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Digital Financial Innovation in SMEs: A Bibliometric Approach

Aoliyah Firasati[1], Adi Setiawan[2], Muhamad Alwi[3], Budi Agung Prasetya[4]

Abstract

In the era of digitalization that continues to develop from 4.0 and will enter the era of 5.0. Conditions like this direct the trend of digital transformation for the implementation of SMEs. Studies related to financial management innovation in SMEs are needed to improve adaptation in the digital era. Many studies are needed to improve the development of science related to financial management in improving the ability to understand, predict and manage the implementation of digital financial innovation. To review the literature review, articles were collected from well-known publishers such as Elsevier, Springer, Emerald, Taylor & Francis, Wiley Online Library, proquest, ebscohost, and sage. Selected articles related to the theme of digital financial innovation in SME companies were collected as many as 953 using the Publish or Perish application. This number consists of articles published from 2005 to 2024. Mapping of the articles was carried out using bibliometric methods and scientific visualization using the VOSviewer application. Network visualization analysis shows that Fintech and Blockchain technology have the strongest total link strength. Overlay visualization analysis shows that the theme related to Digital Financial Innovation in SMEs is a new theme in the development of research trends. Density visualization analysis shows that themes related to Blockchain technology, and Fintech are frequently discussed themes. On the other hand, Financial inclusion, SME, financial literacy and digital innovation have less intensity.

Keywords: *Digital Financial Innovation, Fintech, Blockchain Technology, Financial Inclusion, Financial Literacy.*

Introduction

The global SME landscape is undergoing major changes. On the one hand, developed countries are committed to the strategy of industrial redevelopment, to enhance competitiveness in the global industrial chain. How can the SME industry of resource-intensive developing countries be encouraged to move towards the middle and upper classes. On this basis, it is very important and urgent to study digital financial management innovation in SMEs. Digital financial management innovation will improve the production efficiency of SMEs to increase rapidly[1], [2].

Digital financial innovation in small and medium-sized enterprises (SMEs) is seen in two main aspects. First, new methods such as smart, flexible, and virtual SMEs are increasingly in demand. Digital finance has entered the traditional manufacturing sector, driving digital financial innovation and enabling SMEs to thrive in the digital era. Second, the boundaries between SMEs and the service industry are increasingly blurred, with the integration of the two becoming more prominent. In this context, digital technology has a significant impact on the industrial chain, value, and innovation of SMEs, with each stage of digital innovation involving digital finance[3], [4]. The core of digital financial innovation is to reveal the flow, transformation, and added value of knowledge and technology, reflecting the synergy, cooperation, and value transfer of various actors involved. The integration of new generation information and digital technology in SMEs has had a significant positive impact on the development of national industry and economy. Researchers have studied this phenomenon from various perspectives[5], [6], [7].

Digital innovation is assessed in two aspects, namely business processes and market offerings. They explore the relationship between digital-related competencies and digital innovation, and emphasize the importance of digital humanities and collaborative competencies, technology, and innovation[7], [8], [9] .

[1] Department of Management, Faculty of Business Economics, University of Swadaya Gunung Jati, Indonesia, Email: aoliyahfirasati234@gmail.com
[2] Department of Management, Faculty of Business Economics, University of Swadaya Gunung Jati, Indonesia, Email: a.setiawan28@gmail.com, (Corresponding Author)
[3] Department of Management, Faculty of Business Economics, University of Swadaya Gunung Jati, Indonesia, Email: malwy1980@gmail.com
[4] Department of Management, Faculty of Business Economics, University of Swadaya Gunung Jati, Indonesia, Email: boedyape@gmail.com

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The ability to leverage enhanced information technology enables organizations to transform the way they access knowledge, skills, customized requirements, as well as new and existing product or service lines, value creation, capabilities, and speed of delivery. This forms the basis for digital financial innovation, which consists of two main perspectives: first, digital financial innovation focuses on optimizing existing products and increasing added value through services. Second, digital innovation involves the use of digital technologies by companies to optimize various aspects of their business and ultimately improve their performance[10], [11], [12].

