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Research trends in entrepreneurship in the digital era: A bibliometric analysis

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ABSTRACT

In the digital era, entrepreneurs have begun to leverage ICT and its social capital to overcome obstacles and grow their firms. The idea that digital technology can help address the issues faced by sustainable businesses has gained traction in recent studies. To develop research related to entrepreneurship in the digital era and the potential for new research on this topic. This research used descriptive analysis methods for journal articles indexed in Scopus and Google Scholar. This study investigates the literature using bibliometric analysis methods in five stages: data collection, keyword selection, matrix calculation, result visualization, and data interpretation and visualization results. According to the bibliometric analysis, there were 11 clusters, 161 items, and 447 links with a link strength of 500. Furthermore, according to Scopus and Google Scholar data, most studies on entrepreneurship in the digital era are related to the business environment, pandemics, digital entrepreneurs, digital entrepreneurship ecosystems, digital media, existence, financial literacy, and financial technology. In conclusion, during 2018-2023, there is an increasing trend in digital-era research subjects. Bibliometric analysis, though comprehensive in identifying clusters and connections, may not capture the qualitative nuances and deeper insights within individual studies. This study contributes significantly by mapping the evolving digital entrepreneurship research from to 2018-2023. Through a comprehensive bibliometric analysis, it identifies key research clusters and trends, providing valuable insights for academics, policymakers, and practitioners. The findings illuminate the interconnections between the business environment, pandemic impacts, and technological advancements in digital entrepreneurship.

Keywords: Entrepreneurship, Digital Era, Bibliometric.

1. INTRODUCTION

With the rapid advancement of technology, the digitalization movement has brought about a paradigm shift in the population from the industrial to the computer age. The COVID-19 pandemic has been a major catalyst for the new digital era, leading to a number of businesses and industries. Owing to social distancing restrictions and the ability to work from home during the COVID-19 pandemic, the adoption of digital technology has skyrocketed. These cutting-edge technologies are prevalent in entrepreneurship and include blockchain, cloud computing, and generative artificial intelligence. On the one hand, modern digital technologies encourage businesses to reduce their operating costs by using innovative models that enhance value capture. Conversely, these technologies stimulate the development of new business models and open new avenues for value creation, leading to creative digital value-creation patterns (Carayannis et al., 2012; Tsai et al., 2023). Consequently, business owners now possess higher levels of digital competency to remain competitive in the global market (Ratten, 2023). Entrepreneurship is a multidimensional phenomenon encompassing financial, technological, and human creativity. It encourages the creation of new institutional forms and ways to organize production processes, which can result in new ventures and enterprise growth(Phan et al., 2010). In the digital era, entrepreneurs have begun to leverage ICT and its social capital to overcome obstacles and to grow their firms. A few factors, including industry type, market competition, firm size, age, and age, influence how businesses digitally transform (Kromidha & Robson, 2021).

Sustainable entrepreneurs are regarded as important players because they execute creative and financially feasible business models that have beneficial social and environmental impacts, thus advancing their efforts towards sustainable development. However, sustainable business owners face enormous obstacles because their industries must combine environmental, social, and commercial logic, all of which frequently have different goals, beliefs, and practices(Gregori & Holzmann, 2020). The idea that digital technology can help address issues faced by sustainable businesses has gained traction in recent studies(Dabbous et al., 2023; Ratten, 2023). This supposition expands upon the transformative power of digitalization, which modifies the character of entrepreneurship and handles sustainability challenges in novel ways. Digital technologies present prospects for innovative methods that support the creation of new company concepts and offer opportunities for entrepreneurship. Therefore, there may be untapped opportunities for collaboration between businesses working on digitization and sustainable development. For this collaboration to be effective and efficient, research by academics and practitioners is required, starting from an analysis of weaknesses and strengths, method innovation, product innovation, feedback provided by consumers, creative advertising, and post-transaction services.

