

# Scientometric Analysis of Fintech Based on the Wave of Technological Innovation

Zhiying Wu<sup>a</sup>, Chung-Lien Pan<sup>b\*</sup>

EMAIL: <sup>a</sup>2667039783@qq.com; <sup>b\*</sup>peter5612@gmail.com

School of Accounting, Nanfang College-Guangzhou, Conghua, Guangzhou, 510970, China

**Abstract.** The financial and technology industry has increased its investment in financial technology (Fintech) when promoting digital transformation, which has become essential for developing financial technology in various countries. This paper discusses Fintech under technological innovation, aiming to map the leading countries, sources, themes, and visualizations of relevant research based on 746 articles in the Web of Science (WoS) database. The paper will provide ideas and suggestions for future research. The results show that the main themes are blockchain, cloud computing, AI, etc. The research hotspots mainly focus on artificial intelligence, blockchain, regulatory technology (Regtech), and other aspects. Credit rating, credit scoring, etc. have become new research topic trends. There is also a need for continuous innovation in regulatory regimes or technology to respond to the rapid development of Fintech.

**Keywords:** Fintech, technological innovation, blockchain, Regtech, AI

## 1 Introduction

As an essential innovation strategy for financial enterprises to adapt to the wave of technology, Fintech uses blockchain, AI, Internet of Things (IoT), and biometrics to provide various services, including funds, payments, electronic transactions, electronic insurance, and cryptocurrencies, driven by factors such as customer preference and experience, regulations and information technology. Cross-border cooperation in big data, Internet technology, and e-commerce is crucial for developing scientific and technological innovation and application[1]. In particular, banks should address the importance of Fintech in using innovative technologies in banking to ensure market competitiveness and further expand their customer base[2]. Romanov[3] highlights the need for adequate access to human capital and state regulation to ensure the effective functioning of the Fintech ecosystem. Overall, Fintech will continue to evolve through technological innovation.

This paper examines fintech innovation and aims to map relevant research based on 746 documents in the Web of Science (WoS) database. It can provide hot spots for follow-up research and clear directions.

## 2 Data and Methods

To obtain literature on fintech and technological innovation, we use the following Web of Science (WoS) advanced search query:

TS=(“artificial intelligence” OR “AI” OR “blockchain” OR “cloud computing” OR “big data” OR “IOT” OR “internet of thing” OR “biometrics”) AND TS=(“financial technology” OR “Fintech ” OR “Financial Technology” OR “regulatory technology”)

A total of 746 articles (including SCI-EXPANDED, SSCI.) were collected on 06.04.2023. Use VOSviewer and Bibliometric for mapping.

## 3 Research Findings

### 3.1 Related Statistics, Main Countries, and Sources

Figure 1 is a chart of co-authors' nationality. The red segment indicates the MCP, the number of papers co-authored with authors from other countries; The green component indicates SCP, which is the number of co-authored papers by authors of the same nationality. The figure shows that China co-authoring with other countries is the most significant number. In addition, China, the United States, the United Kingdom, India, and Russia have contributed the most to research in the field of financial technology. Figure 2 shows the most relevant sources of publication. Of these sources, the Sustainability journal publishes the highest number of papers on Fintech. The Journal of Risk and Financial Management, Financial Innovation and Technological Forecasting and Social Change follows this. It shows that Fintech has relevant research in sustainability, financial innovation, management, and other aspects.