Method

Bibliometric Analysis And Software

Bibliometrics is an interdisciplinary discipline that performs quantitative analysis of a field of knowledge using mathematical and statistical methods, and is a body of knowledge that integrates mathematics, statistics, and bibliography[13], [14], [15]. The focus of bibliometrics is to explain, evaluate, and predict the current state of knowledge and trends through the analysis of literature characteristics. Scientific knowledge mapping is a comprehensive analysis method that combines traditional bibliometric methods with modern text mining techniques.

The analysis of author cocitations, keyword co-occurrences, and keyword clustering allows us to explore research lineages, research hotspots, research frontiers, and collaborative relationships between authors, institutions, and countries in a particular research field, which helps us understand the changing trends and academic dialogues on the subject, thus enabling better future research. VOSviewer is a bibliometric and analytical software for building knowledge graphs[14], [16], [17], [18], [19]. The main principle of this software is to mine "co-occurrences and clustering" based on distance, draw correlation graphs, and show the importance of documents, i.e. their interrelationships, through the color, size, and distribution of network nodes.

Research Design

This bibliometric study aims to identify the most active and influential research areas related to digital innovation in manufacturers. We collected raw data from publish or perish, covering 7,152 journals. The database is internationally recognized as a digital bibliometric platform that reflects the level of scientific research..

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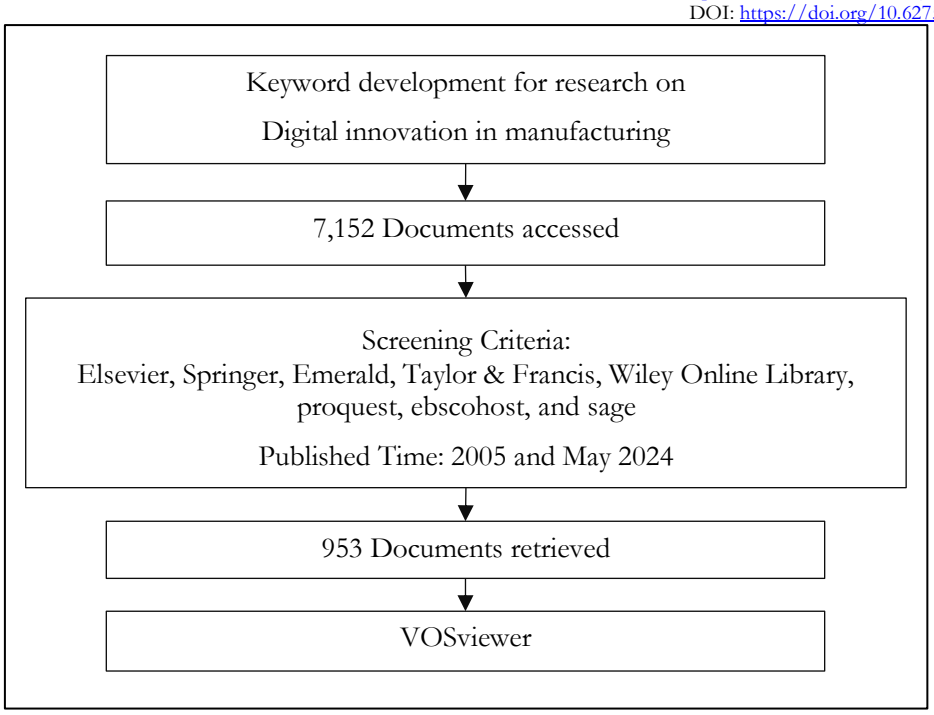

Figure 1. Article Retrieval

Bibliometric Analysis Results

Trend Analysis

Bibliometric analysis is used to identify research trends in a field of study. This includes mapping the development of research topics on Digital Financial Innovation in SMEs, as well as changes in scientific literature over time[3], [4], [5], [6], [7].