The results of this study can serve as a guide for future entrepreneurs. Providing business development options so that the digital era strengthens businesses. Bibliometric studies analyze research trends based on the intended topic. One tool used in library science to assist researchers in finding high-quality books and journal articles related to the publication theme is bibliometric study (Irianti, 2016). According to Haryani et al. (2020) and Irianto and Adiatma (2023), bibliometrics examines writing and uses quantitative analysis to estimate a writer's production over time. Additionally, bibliometrics can be used to identify areas of competence and proficiency in particular knowledge domains. These areas can be examined through citation analysis, web-based bibliometrics, author collaboration, and author analysis (Adiatma et al., 2023; Nuryudi, 2016). This study contributes to mapping entrepreneurship research trends in the digital era over five years (to 2018-2023). This paper discusses the development of research related to entrepreneurship in the digital era and the potential for new research on this topic through bibliometric analysis. This research contributes to opening up research opportunities related to the keywords we analyzed, which have not been further researched at the scale of place, methods, or samples used. This study concludes with conclusions based on the practical implications of research related to entrepreneurship in the digital era.

2. METHODS

This research uses descriptive analysis methods for journal articles indexed in Scopus and Google Scholar. Scopus was chosen as the main data source because it has a wide publication scope and high-quality standards and is an ongoing internal review process that examines various aspects of data quality, including accuracy, processing, profile quality, and completeness of data sources. Google Scholar was chosen as the supporting data source because it analyzes both accredited national journals and Scopus-indexed international journals to determine research trends in Indonesia in general. This study investigates literature using bibliometric analysis methods. Bibliometric analysis is an alternative method for developing a particular scientific field. This analysis includes social, intellectual, and conceptual structures as well as topics and authors. Various scientific fields have often used bibliometric analysis approaches. This approach includes an analysis of books, journal articles, or other forms of written communication (Heersmink et al., 2011). According to Chen et al. (2016), the bibliometric analysis method is applied in five stages: data collection, keyword selection, matrix calculation, result visualization, and data interpretation and visualization results. Figure 1 shows the process used to perform bibliometric analysis.

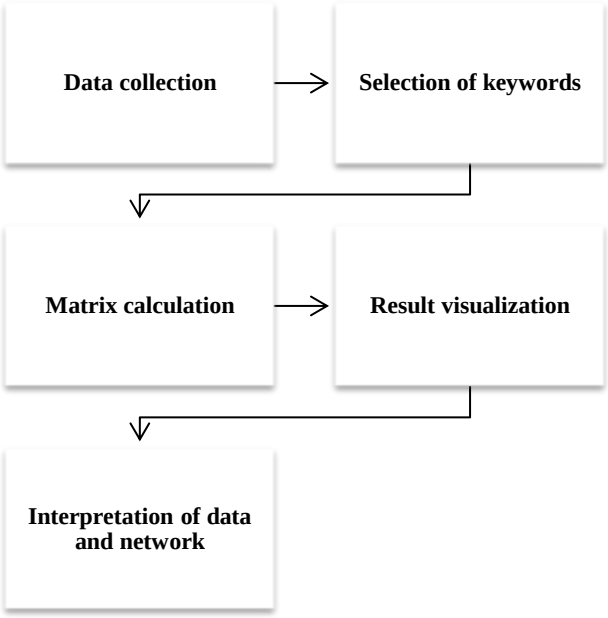

Figure 1. Bibliometric analysis procedures

Source: *Processed from Literature Review (2024)*

For this research, the data search focused on the period from 2018 to 2023 (5 years). The data search was carried out using Publish or Perish 8 (PoP 8) software and 400 data points consisting of 200 data points from Scopus and 200 data points from Google Scholar. A further step is to check the type of reference and its suitability for the keywords. The filtered literature search results were then downloaded and saved in the PoP 8 application and exported into the RIS format, which included information related to the author (ID), year of publication, title, volume, issue, pages, DOI, and keywords. Bibliometric analysis was then carried out using VosViewer software to display or represent the relationship between several pieces of literature resulting from the filtering stage for entrepreneurship articles in the digital era. The results of the analysis using VosViewer software are in the form of a visualization of the relationships between keywords originating from the references used and are depicted in three types of output: output network visualization, overlay visualization, and density visualization. Next, data interpretation was performed based on the output to analyze the research trends on this topic.

