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Peer-to-peer lending: Growth, trends, and economic impact analysis

Muhammad Ikhlash, Tiara Ayodhya Maharani Sembiring
Department of Management and Business, Politeknik Negeri Batam, Indonesia
*Correspondents e-mail: ikhlash@polibatam.ac.id

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Author's email:
tiarasembiringataksmkn2@gmail.com

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Abstract

Purpose – This study analyzes the growth trends and economic impact of peer-to-peer (P2P) lending, highlighting its role in promoting financial inclusion and supporting small businesses, particularly in contexts with limited access to traditional banking services.

Design/methodology/approach – The research uses a bibliometric analysis method to evaluate scientific publications on P2P lending from 2007 to 2024, utilizing data from the Scopus database. The study uses the Biblioshiny Web Interface software, connected via R packages, to map research trends, author productivity, and international collaborations.

Findings – Three significant findings emerge: (1) Research publications peaked in 2021 (132 articles, 15.85%), followed by consolidation phase in 2022-2024, reflecting market maturation post-COVID-19; (2) Conceptual analysis reveals a dual-paradigm structure: technology-driven research (machine learning, big data cluster) and economy-focused research (financial inclusion, SME financing cluster), with "finance" and "investments" serving as bridging ideas; (3) China-USA collaboration dominates (64 co-publications), showing a knowledge production corridor that shapes global P2P lending discourse. Research is increasingly connecting P2P lending to economic outcomes, including SME access to finance, supply chain efficiency, and sustainable business model transitions.

Research limitations/implications – The analysis is limited to articles, conference papers, and reviews, which may exclude emerging insights from editorials and policy commentaries. Future research should incorporate thematic evolution analysis (pre- vs. post-COVID) and regional comparative studies.

Practical implications – The findings demonstrate P2P lending's documented role in enhancing financial inclusion (by reaching unbanked populations) and SME development (through alternative financing channels). The identified research trajectory suggests policymakers should focus on balancing innovation facilitation with consumer protection, particularly as the field matures toward integration with traditional financial systems.

Originality/value – This study uniquely maps the economic impact discourse in P2P lending research, revealing how scholarly literature documents the connection between P2P platforms and real economic outcomes. By extending analysis to 2024 and identifying dual technological-economic paradigms, this research provides strategic insights for directing future investigations toward underexplored areas: Islamic P2P models, sustainability integration, and comparative regulatory effectiveness.

Keywords: Peer-To-Peer Lending, FinTech, Financial Inclusion, Bibliometric Analysis, SME Financing, Research Networks.

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Introduction

Indonesia has experienced rapid growth in the fintech sector in recent years, which aligns with the increasing number of internet users. Fintech innovations, including online lending platforms, have evolved in response to these trends. One significant development is the increasing popularity of peer-to-peer lending, which offers a lending alternative for individuals without bank accounts. Peer-to-peer (P2P) lending is a system that provides access to loans without involving financial institutions, offering alternatives with more flexible terms than regular banking . Peer-to-peer lending, or money-based crowdfunding, is a non-bank financial service that provides credit to individuals or institutions without intermediary financial institutions (Carolan, 2019; Chen et al., 2014; Muhammad et al., 2021)

Peer-to-peer lending first appeared zin 2005 with the establishment of Zopa in the UK and Prosper in the United States (Ziegler & Shneor, 2020). The background to this establishment is the high number of people without access to a bank account (Suryono et al., 2021). Geographical barriers and lack of bank credit history reduce banks' confidence in providing credit to all levels of society (Suryono et al., 2019). Banks also require collateral, and strict credit selection makes it difficult for many people to access loans (Nugraheni & Aziza, 2020; Rahman et al., 2017). Peer-to-peer lending was formed to provide an alternative solution for those with difficulty accessing bank loans (Suryono et al., 2021).

Since 2007, the volume of traditional loans in the United States has gone down, especially for small businesses, due to the global financial crisis with strict regulations on financial institutions. However, peer-to-peer lending issuance went up significantly, suggesting the importance of small business loans (Segal, 2015). A similar global trend emerged in Cambridge University's Center for Alternative Finance report for 2013-2020. Ziegler et al. (2018) found that 17% of the alternative market share in Europe was held by peer-to-peer lending. According to Wardrop et al. (2016), business loans through alternative online channels in the United States went up from 0.24% in 2013 to 1.26% in 2015 and continued to grow in other American regions in 2014-2016.

Online peer-to-peer lending platforms offer alternative credit options for individuals and small businesses. Peer-to-peer lending platforms provide abundant credit information, letting lenders assess the creditworthiness of loans using soft and complex financial data that influences loan interest rates. Empirical studies show that complex credit information, such as the borrower's economic status and bankruptcy records, and soft credit information, such as identity, loan description, and social networks, are essential in lending decisions and setting interest rates.

Peer-to-peer platform regulation varies by country. The United Kingdom implements self-regulation, the United States is regulated by the Securities and Exchange Commission (Wardrop et al., 2016), and many other countries tighten regulation due to platforms' rapid growth and irregularity. Especially in China, peer-to-peer lending platforms have spread over the last decade.

Peer-to-peer lending aims to provide lending options for individuals without access to regular banking services. The advantages of peer-to-peer lending are its efficiency and speed in the application process (Patwardhan, 2018). So far, peer-to-peer lending has given lenders a higher rate of return and more affordable access to credit for borrowers with difficulty getting loans from banks (Milne & Parboteeah, 2016; Wardrop et al., 2016). Peer-to-peer lending offers a more flexible alternative than traditional lending institutions, which may lack technological knowledge and have rigid financial systems. Research shows that peer-to-peer lending can complement or replace traditional financing by attracting high-quality, low-risk customers underserved by traditional lending (Z. Liu et al., 2020). The difference between peer-to-peer lending and banks is that peer-to-peer lending only focuses on lenders and does not collect funds from the public as banks (Rosavina et al., 2019).

One of the essential elements of financial inclusion is the ease and affordability of people's access to financial services. Peer-to-peer lending has a significant role in increasing financial inclusion by providing better access to loans for people who do not have a bank account and need it (Oh & Rosenkranz, 2020). In their study, Coakley and Huang (2023) state that the ratio of peer-to-peer lending to total assets is going up along with increasing working capital expenditure, which shows an increase in production scale. Pan et al. (2021) revealed that peer-to-peer lending can

improve supply chain efficiency and encourage entrepreneurs to increase their investment in product research and development. Pizzi et al. (2021) add that peer-to-peer lending can encourage SMEs to shift to more sustainable business models. This funding platform also increases financial access for SMEs (Abbasi et al., 2021). Therefore, this financing scheme is appropriate for supporting the community's economic impact in developing SMEs. The digitalization of peer-to-peer lending also makes it easier for people to access it because people who need loans need not come to the office (KPMG Indonesia, 2018). Online peer-to-peer lending can eliminate inefficiencies and overhead costs by addressing barriers for borrowers with limited access to credit due to low creditworthiness (Foo et al., 2017).