In terms of the number of annual publications, there was a significant increase from 2005 to 2024. Of this number, literature focusing on business and management studies showed the same growth pattern, especially in the last 5 years. In 2024, it was not even a year when this article was written, there were already 246 with 816 citations

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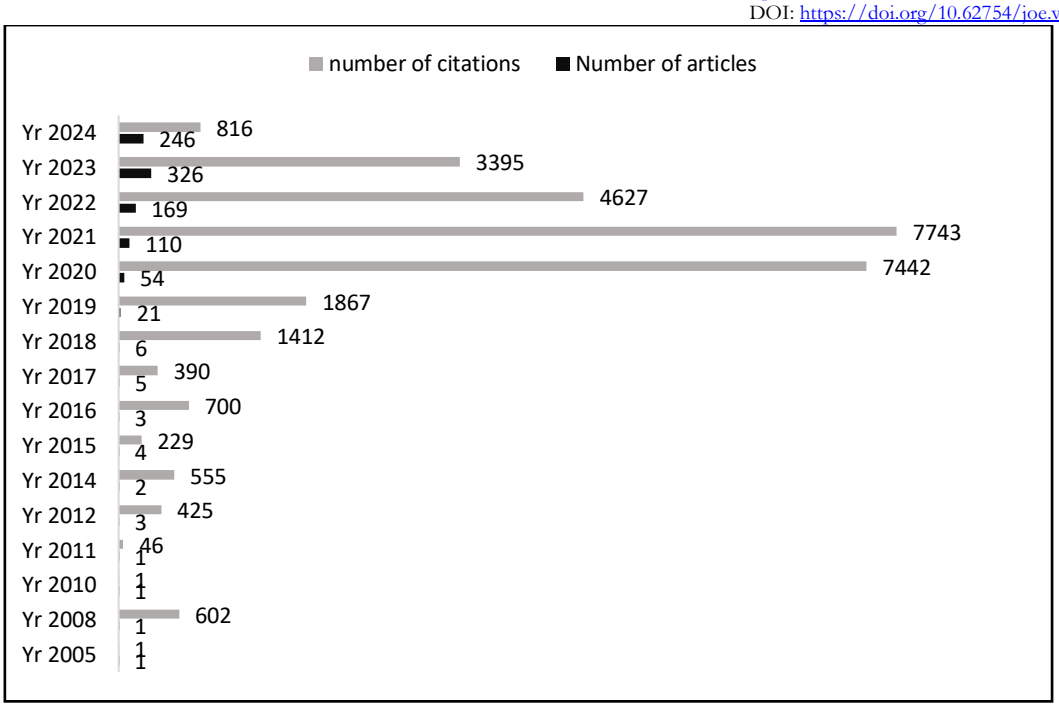

Figure 2. Number of Citations and Articles

On the other hand, after focusing on 953 obtained in the field of business and management, we obtained articles through the Publish and Perish application, and looking at the annual citation frequency, as shown in Figure 2, we can find that the citation frequency started to increase from 2021 and reached a multiplication increase from 2021 to 2024. This shows that the research findings on digital financial innovation in SMEs are increasingly recognized among academics and have an increasing impact year by year.

Network Visualization Analysis in the VOSviewer Application

Network visualization is one of the main features of VOSviewer which is used to map and visualize network data. Network visualization allows researchers to understand the relationship between themes symbolized by nodes in a network. Each node can represent various article entities that show keywords and words that are considered relevant in the title and abstract in the content of articles in published journals..

