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Forecasting Capabilities in Blockchain Data Networks: Trends from Bibliometric Analysis

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General Background: Blockchain technology has gained significant global attention due to its potential to enhance transparency, security, and efficiency in various domains, including business forecasting. **Specific Background:** The integration of blockchain into forecasting mechanisms can improve supply chain efficiency, inventory management, and market demand prediction. **Knowledge Gap:** Despite its potential, limited research has systematically examined blockchain's role in forecasting capabilities, particularly through a bibliometric analysis approach. **Aims:** This study employs R Studio and VOSviewer to analyze bibliometric data from Scopus, aiming to identify trends, influential publications, and research gaps in blockchain-based forecasting. **Methods:** A systematic bibliometric analysis was conducted on 287 relevant articles published between 2015 and 2023, focusing on citation networks, keyword co-occurrence, and thematic clustering. **Results:** The findings indicate that forecasting is a dominant research theme, with China contributing the most publications. Key studies highlight blockchain's role in cryptocurrency prediction, supply chain management, and decentralized finance. **Novelty:** This research provides the first comprehensive bibliometric mapping of blockchain-based forecasting, revealing emerging trends and future directions. **Implications:** The study informs businesses, policymakers, and researchers on leveraging blockchain for predictive analytics, offering insights for enhancing decision-making in finance, trade, and supply chain management.

Keywords: Bibliometric, Blockchain, Business, Forecasting

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INTRODUCTION

The era of society 5.0, the widespread use of electronic gadgets, social media, and automation leads to much data being generated daily. The Industrial Revolution has made significant progress and for centuries, trade has influenced economic conditions, public policy, living standards, and levels of financial inclusion globally. The trade flows are expected to grow by 4% annually and reach US$24 trillion by 2026 (Kowalski, 2021). Trade finance has played a role in international trade. In some ways, it can overcome problems such as importers not liking to pay before receiving goods, while exporters want to finance when the goods are shipped. However, financing could be more varied and efficient (Werbach, 2018). In particular, trust is not transferable, and banks have varying degrees of reputation. The involvement of multiple banks and intermediaries often lengthens the document exchange process. In addition, trade finance is also exposed to the potential for financial fraud (Ho, 2018). Therefore, advances in international trade finance are needed to address trust issues, improve efficiency, and reduce transaction costs.

The creation of a sound forecasting system is a significant challenge for international trade and the involvement of many banks. This is because it is complicated to obtain reliable data. Good forecasting requires quality analytical techniques from both internal and external sources. When a business in the supply chain handles different data, it may cause duplication, which significantly hampers efficiency, especially in large business enterprises. According to Herbert Simon, more than 50 years ago, machines would replace human tasks (Pournader et al., 2021). Blockchain, internet of things (IoT), and artificial intelligence (AI) are some of the disruptive technologies whose integration is considered very promising to address the identified challenges (Abioye et al., 2021; Lee et al., 2021). According to the diffusion of innovation theory (Rogers, 2003), these technologies can be seen as innovations that disrupt traditional business models and practices by introducing new ways of performing tasks and solving problems.

Blockchain is now considered the fifth pillar of the IT revolution and is expected to be the foundational technology for the next generation of the Internet (Iansiti, Marco & Lakhani, 2006; Shermin, 2017; Thakkar, 2019). Nakamoto created blockchain technology in 2008 (Nakamoto, 2008). Since the existence of blockchain technology, the banking, finance, insurance, education, healthcare, and government sectors have used blockchain technology up to 10%, and global GDP will increase by 2027 (World Economic Forum, 2015). The emergence of blockchain is characterized by Cryptocurrencies such as Bitcoin, Ether, and Ripple. Cryptocurrency is a new type of digital asset that uses a decentralized network based on blockchain and cryptography to facilitate, secure, and verify transactions.

After understanding these potential features of blockchain, many studies are researching how to apply blockchain technology to various industrial applications such as healthcare, banking, and voting to meet the integrity requirements of confidentiality and availability of organizations (Casino et al., 2019; Di Francesco Maesa & Mori, 2020; McBee & Wilcox, 2020). At its core, blockchain is a distributed general ledger that enables secure and transparent transactions without barriers requiring a fully trusted third party (Chen et al., 2019). Blockchain stores cryptographic hashes of previous blocks that can guarantee the integrity of the general ledger and make invalid modifications or data tampering implausible (Zhong et al., 2019). Additionally, every transaction on the blockchain is cryptographically signed, and every mining text that keeps a copy of the complete general ledger confirms every transaction on the blockchain. As a result, blockchain technology is safe and economical for validating past transactions without the need for a third party (Karafiloski, E. & Mishev, 2017; Kumar et al., 2023; Nakamoto, 2008; Zheng et al., 2017; Zhu et al., 2022).

The development of blockchains has encouraged their integration to revolutionize the next digital generation. Blockchain offers the ability to explain privacy and trust in AI-based applications (Salah et al., 2019). This convergence of technologies redefines the financial services sector by facilitating trust between parties and speeding up transactions (Soleymani & Paquet, 2020). With the help of virtual instructors who can assist participants in the learning process, the Ministry of Education and Culture and BISA AI Academy Company organized a blockchain-related learning program in August 2022. The program consists of free courses or master classes through a platform run by BISA AI Academy Company (Kemdikbud, 2022). Similarly, blockchain has transformed the supply chain by automating transactions and digitizing conventional procedures (Yong et al., 2020).

Blockchain technology is a powerful tool for reforming existing processes for time efficiency and smooth working. Previous studies such as Yoo (2017) and Ali et al. (2020) have mainly focused on the application of blockchain in the financial sector. So, until now there has been no research that explains the forecasting capabilities of blockchain data networks, especially in businesses, to predict prices in international trade through scientific knowledge, which is an essential context for future research. The Fintech industry is the earliest to adopt blockchain technology and has expanded to a broad market. This requires data to be processed to benefit the Fintech industry business.

One of the effective approaches to identifying these gaps is using bibliometric methods. Bibliometrics, through citation and publication analysis, can give a comprehensive overview of emerging research trends in a given topic, as well as the ability to identify significant contributions to the field. Bibliometric analysis can help researchers to find out which publications are the most influential in relation to blockchain forecasting, as well as the main topics and themes that are often discussed in the existing literature. Thus, this research can explore relevant literature and provide insight into how much literature discusses the application of forecasting in blockchain data networks.