With the times, peer-to-peer lending now plays a role in financial inclusion and public credit access and contributes to economic impact and social welfare. Therefore, research on peer-to-peer lending is essential so it continues to develop according to needs. One form of research is scientific articles, which are scientific writings that explain the research results those researchers have carried out. This article presents new findings that prove or refute a hypothesis and contribute to knowledge in a particular field of science. These research articles are usually published in academic or scientific settings and go through a peer review to ensure validity and scientific quality. Documents that are easy to access, manually or online, require the support of facilities such as indexes, abstracts, catalogs, and so on (Nuryudi, 2017). Therefore, the analysis used to collect research data is necessary, one of which is bibliometric analysis, which is used to analyze bibliographic data from various literature such as journals, articles, and others.

Bibliometrics, first described by Pritchard in 1969, is an essential branch of library science. Pritchard and Nalimov introduced it as a method that uses mathematics and statistics to analyze books and other communication media (Glänzel, 2003). Bibliometrics is an activity that reflects a researcher's research abilities. Co-word analysis is a bibliometric indicator where the frequency of documents containing specific words is counted. The results of the co-word analysis can show research progress, journal productivity, journal quality, journal maturity, and others. Generally, bibliometric analysis helps assess the quality of research results and identify growth trends in scientific disciplines (Pattah, 2013).

With the rapid growth of peer-to-peer lending, bibliometric research has become essential to map research developments in this field. For example, research by Kholidah et al. (2022) uses bibliometric techniques to map economic and business disciplines focused on peer-to-peer lending platforms with data from Scopus for thirteen years. This research explores the development of peer-to-peer lending literature from an economic and business perspective between 2009 and 2021. It identifies prominent authors, organizations, countries, and important topics and critical issues in this discussion. The research also highlights the importance of Sharia-based lending models. It categorizes the literature into three sub-topics: peer-to-peer lending business models, failure factor analysis, and contribution to MSMEs. This study is essential for two reasons: it identifies research developments, reveals gaps, and contributes to other researchers by proposing possible research topics for the future. Bibliometric studies aim to analyze previous literature to reach objective findings (Tepe et al., 2022).

While earlier bibliometric studies have mapped P2P lending research (Kholidah et al., 2022; Tepe et al., 2022), this study offers three contributions that differentiate it from existing literature. First, this research extends the temporal scope to 2024, capturing the post-COVID-19 recovery period (2022-2024), which saw significant regulatory changes and market consolidation in P2P lending globally (Research and Markets, 2024). This period remains unexplored in existing bibliometric analyses. Second, unlike earlier studies that primarily focused on business and economic perspectives, this research explicitly examines the dual technological-economic paradigm in P2P lending research through conceptual structure analysis (Ribeiro-Navarrete et al., 2022), revealing how machine learning and big data (technological cluster) intersect with financial inclusion and banking (economic cluster). This dual-lens approach provides a more comprehensive understanding of the field's evolution. Third, this study identifies and analyzes the economic impact pathways of P2P lending through citation network analysis and keyword co-occurrence patterns, specifically examining how research connects P2P lending to SME development, financial

inclusion, and economic growth.

Despite growing interest in P2P lending, no bibliometric study has systematically mapped how research literature connects P2P lending platforms to measurable economic outcomes, particularly in SME financing and financial inclusion in developing economies. This gap is critical because policymakers and practitioners require evidence-based understanding of P2P lending's economic contributions beyond its technological innovation.

Meanwhile, in this research, researchers applied bibliometric techniques to evaluate research, describe the structure of scientific fields, and track the development of knowledge in the specific area of peer-to-peer lending. This bibliometric analysis uses Biblioshiny's WebInterface software connected via R-Packages to evaluate research developments from year to year, focusing on parts such as authors, countries, institutions, and the relationship between keywords. This visualization produces a mapping of ideas and thoughts in science using pictures, maps, graphs, and numbers. This research analyzes the number of publications, the level of researcher productivity, and a map of the development of publication research on peer-to-peer lending based on the Scopus database. This study provides insight into future research directions through a bibliometric approach.

Literature Review

Peer-to-peer Lending

Peer-to-peer and online lending mechanisms have similarities, namely that they are carried out through digital platforms. However, the two differ in legality and the regulations governing them. Peer-to-peer lending is officially regulated, licensed, and registered with the Financial Services Authority. Illegal online loans do not follow regulations and are not recognized by financial authorities. Therefore, consumers must ensure they are dealing with undesirable institutions and finances.

Peer-to-peer lending is a direct lending system between lenders and lenders that uses information technology, where all transactions are carried out online via a particular platform (Suryono et al., 2019; Wang et al., 2015). Investments in peer-to-peer lending offer the potential for high returns. However, investors need to adjust investments to their respective risk profiles and preferences, as well as understand management strategies (Q. Liu et al., 2019; Suryono et al., 2019, 2021). Therefore, understanding the risks well is an essential first step in investing funds in peer-to-peer lending.

Bibliometrics

Bibliometrics comes from the word "bibliography," which includes "Biblio" (book) and "metrics" (measuring) (Royani & Idhani, 2018). Bibliometrics analyzes and measures literature using mathematical and statistical approaches (Diodato & Gellatly, 2013). Mathematical and statistical approaches are used in bibliometrics to investigate the use of library materials, analyze research developments, and integrate case studies (Rinaldi & Mujianto, 2017).

According to (2003), bibliometric analysis consists of three main parts:

1. Bibliometrics for bibliometricians (methodology): Research focusing on bibliometric research methods.
2. Bibliometrics for scientific disciplines (scientific information): Researchers from various fields of science use this method for scientific classification and analysis.
3. Bibliometrics for science policy and management (science policy): Evaluation of researchers across domains to compare broad topics.

Bibliometrics is widely applied in the scientific field to identify and assess research results through a quantitative approach. This analysis includes output measurements such as the number of citations and the impact of the research. Bibliometric research involves the analysis of articles in a database using indicators such as number of publications, citations, article origin, year of publication, and publisher (Zupic & Čater, 2014). The goal is to measure the development of

science and technology and examine the relationship between scientific disciplines and related articles (Godin, 2006). This approach is suggested as a complementary method in literature reviews because it also objectively explores research trends and performance assessment (Zupic & Čater, 2014).

Scopus Database

As a leading publication indexing engine, Scopus uses subscription data and a selective approach to index documents from a selected list of publications (Martín-Martín et al., 2021). This database is known for covering most of the international journals. Scopus was chosen as the primary database because it provides access to critical information in research, including article titles, abstracts, and keywords (Chadegani et al., 2013).