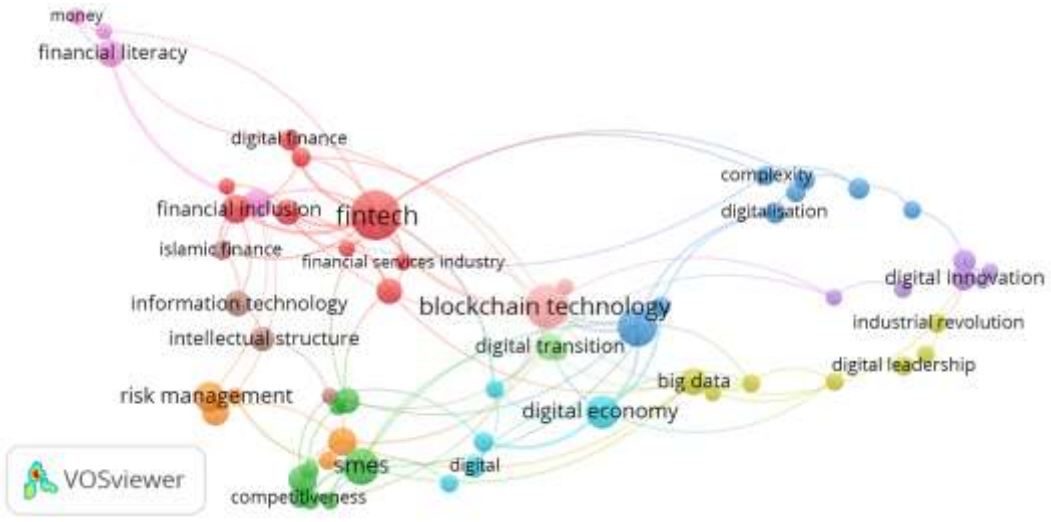

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Figure 3. Network Visualization

Keywords in cluster 1 with red node color to correspond to brown, purple, green and blue nodes. Fintech is the keyword that has the largest total node link frequency. This cluster focuses on digital financial innovation, money management, digital finance, financial literacy, financial inclusion, rafid digital financial transformation, information system islamic finance, green finance, financial planning, term digital transformation and complexity[7], [8], [10], [11], [12], [20], [21], [22].

Label	Cluster	Weight<Links>	Weight <Total Link Strength>	Weight <Occurrences>
Fintech	1	14	31	37
Blockchain Technology	10	12	21	27
Information	3	8	16	23
Digital Economy	6	9	15	16
SMES	2	10	14	19
Financial Planning	9	8	14	12
Financial Inclusion	1	7	13	12
Communication Technology	3	6	13	6
Financial Service	1	7	11	10
Digital Transition	11	9	10	11

Next, the Blockchain Technology theme which has the second most links is in cluster 10. This theme links technological innovation, financial service, fintech, financial service industry, term digital transformation, digital economy, digization, digital transformation path, new digital technology, digital transformation path, and financial service industry[21], [22], [23].

Through network visualization, you can explore the network map in detail. This is very useful for large networks consisting of hundreds or thousands of elements of words that are considered relevant in the article. Fintech and Blockchain technology have the strongest total link strength. This condition shows the size of the total strength of the relationship between one node and another node in a network..

Author Network Analysis

Network visualization visualizes patterns of researcher collaboration in identifying, research trends, and relationships in scientific literature. Satish Kumar from the Indian Institute of Management Nagpur is the researcher with the most published articles. The articles are published through reputed publishers such as Elsevier, Emerald, Springer, Taylor and Francis, and Wiley Online Library. The research is conducted with research partners who are.

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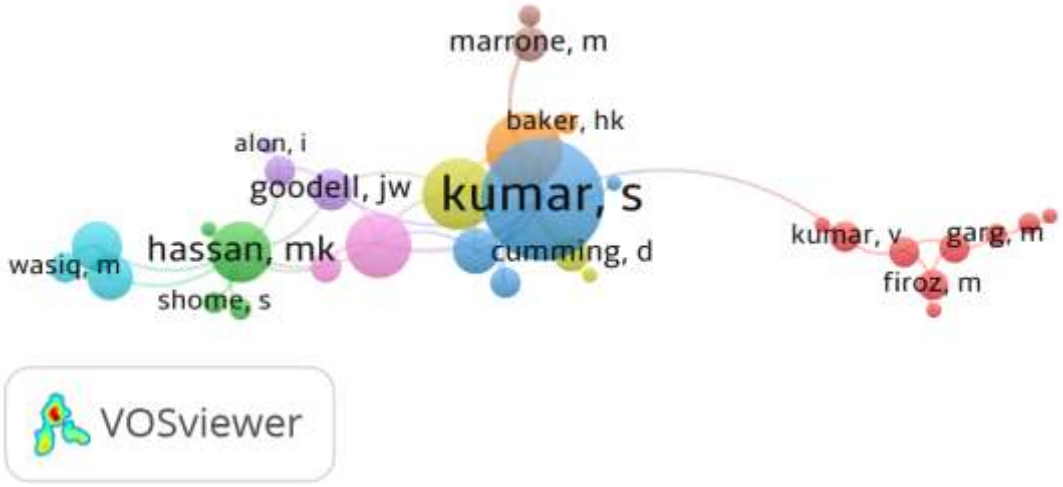

The research partners in question are Weng Marc Lim, Debidutta Pattnaik, Neeraj Pandey, Weng Marc Lim, Akash Nil Chatterjee, Nitesh Pandey, Kumar, S., Xiao, J.J., Pattnaik, D., Lim, W.M. and Rasul, T. The combination of Satish Kumar's research from 2020 to 2024 includes 18 studies..