The bibliometric method used in this research includes

software such as R Studio and VOSviewer to analyze and visualize bibliographic data from the Scopus database, which was chosen for its credibility and wide data scope. Through analyzing the publication data available between 2015 and 2023, this research can illustrate the extent of the development of blockchain technology in the business field, especially with regard to forecasting. Prior on 2015, the development of blockchain technology was relatively limited, and not many studies have integrated blockchain with market prediction or forecasting in a business context. Therefore, choosing this time period is important to identify significant advances that have occurred in recent years and to understand how this technology can be applied in a more expanded field (Firdaus et al., 2019; Rikhardsson & Yigitbasioglu, 2018; Sadri et al., 2023).

Moreover, bibliometric analysis also allows researchers to identify countries that are most active in blockchain research and forecasting, as well as look at business trends developing in the region. This is very important to understand which countries are best utilizing blockchain technology in the context of forecasting for international trade. For example, countries with fast-growing fintech industries such as the United States, United Kingdom, or Singapore may have more publications focused on blockchain applications. This information can provide direction for further research, taking into account research trends and potential applications of blockchain technology in different countries or markets. Thus, bibliometrics helps not only to explore research gaps, but also to direct future research that can address the challenges of integrating blockchain technology and forecasting for business. From these gaps there are several questions to answer these gaps, as follows:

RQ1: Which publications are most influential about forecasting capabilities in the blockchain data network business field?

RQ2: What are the most prominent topics and themes regarding forecasting capabilities in the blockchain data network business field?

RQ3: Which countries have the most promising business trends for implementing forecasting capabilities in the blockchain data network business field?

RQ4: What are the future research directions regarding forecasting capabilities in blockchain data networks in the business field?

This research makes several significant contributions. First, it provides insight into the distribution of publications influencing forecasting capabilities in blockchain data networks by year and which publications are most frequently cited. Second, this research highlights the forecasting capabilities in blockchain data networks, especially in business; knowledge is essential, considering that business is the engine of the economy to stay relevant in the digital world. Third, this research is a significant attempt to conduct a bibliometric analysis of blockchain, which can assist practitioners and academics in gaining a general understanding of the body of research in the field (Donthu et al., 2021).

This research is organized into several sections. The first section introduces the study and the process of asking the question. The second section describes the methods for conducting systematic bibliometric analysis, including searching for articles using the Scopus database. The third section describes and discusses the clustering results in more detail to answer the research questions using a systematic literature review process. Finally, it concludes the research and provides recommendations for future research.

METHODS

This research uses a method with a literature approach to R Biblioshiny and VOSviewer. A bibliometric study summarizes the implementation of bibliometric data analysis methods, namely publication units (Donthu et al., 2021). R Biblioshiny analysis in research aims to comprehensively describe the current state of research, identify hot topics, reveal potential trends and patterns, and establish relationships between scientific publications (Akrami et al., 2023). This VOSviewer can also enrich the exploration of leading contributors (Van Eck & Waltman, 2010). The research methodology consisted of two main phases, namely data collection and data analysis.

Data Collection

The Scopus database was chosen for its credibility and comprehensive coverage of high quality publications in social sciences (Gasparyan et al., 2013). The database search was conducted on September 15, 2023, using a carefully curated set of keywords, including “forecasting”, “blockchain,” “block chain,” “block-chain,” “cryptocurrency,” “distributed ledger,” and “hyperledger,” derived from prior literature and validated by experts. To refine the dataset, inclusion and exclusion criteria were applied, limiting the subject areas to "Business, Management and Accounting" and "Economics, Econometrics, and Finance." Document types were restricted to "conference papers" and "articles," with only English-language publications considered. The publication period was set between 2015 and 2023. This process initially identified 1.645 documents and subsequently filtered based on these criteria, resulting in 287 eligible articles for further analysis. Furthermore, the search parameter is shown in Table 1

Table 1 about here

Data Analysis

In the data analysis phase, two software tools, R Biblioshiny and VOSviewer, were employed to analyze and visualize the bibliometric data. The database collection analyzed is presented in the flowchart in Figure 1.

Figure 1 about here

R Biblioshiny was used to explore trends in ICT-based learning research, focusing on publication growth over time, keyword co-occurrence, and thematic evolution. Key bibliometric metrics, such as h-index, total citations, and annual growth rate, were calculated to provide a comprehensive overview of the research landscape. VOSviewer complemented this analysis by visualizing citation networks and co-occurrence relationships among keywords, authors, and institutions. Clustering

algorithms were utilized to identify thematic clusters and leading contributors within the field. Analytical dimensions included citation analysis to determine influential articles, journals, and authors; co-authorship analysis to explore collaboration patterns among researchers; and keyword analysis to uncover recurring themes and emerging trends. The integration of R Biblioshiny and VOSviewer offered a robust methodological framework for systematically analyzing bibliometric data, enabling a nuanced understanding of ICT-based learning research trends.

RESULTS AND DISCUSSION

This section, the authors will discuss the results of a document search of 287 articles from the Scopus database. The development of research publications on forecasting capabilities in blockchain from 2015 to 2023 shows a significant increase, as shown in Figure 2. This indicates that research in the field of interest is relatively new. Therefore, it's not surprising that research on forecasting capabilities in blockchain data networks is essential. Table 2 shows the summary data in the bibliometric analysis of 287 documents selected from the queries. The documents found 128 sources with an average citation score of 70.38 with an average citation per document of 1.83.

Figure 2 about here

Table 2 about here

Most Impacted Publications

This study analyzed the citation network for the 287 articles reviewed. Several matrices are used to measure the influence of publications. However, the most common matrix used in research is citations (Ding & Cronin, 2011). The result of a journal is seen through the number of times other publications cite the publication (Donthu et al., 2021). R Biblioshiny software is used to determine the citation network between publications. Figure 3. presents a graph between authors. The article of Pazaitis et al., (2017) on blockchain and value systems in the sharing economy: the illustrative case of backfeed received the most citations 257, followed by Yin et al., (2019) on regulating cryptocurrencies: a supervised machine learning approach to de-anonymizing the bitcoin blockchain 215, and Sun et al., (2020) on a novel cryptocurrency price trend forecasting model based on light GBM 134 citations.