3. RESULT AND DISCUSSION

Data Collection

The first stage of bibliometric analysis was the data collection stage. This stage consisted of two parts: field selection and data download. The chosen field is entrepreneurship in the digital era. A data search was then conducted on the Scopus and Google Scholar websites, obtaining 2,603 data on Scopus and 384,000 data on Google Scholar.

Selection of Keywords

The next stage involved keyword selection. This stage consisted of three parts: selecting the article based on keywords, calculating the keyword frequency, and removing keywords that were not related to the analysis. Using the PoP 8 application, 200 data points were obtained (158 articles and 42 other forms) from Scopus and 200 data points (191 articles and nine other forms) from Google Scholar. The aim of this study is to map the development of research in the field of entrepreneurship in the digital era, using all data for further processing.

Matrix Calculation

The next stage is matrix calculation. This stage consisted of two parts: creating a co-occurrence matrix and creating a binary matrix. This stage was also carried out using Pop 8 software. Table 1 presents the results of the citation matrix data. The literature search results obtained were then downloaded and saved in the PoP 8 software and exported into the RIS format, which contains information regarding the author (ID), year of publication, title, volume, issue, pages, DOI, and keywords.

Table 1. Citation Metric Data

Description	Scopus	Google Scholar
Publication years	2018 - 2023	**2018 - 2023**
Citation years	5	**5**
Papers	200	**200**
Citations	1310	**2023**
Cites/year	262,00	**404,60**
Cites/paper	6,55	**10,12**
Cites/author	1310,00	**804,48**
Papers/author	197,99	**90,90**
Authors/paper	0,99	**2,78**
h-index	19	**21**
g-index	**30**	**43**

Result Visualization

The next stage was a bibliometric analysis using VosViewer software to display or represent the relationship between several literature results on entrepreneurship in the digital era article screening stage. The results of the analysis using VosViewer software are visualizations of the relationships between keywords originating from the references used and explained in three types of output, namely network visualization output, overlay visualization, and density visualization, as shown in Figures 2 to 4.

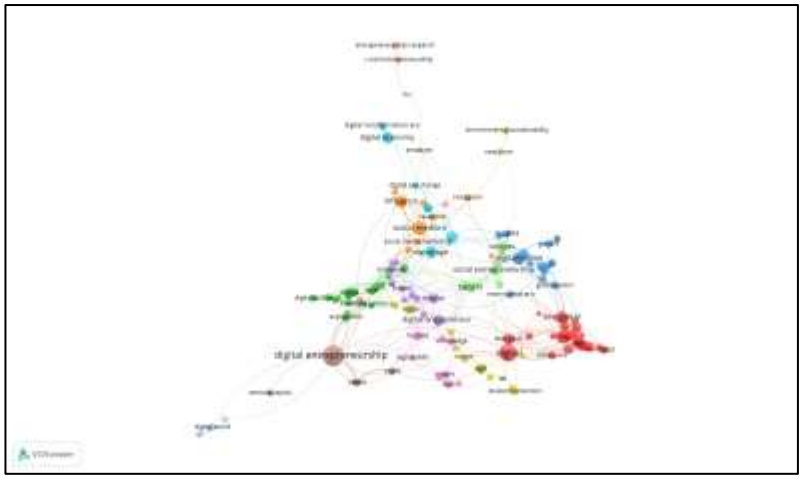

Figure 2. Network visualization

Source: *VOSViewer (2024)*

Figure 2 shows the network of the studies published in the last five years. The use of the same keywords formed a network. This network had 161 items, 13 clusters, and 447 links, and the total link strength reached 500. The clustered data are presented in Table 2.

