



# Economics and Business Quarterly Reviews

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**Nurhayati, S., Rahmawati, A., & Surwanti, A. (2022). Bibliometric Analysis of Peer to Peer Lending Fintech Trends. *Economics and Business Quarterly Reviews*, 5(4), 1-7.**

ISSN 2775-9237

DOI: 10.31014/aior.1992.05.04.454

The online version of this article can be found at:  
<https://www.asianinstituteofresearch.org/>

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Published by:  
The Asian Institute of Research

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# Bibliometric Analysis of Peer to Peer Lending Fintech Trends

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## Abstract

This study aims to determine the development map of research related to "peer-to-peer lending." This research was conducted in December 2021-January 2022 by searching the Scopus database. The researcher uses the keywords "fintech," "peer-to-peer lending," "crowdfunding" through Scopus and also Sci-hub to get some documents that are not free. In this study, bibliometric analysis uses software called VOSviewer to analyze the results. Based on the search results, the researchers obtained 27 scientific work search results which were then exported in CSV format and processed using VOSviewer. Based on the results of the analysis, this study shows that the keywords (co-occurrence) are divided into 4 clusters with a total of 29 topics. Through network visualization, it is shown that the relationship between nodes (edges) is shown by a line between nodes. The more lines of relationship between nodes, the closer the relationship between documents. Meanwhile, the density visualization shows that if the color visualized is yellow then the topic has been studied a lot and if it is green then the topic is still rarely studied.

**Keywords:** Peer to Peer lending, Fintech, Bibliometric, VOSviewer

## 1. Introduction

The rapidly growing digital era or better known as the industrial revolution 4.0 has brought flexible mass production technology (Kagermann et al., 2013). Innovation in finance is something new to reduce costs, reduce risk or provide better products/services/instruments and better meet the demands of the financial system (Awrey, 2013). Technology has encouraged trade to grow, even helps MSMEs in running their business, supports state financial inclusion, and always innovates from year to year to develop significantly (Leng et al., 2018).

Financial technology or fintech has developed rapidly over the last decade (Chen, 2018). Fintech or often known as financial technology is defined as technology-enabled finance, an innovation that can present new business models, applications, processes, or products related to financial markets and institutions as well as the provision of financial services (Giudici et al., 2019). One of the fintech innovations includes in the field of financing, such as supply chain finance, crowdfunding, peer to peer lending which can indeed make it easier for customers to use financial services, especially in the form of loans (Tao et al., 2017). Peer to Peer lending or P2P, the most

widespread form of crowdfunding, and also similar to banks where peer to peer lending can provide loans to customers (Saiedi et al., 2020). P2P lending is a means to obtain loans without having to go through a financial institution and can also be a way to get better terms than in the regular banking system (Ruiqiong & Junwen, 2019).

Research studies related to peer-to-peer lending are dominated by studies on P2P lending performance (Martínez-Climent et al., 2018; Nigmonov et al., 2021), fintech regulation (Han, 2021; Hidajat, 2020; Nasir et al., 2021), fintech crowdfunding (Darmansyah et al., 2020; Lu et al., 2021), equity crowdfunding (Cumming et al., 2021), digital finance (Bollaert et al., 2021; Lunyakov & Lunyakova, 2018), fintech user satisfaction (Dospinescu et al., 2021), P2P lending market (Wang et al., 2021), lending technology (Bartoli et al., 2013). There is research that has also penetrated into studies on the use of fintech such as peer-to-peer lending in the small and medium business sector (Abbasi et al., 2021; Ahelegbey et al., 2019; Suryanto et al., 2020; Xiang et al., 2021), peer-to-peer lending platform funding (Dorfleitner et al., 2016; Stern et al., 2017), credit scoring (Bastani et al., 2019; Duarte et al., 2012).

This study describes various theories in the field of study related to research on fintech peer-to-peer lending. To get a map of research progress, the data is exported in CSV format. The exported data is then processed and analyzed using the VOSviewer application program to find out the bibliometric map of “Fintech Peer to Peer Lending Trends.”