Pazaitis et al. (2017) provide an overview of decentralized back feed solutions on blockchain technology. Implementing backfeeds and similar evaluation systems poses specific challenges to internal relationships within productive communities regarding trust, reciprocity, and intrinsic motives. In addition, the technology is still in its early phase, and more empirical data is needed to support implementation in the field. There are reasonable doubts about how much blockchain can help organizations solve existing problems. At the same time, with the technology yet to reach dominant design, it is too early to predict how it will operate at scale.

Sun et al. (2020) provided an overview of the adoption of a novel gradient decision tree (GBDT) algorithm, a light gradient boosting machine (LightGBM), to estimate market price trends in cryptocurrencies. This study found that the adopted method is more suitable for medium-term prediction of 2 weeks; the higher the level of comprehensive strength, the better the forecast performance obtained. This research contributes by selecting more potential influencing factors and developing a new forecasting model by introducing econometric models and deep learning algorithms. In addition, the forecast target will trend fluctuations to the price level with the forecast model for large sample data sets. Then, the research of Yin et al. (2019) presents a new approach to predicting unidentified entity types. The research assumptions on the anonymity of the Bitcoin blockchain are lower than generally believed, and the number of potential Bitcoin address holders can be narrowed down to a certain level. This research makes three contributions: (a) it develops and validates a new method for anonymizing Bitcoin blockchain transactions; (b) it provides a first estimation of the different types of entities in the bitcoin blockchain environment; and (b) it provides implications for practiced and regulated entities beyond the implementation of a prototype method that can be used as an assessment tool.

Figure 3 about here

Most Prominent Themes

The study used a single keyword that was listed in 287 articles. The keywords listed by the author in an article reflect the research topic, and their occurrence reflects the topic trend in a study (Comerio & Strozzi, 2019). Based on Table 3 There are 20 top keywords based on event by frequency of occurrence. Forecasting is the most significant keyword on the list, with 73 occurrences, followed by blockchain 46, bitcoin 32, block-chain 16, and machine learning 14. All keywords reflect the scope of publications in the dataset. The keywords are consistent with this research question, and reflect core technologies that can be used for business automation and optimization. Keyword frequency analysis can directly and effectively illustrate a particular subject's research domain and core content, as seen in Figure 4.

Table 3 about here

Figure 4 about here

Table 4 we summarize the top cited original articles on forecasting capabilities in blockchain data networks using a table of 10 original articles consisting of rank, years, title, authors, journal, and citation. So that future research can more easily understand the topic being discussed.

Table 4 about here

Table 5 illustrates the 10 most productive publication and affiliation institutions. These institutions significantly contribute to this research among 10 universities, such as Southwest Jiaotong University, Renmin University of China, Nanjing University of Science and Technology, and Tianjin University in China. Then, for other affiliations based in countries other than China to recognize core journals in a field, it is necessary to pay attention to the number of articles and their citation frequency. Table 4 also illustrates the number of journals in each article. Finance Research Letters is the most productive journal with 18 articles, followed by Technological

Forecasting and Social Change with 14 articles, IEEE Conferences on the Internet of Things with 12 articles, and Journal of Forecasting and Journal of Risk and Financial Management have a total publication of 11 articles. After classifying into the top 10 journals based on the number of publications, finance research letters attract more attention from researchers. This highlights that academics increasingly recognize forecasting science's role in blockchain data networks.

Table 5 about here

Most Published Countries

We answered the third question: which countries have the most promising business trends in forecasting capabilities in blockchain data networks? The results of the government's publication are shown in Figure 5, which depicts a network map of international collaborations between significant countries with the highest links in forecasting capabilities in blockchain data networks. Most articles were published by China and the United Kingdom, with 58 and 35 documents, respectively. Then, the United States has 31 papers, France has 16 documents, and Greece has 12 documents with the Scopus database.

Figure 5 about here

Research Direction of the Study

The study distributed the thematic map into four theme quadrants according to centrality and density. Therefore, the articles in the right quadrant merit more research and development because of their strong centrality and density. In contrast, specific themes that are rare and still under-researched can be seen in the upper left quadrant. Furthermore, articles with a declining trend are in the lower left quadrant, while themes with high centrality but low density are in the lower right quadrant. The thematic map in Figure 8 illustrates a connection between three themes: forecasting, bitcoin, and machine learning in the upper right quadrant. Further research on the relationship between forecasting and blockchain has a great opportunity and is worthy of future research.

Cluster #1 (Blue): The largest node is forecasting, which connects many keywords such as Bitcoin, machine learning, and learning systems. This cluster is more concerned with the ability to apply forecasting. Cluster #2 (Orange): The largest node is blockchain, which connects several keywords mainly related to blockchain, commerce, cryptocurrency, and supply chain. These keywords have been active topics in recent years. Although the research topics are different, the contents are related. Cluster #3 (Gray): The largest node is an Internet of Things that connects several keywords, such as green computing, accurate prediction, and prediction algorithm. Figure 8. represents the network between keywords. The network's most relevant and prominent topics in this figure are forecasting, blockchain, and other keywords. Furthermore, cloud analysis identified the frequency of keywords in publications. Some keywords, such as forecasting and blockchain in Figure 6, are more relevant in publications.

Figure 6 about here

Thus, using authors as the unit of analysis, the co-citations analysis of the literature is conducted in Figures 7 and Figure 8. There are two documents for each author in this analysis, and thirty authors were chosen. The number of literature authors determines the size of the nodes in these two unconnected figures, and the connecting lines between them demonstrate the cooperation of various authors. The instance chart displays the average amount of citations each author obtained, while the color spectrum in Figures 7 and Figure 8 graphs indicates the average year of publication of each author's publications. Average publication of articles published by each author. Bouri et al. have 8 articles, Wang S et al., and Gupta R et al. have 5 articles.

Figure 7 about here

Figure 8 about here

Here, we also attach the results and discussion of bibliometric analysis in Table 6. most relevant authors. Research by Bouri et al., forecasting gains in cryptocurrencies from regime-switching factor models using data on the closing prices of 15 major cryptocurrencies. The study involved a standard factor model and a regime-switching factor load. The main results show that investors can design portfolios to predict favorable conditions. This makes the information relevant for academics building asset pricing models in the cryptocurrency market. Research by Ma F et al. indicates cryptocurrency volatility with Markov regime switching, showing that the proposed new MRS-MIDAS model significantly improves forecasting Bitcoin RV.