Overlay Visualization Analysis

Overlay visualization analysis, reflecting temporal changes, plotted according to the start time of the occurrence of words considered relevant in the title and abstract in the body of articles in published journals..

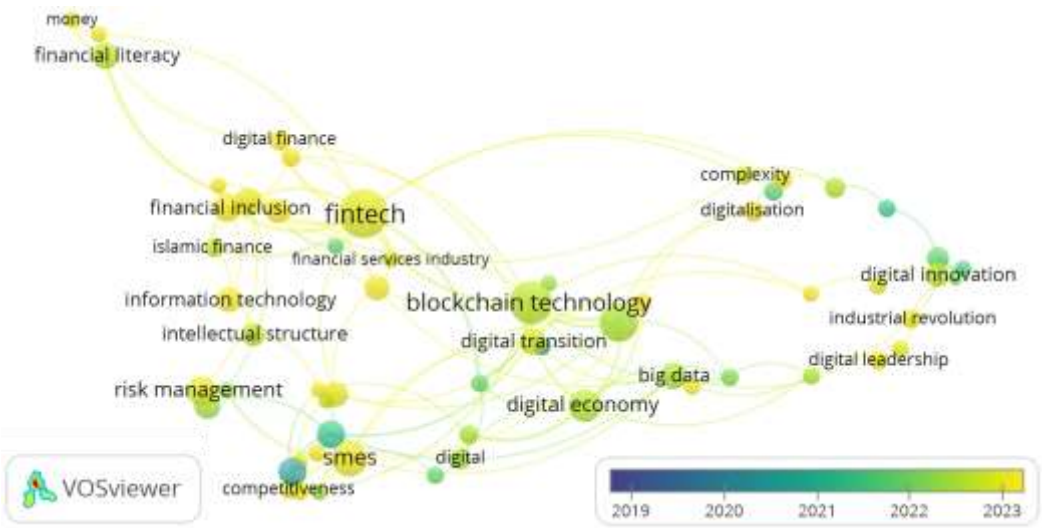

Figure 1. Overlay Visualization

Overlay visualization displays additional information on the bibliometric network map in the form of publication time, from words that are themes relevant to the research mapping. The lighter color of the nodes in the overlay visualization indicates a more recent published research time, while the size of the node indicates a frequently discussed theme[24], [25], [26], [27], [28], [29], [30], [31], [32], [33].

Themes related to Blockchain technology, and Fintech are new themes and are discussed more frequently. Meanwhile, themes related to Digital transition, Fintech, Financial inclusion, SMES, Risk Management, digital finance, financial literacy, money, business performance and industrial revolution are the newest

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themes. It is said to be the newest because the theme emerged from articles published from 2023-2024 and is still lacking to be discussed[34], [35], [36], [37].

Meanwhile, themes related to industrial finance and sustainable business models are themes that show older because they were published between 2022. However, this theme can also be said to be a theme that is rarely discussed. Basically, the overlay visualization analysis in VOSviewer shows that themes related to Digital Financial Innovation in SMEs are still rarely researched and are new themes in the development of research trends [38], [39], [40], [41].