Biblioshiny: The Shiny App for Bibliometrix

In 2008, Corrado began writing about fast-growing companies and discovered that bibliometrics was an attractive method for analysis. Their collaboration developed into a positive scientific partnership in academic circles. In 2016, they released Bibliometrix version 0.1, which has now evolved into version 4.0, supported by global researchers and the academic spin-off "K-Synth."

Research Methods

Research Design

This study uses a quantitative bibliometric analysis approach to systematically map and analyze the intellectual structure, conceptual development, and collaboration networks in P2P lending research. Bibliometric analysis is selected for its ability to objectively assess large volumes of scholarly literature and find patterns not readily apparent through traditional narrative reviews (Zupic & Čater, 2014).

Data Source and Search Strategy

Primary data includes scientific publications indexed in the Scopus database, chosen for its comprehensive coverage of peer-reviewed literature and provision of complete bibliographic metadata, including abstracts, keywords, and citation information (Chadegani et al., 2013). The analytical method applied is bibliometric analysis, where researchers collect literature publication results from the Scopus database using Boolean search syntax applied to the TITLE-ABS-KEY ("Peer-to-Peer Lending" OR "P2P Lending" OR "Crowdlending").

Selection Criteria

Documents were selected based on systematic inclusion and exclusion criteria to ensure quality and relevance. The inclusion criteria were: (1) document types limited to articles, conference papers, and conference reviews, as these undergo rigorous peer review; (2) subject areas restricted to Business, Management, Accounting, Economics, Econometrics, Finance, Decision Sciences, and Social Sciences to align with the study's economic focus; (3) English language only to ensure consistency; and (4) final published versions only.

The exclusion criteria removed: (1) editorials, errata, notes, retracted papers, and book chapters, as these do not represent primary research contributions or may present duplicated content; (2) duplicate records identified through DOI matching; and (3) documents with incomplete metadata, notably missing abstracts or keywords, which are essential for the planned analysis.

The selection process moved forward through multiple stages. The initial search returned 1,247 documents. After applying the document type filter, the number of documents was reduced to 891. The area filter further refined the sample to 856 documents. Finally, after removing duplicates and documents with incomplete metadata, the final analytical sample had 833

documents. This systematic filtering makes sure the analyzed literature is relevant, methodologically sound, and suitable for bibliometric techniques.

Data Extraction

All bibliographic data was downloaded in BibTeX format, which provides structured information compatible with bibliometric software. The extracted data includes four main categories: (1) publication metadata such as title, year, source, and DOI; (2) authorship information including author names, affiliations, and countries; (3) content indicators comprising abstracts, author keywords, and Scopus Keywords Plus; and (4) citation information covering both references cited and times cited by others.

Analytical Tools

The analysis was conducted using Biblioshiny WebInterface version 4.0, connected to the Bibliometrix package in R. This software was selected because it combines powerful analytical capabilities with user-friendly visualization, enabling comprehensive bibliometric analysis. Biblioshiny automatically processes the imported BibTeX file, standardizes author names and affiliations, and generates tables, plots, and network visualizations.

Analytical Methods

Four complementary analytical methods were employed. First, descriptive analysis examined publication trends over time, identified the most productive journals and authors, and mapped geographical and institutional contributions. Author productivity was measured using both publication counts and fractional counting to account for co-authorship.

Second, citation network analysis revealed the intellectual structure of P2P lending research through co-citation patterns. When two documents are often cited together, it suggests they share conceptual foundations. Citation strength was calculated using the association strength method, and only documents with at least five citations were included in the visualization. The modularity Q-value was used to confirm that identified clusters represent genuine intellectual communities.

Third, keyword co-occurrence analysis mapped the conceptual structure by examining which keywords often appear together. Both author keywords and Keywords Plus were analyzed, with a minimum threshold of five occurrences to focus on common themes. The association strength method normalized the data, and the silhouette coefficient confirmed cluster coherence.

Fourth, collaboration network analysis examined international co-authorship patterns to reveal research partnerships and knowledge exchange. This analysis focused on country-level collaboration rather than individual authors to illuminate the geopolitical structure of research production. Metrics included collaboration intensity, network density, and centralization measures.

Results and Discussion

General Information

This section outlines the growth of scholarly publications on peer-to-peer lending worldwide. Analysis was carried out on journal publications based on period and document type and presented in table form to make it easier to understand. The time range considered is 2007 to 2024. The top three documents dominant in the peer-to-peer lending context are articles, conference papers, and conference reviews.

Based on the information in table 1, the growth rate of scientific publications about peer-to-peer lending reached 23.86% per year, with an average of 4.3 citations per document, 21.4 citations per year per document, and 0 references. There are 1624 authors involved in 833 documents related to peer-to-peer lending, of which a single author wrote 106 documents. Author collaborations include 146 documents with a single author, 2.81 with multiple authors, and 26.89 with international authors.

Table 1. Main Information

Description	Results
Main Information About Data	
Timespan	2007:2024
Sources (Journals, Books, Etc)	472
Documents	833
Annual Growth Rate %	23.86
Document Average Age	4.3
Average Citations Per Doc	21.4
References	0
Document Contents	
Keywords Plus (Id)	1784
Author's Keywords (De)	2056
Authors	
Authors	1624
Authors Of Single-Authored Docs	106
Authors Collaboration	
Single-Authored Docs	146
Co-Authors Per Doc	2.81
International Co-Authorships %	26.89
Document Types	
Articles	683
Conference Papers	130
Conference Review	20

Source: Scopus Database (2024)

Most Relevant Sources

Through the Biblioshiny Web Interface, the ten most relevant sources in the number of scientific publications regarding peer-to-peer lending worldwide have been analyzed. According to Table 2, Finance Research Letters stands out as the most relevant source with 24 scientific publications, followed by Electronic Commerce Research and Applications with 18 scientific publications, and Financial Innovation with 15 scientific publications, placing them as the second and third top sources in terms of relevance. Scientific publications on peer-to-peer lending.

Table 2. Most Relevant Sources

Sources	Articles
Finance Research Letters	24
Electronic Commerce Research And Applications	18
Financial Innovation	15
Electronic Commerce Research	11
Emerging Markets Finance And Trade	11
Sustainability (Switzerland)	11
European Journal Of Operational Research	9
Information Systems Research	9
Applied Economics	8
Applied Economics Letters	8

Source: Scopus Database (2024)

Most Relevant Writers

Figure 1. Shows a plot of the ten most relevant authors from the number of scientific publications about peer-to-peer lending worldwide. Author Li Y with 18 articles, and author Wang J is in last place with 11 scientific publications related to peer-to-peer lending.