Research by Wang Y et al. (2023), on Bitcoin forecasting volatility by measuring the spillover effect on cryptocurrencies with data analysis of 16 significant cryptocurrencies collected at 5-minute BTC closing prices. They generated 731 daily RV observations for each cryptocurrency using the HARP, HARP-MAC, and other popular HAR-type models. Results show that past volatility realizations and graphs on Bitcoin are essential for forecasting and explaining future RV. Research by Yang F et al. (2021) describes blockchain and multi-agent systems on meme forecasting in social networks with a blockchain-based meme propagation model to simulate the spread process. The findings show that the model's accuracy is higher than other methods, so discovering meme phrases can be effective and efficient. Furthermore, research by Liang C. et al. (2022), regarding Bitcoin volatility forecasting was inspired by information across international stock markets. The study considers the model confidence set test and the Mariano Diebold test based on three globally accepted functions. The findings show that external predictive information is statistically and economically significant in forecasting Bitcoin in the future.

Wang S et al. (2018), describe research on forecasting capabilities in market research using blockchain technology using experimental methods, which show that markets can predict accurately to implement smart contracts such as blockchain. A study by Wang J et al., discusses medium to long-term forecasting methods using technological tools in the form of blockchain using time series prediction, with results showing that time series models that use models such as AutoReggressive and Moving Average Models, Holt-Winters

and LongShortTerm results can only predict the short term.

Research by Xie T et al., on Bitcoin forecasting on volatility by measuring the spillover effect between cryptocurrencies shows that volatility models can realize future predictions that significantly improve short-term forecasting performance. Gurrib explains how energy commodities will affect this blockchain-based crypto. The research design uses data on crude oil, heating oil, and energy-based cryptocurrencies. The findings show that price movements are better explained by the ENCX index and negatively correlate with cryptocurrencies. Baur DG and Hoang L's research on volatility forecasting of evidence of bitcoin traded on the Deribit options exchange using ARMA or HAR forecasting models provides the highest accuracy for all market price forecasting horizons.

Table 6 about here

Implication for Practice

This study's conclusions have important practical ramifications across a variety of areas. In the financial sector, complex forecasting models proposed by Sun et al. (2020) can improve investment strategies in cryptocurrency markets by allowing for medium-term price trend projections, making them a valuable tool for investors and traders. For regulatory organizations, Yin et al. (2019) propose viable approaches for recognizing and controlling anonymous cryptocurrency transactions, addressing significant concerns about money laundering and financial fraud. Blockchain-enabled forecasting, as noted in the cluster analysis, provides organizations with tools for improving supply chain transparency, reducing operational delays, and optimizing inventory management. Furthermore, in the energy sector, combining blockchain with forecasting capabilities facilitates renewable energy trade and effective resource allocation, hence promoting the adoption of sustainable technologies.

CONCLUSION

This research provides a systematic bibliometric analysis of forecasting capabilities within blockchain data networks, offering a fresh perspective on a rapidly evolving field. Analyzing 287 articles from the Scopus database (2015–2023), the study uncovers significant trends and intellectual structures, providing valuable insights into the increasing adoption of blockchain forecasting methodologies. Notably, the study highlights a marked rise in blockchain-related publications since 2016, reflecting the growing interest in applying forecasting techniques to this technology.

The findings highlight important contributions to the field. For example, widely referenced studies such as Pazaitis et al. (2017), Sun et al. (2020), and Yin et al. (2019) highlight the diverse and novel uses of blockchain forecasting in decentralized systems, cryptocurrency governance, and sophisticated prediction models. Furthermore, the discovery of high-frequency phrases such as "forecasting," "blockchain," and "machine learning" highlights the interdisciplinary character of research at the interface of technology and business optimization.

This research makes a novel contribution by mapping worldwide collaboration networks and theme clusters with tools such as R Biblioshiny and VOSviewer. For example, the study's theme analysis reveals developing synergies between forecasting, blockchain, and machine learning, particularly in business and finance. These findings highlight the need for more research into blockchain's potential to drive innovation across industries.

In addition to methodological advances, the paper suggests numerous future research topics, focusing on the latent potential of blockchain forecasting in e-commerce, energy resource management, and machine learning integration. This study provides a complete bibliometric framework, allowing academics and practitioners to discover prospective areas for future innovation and development.

This study adds to theory and practice in a variety of ways. First, it improves comprehension of the academic landscape in blockchain predictions, as a useful reference for future bibliometric investigations. Second, it bridges the gap between theoretical insights and actual applications, providing businesses and governments with actionable knowledge on how to use blockchain for forecasting and optimization. Third, the study provides a solid framework for investigating the role of forecasting in influencing blockchain's future.

However, this study is not without limits. The use of Scopus as the sole data source, as well as the restriction to English-language articles, may limit the analysis's comprehensiveness. Future studies could include broader databases like CrossRef or Google Scholar to improve coverage. Despite these constraints, this study establishes a standard for bibliometric research on forecasting capacities and blockchain, with important implications for both academia and industry.

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LIST OF TABLES

1. Search String and Search Results 10
2. Document Main Information 11
3. Top keywords by frequency of occurrence 12
4. Top cited original articles forecasting capabilities in blockchain data networks 13
5. 10 Productive journals of blockchain research 14
6. Most relevance authors 15

Table 1 / *Search String and Search Results*

Search String	Search Results
(“*Forecasting*”) AND (“*Blockchain*”) OR (“Block chain”) OR (“Block-chain”) OR (“*Cryptocurrency*”) OR (“Distributed Ledger”) OR (“Hyperledger”)	1645
LIMIT-TO (SUBJAREA, “ECONOM”) OR LIMIT-TO (SUBJAREA, “BUSI”) AND LIMIT-TO (DOCTYPE, “cp”) OR LIMIT-TO (DOCTYPE, “ar”) AND LIMIT-TO (LANGUAGE, “English”)	287
Publication limit of article publication from 2015-2023	

Table 2 / *Document Main Information*

Description	Results
Main Information about Data	
Timespan	2015:2023
Sources	128
Documents	287
Annual Growth Rate %	70.38
Document Average Age	1.83
Average Citation per Doc	13.3
Document Contents	
Keyword Plus (ID)	939
Author's Keywords (DE)	899
Authors	
Authors	738
Authors of Single-authors Docs	36
Authors Collaboration	
Single-authors Docs	37
Co-Authors per Docs	3
International Co-Authorship %	33.8
Document Types	
Article	226
Book Chapter	10
Conference Paper	51