## **2. Research Methodology**

The Scopus search engine was used between December 2021 and January 2022 to identify literature on fintech peer to peer lending. Scopus is one of the largest databases of peer-reviewed literature, such as scientific journals, books, and conference proceedings (Yvonne, 2020). This analysis only focuses on international journals which were excavated using the Scopus search engine and also sci-hub to get some documents that are not free. But broadly speaking, this research refers to journals indexed in Scopus. In this study, the search was limited to obtaining articles that were most suitable for peer-to-peer lending. The articles obtained were published from 2018-2021.

The initial search identified publications related to peer-to-peer lending fintech research in the title, abstract or keywords: “fintech\*” AND “peer to peer lending\*” AND “crowdfunding\*.” Based on the search results, the articles obtained were 27 documents which were then exported in CSV format and processed using VOSviewer. The use of the VOSviewer device to create a visualization of the metadata that has been obtained is then processed based on the algorithms contained in the device. The terms that appear can be obtained from the key words written by the researcher in the article.

## **3. Data Extraction**

At the end of each search, the results obtained are filtered and stored into a different marked list via Scopus used to visualize the results, categorize and rank the results. Use of VOSviewer as an application that can visualize data to create and view network maps based on the data that has been collected and used to import and clean the extracted data.

## **4. Analysis**

Many characteristics are used to categorize and review published publications. Researchers first evaluate the discipline of study and the current state of affairs regarding citation metrics, top publications, countries or regions, research fields, and detect patterns to generate fintech research ideas related to peer to peer lending. To find published literature and links on the network, a bibliometric review was performed using the VOSviewer.

Many study trends in various fields such as information technology, fiscal, monetary, and even fintech are researched using bibliometric analysis. So that the literature related to its implementation can also be examined

using a similar analysis. Network maps are also designed to examine publication connectivity through similar keywords, content shared in article titles and abstracts (co-occurrence), or co-citation frequency assessments.

## 5. Discussion result

### 5.1. Productivity of Authors and Affiliates

From the search results through the Scopus database, regarding fintech peer-to-peer lending, from 2018 to 2021, there are 27 research documents. Regarding countries that publish articles about fintech peer-to-peer lending, as many as 6 articles were written from authors affiliated with the United States. Some of the other writers came from China and Indonesia each (5 articles), England (4 articles), Russia and Australia each (3 articles), Spain and France each (2 articles), Romania, South Korea, Japan, Denmark, Luxembourg, Sweden, Brazil, Malaysia, Egypt, and Vietnam 1 article each.

Table 1: Names of countries that publish articles on “Fintech Peer to Peer Lending”

Documents by country or territory	
Country/Territory	Documents
United States	6
China	5
Indonesia	5
United Kingdom	4
Russian Federation	3
Australia	3
Spain	2
France	2
Romania	1
South Korea	1
Japan	1
Denmark	1
Luxembourg	1
Sweden	1
Brazil	1
Malaysia	1
Egypt	1
Vietnam	1

### 5.2. Map of Fintech Peer to Peer Lending

Of the 27 documents obtained from searching using the Scopus database, these documents were exported into CSV format, then inputted and bibliometric analysis was performed by creating network, overlay, and density visualizations using VOSviewer. The bibliometric network consists of nodes and edges. The nodes represented by circles can be publications, journals, researchers, or keywords; while the edge indicates the relationship between the pair of nodes. In addition, the edge not only indicates the existence of a relationship between two nodes but also shows the strength of the relationship in the form of distance. The closer the distance from one node to another, the higher the relationship between the nodes.

