysis of Covid-19 research using VOSviewer. *Indonesian Journal of Science and Technology*, *5*(2), 209–216.

Hermawanto, A., & A. M. (2020). *Globalisasi, Revolusi Digital Dan Lokalitas: Dinamika Internasional Dan Domestik di Era Borderless World*. LPPM UPN VY Press.

Kartikasari, M. A. (2023). Menumbuhkan Jiwa Keirausahaan Sejak Dini Membangun Mental yang Tangguh. *Tpet (Where Theory, Practice, Experience, & Talent Meet) Community Service Journal*, *3*(1), 18–24.

Kasidi. (2020). Tantangan Kewirausahaan di Era Ekonomi Digital. *Journal of Economic Education and Entrepreneurship*, *1*(1), 17–23.

Krisnatalia, H., P. E., & H. G. S. (2023). Strategi Peningkatan Daya Saing Industri Kreatif Berbasis Kearifan Lokal Di Kelurahan Kalisegoro Kecamatan Gunungpati Semarang. *Jurnal Pengabdian Kepada Masyarakat Nusantara (JPkMN)*, *4*(4), 3030–3036.

Maria, N. S. B., & W. T. (2020). Dampak Perkembangan Ekonomi Digital terhadap Perilaku Pengguna Media Sosial dalam Melakukan Transaksi Ekonomi. *Jurnal Konsep Bisnis Dan Manajemen*, *6*(2), 234–239.

Rahayu, N., A. S. I., & M. E. (2022). Pembangunan Ekonomi Indonesia Dengan Tantangan Transformasi Digital. *ADI Bisnis Digital Interdisiplin Jurnal*, *4*(1), 92–95.

Saprianto, F. (2020). Dilemastis Umkm Di Era Digital. *SCIENTIFIC JOURNAL OF REFLECTION*, *3*(1), 21–30.

Sari, I. K., & M. M. R. (2023). Analisis Bibliometrik Digital Marketing Publikasi Ilmiah di Negara-Negara Seluruh Dunia. Al-Kharaj. *Jurnal Ekonomi, Keuangan & Bisnis Syariah*, *5*(5), 2387–2399.

Sundari, C. (n.d.). Revolusi Industri 4.0 Merupakan Peluang dan Tantangan Bisnis Bagi Generasi Milenial di Indonesia. *In "Fintech Dan E-Commerce Untuk Mendorong Pertumbuhan UMKM Dan Industri Kreatif*, 555–563.

Tomášková, H., M. H., & N. Z. (2011). Issues of financial literacy education. *Procedia - Social and Behavioral Sciences*, *28*, 356–369.

Utami, N., & P. D. Y. (2022). Manusia, Kesejahteraan, dan Ekonomi Digital: Analisis Bibliometrik. *Jurnal Sosial Humaniora*, *2*(2), 226–237.

van Eck, N. J., & W. L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523–528.

Yuliani, D. (2020). Perbandingan Pertumbuhan Ekonomi Digital Indonesia Dan China Dalam Bidang E-Commerce. *Jurnal Ekonomi Dan Bisnis*, 1–22.

Yushita, A. N. (2017). Pentingnya Literasi Keuangan Bagi Pengelolaan Keuangan Pribadi. *Nominal, Barometer Riset Akuntansi Dan Manajemen*, *6*, 11–26.

Yuwono, W. (2020). Konseptualisasi Peran Strategis dalam Pendidikan Literasi Keuangan Anak melalui Pendekatan Systematic Review. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *5*(2), 1419–1429.