Table 2. Data Cluster

Cluster	Items
1	character education; revolusi industri; digital; edupreneurship; era digital; era society; gen z; perkembangan teknologi; teknologi; umkm
2	business performance; china; construction; digital culture; digitization; human capital perspection; industrial revolution era; literature review; sme
3	big data; challenges; company; digital innovation; digitalization; entrepreneurial orientation; globalization; human resource management; moderating role; new normal era; new product; technology entrepreneurship; vocational education
4	digital economy era; diversity; entrepeneur behaviour; intention enterpreneurship; source; students intention
5	business environtment; covid pandemic; digital entrepreneur; digital entrepreneurial ecosystem; digital medium; existence; finansial literacy;finansial technology; fintech; identification; msme; social media; women entrepreneur
6	corporate entrepreneur; digital age; digital economy; digital era change; digital transformation era; economic activity; entrepreneurial behaviour; new digital era; potential; sustainability
7	facebook; influence; instagram; mediating role; social media marketing; social medium; stage entrepreneurship
8	digital disruption; digital entrepreneurship; digital revolution; exploration; venture capital
9	digital skills; knowledge; MSMEs; platform strategy; research opportunity
10	employee; entrepreneurship research; respondent; rural entrepreneurship; rural innovation; theoretical opportunity
11	crowdfunding; digital platform; economy era; social entrepreneur; social entrepreneurship; systematic literature review
12	business model innovation; digital world; entrepreneurial education
13	environmental sustainable; green entrepreneurship; institutional perspective; new form

Table 2 shows that the main keywords are in Cluster 5, whereas the supporting keywords are in Clusters 4 and 6. If analyzed further, digital entrepreneurship has a network, as shown in Figure 3.

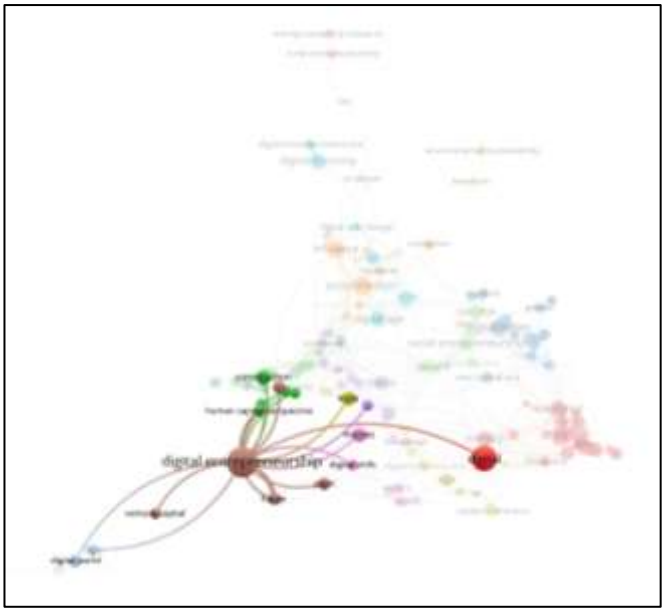

Figure 3. Network visualization of digital entrepreneurship

Source: *VOSViewer (2024)*

Figure 3 shows that apart from being combined with keywords in the same cluster, digital entrepreneurship keywords have also been combined with data in different clusters. This means that diverse research has been conducted on entrepreneurship in the digital era. Furthermore, if we look at the time of publication, Figure 4 shows that research on the keyword entrepreneurship in the digital era is relatively new. The colors displayed in the software correspond to 2021. This means that research on this topic will only begin to be published by 2021.