Table 3 / *Top keywords by frequency of occurrence*

Keywords	Occurrence
Forecasting	73
Blockchain	46
Bitcoin	32
Block-chain	16
Machine Learning	14
Internet of Things	14
Learning Systems	13
Green Computing	12
Costs	10
Support Vector Machines	9
Time Series	9
Forecasting Method	9
Price Prediction	8
Learning Algorithms	7
Deep Learning	7
Currency	7
Cryptocurrency	7
Prediction	7
Technological Forecasting	7
Machine-learning	5

Table 4 / *Top cited original articles forecasting capabilities in blockchain data networks*

Rank	Year	Title	Authors	Journal	TC
1	2017	Blockchain and value systems in the sharing economy: The illustrative case of Backfeed	Pazaitis et al.	Technological Forecasting and Social Change	257
2	2020	A novel Cryptocurrency price trend forecasting model based on LightGBM	Sun et al.	Finance Research Letters	215
3	2019	Regulating cryptocurrencies: A supervised machine learning approach to de-anonymizing the Bitcoin blockchain	Yin et al.	Journal of Management International Systems	134
4	2020	The Predictive Power of public Twitter Sentiment for forecasting Cryptocurrency prices	Kraaijeveld et al.	Journal of International Financial Markets, Institutions and Money	132
5	2021	A machine learning-based approach for predicting blockchain adoption in supply chain	Kamble et al.	Technological Forecasting and Social Change	112
6	2019	Exogenous drivers of bitcoin and Cryptocurrency volatility – A mixed data sampling approach to forecasting	Walthert et al.	Journal of International Financial Markets, Institutions and Money	92
7	2017	Identifying potentially disruptive trends using keyword network analysis	Dotsika et al.	Technological Forecasting and Social Change	85
8	2019	Structural breaks and double long memory of Cryptocurrency prices: A comparative analysis from Bitcoin and Ethereum	Mensi et al.	Finance Research Letters	76
9	2020	A gated recurrent unit approach to Bitcoin price prediction	Dutta et al.	Journal of Risk and Financial Management	76
10	2019	Forecasting cryptocurrencies under model and parameter instability	Catania et al.	International Journal of Forecasting	71

Table 5 / *10 Productive journals of blockchain research*

Articles	Journal	Afiliasi	Articles
18	Finance Research Letters	Southwest Jiaotong University	11
14	Technological *Forecasting* and Social Change	Renmin University of China	8
12	IEEE Conferences on Internet of Things	Democritus University of Thrace	7
11	Journal of *Forecasting*	Nanjing University of Science and Technology	7
11	Journal of Risk and Financial Management	Tianjin University	7
8	Computational Economics	Northern Technical University	6
7	Financial Innovation	University of Pretoria	6
7	Research in International Business and Finance	Beijing	5
6	International Review of Financial Analysis	Lebanese American University	5
5	Decision Support Systems	Ryerson University	5

Table 6 / *Most relevance authors*

Years	Authors	Title	Citations per Years
2021	Bouri, e.	Forecasting returns of major cryptocurrencies: Evidence from regime-switching factor models	20
2022	Wang, y.	Forecasting bitcoin realized volatility by measuring the spillover effect among cryptocurrencies	17
2021	Gupta, r.	Blockchain and multi-agent system for meme discovery and prediction in social network	15
2022	Zhang, y.	Out-of-sample prediction of Bitcoin realized volatility: Do other cryptocurrencies help?	13
2018	Wang, s.	A preliminary research of prediction markets based on blockchain powered smart contract	12
2022	Ma, f.	Cryptocurrency volatility forecasting: A Markov regime-switching MIDAS approach	11
2023	Wang, j.	EB-boost: Medium-long-term forecasting method of supplies of shared e-cars in smart scenic spots	9
2021	Xie, t.	Forecasting bitcoin realized volatility by measuring the spillover effect among crypotcurrencies	6
2019	Gurrib, i.	Can energy commodities affect energy blockchain-based cryptos?	6
2020	Baur, dg.	Forecasting Bitcoin volatility: Evidence from the options market	3

LIST OF FIGURE

1. Data collection process flowchart 17
2. Annual scientific production 18
3. Citation network for publications on forecasting capabilities in blockchain 19
4. Keyword cloud analysis 20
5. Total of articles in the country 21
6. Thematic map 22
7. Co-citations analysis 23
8. Authors as the unit of analysis 24