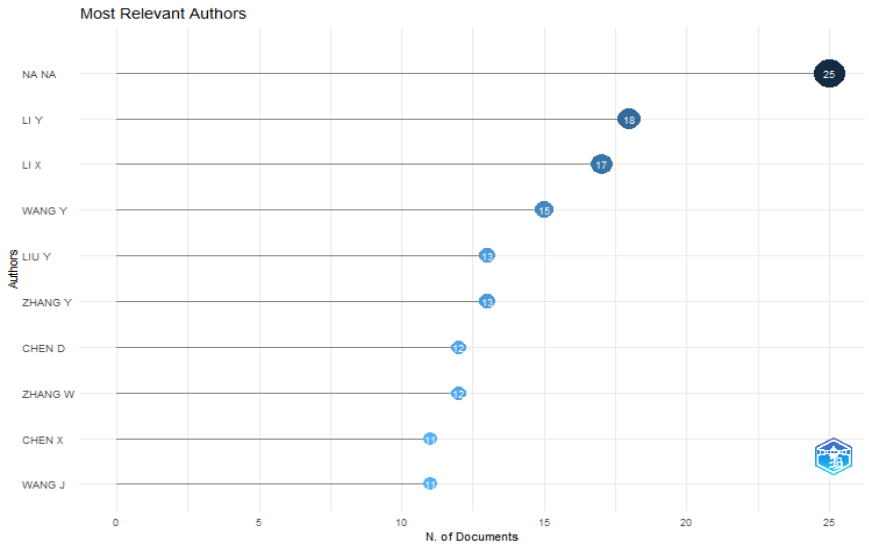

Figure 1. Most Relevant Author Plots
Source: Scopus Database (2024)

Table 3. Explains the fraction of articles written by the top 10 most relevant authors. The total fractionation of articles from all the top 10 authors is 65.9, with Wang J has the lowest fraction, namely 3.95 articles.

Table 3. Most Relevant Author Fractionation

Authors	Articles	Articles Fractionalized
Li Y	18	4.58
Li	17	5.62
Wang Y	15	5.28
Liu Y	13	3.60
Zhang Y	13	4.08
Chen D	12	3.53
Zhang W	12	2.93
Chen	11	3.83
Wang J	11	3.95

Source: Scopus Database (2024)

Scientific Production of the Country

Overall, 70 countries contribute to scientific publications on peer-to-peer lending worldwide. Based on Table 4, China dominates with a total frequency of 553 articles, placing it first. The USA, with 284 articles, is second, and Indonesia, with 140 articles, is third in terms of its contribution to scientific publications related to peer-to-peer lending.

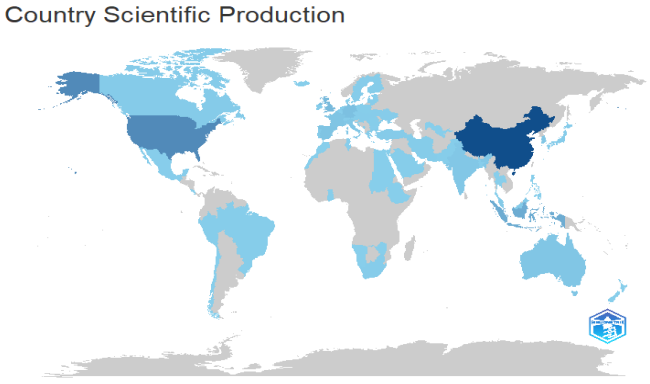

Figure 2. Scientific Production Map
Source: Scopus Database (2024)

Table 4. Country Scientific Production

China	553	Luxembourg	4
USA	284	Pakistan	4
Indonesia	140	Peru	4
UK	83	Romania	4
Germany	59	Saudi Arabia	4
Spain	43	Bangladesh	3
France	39	Belgium	3
Australia	35	Bulgaria	3
South Korea	33	Cyprus	3
Italy	29	Estonia	3
India	28	Mexico	3
Malaysia	17	Tunis	3
Portugal	14	Bahrain	2
Canada	13	Chile	2
Singapore	13	Croatia	2
Netherlands	11	Denmark	2
Turkey	11	Qatar	2
Finland	10	Thailand	2
Iran	10	United Arab Emirates	2
Ireland	9	Costa Rica	1
Greece	8	Egypt	1
Japan	8	Ethiopia	1
Switzerland	8	Ghana	1
Ukraine	8	Iceland	1
Czech Republic	7	Liechtenstein	1
Hungary	7	Malta	1
Lithuania	7	Monaco	1
Slovakia	7	Montenegro	1
South Africa	7	Morocco	1
Sweden	7	Namibia	1
Israel	6	New Zealand	1
Latvia	6	Philippines	1
Poland	6	Sudan	1
Austria	4	Uzbekistan	1
Brazil	4	Zimbabwe	1

Source: Scopus Database (2024)

Document Type

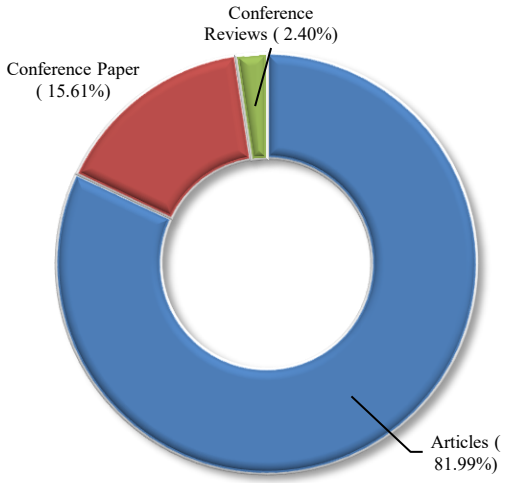

Figure 3. Document Type Diagram
Source: Scopus Data (2024)

Researchers analyzed documents collected from the Scopus database based on document type, which were presented as plots and tables (Figure 3). Of the eight types of documents related to scientific publications regarding peer-to-peer lending, namely articles, conference papers, conference reviews, editorials, erratum, notes, retracted, and reviews, researchers chose three types of documents with the highest percentage of scientific publications worldwide: articles, conference papers, and conference reviews.

Based on Table 5. Most scientific publications about peer-to-peer lending throughout the world use the three most common types of documents, namely articles with a frequency of 683 documents (82.99%), followed by conference papers with 120 documents (15.61%) and conference reviews of 20 documents (2.40%).

Table 5. Frequency of Document Types

Document Type	Amount	%(N=833)
Articles	683	81.99%
Conference Papers	130	15.61%
Conference Review	20	2.40%
Total	833	100.00%

Source: Scopus Database (2024)

Active Institution

The advancement of global peer-to-peer lending research is significantly driven by the contributions of various institutions. As shown in Table 6, the Scopus database analysis identifies the ten most active institutions in this field. Southwestern University of Finance and Economics tops the ranking with 22 publications, followed by Tianjin University in second place (20 publications), while the City University of Hong Kong ranks tenth with 12 publications.