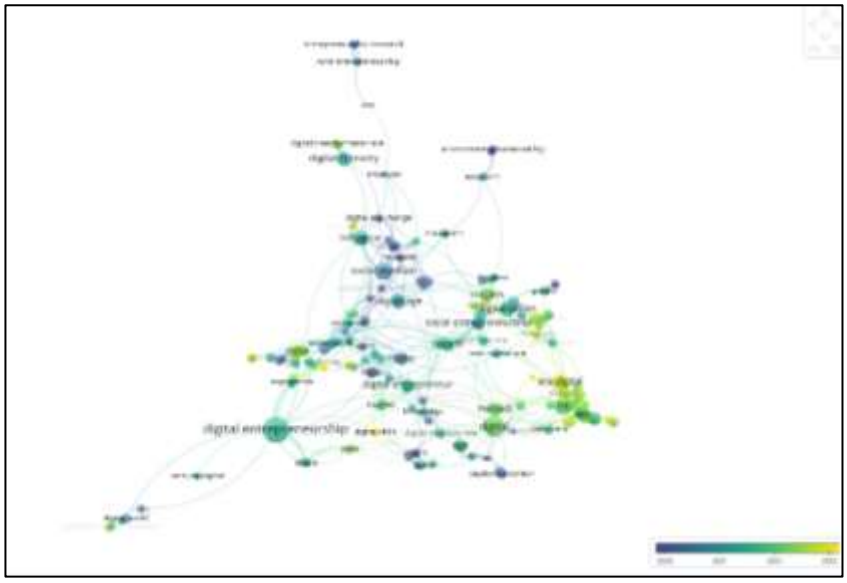

Figure 4. Overlay visualization

Source: *VOSViewer (2024)*

This is shown in more detail in Figure 5.

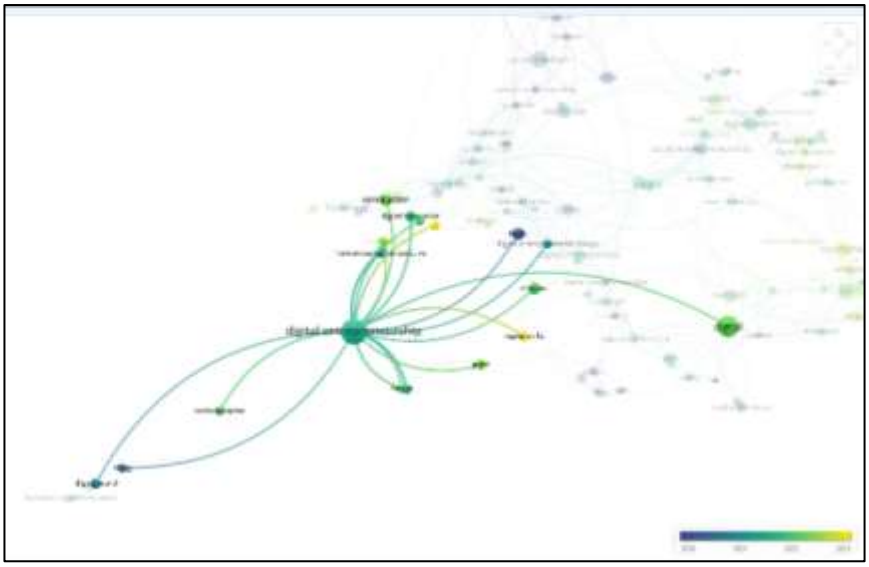

Figure 5. Increasing trend in entrepreneurship in digital era research topics

Source: *VOSViewer (2024)*

Figure 5 shows that keywords related to digital entrepreneurship tend to have lighter colors. Thus, research on this topic has the potential to continue in the future. This is not surprising given the continued development of technological advances that will certainly influence the way humans engage in entrepreneurship. This result was also supported by the density overview results shown in Figure 6.