Figure 1 / *Data collection process flowchart*

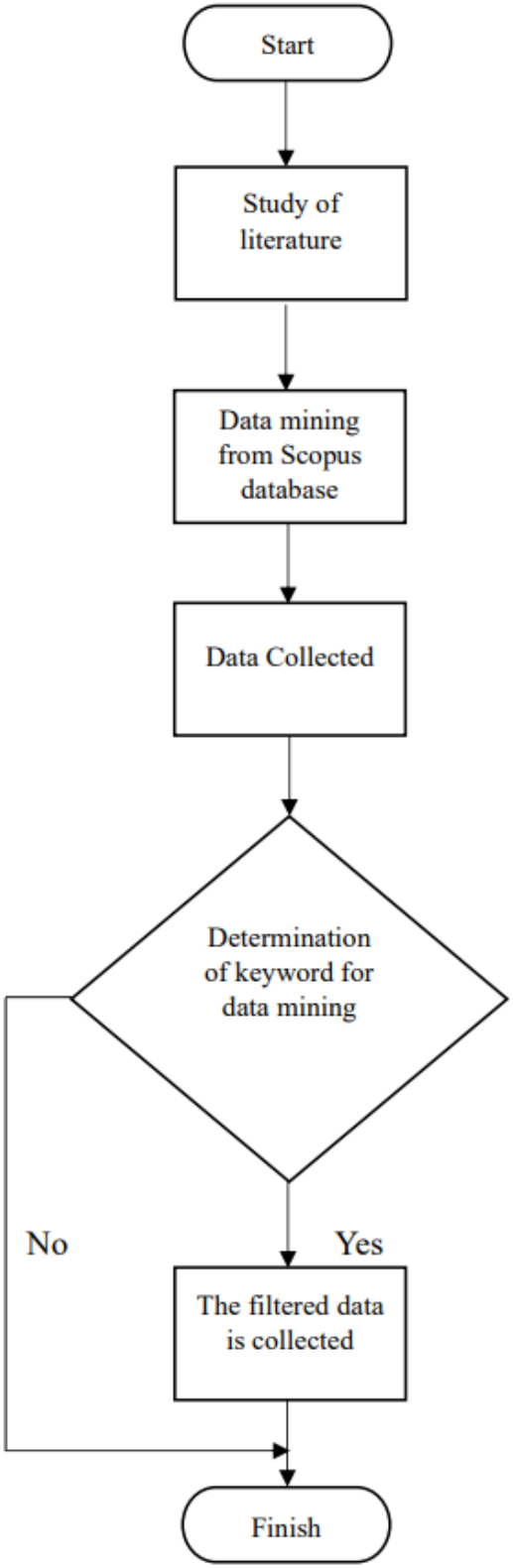

Figure 2 / *Annual scientific production*

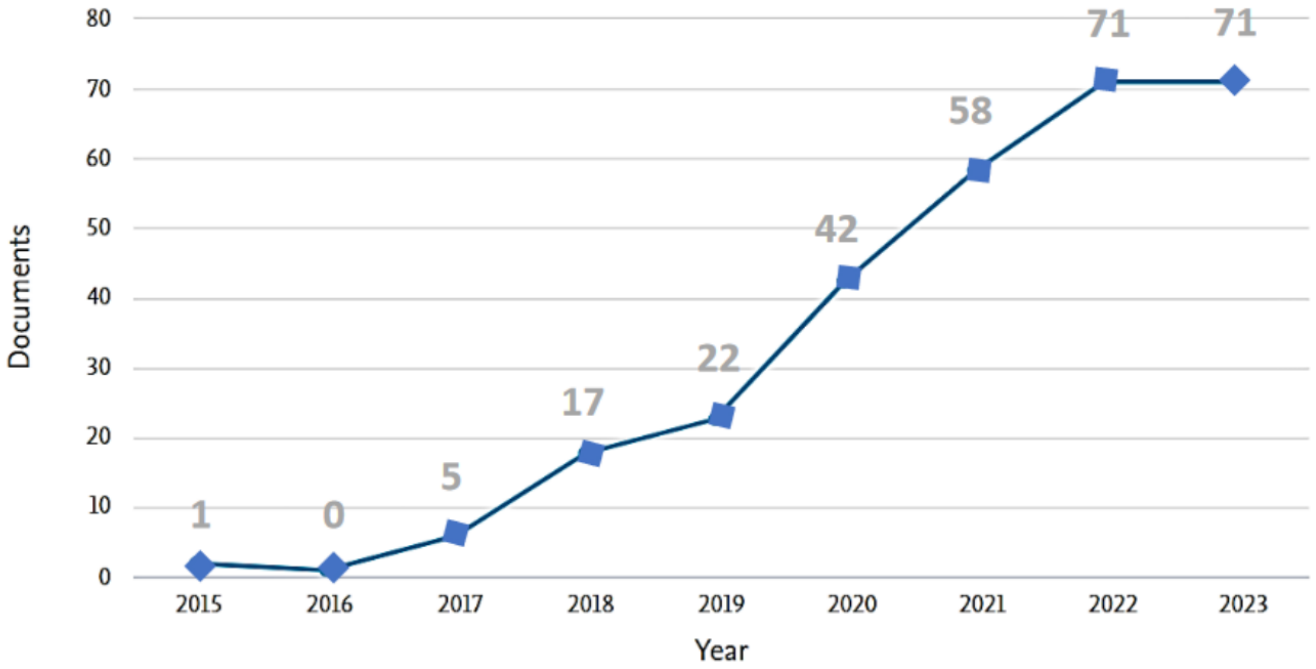

Figure 3 / *Citation network for publications on forecasting capabilities in blockchain*