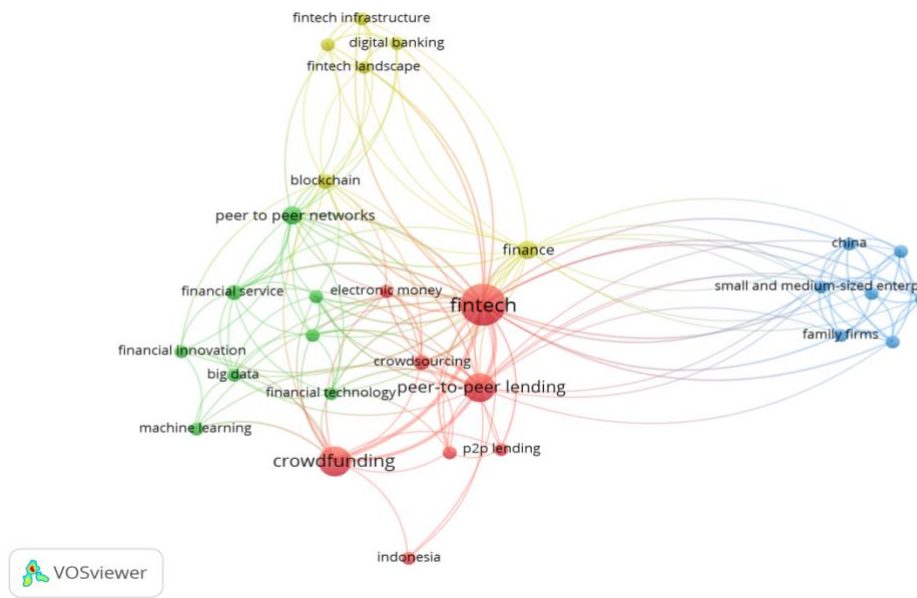


Figure 1: Network visualization of 27 documents published in 2018-2021 by title and abstract

In the visualization shown in Figure 1, each circle represents a keyword or term that appears frequently, which is obtained from the title and abstract of the article. The size of the circle indicates the number of publications related to the term, both in the title and in the abstract. Figure 1 shows that “Peer to Peer Lending Fintech Trends,” divided into 4 clusters:

Table 2: Cluster Division and Items

Cluster 1 (8 items)	<i>crowdfunding, crowdsourcing, electronic money, equity crowdfunding, fintech, indonesia, p2p lending, peer-to-peer lending</i>
Cluster 2 (8 items)	<i>big data, financial industry, financial innovation, financial service, financial technology, machine learning, peer to peer networks, technological development</i>
Cluster 3 (7 items)	<i>china, engineering, family firms, small and medium sized, small and medium-sized entrepreneur, state owned enterprise, state-owned enterprises</i>
Cluster 4 (6 items)	<i>blockchain, digital banking, finance, fintech business models, fintech infrastructure, fintech landscape</i>

From the analysis results on the imported metadata into VOSviewer, an overlay visualization can be obtained. In this visualization, the color of a node represents the keyword and also the year the article was published containing that keyword. The darker the color on the node, the longer the topic will be discussed in a research. The visualization in Figure 2 below shows that topics related to fintech infrastructure, digital banking, the purple fintech landscape, were the topics discussed in 2018. The topics include finance, fintech, crowdfunding, financial innovation to peer-to-peer lending, namely nodes that are blue, green, and yellow, which is a topic that will be widely researched or discussed between the 5th month of 2018 and 2021.