Table 6. Active Institutions

Affiliations	Articles
Southwestern University Of Finance And Economics	22
Tianjin University	20
Peking University	19
Fudan University	18
Renmin University Of China	16
Bina Nusantara University	14
Hefei University Of Technology	13
Tsinghua University	13
University Of Indonesia	13
City University Of Hong Kong	12

Source: Scopus Data (2024)

Conceptual Structure

The author has digitized BibTeX data files related to peer-to - peer lending and arranged them into a conceptual structure that will be visualized through a co-occurrence network, producing images with clusters and colors that are easy to understand. In this visualization, there are 2 clusters with different colors: a blue cluster and a red cluster. The blue cluster has 39 keywords that are most often used in scientific publications about peer-to-peer lending, while the red cluster has 10 keywords that are rarely used.

From Figure 4. It can be concluded that the closer the resulting distance, the closer the relationship between the keywords used, suggesting their greater use. But the greater the distance from other colors, the less often the keyword is used.

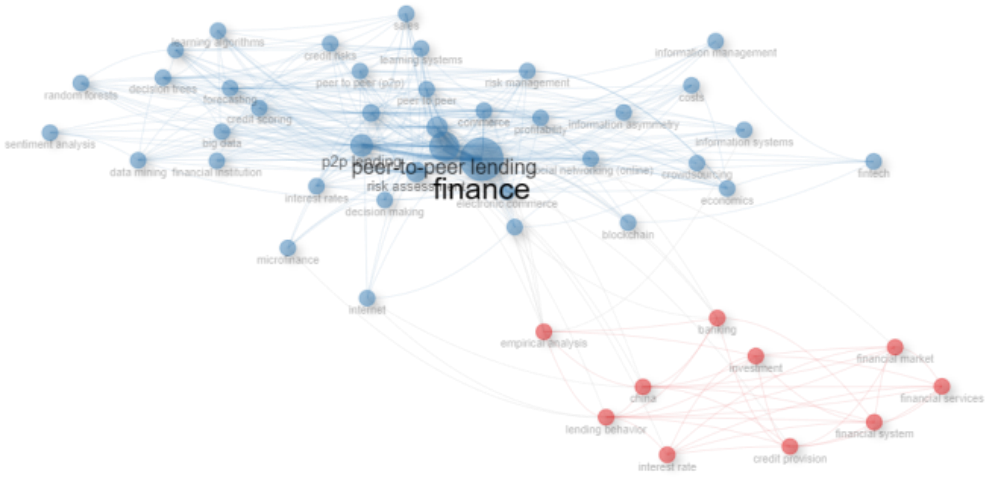

Figure 4. Conceptual Structure
Source: Scopus Data (2024)

Intellectual Structure

In this analysis, researchers used a network of quotes from authors who have published work related to peer-to-peer lending from the Scopus database. The visualization uses 12 colors: red, blue, green, purple, orange, brown, pink, gray, light green, light brown, light blue, and light purple.

There are eight red dots, five blue dots, two green dots, five purple dots, four orange dots, two brown dots, five pink dots, three gray dots, four light green dots, two light brown dots, two blue dots light, and two light purple dots connected with various colors.

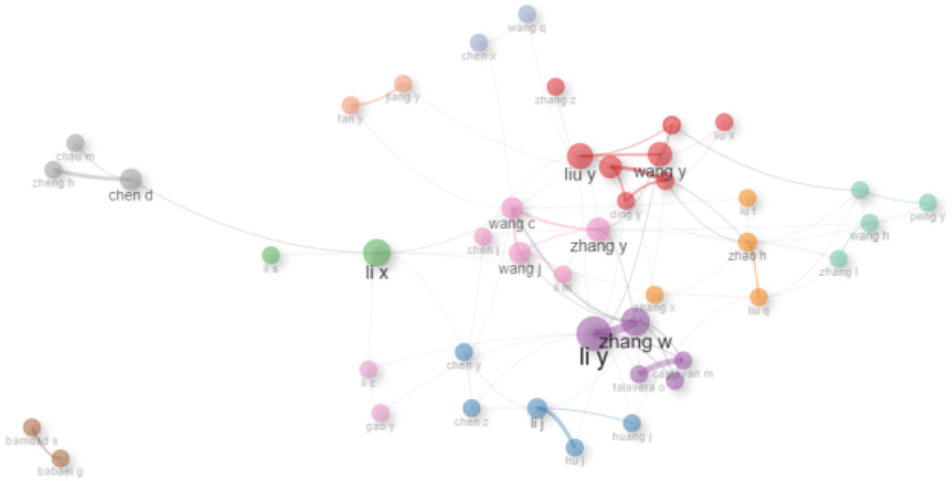

Figure 5. Intellectual Structure
Source: Scopus Data (2024)

From Figure 5. It can be concluded that the closer the resulting color spacing, the closer the relationship between the authors used, suggesting that the authors are often cited in scientific publications related to peer-to-peer lending.

Social Structure

Table 7. below explains the collaboration between countries contributing to worldwide scientific publications on peer-to-peer lending. Researchers chose ten collaborations between countries with the most frequency. It can be seen from the table that collaboration between China and the USA has the highest frequency, namely 64, which indicates the country's social structure, with collaboration between countries being the most dominant in scientific publications related to peer-to-peer lending.

Table 7. Social Structure

From	To	Frequency
China	USA	64
China	Hong Kong	19
China	United Kingdom	19
USA	Hong Kong	15
China	Australia	7
USA	Singapore	6
China	France	5
USA	France	5
USA	Korea	5
China	Japan	4

Source: Scopus Data (2024)

Discussion

Research developments in the field of peer-to-peer lending

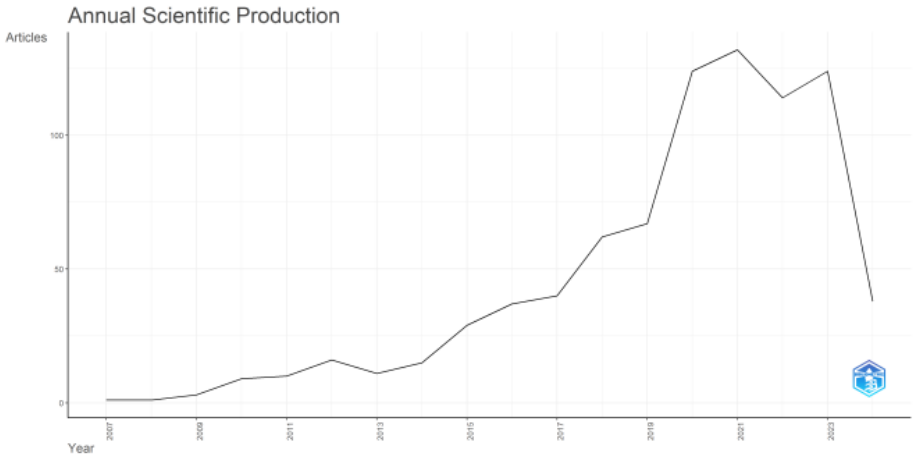

Figure 6. Development of the Number of Peer-to-peer Lending Research Publications
Source: Scopus Data (2024)