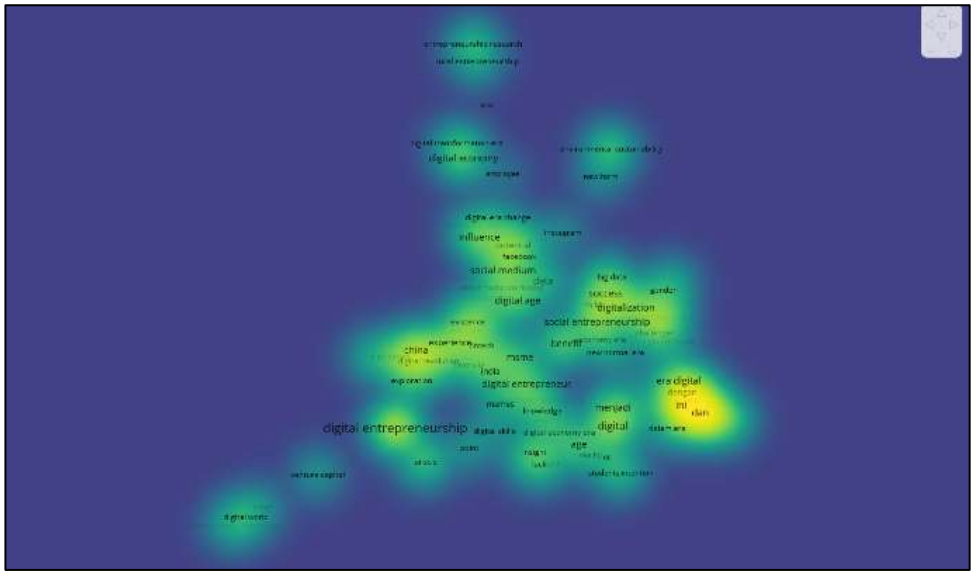

Figure 6. Density visualization

Source: *VOSViewer (2024)*

Figure 6 shows that the area surrounding digital entrepreneurship tends to be dark. Thus, this topic has rarely been published in Scopus or Google Scholar.

Interpretation of Data and Network

The final stage of this research is data interpretation based on the output to analyze research trends. The data in Figures 2 to 5 show that little research on entrepreneurship in the digital era has been published on Google Scholar and Scopus. This may have been influenced by the participants' age. This topic only started to emerge during the Covid pandemic where people were limited to working face to face and were forced to maximize their technological skills for their activities. Digital technologies give entrepreneurs

the opportunity to launch new businesses and foster innovative entrepreneurial endeavors(Luo et al., 2012). They also help them gain timely and accurate market insight, increase their ability to adapt to environmental changes, lower the cost of transactions and communications(Niebel, 2018), expand their markets, encourage cross-border exchanges(Reuber & Fischer, 2011), and lower barriers between organizations, cultures, and institutions(Bouncken & Barwinski, 2021). This is an opportunity for researchers to delve deeper into entrepreneurship research in the digital era. The results also show that there are many opportunities for collaboration with other clusters. Of the 13 clusters, the keyword entrepreneurship in the new digital era collaborated with six other clusters. In fact, it appears that there has been no collaboration between the cluster where this keyword is located and Cluster 1, which is usually the main cluster, that is, the cluster with the highest number of publications. The findings of this study are consistent with those of Paul et al.(2023), who found that the impact of digital transformation on the current entrepreneurial scene has caused digitalization to challenge traditional firms globally. When moving to digital business, a company must have a solid conceptual understanding of digital entrepreneurship. Simultaneously, it is critical for academics to investigate this phenomenon.

4. CONCLUSIONS

During the year 2018-2023, there has been an increasing trend in digital-era research subjects. According to this bibliometric analysis, there were 11 clusters, 161 items, and 447 links, with a link strength of 500. According to Scopus and Google Scholar data, the majority of studies on entrepreneurship in the digital era are related to the business environment; the covid pandemic; digital entrepreneurs, the digital entrepreneurship ecosystem, digital media, existence, financial literacy, and financial technology. This study can help scholars, policymakers, and practitioners to provide a comprehensive picture of entrepreneurial knowledge in the digital era.

REFERENCES

Adiatma, T., Irianto, O., Siamsa, S., & Suwandi, S. W. (2023). Strategic Management to Envisage the Challenges of Inclusive Economy and Business Innovation: A Bibliometric Study. *Journal of International Conference Proceedings*, *6*(5), 47–67. https://doi.org/10.32535/jicp.v6i5

Bouncken, R., & Barwinski, R. (2021). Shared digital identity and rich knowledge ties in global 3D printing—A drizzle in the clouds? *Global Strategy Journal*, *11*(1), 81–108. https://doi.org/10.1002/gsj.1370

Carayannis, E. G., Barth, T. D., & Campbell, D. F. (2012). The Quintuple Helix innovation model: global warming as a challenge and driver for innovation. *Journal of Innovation and Entrepreneurship*, *1*(1). https://doi.org/10.1186/2192-5372-1-2