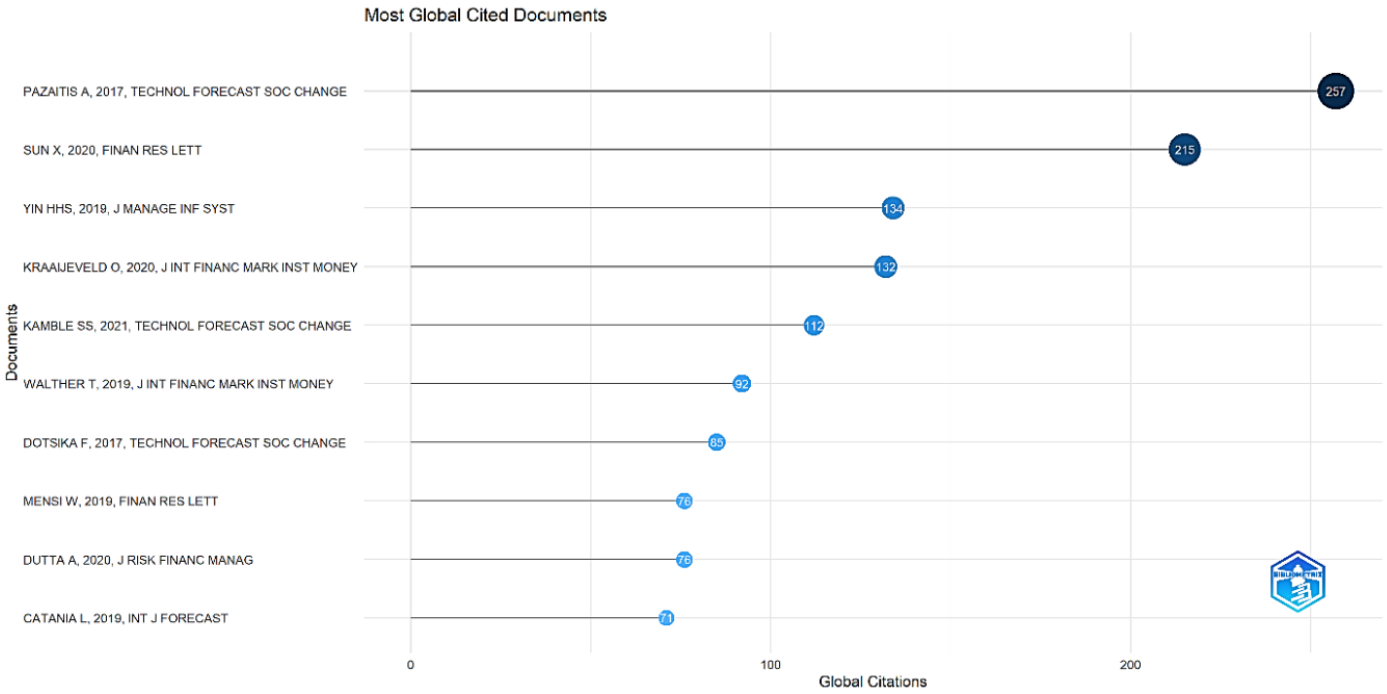

Figure 4 / *Keyword cloud analysis*

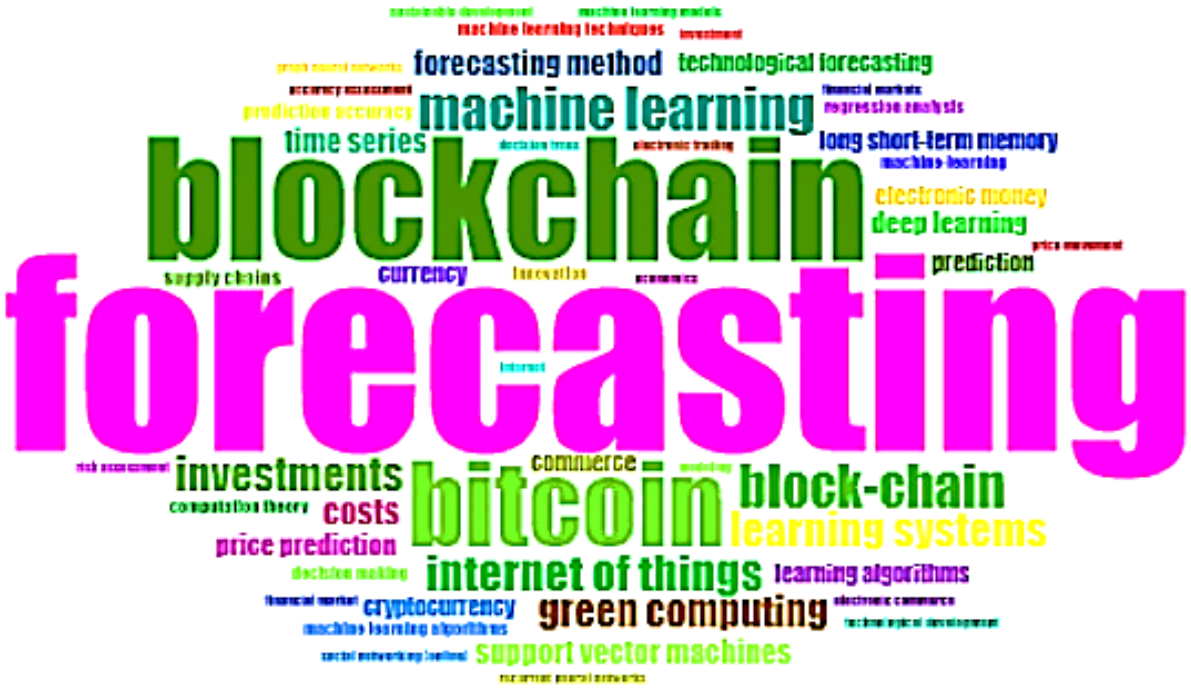

Figure 5 / *Total of articles in the country*

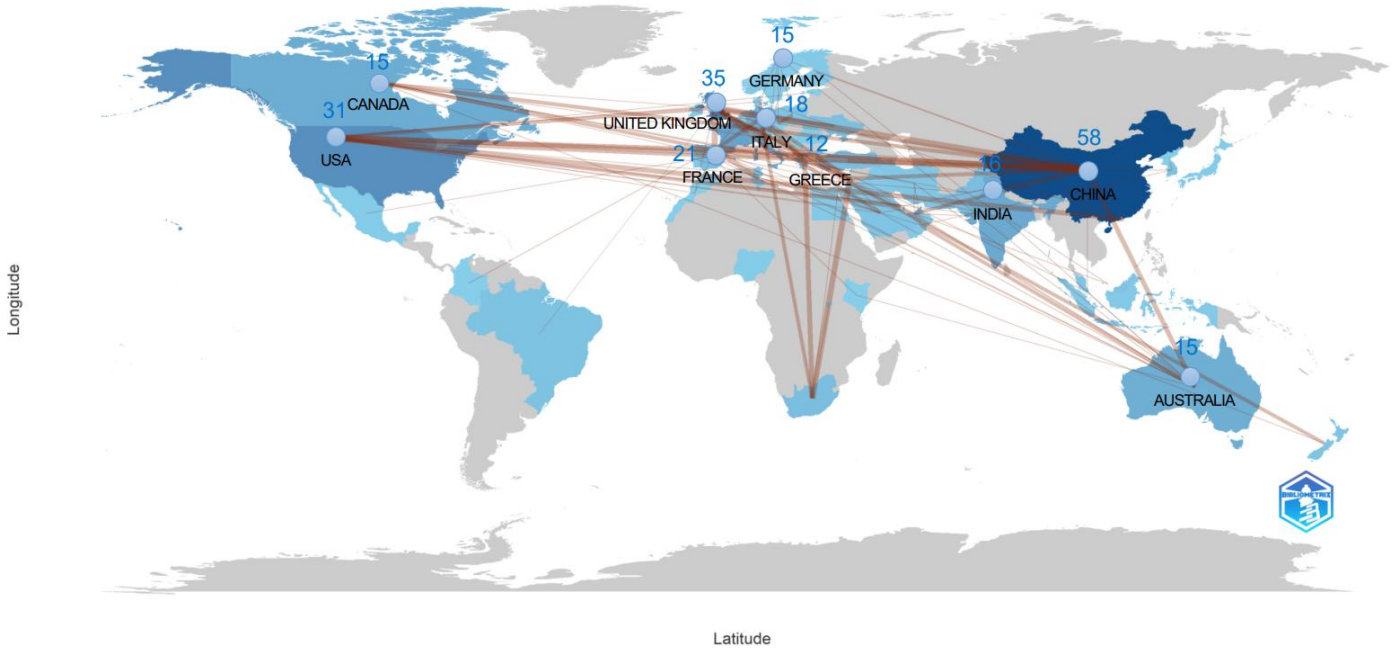