Table 8. Development of the Number of Peer-to-peer Lending Research Publications

Year	Articles	Percentage
2007	1	0.12%
2008	1	0.12%
2009	3	0.36%
2010	9	1.08%
2011	10	1.20%
2012	16	1.92%
2013	11	1.32%
2014	15	1.80%
2015	29	3.48%
2016	37	4.44%
2017	40	4.80%
2018	62	7.44%
2019	67	8.04%
2020	124	14.89%
2021	132	15.85%
2022	114	13.69%
2023	124	14.89%
2024	38	4.56%
Total	833	100%

Source: Scopus Data (2024)

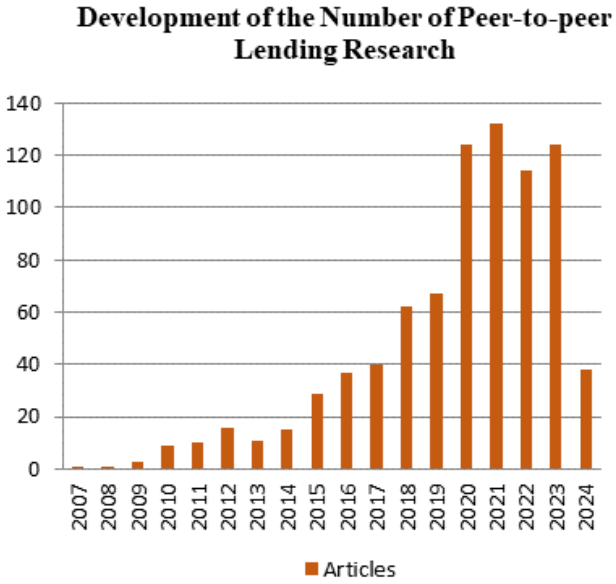

Figure 7. Graph of Development in the Number of Peer-to-Peer Lending Research Publications
Source: Scopus Data (2024)

The development of research publications in peer-to-peer lending from 2007 until 2024 shows significant fluctuations. Figure 7 shows a graph that records the peak of publications in 2021, with 132 journals (15.85%), and the lowest number in 2007 and 2008, with one publication each (0.12%).

In 2022, the number of publications will go down to 114 journals (13.69%). Still, the relatively high number of publications shows that research in this area remains relevant and essential. In this analysis, the author limits the analysis to only the article, conference paper, and conference review document types, eliminating document types such as editorial, erratum, note, retracted, and review.

The data show that several authors have been significant and highly influential contributors to peer-to-peer lending research. This increase in publications reflects researchers' increasing interest and involvement in various parts of peer-to-peer lending, suggesting significant growth in the volume and depth of research topics in this area.

Productivity of peer-to-peer lending writers

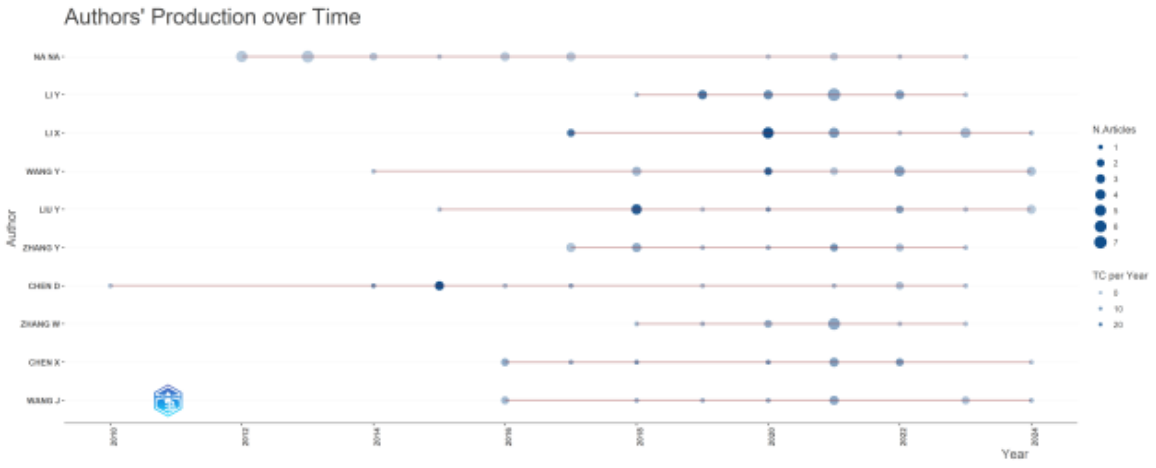

Figure 8. Peer-to-peer Writer Productivity Lending
Source: Scopus Data (2024)

An analysis of author productivity from 2007 to 2024 shows that several authors consistently produce scientific publications in peer-to-peer lending. Li Y is one of the most prolific

writers, with the most significant contributions evenly distributed throughout the period, although these publications have not received significant citations. This shows substantial dedication to research, even though its impact may not yet be reflected in citations.

Other authors, such as Li X, show significant spikes in productivity and influence in certain years. For example, Li Y recorded many citations in 2019 and 2020, suggesting their essential contribution to the literature in this field. Likewise, Li X saw a sharp increase in citations in 2020.

Chen D also showed extraordinary productivity, especially in 2015, with a high number of citations. This indicates that their work that year significantly affected the scientific community. Meanwhile, Zhang W and Chen X show a stable productivity pattern with consistent contributions in their publications.

The data indicate that several authors have made substantial contributions to peer-to-peer lending research, with notable spikes in influential output during specific years. Analyzing these productivity patterns is crucial, as it offers insights into research trends and identifies key scholars in the field.

Development Map of Peer-to-peer Lending Research Publications

a. Development Map Based on Keywords

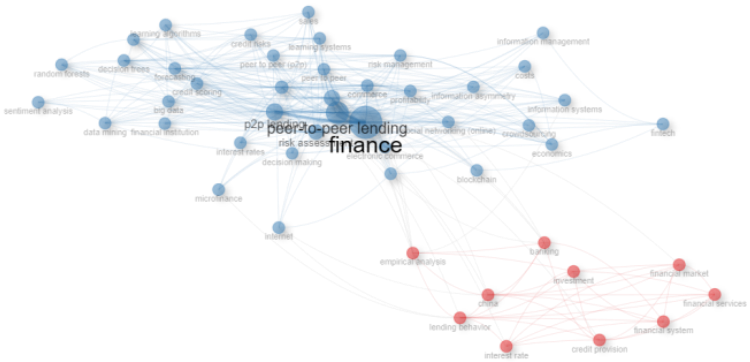

Figure 9. Peer-to-peer Lending Development Map Based on Keywords
Source: Scopus Data (2024)

Research on peer-to-peer lending shows dynamic development, reflected in the conceptual structure analysis. Keywords often used and becoming the center of attention are finance and peer-to-peer lending, characterized by large bubble sizes. This keyword is at the heart of many studies, showing its high frequency of use.