Chen, X., Chen, J., Wu, D., Xie, Y., & Li, J. (2016). Mapping the Research Trends by Co-word Analysis Based on Keywords from Funded Project. *Procedia Computer Science*, *91*, 547–555. https://doi.org/10.1016/j.procs.2016.07.140

Dabbous, A., Barakat, K. A., & Kraus, S. (2023). The impact of digitalization on entrepreneurial activity and sustainable competitiveness: A panel data analysis. *Technology in Society*, *73*. https://doi.org/10.1016/j.techsoc.2023.102224

Gregori, P., & Holzmann, P. (2020). Digital sustainable entrepreneurship: A business model perspective on embedding digital technologies for social and environmental value creation. *Journal of Cleaner Production*, *272*, 122817. https://doi.org/10.1016/j.jclepro.2020.122817

Haryani, C. S., Sudin, A., & Atun, I. (2020). Analisis Bibliometrik Tren Publikasi dan Tingkat Kolaborasi Pada Model Situation-Based Learning (2010-2019). *Jurnal Pena Ilmiah*, *3*(2), 131–140.

Heersmink, R., van den Hoven, J., van Eck, N. J., & van Berg, J. den. (2011). Bibliometric mapping of computer and information ethics. *Ethics and Information Technology*, *13*(3), 241–249. https://doi.org/10.1007/s10676-011-9273-7

Irianti, P. (2016). *Studi Bibliomteri Media Komunikasi Ilmiah Berkala Perpustakaan dan Informasi*. *18*(1), 69–80.

Irianto, O., & Adiatma, T. (2023). Financial Sustainability Publication Trend: A Bibliometric Study. *Academic Journal of Interdisciplinary Studies*, *12*(5), 132. https://doi.org/10.36941/ajis-2023-0132

Kromidha, E., & Robson, P. J. A. (2021). The role of digital presence and investment network signals on the internationalisation of small firms. *International Small Business Journal: Researching Entrepreneurship*, *39*(2), 109–129. https://doi.org/10.1177/0266242620958898

Luo, J., Fan, M., & Zhang, H. (2012). Information technology and organizational capabilities: A longitudinal study of the apparel industry. *Decision Support Systems*, *53*(1), 186–194. https://doi.org/10.1016/j.dss.2012.01.003

Niebel, T. (2018). ICT and economic growth – Comparing developing, emerging and developed countries. *World Development*, *104*, 197–211. https://doi.org/10.1016/j.worlddev.2017.11.024

Nuryudi. (2016). Analisis Bibliometrika Islam : Studi kasus Dokumentasi Publikasi Ilmiah di UIN Syarif Hidayatullah Jakarta. *Al-Maktabah*, *15*, 41–56.

Paul, J., Alhassan, I., Binsaif, N., & Singh, P. (2023). Digital entrepreneurship research: A systematic review. *Journal of Business Research*, *156*. https://doi.org/10.1016/j.jbusres.2022.113507

Phan, P., Zhou, J., & Abrahamson, E. (2010). Creativity, Innovation, and Entrepreneurship in China. *Management and Organization Review*, *6*(2), 175–194. https://doi.org/10.1111/j.1740-8784.2010.00181.x

Ratten, V. (2023). Digital platforms and transformational entrepreneurship during the COVID-19 crisis. *International Journal of Information Management*, *72*. https://doi.org/10.1016/j.ijinfomgt.2022.102534

Reuber, A. R., & Fischer, E. (2011). International entrepreneurship in internet-enabled markets. *Journal of Business Venturing*, *26*(6), 660–679. https://doi.org/10.1016/j.jbusvent.2011.05.002

Tsai, S. B., Cheng, X., Yang, Y., Xiong, J., & Zarifis, A. (2023). The social-technological ways to develop digital entrepreneurship: Targeting value creation and value capture. In *Information Processing and Management*. Elsevier Ltd. https://doi.org/10.1016/j.ipm.2023.103568