Figure 6 / *Thematic map*

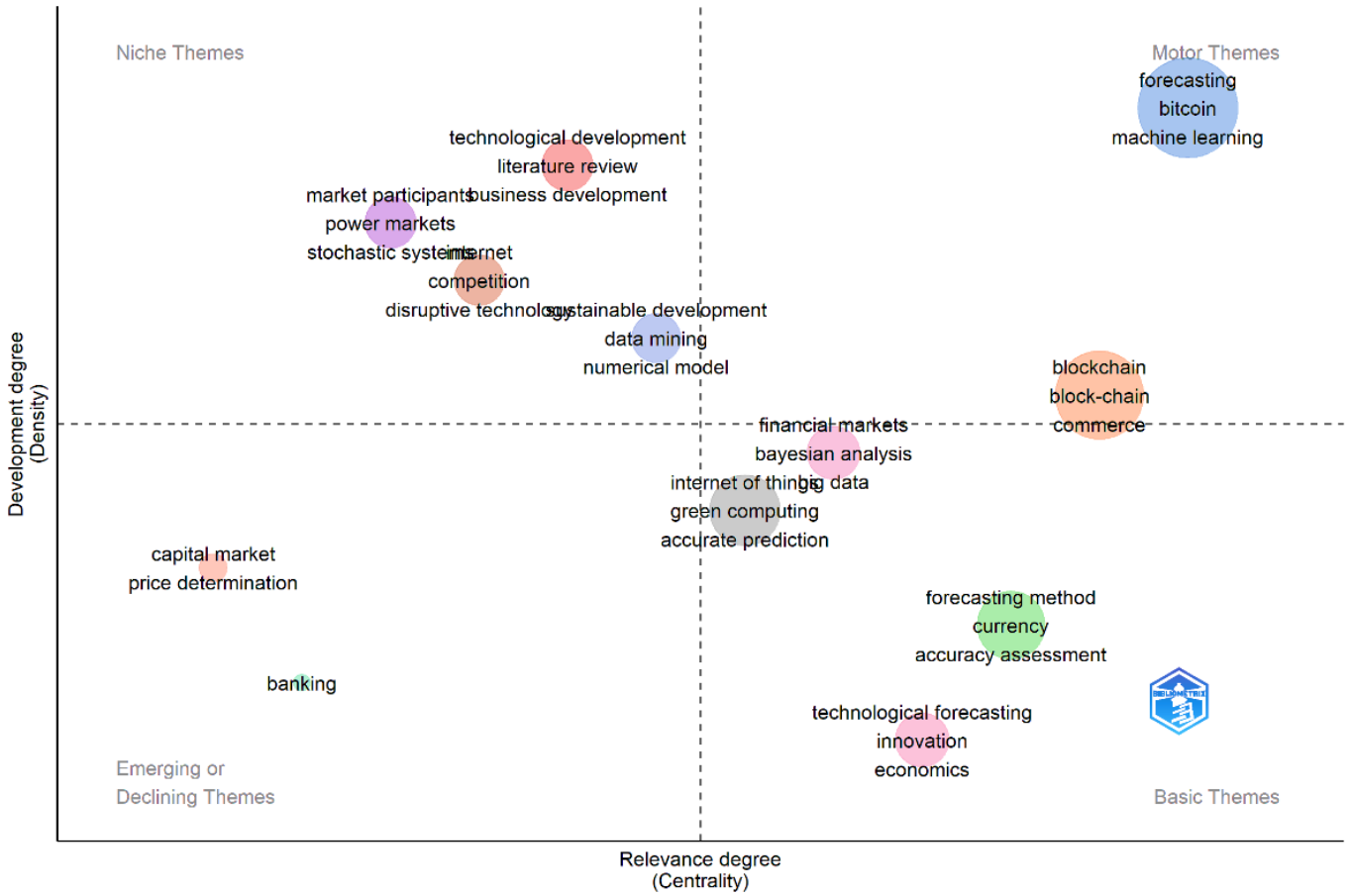

Figure 7 / *Co-citations analysis*

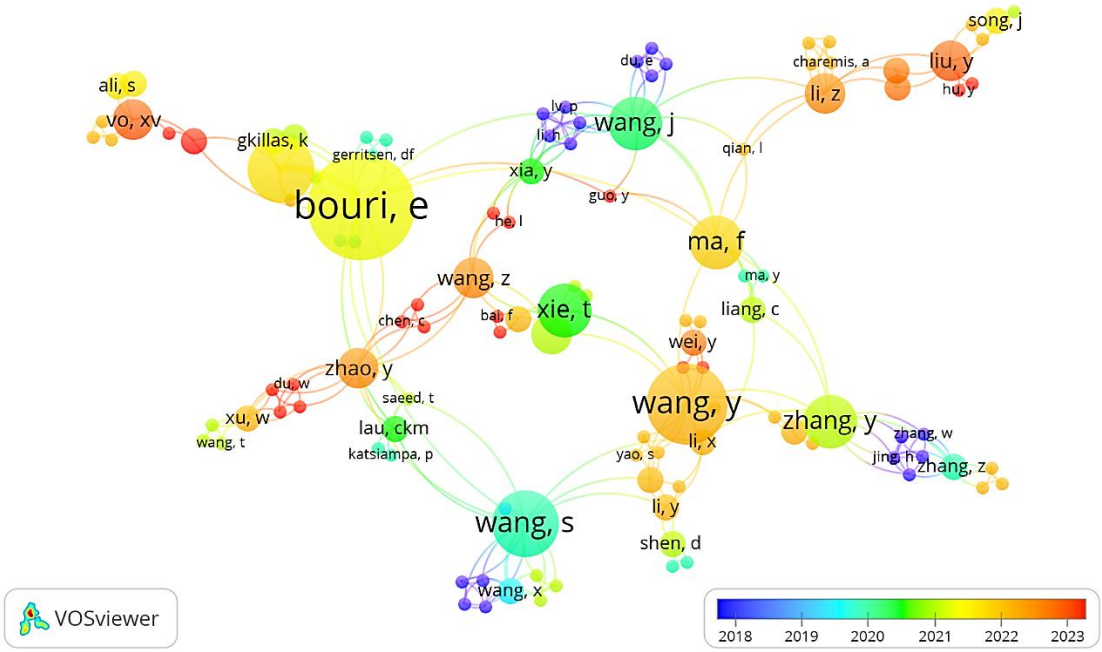

Figure 8 / *Authors as the unit of analysis*