This network is divided into two main clusters. The first cluster (in blue) focuses on technology and data analysis, including keywords like machine learning, big data, and data mining. The second cluster (in red) focuses on economic parts and financial services, with keywords like banking, financial services, and financial markets. The relationship between these two clusters can be seen by connecting keywords such as finance and investments, which bridge the focus of technology with the economy.

Adjacent bubbles indicate these keywords often appear together in the same study, suggesting close association. Meanwhile, far-apart bubbles indicate these keywords are less often related in the same literature. This visualization illustrates how various parts of peer-to-peer lending interact and is the research focus in this field.

b. Development Map Based on Author

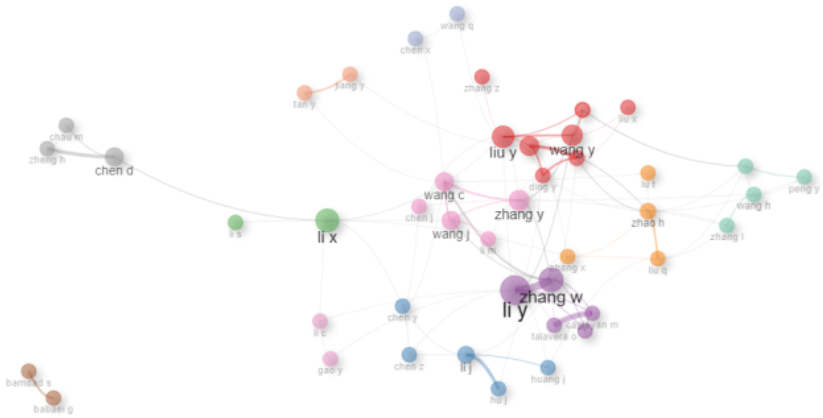

Figure 10. Peer-to-peer Lending Development Map Based on the Author
Source: Scopus Data (2024)

This map illustrates the collaborative relationships among authors contributing to the peer-to-peer lending field. Authors such as Li Y, Zhang W, and Liu Y occupy central positions in the network, indicating their significant influence and high citation frequency by peers. In this visualization, node size is proportional to the number of publications or level of influence; larger bubbles represent authors with greater output or citations, while smaller ones denote fewer contributions.

Distinct color clusters represent specific collaborative groups, for instance, Zhang W and Li Y in the purple cluster and Liu Y in the red cluster. The spatial distance between nodes indicates the strength of the relationship or intellectual connection: adjacent nodes suggest authors who frequently collaborate or share research themes, whereas distant nodes imply minimal or no interaction.

Authors such as Chen D and Bamdad S appear as isolated nodes detached from the main network, suggesting that their research focuses on niche topics or operate independently of the central collaborative cluster. Overall, this visualization unveils the complex web of collaboration and underscores the pivotal authors driving the advancement of peer-to-peer lending research.

c. Development Map by Country

Table 9. Development of Peer-to-peer Lending Research Based on Between Countries

From	To	Frequency
China	USA	64
China	Hong Kong	19
China	United Kingdom	19
USA	Hong Kong	15
China	Australia	7
USA	Singapore	6
China	France	5
USA	France	5
USA	Korea	5
China	Japan	4

Source: Scopus Data (2024)

Social structure analysis using Biblioshiny reveals significant patterns of international collaboration in peer-to-peer lending research. As shown in Table 9, China and the USA emerge as the most active collaborators globally. The partnership between these two nations is particularly dominant, recording a frequency of 64 joint publications. This strong bilateral

tie underscores their pivotal role in the development and dissemination of knowledge within this field.

Furthermore, China maintains robust partnerships with Hong Kong and the United Kingdom, each accounting for 19 joint publications. Similarly, the USA exhibits significant ties with Hong Kong (15 collaborations) and Australia (7 collaborations). These cross-border alliances demonstrate a widespread and cohesive research network, facilitating the global exchange of critical findings.

China's overwhelming research output of 553 publications, accounting for 66.4% of the total, can be explained by three interconnected structural factors that extend beyond simple numerical description. First, the sheer market scale created an unprecedented natural laboratory for academic investigation: at its peak (2015-2017), China hosted over 6,000 P2P platforms, generating massive datasets and complex regulatory challenges that provided fertile ground for scholarly inquiry across multiple dimensions, including platform operations, credit assessment mechanisms, and market dynamics.

Second, the systemic crisis that engulfed the Chinese P2P industry between 2018-2020, characterized by widespread platform failures affecting millions of investors, created urgent demand for research addressing platform survival factors, fraud detection methodologies, risk management frameworks, and investor protection mechanisms.

Third, the policy-academia nexus played an important role: the Chinese government's strategic emphasis on financial technology innovation, followed by stringent regulatory correction, generated a lot of research funding and institutional support for examining P2P lending's contributions to financial inclusion, SME financing access, and systemic risk management, as shown by the strong representation of top Chinese universities such as Peking University, Tsinghua University, and Fudan University in our institutional analysis.

However, China's dominance raises critical questions about the generalizability of research findings: insights derived from China's high-volume, high-failure-rate market environment may not directly translate to more regulated contexts such as the United Kingdom and United States, where self-regulation and SEC oversight have produced different market structures, nor to emerging markets with distinct institutional frameworks, cultural contexts, and financial infrastructure. This generalizability gap represents a critical direction for future research, suggesting the need for comparative studies that systematically examine how institutional context, regulatory approach, and market maturity shape P2P lending outcomes across different geographical and economic settings.

The frequency in the table identifies the number of collaborations between two countries. The higher the frequency number, the more often researchers from the two countries collaborate on research publications. For example, a frequency of 64 between China and the USA indicates 64 publications involving researchers from both countries.

These data suggest that peer-to-peer lending research is a highly collaborative field with strong international involvement. The collaboration between China and the USA stands out as the most significant. At the same time, other countries such as Hong Kong, the United Kingdom, and Australia also play an essential role in this research network. This international collaboration is important to encourage innovation and spread new knowledge in peer-to-peer lending.

Economic Impact Evidence in Research Networks

Our citation and keyword co-occurrence analysis reveals three thematic pathways through which research literature documents the economic impact of P2P lending, moving beyond technological innovation to show measurable economic outcomes. The first pathway, SME financing channels, is shown by a coherent citation cluster formed by studies from Abbasi et al. (2021), Coakley and Huang (2023), and Pan et al. (2021), which collectively show P2P lending platforms significantly increase small and medium enterprises' access to finance, particularly benefiting creditworthy firms that lack traditional collateral, while simultaneously enhancing working capital availability,

stimulating research and development investment intensity, and improving supply chain financing efficiency through more flexible credit terms and faster disbursement mechanisms.