Density Visualization

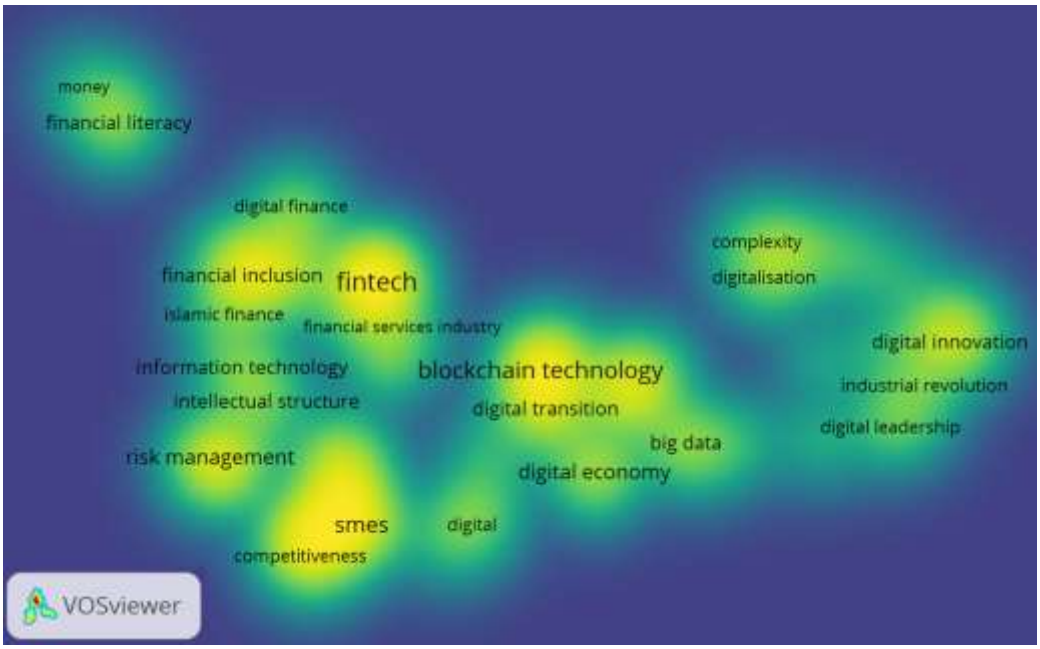

Figure 5. Density Visualization Analysis

Density visualization in VOSviewer is used to display the level of discussion or intensity of research on a particular topic group. This visualization provides an overview of how often a topic is discussed in the analyzed literature. Themes related to Blockchain technology and Fintech are frequently discussed themes. This information is shown by the intensity of the Blockchain technology and Fintech theme groups. Meanwhile, financial inclusion, SME, financial literacy and digital innovation have less intensity, in other words, these topics are rarely discussed [13], [14], [42].

Conclusion

General Findings

This article finds that the theme related to Digital Financial Innovation in SMEs is a theme that is still rarely researched. There are many themes that can be studied to further improve understanding related to Digital Financial Innovation in SMEs. Based on a search from 2005 to 2024, literature that focuses on business and management studies has shown considerable growth in the last 5 years. In 2024, it was not even a year when this article was written, there were already 246 with 816 citations. The largest citation was in 2021 with 7,743.

From 2005 to 2024, there were only 973 articles related to the theme of Digital Financial Innovation in SMEs. This fact makes network visualization not show a large total relationship strength. It can be seen from the network visualization analysis that there are no very large nodes. The results of the network

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visualization analysis show that Fintech and Blockchain technology have the strongest total link strength. This condition shows the size of the total strength of the relationship between one node and another node in a network.

In the nodes in the overlay visualization, the bright node color is very dominant. This condition shows that the published research time is still very new. Likewise, the results of the Density visualization analysis show that the research intensity is still quite low. This condition shows that there are still many research opportunities in the future..

Limitations and Future Research

First, although this article has attempted to avoid limitations in identifying, whether or not document citations obtained from bibliometric algorithms are important. Efforts made are by manually identifying and filtering, as well as conducting careful reading, but negligence can occur. Failure to identify some valuable literature can occur, because the algorithm has certain limitations. This condition makes the bibliometric approach potentially less able to identify valuable citations. Second, the theme related to digital financial innovation is a new research theme for academics. This theme is still in the proliferation phase of academic research. Continuous improvement is needed in future research. Third, literature analysis and a theoretical framework are needed in building a path to realizing the theme of digital financial innovation research. To find out the causal relationship of each node, validity verification is needed.

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