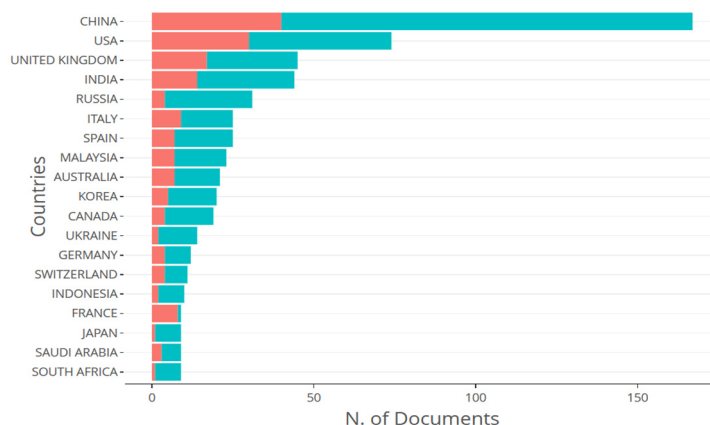
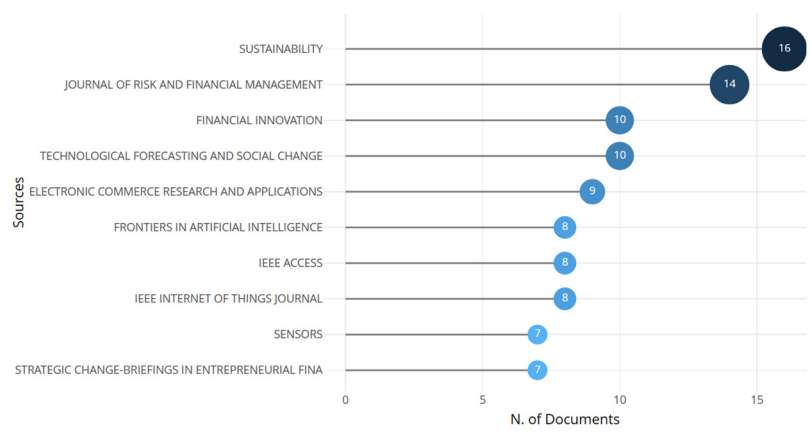


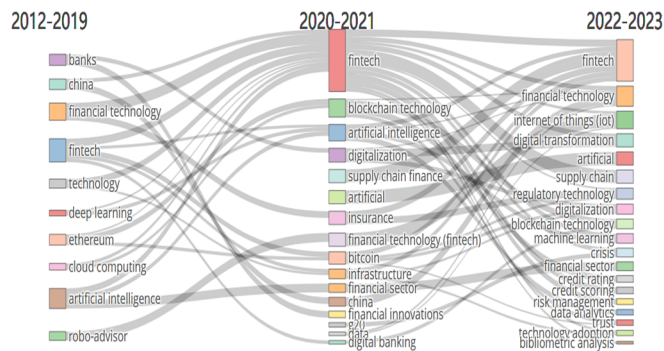
Fig. 1. Most Relevant Countries



**Fig. 2.** Most Relevant Sources

### 3.2 Main theme

Using the Bibliometrix software for theme analysis, Figure 3 shows the evolution of the theme related to Fintech. Between 2012 and 2019, topics such as cloud computing, AI, Ethereum (ETH), and banking were discussed in Fintech. During 2020-2021, blockchain technology, AI, supply chain finance, and Bitcoin were at the forefront. In 2022-2023, more emphasis will be placed on digital transformation, IoT, and Regtech. Credit rating, scoring, and risk management will become new research content.



**Fig. 3.** Thematic evolution map

### 3.3 Analysis of author keywords

To explore the hotspots of Fintech research in the context of technological innovation, Figure 4 shows the co-occurrence network of author keywords. We identify six clusters. The red cluster (blockchain) explores the relationship between crowdfunding, cryptocurrencies, distributed ledger technology, ETH, and blockchain[4]. It indicated that crowdfunding and blockchain are two innovations that have the potential to disrupt traditional financial intermediaries. Furthermore, ETH provides a secure, decentralized, universal transaction ledger and smart contract platform. ETH has a full-featured programming language, a secure and decentralized nature,

and the ability to interact with other resources through messaging frameworks[5]. The cluster also includes Bitcoin, digital economy, and startup finance.

Fintech is the leading research object in the green cluster (Fintech), including keywords such as insurance, bibliometric analysis, and covid-19. Research and discuss the integration of IoT and Fintech to introduce new services, tools, and products for emerging enterprises[6]; The impact of Fintech on banks and how digital innovation and technology-based business models can provide new business opportunities for incumbents or disrupt the existing structure of the financial industry[7].

As a hot topic in the blue cluster (artificial intelligence), AI provides a tremendous driving force for the development of Fintech. The value of big data, AI, and machine learning technologies has become apparent in the Fintech revolution[8]. Fintech can combine big data and AI to transform finance and economics. Clusters also include finance, deep learning, and robo-advisors.