The second pathway, financial inclusion mechanisms, is documented through research by Oh and Rosenkranz (2020) and Suryono et al. (2021), which provides empirical evidence that P2P lending effectively reaches unbanked and underbanked populations who face geographical barriers to traditional banking services or have limited credit histories that would typically disqualify them from conventional lending channels, thus expanding financial access to previously marginalized segments of the economy.

The third pathway, market efficiency gains, emerges from research emphasizing how P2P platforms leverage soft information sources such as social network connections, loan narratives, and borrower-provided contextual data, combined with alternative data analytics including digital footprints and behavioral patterns, to reduce information asymmetry between lenders and borrowers more effectively than traditional credit scoring models, potentially generating superior credit allocation efficiency compared to conventional banking systems that rely primarily on complex financial data and collateral valuations.

Collectively, these three thematic pathways show the research literature has evolved beyond merely describing P2P lending as a technological novelty to systematically documenting its real contributions to economic development through expanded credit access, enhanced financial inclusion, and improved market efficiency, thus providing an evidence base that connects platform operations to real-world economic outcomes.

Conclusion and Future Direction

This bibliometric analysis of 833 peer-to-peer lending publications from 2007 to 2024 provides comprehensive insights into the evolution, structure, and future directions of P2P lending research. The findings reveal that P2P lending scholarship has matured from an exploratory field into a academic discipline characterized by clear thematic structures, productive research communities, and strong international collaboration networks.

The study shows three key theoretical contributions. First, the temporal analysis reveals a distinct evolutionary trajectory, with publications peaking in 2021 at 132 articles (15.85%), followed by a stabilization phase from 2022 to 2024. This pattern reflects the field's transition from documenting a new financial technology to examining the challenges of optimization, regulation, and integration within broader financial ecosystems. The post-2021 stabilization signals market maturation and a shift in research focus from "what is P2P lending" to "how can P2P lending be effectively implemented and regulated." Second, the conceptual structure analysis reveals a dual-paradigm framework comprising technology-driven research (machine learning, big data, data mining) and economy-focused research (financial inclusion, SME financing, banking integration). Critically, these paradigms are not isolated but increasingly integrated, with technological capabilities studied as enablers of measurable economic outcomes rather than as innovations in isolation. Third, the collaboration network analysis reveals that research production is concentrated in a China-USA corridor, with 64 co-publications representing the dominant knowledge exchange pathway. While this concentration helps with cross-national learning and methodological advancement, it also raises important questions about the generalizability of findings to different institutional contexts and regulatory environments.

China's overwhelming dominance, with 553 publications (66.4% of the total output), can be attributed to three interconnected structural factors. The massive market scale, with over 6,000 platforms at its peak (2015-2017), created an unprecedented natural laboratory that generated extensive data and complex regulatory challenges. The subsequent systemic crisis (2018-2020), involving widespread platform failures, created an urgent demand for research on platform survival, fraud detection, and investor protection. Also, the policy-academia nexus, characterized by government emphasis on fintech innovation followed by regulatory correction, has generated a lot of research funding, as reflected in the strong representation of top Chinese universities. However, this concentration requires caution in generalizing findings from China's high-volume,

high-failure-rate environment to more regulated markets or emerging economies with different institutional frameworks.

The analysis of citation networks and keyword co-occurrences reveals three pathways through which research documents the economic impact of P2P lending. First, the SME financing channel, shown by citation clusters from Abbasi et al. (2021), Coakley and Huang (2023), and Pan et al. (2021), demonstrates that P2P lending increases access to finance for creditworthy but collateral-poor firms, enhances working capital availability, stimulates R&D investment, and improves supply chain efficiency. Second, the financial inclusion mechanism, as documented by Oh and Rosenkranz (2020) and Suryono et al. (2021), illustrates how P2P platforms reach unbanked and underbanked populations in geographically remote areas or those with limited credit histories. Third, the market efficiency pathway highlights how platforms use soft information and alternative data to mitigate information asymmetry and enhance credit allocation efficiency, surpassing the capabilities of traditional banking systems.

The practical implications of these findings extend to multiple stakeholder groups. Policymakers should pursue evidence-based regulation that balances the facilitation of innovation with consumer protection, recognizing that the institutional context matters and that China's regulatory experience may not provide a universal model. As the sector matures, policy focus should shift from "whether to allow P2P lending" to "how to integrate it with traditional financial systems" to maximize benefits while managing systemic risks. P2P platform practitioners should focus on sophisticated risk management by combining traditional and alternative data, focus on market niches where they have comparative advantages (such as creditworthy but underserved segments), and invest in advanced analytics for competitive differentiation.

Future research should address six critical gaps identified through this analysis. First, thematic evolution analysis examining pre-versus post-COVID-19 shifts in research priorities would illuminate how the pandemic reshaped scholarly focus. Second, regional comparative studies beyond China and developed markets would enhance generalizability and identify context-specific success factors in ASEAN, Latin America, and Africa. Third, Islamic P2P lending models remain underresearched despite their growing importance in global Islamic finance. Fourth, integrating sustainability deserves deeper investigation as ESG considerations become central to finance, examining how P2P platforms can channel capital toward sustainable enterprises. Fifth, long-term economic impact assessment using longitudinal data would strengthen evidence about borrower outcomes and systemic economic effects. Sixth, a comparative regulatory effectiveness analysis across different national approaches would guide optimal policy design, balancing innovation, consumer protection, and financial stability.

This study acknowledges several methodological limitations that suggest areas for refinement in future bibliometric research. The restriction to peer-reviewed articles, conference papers, and reviews, while ensuring quality, may exclude valuable insights from policy documents and industry reports. The reliance on Scopus alone, though comprehensive, does not capture all global publications, particularly non-indexed regional journals. The English-language restriction may exclude significant non-English research, especially from China. Future studies should consider multi-database approaches combining Scopus with Web of Science and Google Scholar, integrate qualitative content analysis to complement quantitative patterns, and implement periodic updates to track rapidly evolving research priorities.

Peer-to-peer lending research stands at a critical juncture where substantial knowledge has been collected about platform operations, market dynamics, and economic impacts. The next research frontier involves moving beyond documentation to optimization, addressing questions about design, regulation, and integration that maximize economic benefits while managing risks. The challenge is making sure technological innovation serves genuine financial inclusion rather than replicating existing inequalities in digital form, and that lessons from market leaders guide sustainable development in emerging economies. The international collaboration, methodological sophistication, and interdisciplinary integration are already clear in the research community position it well to guide P2P lending's evolution from a disruptive innovation to a sustainable financial

service integration. This bibliometric analysis provides a roadmap for that journey, identifying both the foundations already established and the frontiers that remain to be explored.

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