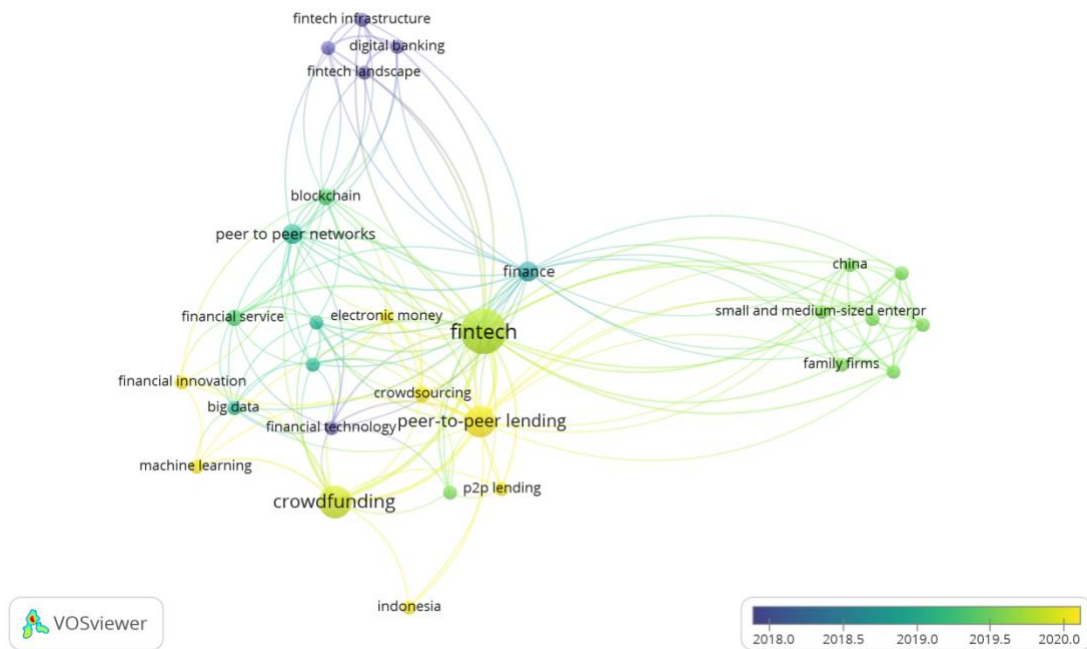


Figure 2: Overlay visualization of 27 documents published in 2018-2021

From Figure 2, the level of saturation indicated by the number of keywords that often appear can be indicated by the yellow color around the fintech label, crowdfunding. These areas are topics that have been extensively researched. Meanwhile, the topics covered in green such as: peer-to-peer lending, p2p lending, blockchain, peer-to-peer networks and more can be seen in Figure 3. These topics are those that have not been studied much. So there is still an opportunity to do research on the same topic and it is still quite broad.