In the yellow cluster (regtech), Regtech is becoming increasingly important with the development of the Fintech industry. Maintain financial stability in the Fintech industry through effective risk management and enabling innovation. The purple cluster comprises smart contracts, cloud computing, privacy, and digital banking. P2P lending, financial inclusion, digitalization, and digital transformation make up the light blue cluster.

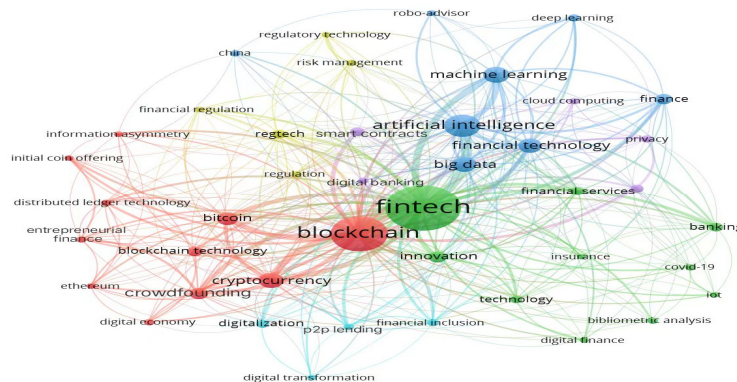


Fig. 4. A map based on author keyword co-occurrence network: clustered outcomes

## 4 Conclusion

This study analyzes the literature related to Fintech based on the wave of technological innovation. The results of the scientific econometric analysis show that: Most of the research is carried out in cooperation between countries, among which the research results of China. The United States and the United Kingdom are more prominent; Key publication sources focus on sustainability, innovation, and management; The evolution of research themes pays more attention to Regtech and IOT, etc. Machine learning and AI still have a lot of room for development, while technological innovation is still an emerging theme. In addition, scholars' research hotspots include Fintech, blockchain, AI, Regtech, smart contracts, P2P lending, etc.

IoT impacts Fintech credit risk through data collection, risk assessment, fraud detection, usage-based lending, and predictive analytics. Financial institutions can avoid credit risk in the context of Regtech through strategies such as compliance automation, risk assessment frameworks, regulatory reporting, real-time monitoring, data analysis, and third-party risk management. In general, Fintech will always be an important innovation tool in the financial industry. It will pose new challenges for regulators and market participants in balancing the potential benefits and potential risks of innovation.

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## References

- [1] C. L. Pan, Y. Liu and Y. C. Pan, (2021) Research on the status of e-commerce development based on big data and Internet technology, *International Journal of Electronic Commerce Studies*, 13, 2nd. doi: 10.7903/ijecs.1977.
- [2] M. Glushchenko, N. Hodasevich and N. Kaufman, (2019) Innovative financial technologies as a factor of competitiveness in the banking, *SHS Web Conf.*,69: 00043.doi: 10.1051/shsconf/20196900043.
- [3] V. A. Romanov, P. B. Александрович, V. V. Khbulova and X. B. Васильевна, (2020)The fintech industry: key technologies and directions of development of the financial digitization, *RUDN Journal of Economics*, 28, 4th. doi: 10.22363/2313-2329-2020-28-4-700-712.
- [4] C. W. Cai, (2018) Disruption of financial intermediation by FinTech: a review on crowdfunding and blockchain, *Accounting & Finance*, 58: 965–992. doi: 10.1111/acfi.12405.
- [5] D. G. Wood, 2014,Ethereum: A Secure Decentralised Generalised Transaction Ledger , <https://cryptodeep.ru/doc/paper.pdf>.
- [6] G. Suseendran, E. Chandrasekaran, D. Akila and A. Sasi Kumar, 2020, Banking and FinTech (Financial Technology) Embraced with IoT Device, in *Data Management, Analytics and Innovation*. Singapore.197–211. doi: 10.1007/978-981-32-9949-8\_15.
- [7] G. B. M. Navaretti, G. M. Calzolari, J. M. M. Mansilla-Fernandez and A. F. M. Pozzo-lo, (2018) Fintech and Banking. Friends or Foes? *SSRN Journal*. doi: 10.2139/ssrn.3099337.
- [8] D. K. Nguyen, G. Sermpinis and C. Stasinakis, (2023) Big data, artificial intelligence, and machine learning: a transformative symbiosis in favour of financial technology, *European Financial Management*, 29, 2nd. doi: 10.1111/eufm.12365.