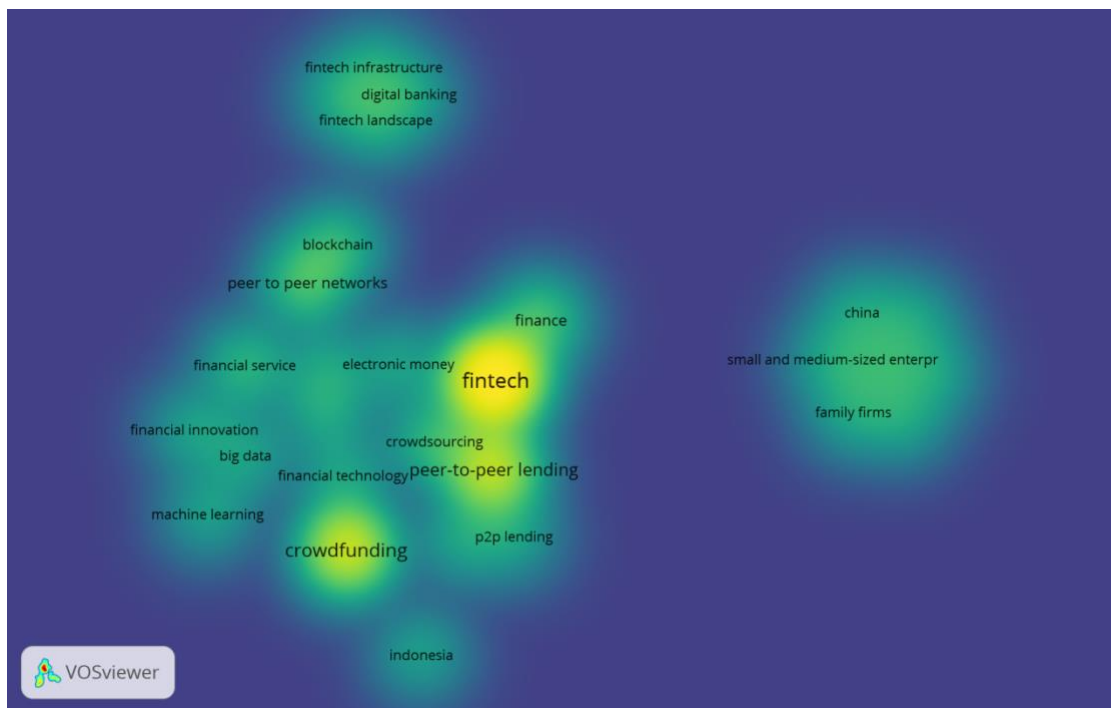


Figure 3: Density visualization of 27 documents published in 2018-2021

From the acquisition of visualizations based on titles and abstracts, researchers also performed visualizations based on *co-occurrence* with keyword choice as the unit of analysis. In this analysis, the researcher uses the full counting

calculation method, intending to see the keywords that appear most often in 2018 to 2021. The results of the search obtained 83 keywords. The minimum number of keywords for the publication of each document is 2 keywords. From this analysis, 4 clusters were obtained with nodes in red, yellow, green, and blue (Figure 1).

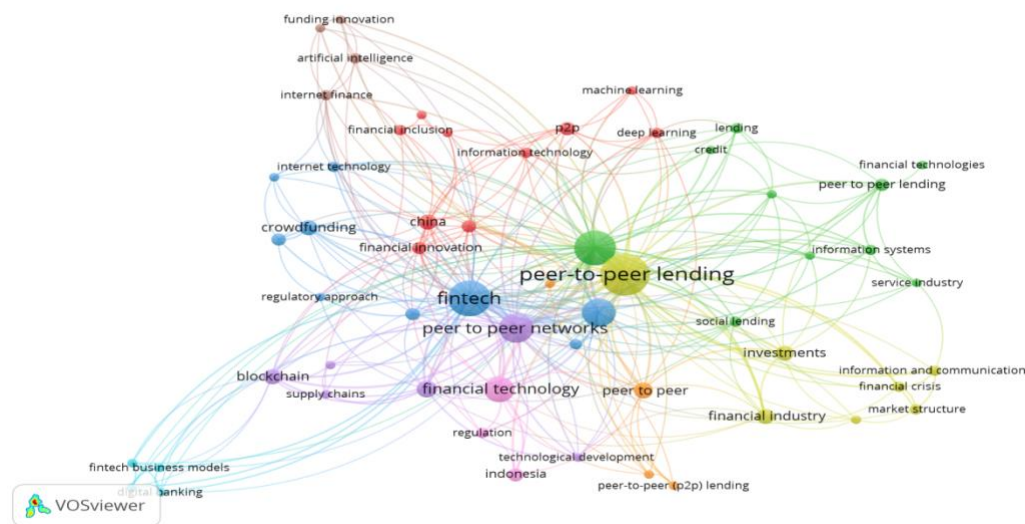


Figure 4: Visualization based on keywords

As for the visualization results shown in Figure 4, the keyword peer-to-peer lending is the largest node in size, which indicates that the keyword peer-to-peer lending is a keyword that is often used. Furthermore, keywords that are often used with a fairly large node size include fintech, peer-to-peer networks, financial technology, and crowdfunding.

## 6. Conclusion

This research has elaborated the mapping and clustering of research themes on fintech peer-to-peer lending from 27 documents obtained through the Scopus database published in 2018 to 2021. The United States is the country with the most publications of 6 documents, while many countries such as Romania, Korea South, Japan, Denmark, Luxembourg, Sweden, Brazil, Malaysia, Egypt, and Vietnam became the countries with the least number of publications, namely 1 document. This study provides insight into research related to fintech peer-to-peer lending in various international journals. In this study, it is focused on the co-occurrence aspect or with keywords so as to allow further research that can be done by other researchers to look at other aspects, for example related to citation, bibliographic coupling,

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